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Long-distance *wh*-movement and morphological realisation of C in the developing grammar of Japanese learners of English : A preliminary study

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Abstract

In this paper, I report on a study that investigated the second language (L2) acquisition of morphology of C, which heads the embedded CP from which a *wh*-phrase was extracted by long-distance *wh*-movement. A grammaticality judgement task including interrogative sentences with long-distance *wh*-movement was administered to Japanese learners of English of different levels of proficiency. Results revealed that learners acquire the *that* form of C earlier than its null counterpart. Moreover, their judgement of Subjacency violation indicated that the spec-head agreement configuration in embedded CP is more correctly observed when the head C is realised as *that*. These data are compatible with the data from L1 acquisition studies, and the view that the acquisition of grammatical operations is governed by UG.

1. Introduction

The acquisition of *wh*-movement has attracted a considerable number of researchers working within the framework of generative grammar (Bley-Vroman, Felix, and Ioup, 1988; Li, 1998; Martohardjono & Gair, 1993; Schachter, 1989, 1990; Uziel. 1993; White, 1992 amongst others). The main reason for this is its property of "displacement", which all theories of grammar must provide an explanation for, i.e., a *wh*-phrase can appear in a position in a sentence distant from where it is interpreted (Yusa, 1999). In the case of Japanese learners of English (JLEs), in particular, acquisition of English *wh*-movement and its related constraints presents the following conditions:

(1)　a. some principle operates in the L2 but not the L1
　　　b. the input undermines the L2 grammar　　　　　　　（White, 1992: 446）

Given these conditions, we can test whether the L2 learner has access to Universal Grammar (UG; Chomsky, 1981) or not (White, 1992).

In this paper, I will report on a study concerning the status of long-distance *wh*-movement in the developing L2 grammar of JLEs. The main focus of this study was to investigate how JLEs with different levels of proficiency treat two different realisations of head C (i.e., phonologically realised form *that* and null form ∅) 'crossed' by the long-distance *wh*-movement. The data suggests early acquisition of the *that* form, which simultaneously allows JLEs to operate long-distance *wh*-movement successive cyclically. On the other hand, it will be suggested that acquisition of the ∅ form proceeds in a more gradual manner, with its grammatical features unspecified until the learner's fluency is relatively advanced.

This paper is organised as follows: First, I will briefly discuss the phenomenon of *wh*-movement in English in the framework of Relativized Minimality as described by Rizzi (1990). Second, some previous acquisition

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studies are discussed. Third, the methodology employed in the study is discussed, followed by a presentation and a discussion of the results of the study. Finally, implications of the findings for L2 acquisition theory and suggestions for further study are discussed in the concluding section.

2. Theoretical background

In English, a *wh*-question is formed by moving a *wh*-phrase from the position where it is interpreted to the clause initial position (Spec, CP). In cases where the *wh*-phrase is extracted from an embedded clause, the derivation of the *wh*-question is generally schematised as follows:

(2)　a. What$_i$ do you think $[_{CP}$ t$_i'$ $[_{C'}$ $[_C$ that$]$ $[_{IP}$ John bought t$_i]]]$?
　　　b. What$_i$ do you think $[_{CP}$ t$_i'$ $[_{C'}$ $[_C \varnothing]$ $[_{IP}$ John bought t$_i]]]$?

(2) shows that the *wh*-phrase is extracted from the object position of the verb in the embedded clause, and moves first to the Spec, CP position of the embedded clause, then to the Spec, CP of the matrix clause by Successive Cyclic Movement (Chomsky, 1973). As can be noted in (2), the intermediate complementizer can be either phonologically realised *that* or phonologically null $\varnothing$.

In cases in which the *wh*-phrase is extracted from the subject position of the embedded clause, however, the intermediate complementizer must be null. In the adult English grammar, the existence of *that* typically induces a '*that*-trace' effect.

(3)　a. *Who$_i$ do you think $[_{CP}$ t$_i'$ $[_{C'}$ $[_C$ that$]$ $[_{IP}$ t$_i$ bought this bike$]]]$?
　　　b. Who$_i$ do you think $[_{CP}$ t$_i'$ $[_{C'}$ $[_C \varnothing]$ $[_{IP}$ t$_i$ bought this bike$]]]$?

The *that*-trace effect has long been discussed in generative grammar (e.g., Chomsky, 1981; 1995; Rizzi, 1990), particularly in terms of its relevance with the Empty Category Principle (ECP), which is the principle determining the licensing of empty categories (e.g., *wh*-traces).[1] Here, the point we need an explanation for is why (3a) is ruled out while (3b) is ruled in.

