

Control and Raising Constructions in Early L2 English Acquisition

早期 L2 英語習得におけるコントロール文と繰り上げ文について

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Abstract

This study reports the results of our investigation with a multiple-choice questionnaire on the interpretation of infinitive null subjects in English control and raising constructions by 30 Japanese high school students. Given that they involve two distinct syntactic derivations with two types of empty categories, the results bear on developmental acquisition pertinent to base-generation versus A-movement in L2 grammar. Interestingly, the participants did not show a strong subject-object asymmetry in the control constructions, unlike L1 children. They did show, however, a particular delay in the raising constructions, like L1 children. Based on these results, it is claimed that control constructions are not difficult for low-proficiency learners because they exist in L1 Japanese, and the participants can use their L1 knowledge of the Extended Project Principle together with the Minimal Distance Principle. However, the raising structures are not easy for Japanese learners of English because the construction on par with *seem-to* word order does not exist in Japanese, thereby forcing them to misapply their L1 knowledge of A-movement and observe the locality constraint. The analysis suggests that the interpretation over the experiencer is delayed due to an intervention effect relative to locality in L2 acquisition as well.

要旨

本研究は、日本語を母語とする 30 名の高校生が英語のコントロール文と繰り上げ文の空範疇の主語の先行詞を適切に解釈できるかどうかについて複数選択肢調査票を用いて実証的に調査し、理論的に解明しようとする試みである。これらの構文は派生が異なる点から、「基底生成」対「A-移動」に関して第二言語文法の習得過程をあぶり出すような成果が期待される。実験では、コントロール文の PRO の先行詞選択において母語の子どもたちに見られるような「主語」対「目的語」に強い有意差が見られなかったのに対して、繰り上げ文の主語解釈においては第一言語習得と同様に顕著な習得の遅れが明らかとなった。分析では、日本語のコントロール構文にも PRO 主語が存在する点を踏まえ、母語の文法知識が「拡大投射原理」(EPP) や「最少距離原理」(MDP) と共に第二言語の構造習得の手がかりとして役立つと主張する。一方、*seem-to* に類似した繰り上げ文が日本語に存在しないために A-移動の知識を適切に適用できない点に加えて、「経験者」の介入の影響によって「局所性」(locality) が長距離解釈を妨げてしまうと示唆する。

1 Introduction

Since C. Chomsky's (1969) pioneer work in child grammar, the interpretation of PRO subjects has been a focus of several studies in the field of L1 acquisition. One main finding was that Subject Control as in (1a) is acquired surprisingly late (no earlier than 5 years of age), relative to Object Control as in (1b).¹

- (1) a. John_i promised Mary [PRO_i to study hard]. (Subject Control)
b. John persuaded Mary_j [PRO_j to study hard]. (Object Control)

Hirsch and Wexler (2008) found that children cannot also comprehend structures involving subject-to-subject raising as in (2) until around the age of 7 years, much later than Control constructions.

- (2) a. John seems to be a friendly gentleman.
b. Mary appears to have won the lottery.

They state that good understanding of Control constructions and poor understanding of Raising sentences are predicted until v defines a phase.²

¹ Jackendoff (1972) considers that a verb determines a control relationship between an infinitive subject (PRO) and its argument. Subject Control verbs make their subjects control the referents of PRO and Object Control verbs have their objects control the referents of PRO. For non-obligatory Control, see Williams (1980).

² See Chomsky (1998, 2001) for a definition of phase.

Unlike L1 acquisition, however, little research has been reported on Control or Raising constructions in L2 acquisition. To our knowledge, no studies have been conducted on L2 acquisition of Control and Raising in one experiment from a contrastive perspective. Therefore, this study investigates the interpretation of infinitive subjects in both Control and Raising structures in English by Japanese high school students. Although these two constructions look similar in that they permit the null subject in the embedded *to*-infinitive clause, they are crucially different in that they involve two distinct syntactic operations in the generation of the null subject in question. In particular, we explore the following issues pertinent to the early development of L2 grammar: (a) what role L1 can play at the syntax-semantic interface in early acquisition, (b) how intervention effects can be dealt with in early acquisition (Belletti & Rizzi, 2013), and (c) whether A-dependency interpretation is delayed among Japanese high school learners studying English in Japan.

The organization of the paper is as follows: First, we will crosslinguistically review the syntactic-semantic properties of Control and Raising constructions in the next section. In Section 3, major previous findings will be briefly summarized to identify our research questions. Then, our multiple choice questionnaire experiment will be described and its results will be considered in Section 4. Finally, Section 5 provides a discussion of our results, and concluding remarks.

2 Basic Facts and Theoretical Background

2.1 Control

The structure of obligatory Control involves the generation of PRO in the subject position of the embedded infinitive clause. It is generally agreed that two linguistic factors are responsible for the relation between PRO and its Controller, one syntactic and one semantic. Syntactically, the Extended Projection Principle (EPP) requires PRO to be generated in the infinitive subject position,³ and it must be c-commanded by its Controller;⁴ semantically, this PRO subject must be co-referential with the matrix subject or the matrix object DP depending on the requirement of the matrix verb. We see that the matrix verb in (1a) is *promise*, thereby requiring the infinitive subject PRO to be compatible with the matrix subject *John*, i.e., Subject Control; on the other hand, the matrix verb in (1b) is *persuade*, thereby requiring the PRO subject to be coreferential with the matrix object *Mary*, i.e., Object Control.

More significant for the present discussion is a subject-object asymmetry with respect to PRO-and-its Controller link. Namely, while the Object Control in (1b) observes Rosenbaum's

³ The EPP is a grammatical requirement that clauses have subjects, covert or overt (Chomsky, 1981).

