The Acquisition of Control, Raising, and *Tough* Constructions Among Japanese Learners of English

Noriko Yoshimura[1], *Mineharu Nakayama*[2], *Atsushi Fujimori*[3]

[1]University of Shizuoka, Japan
[2]The Ohio State University, U.S.A.
[3]Shizuoka University, Japan

yoshimun@u-shizuoka-ken.ac.jp, nakayama.1@osu.edu, fujimori.atsushi@shizuoka.ac.jp

Abstract

This study investigates how Japanese college students learning English as a foreign language acquire three complex structures, subject control, raising to subject, and *tough* constructions in English. Two learner groups (*n*=53) together with a control group of native speakers of English participated in our multiple-choice questionnaire study. The results show that the control and *tough* sentences were equally easier to comprehend than the raising to subject structure in both learner groups. We basically attribute this difference to positive L1 transfer and the absence of true raising in Japanese.

1. Introduction

As noted in C. Chomsky (1969) for L1 acquisition, control, raising, and *tough* constructions can provide an excellent window into generative models of syntactic developments in L2 acquisition because they pertain to A- versus A-bar movement and short-distance and long-distance binding between an anaphor and its antecedent, the two core aspects of grammar at the syntax-semantics interface (Nakayama & Yoshimura 2015). Nevertheless, little research has been reported on the L2 acquisition of the constructions in English.

In this paper, we investigate how Japanese college students learning English in Japan understand the three complex sentences. Specifically, we examine whether they choose *Mary* or *John* as the following unpronounced DP in the infinitive clause: PRO subject in the subject control (SC) structure (1a), the subject trace of A-movement in the raising to subject (RtS) structure (1b), or the object trace of A-bar movement in the *tough* (TC) structure (1c).

(1) a. John promised Mary to study hard.
b. John seems to Mary to be happy.
c. John is tough for Mary to please.

Our concern is to see whether L2 learners observe the locality condition in their interpretations, which necessarily incurs an intervention effect by an experiencer phrase present between the unpronounced DP in the embedded infinitive and its antecedent in the matrix clause.

The paper is organized as follows: In the next section, we will review the syntactic-semantic properties of SC, RtS, and TC in English. In Section 3 major previous findings will briefly be summarized to identify our research questions. Our multiple-choice questionnaire experiment will be described and its results will be examined in Section 4. Section 5 provides a discussion of our results, and Section 6 contains concluding remarks and further issues for future research.

2. Theoretical Background and Basic Facts

2.1. PRO and Movement

We assume the three complex structures in (1) to have the following representations in (2) (Rosenbaum 1967; Chomsky 1973, 1981; Postal 1974).

(2) a. John$_i$ promises Mary [PRO$_i$ to study hard].
b. John$_i$ seems to Mary [t$_i$ to be happy].
c. John$_i$ is tough for Mary [OP$_i$ [PRO to please t$_i$]]

In the SC structure (2a), PRO generated in the infinitive subject position must be coreferential with the matrix subject *John*. In the RtS structure (2b), the matrix subject *John* underwent subject to subject raising from the embedded infinitive to the matrix clause. We assume that this is a case of A-movement, with t$_i$ being an NP-trace. In the TC structure (2c), *John* is generated in the matrix subject position and functions as the object of the infinitive verb. We assume that null operator (OP) is involved in this construction, with t$_i$ being an A-bar trace. Note in passing that the PRO subject in (2c) must be compatible with *Mary* in the experiencer phrase.

Although both SC and RtS both contain the infinitive clause, they are crucially different from each other (Chomsky & Lasnik 1977).

(3) a. John attempted to win the game.
b. John's attempt to win the game.

(4) a. John appears to be friendly.
b. *John's appearance to be friendly.

In other words, *John* in the RtS structure (4) is a derived subject via A-movement whereas *John* in the SC structure (3) is a base-generated subject. Furthermore, the contrast in grammaticality in (5) confirms that the TC structure like (1c) involves A-bar movement, thus prohibiting the wh-movement from the embedded infinitive clause in (5b) (Chomsky 1977).

(5) a. What$_j$ is it difficult for us to give t$_j$ to John?
b. *What$_j$ is John$_i$ difficult for us to give t$_j$ to t$_i$?

2.2. Locality and Intervention

Another issue we pursue in this study concerns 'locality'. The relation between the PRO subject and its antecedent *John* in (2a) is long-distance, not short-distance because *Mary* intervenes between the two in the sentence. In (2b), *John* moves over the experiencer phrase *to Mary*, producing a long-distance relation with its trace. Similarly, in (2c), *Mary* is closer to the null operator in the embedded CP Spec position than *John* in the

matrix subject position. To be more specific, locality is not observed in establishing these anaphoric relations in question, which seems to violate Rizzi's (1990) Relativized Minimality.