Revising Chomsky's (1981) notion of 'minimality',[2] Rizzi's (1990) Relativized Minimality offers an ECP which provides an explanation for (3).[3]

(4)　The Empty Category Principle:
　　　A non-pronominal empty category must be properly head-governed
　　　(Formal Licensing)　　　　　　　　　　　　　　　　　　　　　　　(Rizzi, 1990: 87)

(5)　Head Government: X head-governs Y iff
　　　X $\in$ {A, N, P, V, Agr, T}
　　　X m-commands Y
　　　No barrier intervenes
　　　Relativized Minimality is respected

"Proper head-government" in (4) is further defined:

(6)　X^0 properly head-governs Y if Y is immediately dominated by the immediate projection of X^0

In Rizzi's system, the subject trace in (3a) is not properly head-governed, as INFL fails to c-command the subject trace. In keeping with Chomsky (1981), the complementizer *that* is 'inert' for government. Hence

(3a) is ruled out by the ECP. Rizzi (1990) further suggests that the null complementizer $\varnothing$ can be a potential proper head-governor in special circumstances as in (3b), when a *wh*-operator or trace occupies its specifier position (p.51):

(7) $[_{CP}$ t/wh $[_{C'}$ $[_{C}$ $\varnothing]$ $[_{IP}$ ...

Under this configuration, the null complementizer can be expanded as Agr, which is a member of the governing categories. Hence the grammaticality of (3b). Rizzi assumes that Agr can be a feature assigned to another head as well as an independent head with its own inflectional projection (AgrP). The feature of Agr in the head C is generally licensed by coindexation with its specifier: the specifier position must be occupied by a Wh operator or trace. In other words, a tensed complementizer in English can be realised as *that* or Agr as in (8) (Rizzi, 1990: 52).[4] If Agr is selected for the head C, its Spec is filled by a *wh*-operator or trace.

(8) $C^0 \rightarrow \begin{cases} \text{that} \\ \text{Agr} \end{cases}$

Now (3b) is schematised as follows:

(9) Who$_i$ do you think $[_{CP}$ t$_i'$ $[_{C'}$ $[_{C}$ $\varnothing_{AGRi}$ $]$ $[_{IP}$ t$_i$ bought this bike]]]?

Here it is important to note that this Spec-head agreement is not required to satisfy the ECP when objects or adjuncts are extracted from the embedded clause, as in such cases the trace in the embedded clause is properly head-governed by other elements (i.e., the verb or Tense).
One problem of this proposal was the morphology of C in relative clauses as (10).

(10) a. the key $[_{CP}$ Op$_i$ $[_{C'}$ $[_{C}$ that $[_{IP}$ t$_i$ opens the chest]]]]
      b. the chest $[_{CP}$ Op$_i$ $[_{C'}$ $[_{C}$ (that/$\varnothing$) $[_{IP}$ you opened t$_i$]]]] (From Doherty, 2000)

In explaining the apparent contradicting morphological realisation of C^0 in English verb complement clauses and relative clauses, Rizzi proposes to capture the difference between these types of CPs as $[+/-$ predicative$]$ feature of C^0. The distribution of overt form of C^0 is as follows:

(11) a. C^0 +predicative, +Agr = that
      b. C^0 -predicative, +Agr = $\varnothing$
      c. C^0 -predicative, -Agr = that
      d. C^0 +predicative, -Agr = $\varnothing$

Given the system discussed above, our question is how the learners acquire this system. Before turning to the details of our present study, let us briefly look at some previous research on L1 and L2 acquisition.

3. Overt *that* in the acquisition of long-distance *wh*-movement

3.1 L1 English
Assuming the plausibility of Spec-head agreement in CP,[5] how do children acquiring L1 English acquire this system? Thornton (1990) found that her young child subjects acquiring L1 English used long-distance *wh*-movement crossing *that* (henceforth '*that*-questions') for both subjects and objects extraction cases.

(12)　a. Who do you think that the dwarfs licked?　(Thornton, 1990: 314)

　　　b. Who do you think that ate this?　(Thornton, 1990: 299)

Furthermore, the use of 'that-questions' initially predominated that of 'non-*that*-questions' (i.e., the long-distance *wh*-questions crossing a null complementizer). This observation leads her to claim that the children wrongly apply Spec-head agreement in CP to the CP headed by *that*. Then they wrongly treat *that* as a proper head-governor. She proposes the possibility that children obligatorily apply this to the cases with the object extraction as well as that with the subject extraction (Thornton, 1990: 291).[6] Assuming these operations, the structures of (12a-b) can be illustrated as (13a-b) respectively.