⁴ For our purpose, we assume Reinhart's (1976) definition of strict c-command: α c-commands β if and only if the first branching node dominating α also dominates β and neither α nor β dominates the other.

(1967) Minimal Distance Principle (MDP)⁵, the Subject Control in (1a) seems to violate it because *John* is a “long-distance” antecedent for PRO. Furthermore, the DP *Mary* intervenes between PRO and its Controller in the case of Subject Control whereas such intervention is not involved in the case of Object Control (Belletti & Rizzi, 2013).⁶ In (1a), for example, *Mary* is closer to PRO than *John*, but cannot be its antecedent; *Mary* is a blocking intervener for the link between PRO and its Controller *John*. Nevertheless, the sentence is grammatical on the intended reading, which in turn indicates that such intervention must not take place in the case of (1b).

Examples in (3) are parallel to the English ones in (1). They show that Japanese also permits both types of Control with the PRO subject in the embedded infinitive clause (Kishimoto, 2005, 2009; Nishigauchi, 1993).

- (3) a. Johni-ga Maryj-ni [PRO_{i/*j} isshookenmei benkyoosuru no]-o
 John-NOM Mary-DA hard study SN⁷-ACC

yakusokushita.
 promised
 ‘John promised Mary to study hard.’

- b. Johni-ga Maryj-o [PRO*_{i/j} isshookenmei benkyoosuru yooni]
 John-NOM Mary-ACC hard study like

settokushita
 persuaded
 ‘John persuaded Mary to study hard.’

In (3a), the matrix verb *yakusokusuru* ‘promise’ requires the embedded PRO subject to be coreferential with the matrix subject *John*, and in (3b), the matrix verb *settokusuru* ‘persuade’ needs to have the embedded PRO subject compatible with the matrix object *Mary*. As shown by the ungrammaticality (*), the PRO subject in question cannot take *Mary* in (3a) and *John* in (3b) as its antecedent. Further, the Subject Control in (3a) seems to be immune to an MDP effect even though it crosses over the matrix object *Hanako* in the search for the proper

⁵ MDP is a structural constraint on the relation between an anaphor or a pronoun and its antecedent, requiring the latter to be closest to the former in the relevant structure. In (1a), for example, although *Mary* is closest to the PRO subject, it cannot be the antecedent for the null pronoun, an apparent violation of MDP.

⁶ See Belletti and Rizzi (2013) for a Relativized Minimality (Rizzi, 1990) explanation.

⁷ SN stands for the sentential nominalizer (Horie, 1995; Kinsui, 1995). In other words, *no* functions to nominalize the embedded sentence ‘PRO isshokenmei bennkyoosuru’ in (3a). That the embedded clause does not allow the occurrence of past tense as in **benkyooshita no o yakusokushita* which constitutes supporting evidence for this nominalizer hypothesis.

antecedent, whereas the Object Control in (2b) observes the locality constraint. Again, this subject-object asymmetry is parallel to what happens in English, as seen in (1).

Thus, the two types of Control in both languages have the following schematic representations, as illustrated in (4).⁸

(4) a. [TP₁[SpecDP_i] promise DP_j [CP[TP₂[SpecPRO_{i/*j}] to VP]]] (1a)

[vP₁[SpecDP_i] DP_j [CP[vP₂[SpecPRO_{i/*j}] VP]] yakusokusuru (3a)

b. [TP₁[SpecDP_i] persuade DP_j [CP[TP₂[SpecPRO_{i/*j}] to VP]]] (1b)

[vP₁[SpecDP_i] DP_j [CP[vP₂[SpecPRO_{i/*j}] VP]] settokusuru (3b)

In short, no particular discrepancies exist between English and Japanese with respect to the structure and interpretation of PRO in Control constructions. To be more specific, we assume, without further justification, that the subject, null or lexical, is located in either the [TP, Spec] (English) or [vP, Spec] (Japanese) position.⁹

2.2 Raising

Verbs like *seem* and *appear* have a subject-to-subject Raising construction.¹⁰ It is generally assumed that such raising predicates alternatively take as their complement an infinitive TP as well as a finite CP (Davies & Dubinsky, 2004).¹¹

- (5) a. John seems to be a friendly man.
b. Mary appears to have won the lottery.

- (6) a. It seems that John is a friendly man.
b. It appears that Mary has won the game.

In this study we focus on the infinitive clause type. In (5), the argument DP of the embedded predicate is syntactically raised from the lower subject position to the upper subject position, thereby becoming the subject DP of the matrix predicate in the structure. In traditional

⁸ Irrelevant details are not represented.

⁹ We are assuming that the subject DP does not move to the [TP, Spec] position in narrow syntax in Japanese because, unlike English, it is not an agreement language (Miyagawa, 2010). Note, however, that this asymmetry between English (1) and Japanese (3) does not affect our discussion regarding the L2 acquisition of Control, as shown in (4). See further Kitagawa (1986), Koopman and Sportiche (1991), and Kuroda (1988) for arguments for the vP-internal subject hypothesis.

¹⁰ We only deal with verbal raising constructions in this study.

¹¹ Hirsch and Wexler (2008) consider empirical evidence that unraised structures in (6) are acquired much earlier than raised structures in (5). Choe (2010) reports that 30 Korean speaking learners of English performed much better on unraised structures (83.3%) than on raised structures (41.7%).

generative grammar, this subject-to-subject raising construction is required for a Case reason, and within the Minimalist framework (Chomsky, 1995), a relevant portion of the structure is schematically summarized as in (7).

(7) [TP₁ [Spec DP_i] seem/appear [TP₂ t_i to t_i v VP]]]

As in (7), we are assuming that the raising structure does not contain a C in the embedded clause (Chomsky, 1998).