(6) Relativized Minimality (RM)
In the following configuration…X … Z …Y, a local relation between X and Y cannot hold if Z intervenes, and Z is a position of the same type Y.

Despite the apparent violation of RM, the sentences in (2) are all grammatical. This fact has raised a question in the literature with respect to how language learners come to correctly choose a long-distance anaphoric relation over a short–distance relation in SC, RtS, and TC. In other words, a long-debated issue is how difficult it is for language learners to discard locality, i.e., an intervention effect, in these complex constructions.

2.3. Japanese Facts

Examples in (7) show that Japanese permits SC and TC on par with (2a) and (2c) in English.

(7) a. John$_i$-ga Mary$_j$-ni [PRO$_{i/*j}$ [isshookenmei benkyoo-
John-NOM Mary-DAT hard study
suru no]]-o yakusokushita.
doing -ACC promised
'John promised Mary to study hard.'
b. Mary$_j$ ni-totte John$_i$-ga [PRO$_j$ [t$_i$ soudan-shi]] yasui
Mary for John-NOM consult do easy
'John is easy for Mary to consult.'

(7a) contains the structure of SC with the infinitive PRO subject being coreferential with the matrix subject *John* (Nishigauchi 1993; Kishimoto 2005, 2009). (7b) represents the structure of TC with the infinitive PRO subject being compatible with *Mary*. We assume that TC involves movement, either A-movement in which the matrix subject *John* underwent NP-movement from the embedded object position (Kuroda 1986), or A-bar movement in which OP moves from the object position to Spec, CP within the embedded clause in the same way as in (2c). On either account, t$_i$ is the trace of movement.

However, Japanese does not have RtS constructions similar to (2b) in English. Consider, for example, (8) from Takezawa (1993: 76) with "spontaneous verbs" parallel to *seem*/*appear*.

(8) Mary-ga John-ni totemo sutekini omoeta/mieta
Mary-NOM John-DAT very nice seemed/appeared
'Mary seemed/appeared to John to be very nice.'

According to Takezawa's analysis (1993, 2006), the dative *ni* marked experiencer *John* moves to Spec, TP, and the nominative *ga*-marked *Mary* is scrambled clause-initially, as shown in (9).

(9) [$_{TP}$Mary-ga$_i$ [$_{TP}$John-ni$_j$ [$_{VP}$ t$_j$ [$_{TP}$ t$_i$ sutekini] omoeru]]]

Although it is a subject to subject movement, the *omoe*/*mie* construction does not involve A-movement for a Case reason.

To recap, a structural difference between English and Japanese only emerges in the case of RtS, not SC and TC. From an L1 transfer perspective, it is thus predicted that Japanese college students learning English face a problem only in acquiring RtS constructions.

3. Previous Acquisition Studies

C. Chomsky (1969) showed that complex structures like those in (2) are acquired surprisingly late, which she attributed to children's reliance on Rosenbaum's (1967) Minimal Distance Principle as a locality constraint on the relevant anaphoric relation. Her pioneering contributions to the advancement of a L1 acquisition theory have been updated within the framework of the Minimalist Program (Chomsky 1993, 1995) in recent literature. In this section, we will take a brief look at major findings in previous studies, thereby identifying some key issues to be explored in subsequent sections.

3.1. L1 Acquisition

Wexler (1992) confirmed the developmental delay in the acquisition of SC relative to object control (OC) before age 5. Based on the Maturation Hypothesis (Borer & Wexler 1987), he claimed that children might lack the category of PRO at an early stage, which is distinct from C. Chomsky's (1969) locality account for the delay. McDaniel, Cairns, & Hsu (1990) presented a different view that child grammar permits PRO to have an arbitrary interpretation in complements and adjuncts at around 4 years of age. They maintain that young children's non-adult like interpretations of SC are due to their insufficient knowledge of semantics or the lexicon, not the absence of PRO in early grammar.

A similar developmental delay has been reported as to the acquisition of RtS constructions. Hirsh & Wexler (2007) found that young children had great difficulty with RtS around the age of 7 relative to unraised sentences like *It seems to Mary that John is happy*. They argued that a majority of the children treated the RtS structure as if it were the *think* construction like *John thinks Mary is happy*. However, Becker (2005a,b) observed that children show good comprehension of RtS constructions without an experiencer phrase, as in (10a), arguing that they can treat the raising verb as a copula in (10b).