(13)　a. Who$_i$ do you think [$_{CP}$ t$_i$ [$_{C'}$ [$_C$ that$_{AGR_i}$] [$_{IP}$ the dwarfs licked t$_i$]]]?

　　　b. Who$_i$ do you think [$_{CP}$ t$_i$ [$_{C'}$ [$_C$ that$_{AGR_i}$] [$_{IP}$ t$_i$ ate this]]]?

This observation seems significant when we consider that "the children are overriding the general tendency to use reduced forms wherever possible" (Thornton, 1990 citing Lasnik, 1990).

Why do children start with *that* for the agreeing form rather than null form $\emptyset$?　Thornton (1990) suggests the Uniqueness Principle (Pinker, 1989) is at work. Namely, children in their earlier stages of L1 English acquisition should have a considerable amount of input of declarative sentences with a null complementizer. This leads children to register $\emptyset$ in their lexicon as the non-agreeing form for [−predicative] C^0. This in turn, by the Uniqueness Principle, makes children assume that the agreeing form of [−predicative] C^0 is *that* (Thornton, 1990: 308).

3.2　Japanese learners of English

Given the above syntactic paradigm and the process of L1 acquisition, let us now turn to L2 data. Our question is how JLEs, whose L1 does not have overt *wh*-movement, acquire long-distance movement and the C morphology in embedded CP.

Arimoto (1998) argues that JLEs might incorrectly assume the main clause such as *"do you think"* as an inserted adjunct phrase and what actually is in the complement clause as the main predicate. He points out that JLEs are normally explicitly taught this way, and that they are not often taught questions with *that* as (2a). His argument derived from his study where he gave the following set of declarative sentences to 31 Japanese college students.

(14)　a. I think John bought <u>an apple.</u>

　　　b. I think that John bought <u>an apple.</u>[7]

The students were asked to form a *wh*-question questioning the underlined phrase *an apple* for each sentence (14a-b). The assumption was that learners would move the *wh*-phrase all the way up to the matrix Spec, CP if they 'knew' that the *wh*-phrase can move successive cyclically crossing the embedded clause boundary. Putting aside the details of his subjects' responses, the results showed that 23 subjects provided (15a) for (14a), while only 15 provided (15b) for (14b).

(15)　a. What do you think John bought?

　　　b. What do you think that John bought?　　　　　　　(From Arimoto, 1998: 267)

This difference in the subjects' responses to the two sentences was attributed to the fact that the input of the long-distance *wh*-movement to these learners was almost exclusively like (16).

(16) a. Who do you think broke this window?

   b. What did you say your name was?　　　　　(From Arimoto, 1998: 269)

These are the cases with a null complementizer $\emptyset$. Drawing on the way Japanese learners are normally taught in class, he further claims that these learners initially assume that the clause *do you think* is just 'inserted' after the *wh*-phrase, and that what follows is the main clause predicate. In other words, learners might produce the correct surface form of (15a) without knowing the possibility of long-distance *wh*-movement. For the sentence with an overt complementizer (14b), on the other hand, learners are made to realise that the clause following *that* is a complement of the matrix verb *think*. Hence, only the learners who produced the appropriate question (15b) can be assured to have known the possibility of long-distance *wh*-movement.

In Arimoto's explanation, the JLEs start with the short-movement which does not allow them to move a *wh*-phrase across a clause boundary. Then later in their development, they somehow realise that a *wh*-phrase may be moved across a clause boundary, which is overtly marked by the complementizer *that*. This line of analysis of learning strategy may seem reasonable at first sight. As Arimoto's claim would entail that JLEs start with a wrong structure, however, it appears incompatible with the assertion generally held that learners' developmental L2 grammars are fairly governed by UG principles from relatively early stages of acquisition, even in the instruction-only environment (e.g., White & Juffs, 1998). Moreover, it is not clear why JLEs assume the short-movement initially, or how the inserted phrase "do you think" gets properly re-analysed as the main clause taking a complement CP headed by null C. More crucially, the fact that learners produced less long-distance movements crossing *that* than those without it does not itself constitute evidence that his subjects were using the "insertion" strategy. Contrary to Arimoto's (1998) claim, it is quite possible that many of his subjects had already learned *that* and $\emptyset$ for embedded C, but simply preferred $\emptyset$ over *that* to be crossed by long-distance *wh*-movement.[8]

4．Research hypothesis

Let us suppose that L2 learners acquire the *that* form at a very early stage of development, i.e., as soon as L2 learners are able to comprehend embedded sentences. Their interlanguage structures involving an embedded CP headed by $\emptyset$ or *that* are as follows:

(17)　John thinks [$_{CP}$ [$_{C'}$ [$_{C}$ $\emptyset$/*that*] [$_{IP}$ Ken broke Mary's bike]]]

Let us further assume that L2 learners 'know' that long-distance *wh*-movement is possible in a successive cyclic fashion. As Spec-head agreement is quite a general linguistic phenomenon (Chomsky, 1995), it is not implausible that L2 learners start processing *wh*-movement by assuming the Spec-head agreement configuration in CP. Like Thornton's (1990) L1 subjects, however, L2 learners might initially assume overt *that* as the agreeing form of [−predicative] C⁰. Then, somewhere later in their development, they learn the appropriate form of [−predicative] C⁰.

