

Japanese Adult Learners' Interpretation of Long-distance Binding
of English Reflexives in Embedded Infinitival Clauses

日本人学習者の英語の非定形節内にある再帰代名詞の解釈

keywords: second language acquisition, reflexives, linguistics

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It is widely known that English and Japanese differ with respect to the local domain of reflexive pronouns. English is considered to be more restrictive a language in that a reflexive has to refer to a noun phrase (NP) within a clause. Hence, in Sentence 1a, the reflexive *herself* refers only to the local antecedent *Mary* (local binding), but not to the long-distance (LD) antecedent *Susan*. On the other hand, in the corresponding Japanese sentence (1b), the reflexive *zibun* can refer either to the local antecedent *Mary* or the LD antecedent *Susan* (LD binding).

- (1) a. Susan_i thought [that Mary_j hated herself_(*i/j)].
b. Susan_i-ga [Mary_j-ga zibun_(i/j)-o kiraida-to] omotta (koto).
(Susan-NOM Mary-NOM self-ACC hated thought.)

A number of studies have investigated Japanese adult learners' acquisition of reflexive binding in English (e.g., Akiyama, 1999; Broselow & Finer, 1991; Cook, 1990; Finer, 1991; Finer & Broselow, 1986; Hirakawa, 1990; Matsumura, 1994; Thomas, 1989, 1991, 1993; Wakabayashi, 1996). The central issue in these studies is whether it is possible for Japanese speakers to learn the more restrictive locality condition of English reflexives; and if so, how it is acquired. Japanese learners of English have to overcome a few obstacles in order to acquire the locality condition of English reflexives. First, transfer from their first language (L1) rule would not be helpful because of the difference in locality conditions between English and Japanese as described above. Second, there is lack of negative evidence in target language input that could otherwise make them realize that LD binding is not possible in English reflexives. In other words, target language input only provides positive evidence that local binding is possible (which is true to Japanese any way), but lack of instances for LD binding of English reflexives does not necessarily provide evidence that LD binding is impossible in English, which is what Japanese learners need to know in order to acquire the locality condition on English reflexives. Moreover, Akiyama (1999) claims that it is unlikely that Japanese learners of English receive any instruction about this particular restriction¹.

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Some UG-based second language acquisition (SLA) researchers suggest that second language (L2) learners may go through a similar process as L1 learners, who are assumed to start with the minimal possible generalization and later expand their interlanguage rules based on the positive evidence provided in target language input (e.g., Wexler & Manzini, 1987). In the case of reflexive binding, assuming this conservative thesis is correct, Japanese learners of English are expected to start with the most restrictive value (that is, the English value, in which the reflexive and its antecedent must be clausemates), and stay at that unmarked value until positive evidence forces them to change the parameter setting. Since no instances of LD binding is provided in the input, they should not assume it is possible in English.

Tensed/infinitive asymmetry in Japanese learners' interpretation of LD binding of English reflexives

Previous studies have revealed that Japanese learners of English show differentiated preferences toward LD binding of English reflexives that are in embedded finite clauses and non-finite clauses. Consider the two sentences in (2).

- (2) a. Susan_i thought [that Mary_j hated herself_(*i/j)].
b. Susan_i wanted [Mary_j to hate herself_(*i/j)].

Both sentences are considered to be the same in the sense that the reflexive *herself* can refer to *Mary* (local binding) but not *Susan* (LD binding). The difference is that the embedded clause in Sentence 2a is tensed, or finite, whereas the reflexive is located in an embedded infinitival, or non-finite, clause in Sentence 2b. Although reflexive binding of English is not affected whether the embedded clause is finite or not, Japanese learners of English are often found to accept more of the LD binding in an infinitival clause than that in a finite clause. In other words, learners who correctly reject the possibility that the reflexive in a finite clause (2a) refers to *Susan* often accept the same interpretation, wrongly, in an infinitival clause (e.g., Akiyama, 1999; Broselow & Finer, 1991; Cook, 1990; Finer & Broselow, 1986; Hirakawa, 1990; Wakabayashi, 1996). This phenomenon cannot be accounted for by the conservative thesis since it cannot predict differentiated preference for one clause type to the other, nor can L1 transfer explain this since Japanese does not distinguish between finite and non-finite clauses.

Akiyama's (1999) scenario


Akiyama (1999) conducted an experimental study to investigate the developmental pattern of Japanese adult learners' acquisition of the locality condition on English reflexives. In an experiment with 411 native speakers of Japanese, he found that the locality condition

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was acquired better with sentences which contain embedded finite clauses than with sentences which contain embedded infinitival clauses. In order to account for this asymmetry, Akiyama proposed a scenario which consists of the following two processing principles.

- (3) a. Saliency Principle: Choose a more salient NP as a binder.
- b. Closeness Principle: Choose a closer NP as a binder. (p. 33)


Assuming that "L2 learning is done on a 'construction by construction' basis" (p. 35), Akiyama (1999) proposes that an infinitival clause in Sentence 4a could be interpreted by Japanese speakers as in Sentence 4b.