Japanese has verbs like *seem* and *appear*.¹² Consider the example in (8) from Takezawa (1993, p. 76).

(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 a [TP, Spec] position, and the nominative *ga* marked *Mary* is scrambled clause-initially, as shown in (9).¹³

(9) [TP Mary-ga_i [TP John-ni_j [VP t_j [TP t_i totemo sutekini] omoeru]]]

Details aside, if we adopt this view, Japanese *omoe/mie* constructions are not generated for a Case reason even though it is a subject-to-subject movement. In short, Japanese does not have English-type raising constructions even though it has *omoe/mie*, lexical counterparts of *seem/appear*.¹⁴

¹² These verbs are often called “spontaneous verbs” in traditional Japanese grammar.

¹³ Takezawa (1993, 2006) assumes that scrambling is a TP-adjunction operation in Japanese. Takezawa (1993) presents arguments in support of the scrambling analysis of the clause-initial DP based on *zibun* ‘self’ binding, quantifier scope, and *otagai* ‘each other’ binding facts. See Takezawa (1993) for a detailed discussion.

¹⁴ Note incidentally that unraised constructions are available in Japanese.

(i) a. Taro-ga shiai ni katta yooni/to omoeta
 Taro-NOM game in won COM seemed
 ‘It seems that Taro won the game.’

b. [TP pro [CP [TP Taro-ga shiai ni katta] yooni/to]] omoeta]

2.3 Smuggling and A-Movement

As noted in the above, a local link between the PRO subject and its controller is blocked by the object DP in the case of Subject Control whereas no such intervention occurs between the two constituents in the case of Object Control. Nevertheless, both constructions are grammatical on the intended readings. That is, adult grammar must know how to meet the MDP requirement in order to escape from an intervention effect in the Subject Control construction.

Returning to the schematic representation in (4a), as repeated in (10), we now consider how it is made possible to compute a local relation between the PRO subject and its antecedent in English and Japanese.

(ia) is on par with the English example in (6b) in that the embedded complement is a CP. Given that an overt expletive like *it* does not exist in Japanese, the subject of the matrix predicate is null (*pro*) on the assumption that a null expletive is possible in the language.

Relevant to this expletive *pro* hypothesis is the editors' comments on the availability of *yooda* and *rashii* in Japanese. However, they are not lexical counterparts of *seem* and *appear*. Strictly speaking, they are not verbs, but *yooda* consists of the adjectival noun *yoo* and the copular verb *da* whereas *rashii* is an adjective. Given these distinctions, we assume that *yooda* and *rashii* must take a tensed CP, not an infinitive one, as their complement clause (Saito, 1985), as in (ii).

(ii) a. John-wa totemo shinsetuna hito-no yoo da/rashii.

John-TOP very friendly man-GEN look is/seem/appear

'John looks like a very friendly man.'

'It seems/appears that John is a very friendly man.'

b. Mary-ga takarakuji ni atatta yoo da/rashii

Mary-NOM lottery at hit look is/seem/appear

'It looks like Mary won the lottery.'

'It seems/appears that Mary won the lottery.'

In other words, the structure involved in (ii) may be schematically represented as (iii), with *John* or *Mary* being in-situ because there is no syntactic motivation for subject raising, like nominative Case assignment.

(iii) [_{TP} pro [_{CP} [_{TP} John/Mary-ga VP]] yoo da/rashii]

Given that Japanese does not have verbs structurally equivalent to *seem/appear*, coupled with the absence of the overt expletive *it*, our prediction is that Japanese learners of English will encounter difficulty with unraised constructions as well as raised constructions in English. Yoshimura and Nakayama (2010) showed that this prediction is empirically borne out in an acceptability judgment survey. See Yoshimura & Nakayama for a detailed discussion.

We thank the editors for reminding us of the significance of including our view of these *yooda/rashii* constructions in this discussion.

- (10) [TP₁ [SpecDP_i] promise DP_j [CP[TP₂ [SpecPRO_{i/*j}] to VP]]] (1a)
 [vP₁[SpecDP_i] DP_j [CP[vP₂[SpecPRO_{i/*j}] VP]] yakusokusuru (3a)

Here we adopt Belletti and Rizzi's (2013) suggestion that Subject Control verbs undergo a smuggling operation, as proposed in Collins (2005), thereby moving the PRO subject closer to the matrix subject or its Controller, as schematically given in (11).¹⁵

- (11) [TP_{1/vP₁}[SpecDP_i] [SpecPRO_{i/*j}]_k DP_j [CP[TP_{2/vP₂} t_k to VP]]]

Thus, the smuggling operation induces the structure in which DP_j is no longer an intervener between the PRO subject and its Controller. Basically, we assume that a similar smuggling operation can apply to the Subject Control structure in Japanese, thereby moving the PRO subject over the object DP (*Mary-ni* in (3)) to avoid the intervention effect.

With respect to the Raising constructions in (5), it is generally assumed that A-movement is involved in order for the DP to receive Nominative Case from the matrix T because the embedded T is defective and cannot assign any case to it in the infinitive clause (Chomsky & Lasnik, 1977; Riemsdijk & Williams, 1981). Furthermore, as *seem/appear* is a one-place predicate, the DP at hand receives a theta-role from the embedded verb. As a consequence, (12) (= (7)) is a schematic representation under the vP-internal subject hypothesis.

- (12) [TP₁ [Spec DP_i] seems/appears [TP₂ t_i [to t_i v VP]]]

Here the DP_i moves first to the embedded [TP, Spec] and then to the matrix [TP, Spec] to receive Nominative Case. This movement is A-movement, leaving the original NP-trace t_i in the embedded subject position. Recall, on the other hand, that Japanese does not have this raising type of NP-movement in the syntax.¹⁶

In short, Japanese grammar helps L2 learners understand the way in which an intervention effect can be avoided in the Subject Control construction by virtue of smuggling the PRO subject over the intervening object DP. However, they must learn to understand the

¹⁵ YP smuggles XP past W, an intervener according to the MDP (or Relativized Minimality).