(10) a. The dog seems to be purple.
b. The dog is purple.

However, Hirsch, Orfitelli & Wexler (2009), who adopted Becker's test sentences as in (10), with the use of *really* as in *The dog really seems to be purple*, found that children poorly comprehended the RtS construction even without an experiencer phrase, contrary to Becker's observations, relative to the copula, SC, and unraised constructions.

In short, these and other previous studies showed two different views regarding children's comprehension of RtS without an experiencer phrase, being good or poor, but basically agreed that children had great difficulty with RtS with an experiencer phrase due to a syntactic intervention effect (Belletti & Rizzi 2013; Choe, Deen & O'Grady 2014).

As for the TC, Cromer (1970) replicated C. Chomsky's (1969) experiments and confirmed her results. Relevant to our study are the following sentences.

(11) a. The wolf is happy to bite.
b. The wolf is easy to bite.

(11a) is an adjectival control with PRO as the subject of *bite* identified by the matrix subject the *wolf* (S-type) whereas (11b) is a TC construction with the surface subject *the wolf* interpreted as the logical object of *bite* (O-type). The results showed that 17 children below 'mental age' 5:7 made 37 mistakes in sentences like (11b) and 5 mistakes in sentences like (11a). Cromer (1983) conducted a follow-up experiment, confirming

that a majority of children were unable to achieve correct adult-like performance until after 10 years of age. As an explanation of such developmental delay, Wexler (2013) postulates that child grammar does not have the A-chain formation mechanism specific to the syntax of TC until about eight or nine.

Based on these findings in L1 acquisition, it is fair to say that the acquisition order of the complex constructions by English speaking children is SC, RtS, and TC.

3.2. L2 Acquisition

Few studies to date have been conducted on the acquisition of TC, RtS, and TC by non-native speakers of English. Yoshimura et al. (2015a,b) and Nakayama et al. (2016) investigated how Japanese high school and college students could perform on the interpretation of SC (12a) and OC (12b) in a multiple choice questionnaire.

(12) a. Jim promised his parents to solve the problem.
b. May asked Susan to return home as soon as possible.

The overall percentages of the correct responses were in the range of 83% to 96% for the SC and in the range of 87% to 98% for the OC. In other words, a severe asymmetry did not emerge between the SC and the OC although a slightly better performance was observed on the OC than on the SC, inducing a weak intervention effect. It is therefore concluded that the presence of both control structures in Japanese together with the innate EPP is a key contributor to the absence of the subject-object asymmetry, unlike in L1 acquisition.

Choe (2015) is the first study on the comprehension of unraised (13a) versus raising (13b) constructions with an experiencer argument by non-native speakers of English.

(13) a. It seems to Mary that John is happy.
b. John seems to Mary to be happy.

Results from the Truth-Value Judgment task (Crain & McKee 1985) by 30 Korean college students indicated that overall, the raised construction was much more difficult (41.7%) than the unraised construction (83.3%). In other words, a severe intervention effect, i.e., a severe RM violation, was observed. The results also showed that their comprehension of raising improved as their proficiency in English increased, which Choe claimed can support Eckman's (1977) Markdness Differential Hypothesis. Furthermore, given that Korean bars raising over an experiencer phrase in the RtS construction, it is also concluded that the Full Transfer/ Full Access Hypothesis (Schwartz & Sprouse 1996) is supported.

Yoshimura et al. (2016) is a further study investigating the acquisition of SC, OC, and RtS constructions among Japanese novice-low proficiency learners of English. Thirty high school students were asked to read a question in Japanese and choose one answer from among four possible answers in English, as given in (14), for example.

(14) Jake appeared to Steve to have fun on his business trip.
Q: Dare-ga shucchoo-no toki-ni tanoshisoodeshita ka.
'Who seemed to be having fun on his business trip?'
A: **Jake** Steve both I don't know

The results demonstrated that the overall percentages of correct responses by sentence type for the novice learners were 70.8% for SC, 85.8% for OC, and 41.7% for RtS 28%. Not one participant correctly answered all RtS questions. These rates constitute evidence that the RtS construction is indeed difficult for Japanese novice proficiency learners of English to acquire relative to the SC and OC constructions. In short, Japanese L2 English learners experience a severe intervention effect during the course of RtS acquisition, like Korean L2 English learners. Based on the fact that Japanese does not have a similar RtS structure, it is concluded that their delayed RtS acquisition stems from their unfamiliarity with the syntactic and semantic nature of raising verbs in English.