- (4) a. John wants to shave himself.
 - b. John_i wants [PRO_i to shave himself_i].
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When L2 learners encounter a sentence like (4a), they may interpret that the reflexive *himself* refers to *John*, if they follow the Saliency Principle (3a) rather than the Closeness Principle (3b), although it is an invisible *PRO* that is actually referred to. Hearing this sentence, Japanese learners of English may misinterpret that *John* is the binder of *himself*, rather than *PRO*. This leads them to conclude that LD binding is possible in Sentence 5.

- (5) John_i wants [Tom_j to shave himself_i(*_{i/j})].
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On the other hand, Japanese learners of English should correctly identify the binder of reflexive as *Tom*, but not *John*, in (6). Since the actual binder *Tom* is salient *and* closer, both the Saliency and Closeness Principles would lead them to interpret that *Tom*, rather than *John*, is the binder.

- (6) a. John said that Tom should shave himself.
 - b. John_i said [that Tom_j should shave himself_j].
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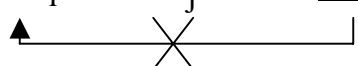
Akiyama suggests that the above discussion can explain why Japanese learners of English accept LD binding in embedded infinitival clauses more often than that in embedded finite clauses. He further predicts that the tensed/infinitive asymmetry would not occur with verbs such as *tell*, because sentences like (7) is not possible in English.

- (7) *John tells to shave himself.

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The fact that Sentence 7 is ungrammatical in English (and therefore no instances are found in the input) prevents L2 learners from interpreting that *John* in Sentence 8 is the antecedent of *himself*.

(8) John_i tells Tom_j to shave himself(*_{i/j}).



However, this is no more than just a speculation since Akiyama (1999) does not provide any empirical support for this claim. The only relevant results can be found in Matsumura (1994). While not intended, Matsumura found that the participants of a higher proficiency in his experiment performed very highly on the verbs *tell* and *order* but very poorly on the verb *want*. This appears to be consistent with Akiyama's prediction. However, although Akiyama's (1999) prediction appears to be plausible, further empirical supports will be necessary to draw any conclusion.

The purpose of this study is to examine Japanese learners' interpretation of LD binding of English reflexives in two sentence types: (a) sentences that include *want* type verbs, and (b) sentences with *tell* type verbs. The following research question is addressed: Do Japanese learners of English accept LD binding in *want* type sentences more consistently than that in *tell* type sentences?

Method

Participants. Forty native speakers of Japanese, 33 female and seven male, participated in the study on a voluntary basis. All of them were enrolled in intensive English language programs in the State of Hawai'i at the time of their participation. Their mean age was 27.10 years with the range between 18 and 49. They all have experienced at least six years of formal English language education in Japan at the secondary school level. Their length of stay in English-speaking countries ranged from one month to ten years with a mean of 11.00 months. Each participant received a free movie ticket or a debit card for photocopying at the university libraries as compensation after the experiment.

Materials. This study basically followed the experimental procedure introduced by Akiyama (1999). After reviewing previous studies from a methodological point of view, Akiyama concluded that a story-based truth-value judgment task was the most appropriate data-collection method for this issue. A sample set of the stimulus sentence and the story used in the present study is provided below.

(9) a. Story (the actual stories were given in Japanese):

Taro likes Hanako, but he was so shy that he had never talked to her. Takashi, a friend of Taro's, and Hanako were in the same class, and therefore Takashi kindly arranged a dinner meeting one day. The three arrived at a restaurant and were now seated. Takashi kept talking to Hanako about the TV program he had seen the previous night, and he did not seem to talk about Taro. When Hanako left the table to go to the restroom, Taro said to Takashi, "Hey, please talk more about me!"

- b. Stimulus sentence: Taro told Takashi to talk about himself. Yes / No

All the stories in the test items were made so that they force the LD interpretation in the stimulus sentences. Eight sets of stories and stimulus sentences were created for the experiment. Four of them were for the *want* type sentences and the other four for the *tell* type sentences. Three distractors were added to the eight experimental sets of stories and stimulus sentences.

(10) Stimulus sentences

Want type: Cathy wanted Tomoko to talk about herself in class.
Tomoko wished Cathy to think about herself again.
Kenta would like Hiroshi to include himself.
Kenta would prefer Hiroshi to write about himself.

Tell type: Taro told Takashi to talk about himself.
John asked Kazu to think about himself again.
Tomoko persuaded Lisa to include herself.
Ms. Tanaka ordered Tomoko to write about herself.

Distractors: Cathy wanted Tomoko to know herself better
(the story forces local interpretation.)
The girl beside Cathy saw herself in the mirror and laughed.
A fan of Musashimaru hit himself.

Procedure. The experiment was conducted individually. The participants were given the materials in booklets. They were first given a story which was written in Japanese on one page, and then, flipping the page, a stimulus sentence was presented for the story. This procedure was employed to ensure that the participants were first given the context before the sentence. The participants were allowed to read the story as many times as they liked after reading the sentence. Prior to the task, an instruction was provided by the experimenter, and the participants were encouraged to ask questions if any before the main session. Also, the first item of the main session was a dummy so that it was not included in the analysis.