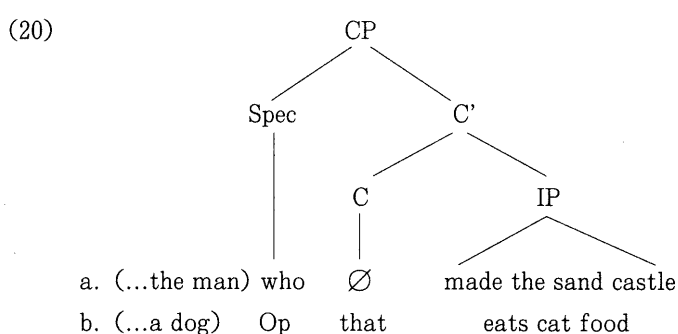## 5．Experiment

5.1 Grammaticality judgement task

To test the above hypotheses, a grammaticality judgement task (GJT) was devised. This test included interrogative sentences with the embedded subject or object extracted crossing *that* as in (18a-b) respectively, and those with the embedded subject or object extracted and raised crossing the null complementizer as in (18c-d) respectively.

(18)　a. *Who do you think that likes Mary?

　　　b. What do you think that Mary bought?

　　　c. Who do you think likes Mary?

　　　d. What do you think Mary bought?

Also included in this task were *wh*-interrogatives which involved a Subjacency violation, with an extracted element raised across the *wh*-relative (19a) or the complementizer *that* (19b)

(19)　a. *What are you looking for the man who made?

　　　b. *What have you kept a dog that eats?

The structure of relative clauses before *wh*-movement takes place are illustrated as follows:

(20)

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                    CP
                   /  \
                 Spec  C'
                  |   /  \
                  |  C    IP
                  |  |   /  \
a. (...the man) who  ∅   made the sand castle
b. (...a dog)   Op  that  eats cat food
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It was hypothesised that learners would respond differently to these two types of relative clauses if there was any difference in the status of *that* and ∅.

The task also included grammatical and ungrammatical declarative sentences in order to counter-balance the numbers of grammatical and ungrammatical sentences. The distribution of the test sentences is shown in the Table 1. The actual sentences used in the task are provided in the Appendix.

Table 1: Distribution of the test sentences

		grammatical	*ungrammatical	Total
declarative	that-clause	3	3	6
	∅-clause	3	3	6
	Relative clause	3	3	6
interrogative	Subject extraction from *that*-clause	-	3	3
	Object extraction from *that*-clause	3	-	3
	Subject extraction from ∅-clause	3	-	3
	Object extraction from ∅-clause	3	-	3
	Subjacency violation with *wh*-relative	-	3	3
	Subjacency violation with *that*	-	3	3
total		18	18	36

5.2　Participants

Students (age: 17-20) at Fukushima National College of Technology participated in the study. They had been learning English for 4 to 7 years, with their exposure to English being almost exclusively limited to classroom instructions, which they normally had had two to three hours a week, where government-approved

reading-based text books were used. Since they entered the College, they had been receiving additional two-hours-a-week grammar-based classes and one-hour-a-week conversation classes. None of them had lived in an English-speaking country for more than two weeks.

In order to grasp the general proficiency levels of the subjects, the Grammar Test Part 1 of the Oxford Placement Test 2 (Allan, 1992) was administered to 126 students. The Grammar Test Part 1 comprises the first 50 of the 100 questions testing grammar (200 questions in total). The remaining 100 questions test listening comprehension. Only the first 50 of the grammar section were given to the participants due to time restraints. Participants were divided into proficiency groups according to their scores. The dividing lines between proficiency groups were drawn in accordance with the percentage scores of the full test, on which the classification of the L2 English learners is originally based on.[9] As a result, there were 22 "Intermediate" learners, 24 "Elementary" learners and 27 "Basic" learners. Unfortunately only 2 participants performed at an "Advanced" level. Hence, in what follows, the participants' performance as groups for the GJT is discussed for three proficiency groups: Intermediate, Elementary and Basic. The distribution of the participants in terms of their scores is illustrated in the Table 2.