- (i) Z [Y_P XP] W <[Y_P XP]>
 (Collins, 2005, p. 97)

See Collins (2005) for a further discussion of this approach.

¹⁶ It is generally assumed in the literature that NP-movement is possible in the derivations of direct passives (Hoshi, 1991; Kuno, 1973; McCawley, 1972; Miyagawa, 1989) and tough constructions (Kuroda, 1986). We leave open the question of whether the existence of NP-movement in these constructions affects Japanese learners' L2 acquisition of A-movement in general.

way in which the embedded subject must be moved to the matrix subject position by virtue of A-movement in order for it to receive Nominative Case in English.

3 Previous Findings and Research Questions

3.1 L1 Acquisition

Control has been a focus of several developmental studies in the field of L1 acquisition. C. Chomsky (1969) observed that the syntactic structure of Subject Control in English was acquired late (after 6 years of age) relative to that of Object Control. She attributed this developmental delay to young children's reliance on the MDP as a locality constraint on the linking between PRO and the Controller.¹⁷ Wexler (1992) proposed that children might lack the category of PRO at an early stage and then proceed to accept Object Control of PRO at a middle stage before understanding "long-distance" Subject Control of PRO. His analysis claimed that this PRO development is in accord with the Maturation Hypothesis (Borer & Wexler, 1987).

However, McDaniel, Cairns and Hsu (1990) reported different results for their two act-out experiments. Their first study found that out of 20 young children (3;9 to 5;4), there were actually some children who allowed arbitrary reference for PRO in complements (13a) and adjuncts (13b).

- (13) a. Cookie Monster tells Grover to jump into the water.
b. The zebra touches the lion before drinking some water.

The results of their second study, a longitudinal experiment (from November to May) on 14 children (4;1 to 4;10), basically confirmed the findings of their first study. Namely, in order to understand the referent of PRO, child grammar seemed to proceed in the following order: First, from arbitrary in complements and adjuncts, next, object control in complements (13a) and arbitrary in adjuncts, then, object control in adjuncts, and finally, subject control in adjuncts (13b). With these results, McDaniel, Cairns and Hsu concluded that all young children's non-adult-like interpretations of Control are due to their insufficient knowledge of semantics or the lexicon (2009), which they interpret to provide evidence in support of the Continuity Hypothesis (Crain, 1991; Goodluck, 1991; Pinker, 1984).^{18,19}

¹⁷ See Cromer (1970) for a detailed follow-up discussion of Chomsky's original findings on the *tough* construction.

¹⁸ Note, however, that the sentence types used in their experiments did not contain any Subject Control predicates for the *to*-infinitive complements.

¹⁹ Landau and Thornton (2011) discussed that 2-year-old children produced clausal complements without the infinitive marker *to* (*I want Daddy sing*) by around the age of 2;1, and started replacing them with infinitive complements (*I want him to go to work*) around the age of 2;3. They claim that these developmental stages

A few studies have been conducted on L1 acquisition of Raising structures in English. Hirsch and Wexler (2008) investigated children's comprehension of Raising by a picture identification task. Of particular relevance to the present study, the following sentence structure types were tested in the experiment.

- (14) a. It seems to Homer that Marge is pushing a cart.
b. Homer seems to Maggie to be bowling a ball.

(Hirsch & Wexler, 2008, p. 43 (9)-(10))

Data were collected from seven different age groups of 70 monolingual children (from 3 to 9 years of age, 10 for each group). The results indicate that while the unraised *seem* construction in (14a) scored above 85% across the age groups, three-way differences emerged in the raised *seem* construction in (14b) by age group. Namely, 40 children of the low groups (3-, 4-, 5-, and 6-year-olds) performed poorly with accuracy ranging between 43.9% and 51.7%. Twenty children of the 7- and 8-year-old groups scored 71.1% and 75.6%, respectively. The 9-year-old group performed well, with an average score of 92.2%. These children understood the unraised *seem* sentences, yet they could not comprehend the raised *seem* sentences until around the age of 7. They concluded that the acquisition of raising with *seem* is a much-delayed phenomenon.

As a plausible account for this delay, Hirsch and Wexler claim that children opt to assign the raising structure a '*think*' interpretation. According to their analysis, therefore, children's interpretation of the sentence in (14b) *Homer seems to Maggie to be bowling a ball* is something like (15).

- (15) Homer thinks Maggie is bowling a ball.

They posit that one important reason for the *think* analysis is that children are unable to provide the adult representation for the raising structure, thereby trying to find some plausible interpretation for it. That is, children misanalyze *seem* as if it were *think* because the two verbs share many semantic properties and because they showed almost perfect comprehension of *think* in the experiment. On this hypothesis, children's poor performance on Raising sentences like (14b) cannot be attributed to a syntactic restriction on raising over experiencers (*Maggie* in this case).²⁰ Presumably it is because of their lack of knowledge of the smuggling operation.

can be explained by Landau's (2004, 2006) Agree-based theory of Control. See Landau for a detailed account.

²⁰ However, Becker (2005, 2006) empirically argues that young children have knowledge of the raising structure in their grammar. In her first experiment conducted on 43 children, the results showed that 73% of 3-year-olds and 88% of the 4-year-olds properly judged the Raising-verb sentences like (ib) as silly relative to 47% of 4-year-olds' improper acceptance of the Control-verb sentences like (ia) as acceptable.