The three distractor sentences served as screening sentences, and anyone who misinterpreted one or more of them were excluded from the analyses. 19 participants were excluded, thus data from the remaining 21 participants were taken into analyses.

Analyses. The result of the analyses of aggregated data is presented in this article. The mean scores for the *want* type and *tell* type sentences ($k = 4$ respectively) were compared by computing a matched *t*-test. The significance level for this study was set at $< .05$, non-

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directional. Also, a further analysis was conducted on the mean scores for individual stimulus sentences.

Hypothesis. The following research hypothesis was tested: The mean score for the *tell* type sentences would be statistically significantly higher than that for the *want* type sentences. This hypothesis was derived from Akiyama's (1999) prediction and Matsumura's (1994) preliminary findings reviewed in the previous section.

Results and discussion

Analyses of aggregated data. Mean scores and standard deviations for the aggregated data are displayed in Table 1. As the table shows, the mean score for the *tell* type sentences was 0.76 higher than that of the *want* type sentences. The result of the matched *t*-test indicated that the difference was statistically significant ($t(20) = 2.685, p = .014$).

Table 1
Mean Scores and Standard Deviations for the Sentence Type (n = 21)

Sentence Type	<i>k</i>	<i>M</i>	<i>SD</i>
<i>want</i> type	4.00	1.19	1.12
<i>tell</i> type	4.00	1.95	0.80

This result confirms the research hypothesis addressed in the previous section. The result of the experiment was consistent with Akiyama's (1999) prediction as well as Matsumura's (1994) findings. This could suggest that, as proposed earlier in this article, Japanese learners of English interpret the locality condition on reflexives based on their own mis-analyses of the target language input, rather than depending solely on their L1 rules or on top-down abstract-level of information similar to child L1 acquisition. This might also suggest that adult L2 learning may be bottom-up by analyzing individual instances of the structure in target language input, at least where the locality condition on English reflexives is concerned.

Analyses of individual sentences. More detailed analyses of the collected data were conducted on individual stimulus sentences. Mean scores and standard deviations are presented in Table 2. It is obvious that the mean score for *order* is considerably higher than those of the other verbs. It seems that a good proportion, though not all, of the difference between the *want* type and *tell* type sentences was due to this exceedingly high score for this particular verb. Since there is no convincing reason why the interpretation of the sentence that includes *order* was much easier than others as far as I am aware of, it is likely that this was due to some methodological problems in the experiment. Therefore, this particular sentence as well as its accompanying story should be investigated carefully for future research purposes.

Table 2
Mean Scores and Standard Deviations for Individual Verbs ($n = 21 / k = 1$)

	want		wish		like		prefer	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>want</i> type	0.33	0.47	0.33	0.47	0.18	0.38	0.35	0.48
	tell		ask		persuade		order	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>tell</i> type	0.38	0.49	0.40	0.50	0.33	0.47	0.80	0.41

(11) is the story and the stimulus sentence for the verb *order*. Although I carefully examined this set of story and the sentence, and compared it with the other sets, I could not find any indication as to why 80 percent of the participants (17 out of 21) were able to reject the LD binding only in this particular sentence.

(11) a. Story (the actual story was given in Japanese):

Ms. Tanaka, our English teacher, gave us a writing assignment titled "About Ms. Tanaka". However, Tomoko was not listening to Ms. Tanaka very carefully, and handed in her writing assignment whose topic had nothing to do with Ms. Tanaka. Since she had been angry about Tomoko's laziness for a while, Ms. Tanaka, in a bit hysteric voice, told her to re-submit the writing assignment.

b. Stimulus sentence

Ms. Tanaka ordered Tomoko to write about herself. Yes / No

Conclusion

This study attempted to investigate the possibility that Japanese learners of English interpret the locality condition of English reflexives differently between sentences with *want* type verbs and those with *tell* type verbs. Although the statistical analysis of the aggregated data indicated a significant difference in favor of this assumption, the results should be interpreted with caution since an exceptionally high mean score was found only for a particular verb *order*. In conclusion, I would point out potential limitations of the present study, and suggestions for future studies will be given.

First, although the ultimate goal of this type of study is to explore the acquisition of reflexive binding constraints in English, the present study did not provide any direct information for this since it was neither a cross-sectional study nor a longitudinal study. A cross-sectional study with at least two different proficiency levels, for example, would provide valuable insights to this area of research, as many of the previous studies did.

Second, a much larger sample size is preferable to increase the reliability and generalizability of the results. Although there is no "magic number", convention suggests that at least 30 to 40 participants would be needed in each proficiency group.

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Third, a careful piloting of the stimulus sentences and the stories should be done. In this type of study, an instance for an inappropriate test item could easily obscure the results. Therefore, careful selection and wording of the sentences would be mandatory. An alternative solution to this problem could be to counter-balance the sentence types and stories by preparing for more than one occurrence of each stimulus sentence.

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Note

1. I conducted an informal interview with the participants of the present study after the experiment, and none of them reported that they had been taught such a restriction before.

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