3.3. Research Questions

Based on these L1 and L2 acquisition findings together with the theoretical explanations of relevant basic facts in English and Japanese, we explore the following research questions.

(15) a. Do Japanese college students have great difficulty with RtS, like Korean learners and Japanese novice learners?
b. Do Japanese college students acquire TC at a much later stage than SC or RtS, like L1 English children?
c. Do Japanese college students show an intervention effect with the experiencer argument?

Answering these questions will contribute to a better understanding of syntactic developments of the antecedent-null element (filler-gap) dependency in L2 acquisition.

4. Experiment

4.1. Participants

A total of 80 Japanese college students, who were learning English in Japan, participated in this study. They were divided into three groups according to their TOEIC scores: Low Group (n=28), Middle Group (n=27), and High Group (n=25). The Middle Group of 27 participants was excluded from our analysis. The lower TOEIC group (Low) had a mean score of 443.36 (SD=40.05) while the higher group (High) had a mean TOEIC score of 732.92 (SD=61). The score difference between the two groups was significant ($t(51)=19.492$, $p<.000$). This significant difference gives us an idea about the two distinct proficiency stages in the acquisition of SC, RtS, and TC in adult L2 English. Eighteen native speakers of English (11 American students and 7 English university instructors in Japan) served as the Control group.

4.2. Materials and Procedure

The participants were given a paper-and-pencil questionnaire and answered each question individually. The questionnaire consisted of five test sentences for each of three sentence types: SC, RtS, and TC constructions (with 25 fillers, 40 sentences in total). As seen in (16)~(18) below, test question-answer pairs were provided in English whereas the associated questions were given in Japanese. The participants were asked to choose one from among four possible answers, responding to 'who would do/ did what to whom.' (16) represents SC, (17) RtS, and (18) TC, and the expected answers are in bold.

Stimulus Sentence-Answer Pair Examples
(16) Hanako promised Susan to join the school tennis team.
Q: Dare-ga gakkoo-no tenisu tiimu-ni sanka-shimasu ka
who-NOM school-GEN tennis team in join-do Q
A: **Hanako** Susan both I don't know
(17) Jake appeared to Steve to have fun on his business trip.
Q: Dare-ga shuccho-no toki-ni tanoshisoodeshita ka
who-NOM business trip-GEN time on enjoyed-like Q
A: **Jake** Steve both I don't know
(18) Elizabeth is always difficult for Betty to please on her birthday.

Q: Dare-ga tanjyobi-ni yorokobaseru no-ga
Who-NOM birthday on please COP-NOM
muzukashii desu ka
difficult copula Q
A: **Elizabeth** Betty both I don't know

Note that the answer "I don't know" was treated equivalent to a missing response in the statistical analysis.

4.3. Results

Participants' responses are summarized in Figure 1 in the form of mean percentage (%) for SC, RtS, and TC. Overall, the Japanese college students showed improvement across the board, regardless of the structural condition, as their proficiency improved; from 74% to 92% for SC, from 38% to 67% for RtS, and 73% to 92% for TC. On the comprehension of SC and TC, the HIGH group performed quite similarly to the NS group, but the LOW group was divergent from the HIGH group although its performance was at far-above-chance level.

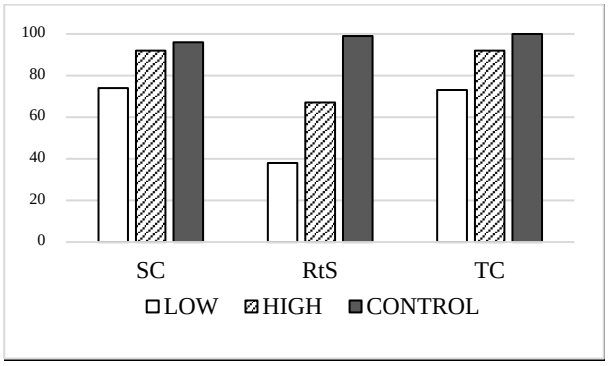

Figure 1: *Mean Accuracy by Condition*

However, the Japanese college students had great difficulty with the RtS construction. As illustrated in Figure 2, the mean percentages of correct responses were only 38% for the LOW group and 67% for the HIGH group, inducing much poorer performance than the Control group. In other words, RtS is significantly delayed relative to SC and TC in L2 acquisition. This developmental delay is similar to that of A-chain dependency reported in L1 acquisition, though no such maturational delay is expected in adult L2 acquisition.