In sum, L1 children seem to understand the Object Control construction earlier than the Subject Control construction. Their interpretation of PRO appears to move in the following order: from arbitrary readings in complements and adjuncts, object control in complements and arbitrary in adjuncts, object control in adjuncts, and finally, subject control in adjuncts. Their non-adult-like interpretations of Control are due to their insufficient knowledge of semantics or the lexicon. Regarding the raising construction, Hirsch and Wexler (2008) showed that L1 children acquire the unraised *seem* construction much earlier than the raised *seem* construction presumably because of their lack of knowledge of the smuggling operation. According to their analysis, these errors do not emerge due to a blocking experiencer DP in the structure: rather, these errors must have something to do with a semantic similarity between *seem* and *think*.

3.2 L2 Acquisition

Few studies to date have been conducted on the acquisition of Control and Raising in L2 English. Yoshimura, Nakayama, Fujimori and Shimizu (2015) and Nakayama, Yoshimura and Fujimori (2016) report that overall, 62 Japanese speaking learners of English (30 high school learners²¹ and 32 college learners) performed quite well on a multiple choice questionnaire with 11 test sentence-answer pairs of Subject Control and Object Control, as in (16).

(16) a. Jim promised his parents to solve the problem.

Q: Dare-ga sono mondai-o kaiketsu-suru deshou ka
 Who-NOM that problem-ACC solve-do would Q
 ‘Who would solve the problem?’

A: 1. **Jim** 2. his parents 3. I don’t know

b. May asked Susan to return home as soon as possible.

Q: Dare-ga suguni ie ni kaeru koto ni naru no
 Who-NOM soon house to return fact in result Q
 ‘Who would return home soon?’

A: 1. May 2. **Susan** 3. I don’t know

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- (i) a. The flowers want to be pink.
 b. The hay seems to be excited.

In her second experiment on 21 children, the results indicated that they made no clear distinction between Raising and Control verbs. These results led her to the conclusion that young children opt to assign a Control-verb sentence a Raising structure. See Hirsch and Wexler (2008) for conceptual and experimental arguments against this proposal.

²¹ The high school groups in these studies were different from the high school groups in the present study although they were chosen from the same high school in Japan.

The overall percentages of the correct responses were in the range of 83% to 96% for the Subject Control constructions and in the range of 87% to 98% for the Object Control constructions. That is, they did not show a significant difference by the Control type. Given these results, it was concluded there that there was no subject-object asymmetry in Japanese learners' L2 acquisition with respect to the Control structures in English.

Turning to L2 studies on the Raising construction, Yoshimura and Nakayama (2011) examined data from 36 Japanese college students pertinent to the acceptability judgments of raised TP and unraised CP structures. The participants were divided into two groups based on their proficiency test scores in the discussion (Low proficiency group: $n=18$, $M=58.33$, $SD=6.26$; High proficiency group: $n=18$, $M=79.07$, $SD=6.11$).²² The task employed in this experiment was a magnitude estimation task (Bard, Robertson, & Sorace, 1996) in which the participants were asked to rate the acceptability of the sentences with respect to the norm sentence. Their raw scores were log-converted. In other words, the smaller the number, the greater the unacceptability (i.e., 1 being as acceptable as the norm sentence). Fifty sentences were tested including those with expletives *there* and *it*. Table 1 is a summary of the Low versus High proficiency groups' acceptability ratings of the *seem/appear* sentences in (17).

Table 1. Acceptability ratings of the *seem* raised and unraised structures

Group	(17a)	(17b)	*(17c)
	raised TP		unraised CP
Low proficiency group (n=18)	0.985	0.862	0.889
High proficiency group (n=18)	1.012	0.898	0.826

- (17) a. The policeman seems to know that teacher.
 b. There appear to exist many millionaires in China.
 c. *This time seems that he followed my advice. (Kuribara, 2003, p. 40 (7))

Interestingly, the two college student groups showed significant differences in (17a) versus (17b-c). They correctly accepted (17a), but incorrectly judged (17b) as unacceptable, similar to (17c). Although this may be partially due to their unstable use of the expletive *there* subject, we suppose that it also points to their incomplete knowledge, both syntactic and semantic, of the *seem* verb, in particular, a distinction between the raised and unraised *seem* structures.

Choe (2015) reports a recent study on the acquisition of raising by Korean-speaking learners of English.²³ She investigated their comprehension of unraised versus raised constructions.²⁴ The results indicated that overall, the raised construction *John seems to be*

²² For this experiment, we used our in-house test with a maximum score of 100.

²³ This appears to be a first report on L2 comprehension of Raising constructions, as noted in Choe (2015).

²⁴ Based on the subject-verb honorific agreement facts, Choe assumed that subject-to-subject raising is permitted in Korean. However, given that the language has scrambling coupled with a morphological case

happy was much more difficult (41.7%) for Korean learners than the unraised construction *It seems that John is happy* (83.3%). Significantly, it was also revealed that their comprehension of raising improved as their proficiency in English increased. Choe took these findings to provide supporting evidence for Eckman's (1977) Markedness Differential Hypothesis on the assumption that the structure under investigation is highly marked crosslinguistically.

3.4 Research Questions

Based on these L1 and L2 acquisition findings pertinent to the Control versus Raising constructions together with the theoretical explanations of relevant basic facts in English and Japanese, we explore the following four research questions in L2 English.

(18) Research Questions

- a. Do Japanese high school learners identify the subject referents (the antecedents of PRO and NP-trace) of infinitives in Control and Raising constructions?
- b. Does a subject-object asymmetry emerge in Japanese high school learners' interpretation of Control constructions?
- c. Do Japanese high school learners show intervention effects with the intervening argument?
- d. Is the A-dependency interpretation delayed?