Table 2: Participants' proficiency levels

Proficiency level	score		no. of participants
	Above 45	95 % -	0
advanced	42-45	84-90 %	2
	40-41	80-82 %	0
intermediate	33-39	66-78 %	22
	31-32	62-64 %	6
elementary	28-30	56-60 %	24
	26-27	52-54 %	21
basic	23-25	46-50 %	27
	Below 23	- 46 %	24
	Max. 50		Total 126

5.3 Procedure

The GJT was administered during a normal class at the end of the academic year. To minimise the possibility of the participants' performance being affected by their lack of familiarity with lexical items included in the tasks, they were encouraged to ask questions about meanings of unfamiliar words if necessary. They were also told not to worry about errors related to spelling, tense or punctuation, to proceed on the test one item a time and not to go back to an item they have already done. Participants were instructed to provide their grammaticality judgement by circling one of four choices: "Perfectly OK", "Maybe OK", "Maybe wrong" and "Completely wrong". All the instructions were given in Japanese.

All subjects followed the instructions, completing the tasks in approximately 20 minutes.

5.4 Results

The GJT included 3 tokens for each sentence type, making the total number of responses for each sentence type as a group 66 for the Intermediate, 72 for the Elementary, and 81 for the Basic. In analysing the data, responses with "Perfectly OK" and "Maybe OK" were subsumed as "Accepted", and "Maybe wrong" and "Completely wrong" as "Rejected". The results of the GJT, and the χ^2 values comparing the performance of the 3 groups are illustrated in Tables 3 and 4.

Table 3 shows that, with the exception of the sentences involving a RC, the accuracy of judgement for the declarative sentences improves as learners advance in fluency. In particular, learners appear to acquire the

complement clause with *that* earlier than that with $\emptyset$. The difference between the Elementary group's responses to *that*-clause sentences and $\emptyset$-clause sentences was significant ($\chi^2(1) = 5.544$, $p < 0.025$), while other two groups' response patterns were exactly the same for both types of test sentences.

The results of the long-distance *wh*-interrogative sentences showed that the difference among the 3 groups' response patterns was significant in both subj-that ($\chi^2(2) = 11.552$, $p < 0.01$) and SUB-wh ($\chi^2(2) = 9.797$, $p < 0.01$).

For the subj-*that* sentences, in particular, the learners' performance seems to improve greatly while their proficiency levels are somewhere between Basic and Elementary ($\chi^2(1) = 7.105$, $p < 0.01$). There was no significant difference between Elementary and Intermediate groups ($\chi^2(1) = 0.180$, n.s.).

The difference in learners' response patterns to the subj-$\emptyset$ sentences was neither significant for the 3-group comparison ($\chi^2(2) = 2.492$, n.s.) nor for the 2-group comparisons (for Elementary-Intermediate, $\chi^2(1) = 0.964$, n.s., for Basic-Elementary, $\chi^2(1) = 2.444$, n.s.).

Table 3: Results of GJT (declarative sentences)

Sentence type	Group	Response				total	Comparison among 3 groups	
		Accepted		Rejected			$\chi^2(2)$	p
that-clause	INT	58	88%	8	12%	66		
	ELE	61	85%	11	15%	72	9.506	<0.01
	BAS	56	69%	25	31%	81		
	total	*175*	*80%*	*44*	*20%*	*219*		
that-clause	INT	5	8%	61	92%	66		
(ungrammatical)	ELE	26	36%	46	64%	72	35.456	<0.01
	BAS	44	54%	37	45%	81		
	total	*75*	*34%*	*144*	*66%*	*219*		
$\emptyset$-clause	INT	58	88%	8	12%	66		
	ELE	49	68%	23	32%	72	9.003	<0.025
	BAS	56	69%	25	31%	81		
	total	*163*	*74%*	*56*	*26%*	*219*		
$\emptyset$-clause	INT	3	5%	63	95%	66		
(ungrammatical)	ELE	16	22%	56	78%	72	14.957	<0.01
	BAS	24	30%	57	70%	81		
	total	*43*	*20%*	*176*	*80%*	*219*		
Relative clause	INT	53	80%	13	20%	66		
(RCthat)	ELE	50	69%	22	31%	72	3.598	n.s.
	BAS	54	67%	27	33%	81		
	total	*157*	*72%*	*62*	*28%*	*219*		
Relative clause	INT	29	44%	37	56%	66		
(RC-)	ELE	30	42%	42	58%	72	0.132	n.s.
(ungrammatical)	BAS	36	44%	45	56%	81		
	total	*95*	*43%*	*124*	*57%*	*219*		

* The numbers of the subjects of each proficiency group were as follows: INT (N=22), ELE (N=24), BAS (N=27).