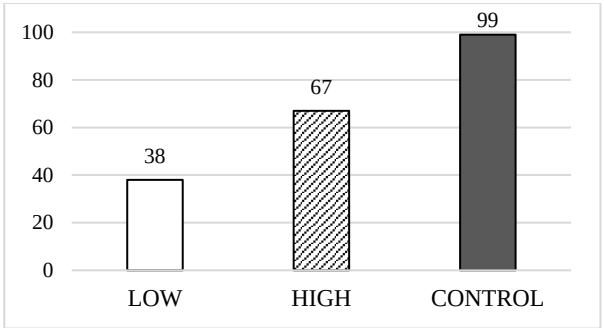

Figure 2: Mean Accuracy on Raising by Group

We now answer our research questions in (15). The results of the present study can answer "yes" to our first question in (15a). Like Korean learners (Choe 2015), Japanese college students have great difficulty with RtS (Figure 2). The answer to our second research question in (15b) is negative because they find TC and SC equally easier to acquire than RtS (Figure 1). To be more precise, the RtC is the most difficult construction for Japanese L2 learners of English to comprehend, unlike English speaking children. These answers have already provided an answer to our third question in (15c). In the SC and the TC structures, low proficiency college students show weak intervention effects with the experiencer argument whereas high proficiency college learners do not suffer such effects at all. On the contrary, both groups of learners show strong intervention effects with an experiencer phrase in the RtS construction. Although these effects seem to become weaker as proficiency improves, they are too severe for the learners to overcome after several years of English education.

5. Discussion

We now look at our findings from three perspectives in L2 acquisition, namely, the long-distance dependency between an antecedent and the associated null element, the argument intervention, and L1 transfer. First, the results indicate that Japanese learners understand that the infinitive clause contains an unpronounced subject, PRO in SC and TC, and NP-trace in RtS, as in (2), thus meeting the EPP requirement. The fact that the High group comprehended the SC and the TC sentences better than the Low group without any significant divergence from the Control group supports that improvement in English proficiency helps them proceed to acquire the long-distance relation between the matrix and the infinitive PRO subjects in SC as well as between the matrix subject and the null operator in TC. It seems unlikely that any specific difficulty would emerge at any developmental stage as their proficiency level advances in L2 English. We posit that their syntactic development in both constructions can be facilitated by their prior knowledge of the Japanese constructions in (7a-b), because their structures are on par with those in English, as in (2a,c). The participants' understanding of the constructions can partially be attributed to this positive L1 transfer.

Second, Japanese learners' good comprehension of the SC sentences also suggests that they can overcome the argument intervention by an experiencer phrase as their English proficiency improves. To be more specific, we suppose that L1 knowledge is successful in instructing the learners to apply the smuggling approach (Collins 2005) to SC so that the entire embedded TP can be smuggled into the position adjacent to the matrix subject (see Yoshimura et al. 2016 for a detailed discussion). Furthermore, recall that L1 children's delayed acquisition of TC is not the result of such intervention, but has something to do with their incompetence in forming the A-chain between the surface matrix subject and the object NP-trace (Wexler 2013). Conversely, Japanese learners' early acquisition of TC implies that they are capable of forming the relevant A-chain by moving the null operator (OP) to the embedded Spec, CP in this construction. This is not surprising because the A-chain formation mechanism is also available in their L1 grammar pertinent to TC, given that it exists in Japanese on par with that in English, as seen in (7b) and (2c). Furthermore, an argument structure of the embedded verb can be an additional cue to signal to the learners that an object DP is missing, but required according to the subcategorization restriction. Hence, it is fair to say that Japanese learners can readily form the A-chain in the TC once they come to understand the transitivity of *please* in (2c) on par with *soudansuru* 'consult' in (7b), for example. As such, TC does not constitute a difficult problem for the L2 learners, unlike L1 children. This is also an instance of positive L1 transfer.

Finally, more crucial to our discussion is that Japanese learners encounter great difficulty with the RtS, showing the very slow development and late delayed acquisition of the construction. Raising verbs like *seem*/*appear* in English are so-called "argument-less" and involve a Case-triggered A-

movement in English. Recall, however, that a similar A-movement does not need to occur for a Case reason in the generation of the RtS in Japanese. Lower Case assignment is available (Kuno 1973, Kuroda 1988), or scrambling is optionally available in Japanese. Consequently, a negative L1 transfer is expected to emerge.

To see what actually occurred in the present study, we consider the errors the 53 Japanese college students committed in the present experiment. Our analysis is particularly relevant to the following question-answer pairs.