Answering these questions will no doubt contribute to the further exploration of the long-pursued issue of what role L1 knowledge plays in L2 acquisition in reference to Control and Raising constructions.

4 Experiment

To examine these questions, we conducted an experiment using a multiple-choice questionnaire.

4.1 Participants

A total of 30 Japanese high school students, who were learning English in Japan, participated in this study. They were divided into two groups ($n=15$ each): the lower TOEIC group (Novice-Low) had a mean score of 285 (*Range*: 215-330, *SD*=40.05) while the higher group (Novice-High) had a mean TOEIC score of 443 (*Range*: 335-625, *SD*=92.58). The score difference between the two groups was significant ($t(14)=9.613$, $p<.004$). This significant proficiency

marking system, like Japanese, as seen in (9), one might wonder whether the English-like raising structure indeed exists in Korean.

difference gives us an idea about the two distinct proficiency stages in the acquisition of Control and Raising in L2 English. Regarding their English learning experiences, almost all of the participants started studying the language when they entered junior high school four years ago.²⁵ They received English instruction in the classroom under the 40-students-per-class system, 3 times a week, and were seldom exposed to English outside the classroom. According to the pretest survey, none of these students had lived in an English speaking country.

4.2 Material 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: Subject and Object Control sentences and Raising construction sentences (with fillers, 40 sentences in total) (see Appendix for the test sentences).²⁶ All items were randomly ordered, but all participants saw the same ordered material. The test sentences and answers were given in English whereas the questions were given in Japanese. Each participant was asked to choose one from among four possible answers by answering who would do, does, or did what to whom. Note that the answer “I don’t know” was treated equivalent to a missing response in the statistical analysis. The expected answers are in bold below.

(19) Stimulus sentence-answer pair examples by sentence type

a. Subject Control (SC)

Hanako promised Susan to join the school tennis team.

Q: Dare-ga gakkoo-no tenisu chiimu-ni sankashimasu ka

‘Who is going to join the school tennis team?’

A: 1. **Hanako** 2. *Susan* 3. *both* 4. *I don’t know*

b. Object Control (OC)

Tom ordered Kate to return home by six o’clock.

Q: Dare-ga roku-ji made-ni ie-ni kaerimasu-ka

‘Who goes back home by 6 o’clock?’

A: 1. Tom 2. **Kate** 3. *both* 4. *I don’t know*

²⁵ A few students said they received occasional informal instruction through songs and chants in pre-schools.

²⁶ Two more sentence types (*for*-DP and *tough* constructions) were included, but we analyze only three sentence types in this paper. This survey did not intend to contain the ECM (exceptional case marking) constructions because their syntactic structures are distinct from those of Control and Raising constructions in that, unlike the latter, the former does not involve the occurrence of PRO or NP-trace and because our concern here was to see if L2 learners could identify the referent of such a silent category. See Yoshimura et al. (2015) for a detailed discussion of Japanese EFL learners’ L2 acquisition of the ECM constructions relative to Control structures.

c. Raising (RA)

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: 1. **Jake** 2. Steve 3. both 4. I don’t know

4.3 Results

One test sentence each from the three sentence types was discarded for the analysis below because of some pragmatic biases (see Appendix for the discarded sentences). Thus, 4 sentences per sentence type were analyzed.²⁷ The following table shows the average proportions and standard deviations of the correct responses of the subject referents in the infinitives. The numbers in the parentheses are standard deviations.

Table 2. Proportions and standard deviations of correct responses by group and sentence type

Group	SC	OC	RA
Novice Low (<i>n</i> =15)	.667 (.374)	.817 (.221)	.400 (.207)
Novice High (<i>n</i> =15)	.750 (.299)	.900 (.207)	.433 (.275)

The overall percentages of correct responses by group are: 62.8% for the Novice-Low group and 69.4% for the Novice-High group.

An ANOVA (2 groups X 3 sentence types) revealed that the two groups’ performances were not significantly different ($F(1, 84)=1.366, p>.245$ ns.), but their responses by sentence types were significantly different ($F(2, 84)=20.668, p<.001$). There was not a significant interaction between the groups and sentence types ($F(2, 84)=.085, p>.917$ ns.). A post-hoc Bonferroni analysis revealed that both Control sentences were significantly different from the RA construction sentences: (SC: $p<.001$; OC: $p<.001$). Figure 1 shows the overall percentages of correct responses by sentence type for the novice learners: 70.8% for SC, 85.8% for OC, and 41.7% for RA.²⁸

²⁷ The SC sentence type contained one sentence that did not have the intervening DP between the matrix and the embedded verbs. Removing the response for this sentence did not change the overall SC proportions very much (Novice Low .644 and Novice High .711). Therefore, we included the responses of the sentence for statistical analyses in order to maintain four test sentences in each sentence type.

²⁸ The overall percentages of critical “incorrect” responses by sentence type (i.e., selection of #2 for SC, #1 for OC, #2 for RA) are as follows: 24.2% for SC, 13.3% for OC, and 58.3% for RA. These “incorrectness” rates constitute confirming evidence in support of our argument that the RA construction is indeed difficult for Japanese L2 learners of English to acquire relative to the Control constructions.