Comparison of results for the subj-*that* and the subj-$\emptyset$ by each proficiency group indicated a significant difference for the Intermediate group ($\chi^2(1) = 7.190$, $p < 0.05$) but not for the other groups.

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Table 4: Results of GJT (interrogative sentences)

Sentence type	Group*	Response					Comparison among 3 groups	
		Accepted		Rejected		Total	$\chi^2(2)$	p
Subject extraction from	INT	18	27%	48	73%	66		
that-clause	ELE	22	31%	50	69%	72	11.552	<0.01
(subj-*that*)	BAS	42	52%	39	48%	81		
(ungrammatical)	*total*	*82*	*37%*	*137*	*63%*	*219*		
Object extraction from	INT	40	61%	26	39%	66		
that-clause	ELE	47	65%	25	35%	72	1.168	n.s.
(obj-*that*)	BAS	56	69%	25	31%	81		
	total	*143*	*65%*	*76*	*35%*	*219*		
Subject extraction from	INT	33	50%	33	50%	66		
$\varnothing$-clause	ELE	30	42%	42	58%	72	2.492	n.s.
(subj-$\varnothing$)	BAS	44	54%	37	46%	81		
	total	*107*	*49%*	*112*	*51%*	*219*		
Object extraction from	INT	33	50%	33	50%	66		
$\varnothing$-clause	ELE	37	51%	35	49%	72	0.162	n.s.
(obj-$\varnothing$)	BAS	39	48%	42	52%	81		
	total	*109*	*50%*	*110*	*50%*	*219*		
Subjacency violation	INT	25	38%	41	62%	66		
with *wh*-relative	ELE	43	60%	29	40%	72	9.797	<0.01
(SUB-*wh*)	BAS	50	62%	31	38%	81		
(ungrammatical)	*total*	*118*	*54%*	*101*	*46%*	*219*		
Subjacency violation	INT	19	29%	47	71%	66		
with *that*-relative	ELE	23	32%	49	68%	72	0.226	n.s.
(SUB-*that*)	BAS	26	32%	55	68%	81		
(ungrammatical)	*total*	*68*	*31%*	*151*	*69%*	*219*		

*The numbers of the subjects of each proficiency group were as follows: INT (N=22), ELE (N=24), BAS (N=27).

There was no meaningful difference in the 3-group-comparison for the obj-that or for the obj-$\varnothing$ sentences. However, comparison between these two types for each proficiency group revealed that there was a significant difference for Basic learners ($\chi^2(1) = 7.356$, $p < 0.01$), and a noticeable difference for Elementary learners ($\chi^2(1) = 2.857$, $p < 0.1$). There was no significant difference in Intermediate learners' treatment of the two types of sentences. Hence, it seems safe to say that the JLEs at least initially more readily identified sentences with a *wh*-phrase crossing *that* to those with a *wh*-phrase crossing the null C^0 ($\varnothing$).

For the sentences including a RC construction, the learners appear to know the correct *that* morphology of C^0 even when their fluency is in the Basic level. Neither the difference among the three groups for RCthat sentences nor that for RC- sentences was significant.

The results of the SUB sentences show that the learners initially treat the two types of Subjacency violation (16a-b) differently. Namely, they showed a tendency to wrongly accept movement out of the *wh*-relative clause in the lower 2 levels of proficiency, while their judgements for the movement out of the relative clause headed by *that* were relatively correct and fairly consistent over the three proficiency levels. The difference in the response pattern for SUB-*wh* sentences was significant between Intermediate and

Elementary levels ($\chi^2(1) = 6.573$, $p < 0.025$), and the within group comparison between SUB-*wh* and SUB-*that* showed that the responses to these two types of sentences were significantly different for Elementary learners ($\chi^2(1) = 11.189$, $p < 0.01$) and Basic learners ($\chi^2(1) = 14.277$, $p < 0.01$).

6. Discussion

The results described above show that acquisition of the *that* form of embedded C takes place relatively early, and the null form is learned in a gradual manner. This trend is most apparent in their judgements of the declarative sentences. For the long-distance *wh*-movement interrogatives, more importantly, they clearly showed higher acceptance of sentences with an embedded CP headed by *that* compared to those with $\varnothing$. Given that this tendency to accept *that*-clause sentences more than $\varnothing$-clause sentences cannot be explained by the effect of L2 input or the 'insertion' strategy, we need to seek more plausible explanations for the L2 data.