(19) a. Taro appeared to Miho to know the answer.
Q: Dare-ga kotae-o shitte-i-sou deshita ka
who-NOM answer-ACC is knowing seemed Q
'Who seemed to know the answer?'
A: **Taro** Miho both I don't know

b. Kenji seemed to Mary to be an excellent singer for the school festival.
Q: Dare-ga gakuensai ni subarashii kashu
Who-NOM school festival for excellent singer
deshoo ka
will be Q
'Who would be an excellent singer at the school festival?'
A: **Kenji** Mary both I don't know

c. Jake appeared to Steve to have fun on his business trip.
Q: Dare-ga shucchoo-no toki tanoshi soo deshita ka
Who-NOM business trip-GEN time fun seemed Q
'Who seemed to be having fun on his business trip?'
A: **Jake** Steve both I don't know

The correct choice is shown in bold in each pair, and the intervening argument is *Miho* in (19a), *Mary* in (19b), and *Steve* in (19c). In other words, if a participant chose Miho rather than *Taro* in (19b), for example, his/her comprehension would have been affected by the blocking intervener.

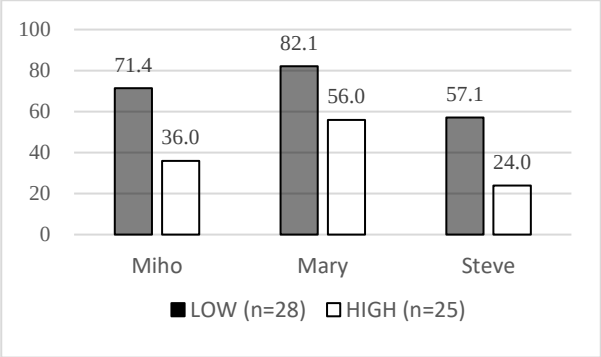

Figure 3: Mean Intervention Rates by Group

The mean intervention rates (%) are illustrated in Figure 3. The results show that the LOW group suffered much stronger intervention effects than the High group in each pair: Out of 28 responses each, the LOW group made 20, 23, and 16 errors whereas out of 25 responses each, the High group made 9, 14, and 6 errors in (19a), (19b), and (19c), respectively. The average intervention rates are 73.08% for the LOW group and 40% for the HIGH group. These mean percentages point to the very slow developmental growth in the understanding of the syntax of RtS among Japanese learners of English. The results further suggest that they are still far from performing well on the comprehension of RtS when their English proficiency reaches an 'advanced' level, i.e., High group.

In addition to a blocking argument in the structure, we maintain that there are two other factors responsible for Japanese learners' great difficulty with the construction in question, namely, the absence of the RtS structure in L1 grammar and the complexity of the structure. Recall that Japanese does not have a structural counterpart of the RtS , as noted in Section 2.3. This means that Japanese learners do not have any prior syntactic knowledge of the structure. More specifically, A-movement required for Case assignment does not exist in Japanese, which constitutes another learning problem for Japanese learners of English. Our basic view is that they are unfamiliar with the mechanism of Case-triggered A-movement during the early stages of L2 English learning.

Together with negative L1 transfer, these two linguistic factors prevent even advanced Japanese learners from becoming capable of forming a legitimate A-chain between the surface and the logical subjects in the structure, which we assume to force them to depend on locality, hence erroneously observing the RM. If this explanation is on the right track, Japanese L2 English learners' very late acquisition of the RtS is parallel to L1 English children's very late development of TC (Wexler 2013), though it is not maturation-related.

6. Conclusions

The present study explored how Japanese college students learning English as a foreign language can acquire subject control (SC), raising to subject (RtS), and *tough* (TC) constructions in the target language. These constructions are syntactically complex in that a long-distance anaphoric dependency is involved between a (antecedent) filler and the associated (null element) gap, i.e. the matrix subject and the infinitive PRO subject in SC, the matrix subject and the NP-trace in RtS, and the matrix subject and the variable in TC. We briefly reviewed previous studies to identify what has been revealed and what has remained unanswered in the relevant literature on L1 and L2 acquisition. A comparative discussion of these complex structures followed between English and Japanese. Three research questions were then presented with respect to the great difficulty of understanding the RtS sentences, the possible acquisition order of TC after SC or RtS, and the emergence of intervention effects.

The results from 53 Japanese college students were analyzed from the viewpoints of long-distance anaphoric dependency, argument intervention, and L1 transfer. Their good comprehension was observed in the SC and the TC constructions. We interpreted this evidence to show that Japanese learners know how to go over the intervening experiencer phrase in searching for the associated antecedent in the matrix clause. Our conclusion is that positive L1 transfer can facilitate their syntactic growth required for the understanding of these two constructions. The results also showed Japanese learners' early acquisition of TC, unlike L1 English children's delayed development. As an account for this L1-L2 asymmetry, we appeal to their prior grammatical knowledge on the A-chain formation involved in TC as a crucial factor. The results further revealed that Japanese learners face severe intervention effects in the RtS constructions, which we attribute to their insufficient syntactic knowledge of the legitimate A-chain formation together with the negative L1 transfer.