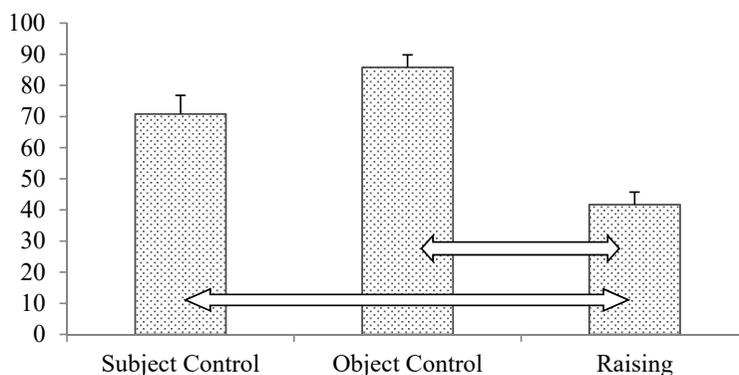


Figure 1. Mean accuracy by sentence type for novice learners

The individual performances on each sentence type are as follows: Fourteen out of the 30 novice learners performed perfectly on the SC sentences. But two participants in the Novice-Low group did not respond correctly to any questions at all, and two learners made only one correct choice out of the 4 stimulus sentence-answer questions. In the Novice-High group, two participants correctly responded to one question, and two learners evoked correct responses half of the time. Eight participants in the Novice-Low group and 11 participants in the Novice-High group (19 learners in total) responded perfectly to the 4 OC questions. Three students in each group misinterpreted one question, four learners answered correctly 50% of the time in the Novice-Low group, and one participant obtained one correct answer in the Novice-High group.²⁹

Contrary to the Control (SC and OC) sentences, both groups' responses were quite poor on the RA condition. Not one participant in either group answered all questions correctly.³⁰ Although three students in the Novice-Low group (20%) and two students in the Novice-High group (13.3%) chose 3 correct answers out of the 4 questions, the remaining 12 and 13 learners in the Novice-Low and Novice-High groups, respectively, performed quite poorly. Nine participants in the Novice-Low group and four students in the Novice-High group obtained only one correct answer. Two participants in the Novice-High group did not have a single

²⁹ Interestingly, this participant answered all the SC sentences correctly.

³⁰ The editors raised an important question with respect to these participants' poor performance on the RA condition, given that scrambling involved in the *omoeru* sentence (9) induces a similar structure to raising involved in the *seem/appear* sentence (19c). We emphasize, however, that there is a crucial distinction between scrambling and raising in the operation of movement in narrow syntax. While scrambling is optional, raising is obligatory. In fact, no overt movement in Japanese is motivated for a Case reason because morphological Case particles are always available in the language (Kuno, 1973; Kuroda, 1967). We suspect that Japanese L2 learners need much time to understand the obligatory nature of the raising operation for a Case reason in the *seem/appear* constructions.

correct response at all.³¹ Overall, intervention by the DP was far more serious in the RA sentences than in the SC sentences.

5 Discussion and Concluding Remarks

We now look at our findings from the two factors involved in the Control and Raising constructions, namely, the null infinitive subject and the blocking experiencer argument. First, the results indicate that Japanese high school learners understand that the embedded infinitive clause must have the PRO subject in both Control structures, as in (4), thereby showing their sensitivity to the syntax of Control.

Second, given the slightly better performance in the Object Control constructions than in the Subject Control constructions, Japanese high school learners make progress towards the end state that the PRO subject must refer to the matrix subject or object depending on the matrix verb. This shows their sensitivity to the semantics of Control. We assume that this acquisition is facilitated by their innate knowledge of the EPP and their L1 knowledge of the PRO subject in Japanese Control counterparts, as discussed in section 2.1 above. This is a similar conclusion to that of Yoshimura et al. (2015) or Nakayama et al. (2016). More particular to the present discussion, Japanese high school learners did not show a serious MDP effect in the Subject Control constructions, unlike L1 children. That is, they understand that they must avoid this effect in the Subject Control structure in L2 English, as in L1 Japanese. Put differently, if the smuggling approach is on the right track, as suggested in Belletti and Rizzi (2013), Japanese high school learners can apply it as a way of avoiding such effects based on their L1 knowledge. As they obtain a lexical compatibility between *yakusokusuru* and *promise*, they apply their L1 knowledge to the interpretation of the PRO subject in English.

³¹ One interesting finding emerged from one stimulus sentence-question pair, as in (i).

- (i) *Japanese people seem to foreign visitors to be very kind and friendly.*

Q: Dare-ga taihen shinsetude yuukootekini miemasuka

‘Who looks very kind and friendly?’

A: 1. Japanese people 2. foreign visitors 3. both 4. I don’t know

The mean accuracy percentage of this sentence was 93.3% in the Novice-Low group and 80% in the Novice-High group whereas the mean accuracy percentages ranged from 13.3% to 40% in the other three Raising constructions. This indicates that L2 learners seem to rely on their pragmatic knowledge rather than their syntactic knowledge when they find a given structure a syntactic challenge.

The editors wondered whether native speakers of English would show a similar pragmatically biased-behavior on their interpretation of the RA constructions. Eighteen native speakers of English (10 students studying at an American university and 8 English instructors teaching at two universities in Japan) participated in the present experiment, showing no such pragmatic effect at all. Their mean correctness rates were 95.8% for SC, 100% for OC, and 98.5% for RA.