In keeping with Thornton's (1990) claims on L1 acquisition, the data suggests that L2 learners learn the *that* form of embedded C as soon as they are exposed to the relevant sentence structures, and they soon start operating long-distance *wh*-movement by assuming *that* as the agreeing form of [$-$predicative] C⁰. This analysis is not implausible if we adopt the proposal that the difference between English and Japanese in terms of *wh*-movement boils down to the different places in the grammar where such a process is incorporated as part of the properties of UG (Fukui, 1995; Huang, 1982). In such an analysis, JLEs, even at their initial stages of development, 'know' that *wh*-movement is necessary in L2 English, and they try to accomplish the process "successive cyclically" with the intermediate trace of Wh being in the Spec-head agreement configuration in CP, which is headed by *that*.[10]

Moreover, the data for the sentences involving Subjacency violation shows that JLEs' L2 grammar allows *wh* extraction out of the relative clause led by the *wh*-relative more freely compared to the same type of extraction out of the relative clause headed by complementizer *that*. Assuming the generally accepted structure of relative clauses as (20), JLEs seem to acquire the *that* form of C⁰ correctly, in that they only allow one Spec position for *that* C⁰. In relative clauses headed by *that* (19b), the only possible Spec position for *wh*-movement is already filled by the null operator (Op). Hence the successive cyclic movement is properly blocked. On the other hand, more JLEs of Elementary and Basic levels allowed *wh*-island violations induced by the overt *wh*-operator raised to the Spec, CP, which requires $\varnothing$ in the C⁰ position. I propose that the JLEs' differential treatment of these two types of relative clauses can be attributed to differences in the learning process employed for *that* and $\varnothing$. In other words, overt morphology of *that* is learned relatively early and may be used with an agreement feature, while acquisition of the null form $\varnothing$ takes place in a more gradual fashion with its grammatical features unspecified until somewhere later in development. This unspecified status of $\varnothing$ in JLEs' L2 grammar may result in allowing multiple specifiers in the embedded CP (Yusa, 1999). In such grammars, as more than one Spec, CP positions will be available for Wh to be raised to, long-distance *wh*-movement can proceed successive cyclically via intermediate Spec, CP all the way up to the matrix Spec, CP. Assuming Japanese as an 'IP-absorption' language, which allows multiple specifiers in IP ($=$TP), Yusa (1999) suggests that JLEs transfer the [$+$multiple] specifier structure of T in Japanese to CP in English.[11] The data not only seems to support this claim, but also indicates that such transfer might be closely related to the overt morphology of functional category C.[12] It is interesting to speculate that in L2 acquisition the overt PF realisation of C⁰ can only trigger *wh*-movement. This line of argument leads us to say that there is no *wh*-movement happening in the sentences without *that*.[13] I leave this open to further research.

Finally, our JLEs' judgement of "that-trace" cases improved greatly at the Elementary level. Unlike Thornton's (1990) L1 children, many JLEs seem to abandon *that* as the proper form for this construction at a relatively early stage of development. In other words, the L2 learners did not follow exactly the same path

as L1 children regarding the acquisition of the overt morphology of C⁰. From the present data, unfortunately, there seems to be no straightforward explanation for the data other than assuming JLEs' observation of ECP.[14] Further research is certainly needed to clarify what is behind this apparent difference between L1 and L2 data.

7. Conclusion

In this paper, I reported on a study on L2 acquisition of long-distance *wh*-movement by Japanese learners of English (JLEs) which focussed on overt morphology of C heading the embedded CP. Drawing on Thornton's (1990) L1 data, and to the generalisability of the linguistic phenomenon of Spec-head agreement (Chomsky, 1995), it was hypothesised that JLEs in earlier stages of acquisition would assume overt *that* as the proper form of C when successive cyclic *wh*-movement is applied.

The results of the grammaticality judgement task administered to JLEs at different levels of proficiency supported this hypothesis. Moreover, JLEs' judgements of sentences involving Subjacency violation led us to propose that acquisition of the *that* form prompts developing L2 grammars to assume one-to-one Spec-head agreement in CP, while the unspecified status of null C lets them transfer multiple specifier construction in Japanese to English.

The data on the acquisition process of overt C morphology by JLEs arising from this study was not totally parallel with the data from L1. However, it clearly supported the view that L2 acquisition proceeds with access to UG, and differences in superficial forms provided through input or learning strategies alike might have little impact on development of L2 knowledge.

Notes

[1] In the framework of the Principles and Parameters (Chomsky, 1981; 1986; 1995), the empty categories are licensed by being properly governed.