A final comment is in order with respect to those severe intervention effects which emerged in the comprehension of the RtS construction. In their recent article on L1 acquisition of the RtS, Choe & Deen (2016) investigated English-speaking children's comprehension of the RtS sentences with a lexical experiencer (*Donald seems to Mickey to be short*), with a

fronted experiencer (*To Mickey, Donald seems to be short*), and with a pronominal experiencer (*Donald seems to him to be short*). Their experimental data demonstrated that having a pronominal experiencer can induce a significantly better performance on the comprehension of RtS sentences. They thus claim that young children's great difficulty with RtS reported in the literature is not due to their syntactic deficits, but to their performance limitations. In other words, future studies must be undertaken to explore the issue of where L2 learners' great difficulty associated with the comprehension of the RtS sentences comes from, i.e., from their grammatical insufficiency or their processing limitations.

7. Acknowledgments

We thank our participants in Shizuoka as well as the PacSLRF 2016 audience for valuable comments and questions. This research has been partially supported by the Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (C) 26370700 given to Noriko Yoshimura.

8. References

Becker, M. (2005a). 'Learning verbs without arguments: The case of raising verbs', *Journal of Psycholinguistic Research*, 34, (pp. 165-191).

Becker, M. (2005b). 'Raising, control, and the subset principle', *Proceedings of the 24th West Coast Conference on Formal Linguistics*, (pp. 52-60).

Becker, M. (2007). 'Animacy, expletives, and the learning of the raising-control distinction', *Proceedings of GALANA 2*, (pp. 12-20).

Belletti, A. & Rizzi, L. (2013). 'Ways of avoiding intervention: Some thoughts on the development of object relatives, passives, and control', in M. Piattelli-Palmarini & R. C. Berwick (eds.), *Rich Languages from Poor Inputs*, (pp. 115-26). Oxford University Press, Oxford.

Borer, H. & Wexler, K. (1987). 'The maturation of syntax', in T. Roper & E. Williams (eds.), *Parameter setting*, (pp. 123-172), Reidel, Dordrecht.

Choe, J. (2015). 'Raising over an experiencer in English L2 acquisition' ms. Hankuk University of Foreign Studies.

Choe, J., Deen, K. & O'Grady, W. (2014). 'Children seem to know raising: Intervention effects in child language', in R. E. Santana-LaBarge (ed.), Proceedings of the 31st West Coast Conference on Formal Lingistics, (pp. 107-114), *Cascadilla Proceedings Projet*, Somerville.

Choe, J. & Deen, K. (2016). 'Children's difficulty with raising: A performance account', *Language Acquisition, 23*, (pp. 112-141).

Chomsky, C. (1969). *The acquisition of syntax in children from 5 to 10*, MIT Press, Cambridge.

Chomsky, N. (1973). 'Conditions on transformations', in S.R. Anderson and P. Kiparsky (eds), *A festschrift for Morris Halle*, (pp. 232-286), Holt, Rinehart & Winston, New York.

Chomsky, N. (1977). *Essays on form and interpretation*, Elsevier Science, New York.

Chomsky, N. (1981). *Lectures on government and binding*: *The Pisa lectures*. Foris Publications, Dordrecht.

Chomsky, N. (1993). 'A minimalist program for linguistic theory', in K. Hale & S. J. Keyser (eds.), The view from Building 20, (pp. 1-52), MIT Press, Cambridge.

Chomsky, N. (1995). The minimalist program, MIT Press, Cambridge.

Chomsky, N. & Lasnik, H. (1977). 'Filters and control', *Linguistic Inquiry*, 8, (pp. 425-504).

Collins, C. (2005). 'A smuggling approach to raising in English', *Linguistics Inquiry, 36*, (pp. 289-298).

Crain, S. & McKee, C. (1985). 'The acquisition of structural restrictions on anaphora', *Proceedings of NELS, 15*, (pp. 94-111), GLSA Publications, Amherst.

Cromer, R. F. (1970). 'Children are nice to understand: Surface structure clues for the recovery of a deep structure', *British Journal of Psychology, 61*, (pp. 397-408).

Cromer, R. F. (1983). 'A longitudinal study of the acquisition of word knowledge: Evidence against gradual learning', *British Journal of Developmental Psychology*, 1, (pp. 307-316).