Third, the results reveal that Raising constructions are quite difficult for Japanese high school learners to understand. Their poor performance was expected because L1 children are unable to understand the raised *seem* sentences until around the age of 7, as discussed in section 3.1, and because Korean-speaking learners of English performed quite poorly on the raised constructions, as noted in section 3.2. Moreover, as discussed in section 2.2, Japanese does not have the English-like subject-to-subject raising in its grammar. We maintain that Japanese high school learners have great difficulty with the raising structure because they were unable to understand that the matrix subject is not the subject theta-marked by *seem*, but rather the subject theta-marked by the embedded infinitive verb. Due to their lexical unfamiliarity with the syntax of raising, Japanese high school learners are barred from going over an experiencer in the structure,³² and consequently, are forced to follow a locality constraint like MDP (or Relativized Minimality) because they know that the null infinitive subject needs an antecedent in order to be identified.³³ Since no developmental progress from the Novice-Low (40%) to the Novice-High (43%) was observed in the Raising sentences (Table 2), we claim that A-dependency between the subject DP and its NP-trace remain delayed during the early stages of L2 acquisition.³⁴

We now answer our research questions in (18). The results of the present study can answer “yes” and “no” to our first question in (18a) (Do Japanese high school learners identify the subject referents (the antecedents of PRO and NP-trace) of infinitives in Control and Raising constructions?). Japanese high school students can identify the referent of the PRO subject in the embedded infinitive clause in both Subject and Object Control constructions, but encounter great difficulty establishing an A-dependency link between the matrix lexical subject and the embedded NP-trace in the Raising constructions. Being novice, their L2 grammar has not acquired the subject-to-subject raising structure yet, thereby failing to comprehend Raising structures over an experiencer and incorrectly inducing a locality effect. The answer to our second research question in (18b) (Does a subject-object asymmetry emerge in Japanese high school learners’ interpretation of Control constructions?) is negative because there were no significant differences between the Subject and Object Control structures in the interpretation of the PRO subject under investigation. These answers have already provided an answer to our question in (18c) (Do Japanese high school students show intervention effects with the blocking argument?). Intervention effects emerged on the comprehension of the Raising constructions,

³² In other words, Japanese high school learners have not learned that the smuggling approach must apply to raising if Collins’ (2005) hypothesis is on the right track. They must proceed to learn its appropriate application in the course of L2 acquisition, like L1 children while they try to overcome an L1 effect during the acquisition process.

³³ If Takezawa’s (1993, 2006) scrambling analysis is correct, as discussed in section 2.2, the null subject in question would be a trace of scrambling. However, we do not have decisive evidence to exclude the possibility of *pro* in Japanese sentences like (8).

³⁴ Note that this delay is not due to maturation as in L1 acquisition because these learners were mature adult learners.

not on the Subject Control constructions. This contrast pertains to our research question in (18d) (Is the A-dependency interpretation delayed?). Movement-involved A-chain is delayed whereas base-generated A-link is acquired early in L2 acquisition.

To conclude, acquiring Control in English is not difficult for Japanese learners of English at the onset of L2 acquisition because they already have the EPP, the PRO subject, and linguistic ways of avoiding intervention like the smuggling operation in their L1 grammar. However, acquiring a raising operation in English is very difficult for Japanese learners at the early stages of L2 acquisition because this construction is absent in Japanese. They do not understand that A-movement must apply in order to generate the raising structure in English. As such, the present study confirms that together with innate knowledge, L1 knowledge can affect L2 acquisition either positively or negatively, which provides some supporting evidence for Schwartz and Sprouse's (1996) Full Transfer/Full Access Model.

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Appendix (Test Sentences of Three English Construction Types)

Subject Control

Hanako promised Susan to join the school tennis team.

Q: [だれが学校のテニスチームに参加しますか?]

A: 1. Hanako 2. Susan 3. both 4. I don't know

Sen refused to clean the room for Takashi.

Q: [だれが部屋を掃除しなかったのですか?]

A: 1. Sen 2. Takashi 3. both 4. I don't know

Tom promised Bill to keep his cat for a few days.

Q: [だれがネコを預かることになるでしょうか?]

A: 1. Tom 2. Bill 3. both 4. I don't know

Jim promised Marilyn to read the letter.

Q: [だれがその手紙を読みますか?]

A: 1. Jim 2. Marilyn 3. both 4. I don't know

Keiko wished to pass the test for her mother Naomi. [Deleted in the analysis]

Q: [だれがテストに合格するように願いましたか?]

A: 1. Keiko 2. Naomi 3. both 4. I don't know

Object Control

Tom ordered Kate to return home by six o'clock.

Q: [だれが6時までに家に帰りますか?]

A: 1. Tom 2. Kate 3. both 4. I don't know

Toyota convinced Honda to participate in Formula One next year. (convince=納得させる)

[Deleted in the analysis]

Q: [フォーミュラワンに参加するのはどの会社でしょうか?]

A: 1. Toyota 2. Honda 3. both 4. I don't know

George advised Sarah to walk a mile every day.

Q: [だれが毎日1マイル歩いた方がよいでしょうか?]

A: 1. George 2. Sarah 3. both 4. I don't know

The president told the manager to arrange a business meeting for this Friday.

Q: [だれが今週金曜日の会議をアレンジしますか?]

A: 1. president 2. manager 3. both 4. I don't know

Mike instructed his daughter Anna to read at least one book every week.

Q: [だれが毎週最低1冊の本を読みますか?]

A: 1. Mike 2. Anna 3. both 4. I don't know

Raising

Yoshio is likely to answer the question for his brother Masa. [Deleted in the analysis]

Q: [だれが問題に答えるでしょうか?]

A: 1. Yoshio 2. Masa 3. both 4. I don't know

Taro appeared to Miho to know the answer.

Q: [だれが答えを知っていそうでしたか?]

A: 1. Taro 2. Miho 3. both 4. I don't know

Kenji seemed to Mary to be an excellent singer for the school festival.

Q: [だれが学園祭に素晴らしい歌手でしょうか?]

A: 1. Kenji 2. Mary 3. both 4. I don't know

Japanese people seem to foreign visitors to be very kind and friendly.

Q: [たいへん親切で友好的に見えるのはだれですか?]

A: 1. Japanese people 2. foreign visitors 3. both 4. I don't know

Jake appeared to Steve to have fun on his business trip.

Q: [だれが出張の時に楽しそうでしたか?]

A: 1. Jake 2. Steve 3. both 4. I don't know