[2] The Minimality Condition is formulated as follows:

$$\ldots \alpha \, [_\gamma \ldots \delta \ldots \beta \ldots]$$

α does not govern β if γ is a projection of δ excluding α (Chomsky, 1986: 8-9)

[3] Rizzi (1990) formulates his Relativized Minimality as follows:

X α-governs Y only if there is no Z such that

  a. Z is a typical potential α-governor for Y, and

  b. Z c-command Y and does not c-command X

Typical potential governor:

Z is a typical potential head governor for Y = Z is a head m-commanding Y

Z is a typical potential antecedent governor for Y, in an A′-chain = Z is an A′ specifier c-commanding Y (See Rizzi, 1990: 7 for further details).

[4] As for the infinite clauses, the [-Tense] feature inhibits the expansion of C as Agr. See Rizzi (1990: 35) for further details.

[5] Rizzi (1990) points out that the morphological alternations of the complementizer in accordance with its specifier are seen cross-linguistically, and that "the view that such processes are generally available" (Rizzi, 1990: 55).

[6] This account is actually what Rizzi (1990) provides to account for certain dialects of English which do not manifest that-trace effects. Thornton (1990) further analyses the 'Medial-Wh' questions as parallel with the use of overt complementizer *that*. See Yokota (2001) for the data from L2 acquisition supporting this analysis.

[7] The following test sentence was also included in Arimoto (1998).

  I am looking for a man who bought <u>an apple</u>.

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I put aside arguments related to the knowledge of Subjacency from our discussion here.

[8] Bannai (2001) actually found that his high school level subjects preferred long-distance *wh*-movements crossing *that* to those crossing its null counterpart. The data is certainly not compatible with Arimoto's ideas on learning process. Unfortunately though, the JLEs' levels of proficiency are specified in neither of the two studies.

[9] See the Levels Chart in Allan (1992).

[10] There have been various forms of arguments supporting the view that learners may start with 'non-movement' for English *wh* interrogatives (i.e., White, 1992, Yusa, 1999). Such arguments are based on the violation of Subjacency condition by the L2 learners whose L1 does not manifest overt *wh*-movement. My proposal here does not exclude the possibility of such analyses. In fact, the JLEs' performance for the SUB sentences shown in Table 5 can support this line of argument. I leave this discussion open by simply assuming that 'non-movement' (or Merge) may be preferred when there is some constraint (i.e., *wh*-island). See Yusa (1999) for further discussion within the framework of Minimalist Program (Chomsky, 1995).

[11] According to Yusa (1999, citing Rudin, 1988 and Richards, 1997) there are two classes of languages which allow multiple *wh*-fronting overtly. One being "IP-absorption languages," where *wh*-phrases are raised to multiple specifiers of IP, and the other being "CP-absorption languages," where *wh*-phrases move to multiple specifiers of CP. As *wh*-movement in IP-absorption languages can be seen parallel to scrambling in Japanese, Yusa assumes that Japanese and Korean are IP-absorption languages.

[12] This view of unspecified features of the functional categories is compatible with the view that the initial state of L2 acquisition is the final state of L1 acquisition (Schwartz & Sprouse, 1996).

[13] I would like to thank Shigenori Wakabayashi for pointing out this possibility to me.

[14] See Martohardjono (1993) for the argument for the strong sensitivity to ECP violations.

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Appendix

Sentences used in the Grammaticality Judgement Test

declaratives	interrogatives
I think that John's father will take us to school.	*Who do you think that likes Mary?
My teacher says that I should read more books.	*Who did you say that took this picture?
Ken's sister believes that she will marry a handsome man.	*Who do you believe that wrote this letter?
*Mary said that did he hit her brother.	What do you think that Mary bought?
*I think that will our teacher give us a lot of homework.	What did you say that John saw?
*Mike believes that does Jennifer love him.	What does Sue believe that she saw?
I think we have already seen this movie.	Who do you think likes Mary?
The police believe Tom stole the money.	Who did you say took this picture?
John says his teacher hates him.	Who do you believe wrote this letter?
*I think has John finished his report.	What do you think Mary bought?
*Mary believes did she see a ghost.	What did you say John saw?

declaratives	*interrogatives*
*Ken says does his uncle have a Mercedes.	What does Ken believe he saw?
I saw the crocodile that ate my sister's little fish.	*What are you looking for the man who made?
I know the shop that sells tropical plants.	*What did you see the person who bought?
Ben bought a car that had been in an accident.	*What did you know the boy who ate?
*I went to see a doctor has a very expensive car.	*What are you looking for the car that has?
*John finished his report took him two weeks.	*What have you kept a dog that eats?
*Mary bought a plant had no leaves.	*What do you know the shop that sells?