Eckman, F. (1977). 'Markedness and the contrast analysis hypothesis', *Language Learning*, 27, (pp. 315-330).

Hirsch, C. & Wexler, K. (2007). 'The late acquisition of raising: What children seem to think about seem', in S. Dubinsky & B. Davies (eds.), *New horizons in the analysis of control and raising*, (pp. 35-70), Springer, New York.

Hirsch, C., Orfitelli, & Wexler, K. (2009). 'The acquisition of raising reconsidered', In A. Gavarro & M J. Freitas (eds.) *Proceedings of GALA 2007*, (pp. 35-70), Cambridge Scholars Press, Newcastle Upon Tyne.

Kishimoto, H. (2005). *Toogo koozo to bunpoo kankei* [Syntactic structures and grammatical relations], Kurosio Publishers, Tokyo.

Kishimoto, H. (2009). *Beishikku seisei bunpoo* [Basic generative grammar], Hituzi Syobo, Tokyo.

Kuno, S. (1973). *The structure of the Japanese language*, MIT Press, Cambridge.

Kuroda, S.-Y. (1986). 'Movement of noun phrases in Japanese', in T. Imai & M. Saito (eds.), *Issues in Japanese linguistics*, (pp. 229-271), Foris Publications, Dordrecht.

Kuroda, S.-Y. (1988). Whether we agree or not: A comparative syntax of English and Japanese, *Linguisticae Investigations, 12*, (pp.1-47).

McDaniel, D., Cairns, H.S. & Hsu, J.R. (1990). 'Control principles in the grammars of young children', *Language Acquisition, 1*, (pp. 297-335).

Nakayama, M. & Yoshimura, N. (2015). 'The modularity of grammar in L2 acquisition', in M. Nakayama (Ed.), *Handbook of Japanese psycholinguistics*, (pp. 235-270), Mouton de Gruyter, Berlin.

Nakayama, M., Yoshimura, N. & Fujimori, A. (2016). 'Control constructions by Japanese speaking learners of English.', *Kyushu University Papers in Linguistic*s 36 (*Papers in memory of the late Professor Tsutomu SAKAMOTO*), (pp. 239-253).

Nishigauchi, T. (1993). 'Long distance passive', in N. Hasegawa (ed.), *Japanese syntax in comparative grammar*, (pp.79-114), Kurosio Publishers, Tokyo.

Postal, P. (1974). On raising: *One rule of English and its theoretical implications*, MIT Press, Cambridge.

Rizzi, L. (1990). *Relativized minimality*, MIT Press, Cambridge.

Rosenbaum, P. S. (1967). *The grammar of English predicate constructions*, MIT Press, Cambridge.

Schwartz, B. D. & Sprouse, R. A. (1996). 'L2 cognitive states and the full transfer/full access model', *Second Language Research*, 12, (pp. 40-72).

Takezawa, K. (1993). 'A comparative study of *omoe* and *seem*', in H. Nakajima & Y. Otsu (eds.), *Argument structure: Its syntax and acquisition*, (pp. 75-95), Kaitakusha. Tokyo.

Takezawa, K. (2006). Eigo kara nihongo o kangae, nihongo kara eigo o toraenaosu: Seisei togoron no houhou [Considering Japanese from English and reconsidering English from Japanese: A generative syntax approach]. *Nihongogaku, 25*, (pp. 46-55).

Wexler, K. (1992). 'Some issues in the growth of control', in R. Larson, S. Iatridou, U. Lahiri, & J. Higginbotham (eds.), *Control and grammar*, (pp. 253-295), Kluwer Publishers, Dordrecht.

Wexler, K. (2013). '*Tough*-movement developmental delay. Another effect of phasal computation', In M. Piattelli-Palmarini & R. C. Berwick (eds.), *Rich languages from poor inputs*, (pp. 146-167), Oxford University Press. Oxford.

Yoshimura, N., Nakayama, M., Fujimori, A & Shimizu, H. (2015a). 'Japanese learners' interpretation of PRO in English control structures', *IEICE Technical Report, 115* (176), (pp. 71-76).

Yoshimura, N., Nakayama, M. & Fujimori, A. (2015b). 'Why can't obligatory control PRO participate in L2 English binding', in K. Sawasaki & Y. Terao (eds.), *The Japanese Society for Language Sciences (JSLS) 2016 conference handbook*, (pp. 134-137).

Yoshimura, N., Nakayama, M., Fujimori, A & Shimizu, H. (2016). 'Control and raising constructions in early L2 English acquisition', *Second Language, 15*. (pp. 53-76).