The Interpretation of Inanimate Reflexive Pronouns

by Second Language Learners

Akihiro Kano

Abstract

This study investigated whether Japanese-speaking learners of English could accept animate referents and reject inanimate referents when the reflexives occur in logophoric domains. The results showed animacy did not affect their interpretations. They opted for the local referents regardless of whether the reflexives were in coargument positions or in exempt positions, which were consistent with the views of Standard Binding Theory.

Key Words: second language, reflexives, binding

I. Introduction

The interpretations of reflexive pronouns have been one of the most extensively studied domains in the field of second language (L2) acquisition (e.g., Akiyama, 2002; Cook, 1990; Felser, Sato, & Bertenshaw, 2009; Finer & Broselow, 1986; Hamilton, 1998; Hirakawa, 1990; Matsumura, 2007; Thomas, 1993; Wakabayashi, 1996). Because reflexive binding has been rigorously investigated in generative syntax (e.g., Chomsky, 1981, 1986 and 1995), L2 researchers can utilize concrete hypotheses proposed by theoretical linguists for exploring the nature of language learners' grammar.

Binding theory regulate the different types of nominal expressions such as reflexives, reciprocals, pronouns and names. Reflexives are subject to Condition A which poses locality constraints. For example, in sentence (1), the reflexive must be bound to the local subject DP, *Mike*, but not to the long-distance subject DP, *Steve*.

(1) Steve_i said that Mike_j blamed $\text{himself}_{*i/j}$.

Yet, there are many counterexamples that seem to violate the locality condition. For example, in (2) not only the local subject DP *Justin* but also the matrix subject DP *George* can be construed as the reflexive antecedent.[1]

(2) George_i realized that Justin_j found the note behind $\text{himself}_{?i/j}$.

Reflexives that do not obey the locality constraints are often called logophors.[2] It is argued that reflexives can be divided into two types: one is a core anaphor which is subject to syntactic constraints and the other is a non-core anaphor which is regulated by various pragmatic/discourse constraints, and they both happen to be in the same lexical form (e.g. *himself*). More recently, however, Charnavel (2019, 2020) and Charnavel and

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[1] The results of this study, however, showed that the long-distance binding in structures as in (2) is unacceptable even for native-speakers of English.

[2] In this study the terms *logophors*, *non-core anaphors* and *exempt anaphors* are used interchangeably.

Sportiche (2016) pointed out that it is not the case that there are two different lexical entries of *himself*, but it is that the binder that determines behaviors of the reflexives. To be more specific, logophoric antecedents must be animate because the antecedents must be either attitude holders or empathy loci; and therefore, inanimate referents cannot meet these requirements. Furthermore, they argued that the animacy strategy plays an important role to identify a logophor. The sentence in (3) is structurally identical with (2), yet it is ill-formed.

(3) *The AI speaker$_i$ recognized that the robot detected radiation near itself$_i$.

Because replacing the animate noun *George* in (2) with the inanimate noun *the AI speaker* as in (3) results in ill-formedness, the reflexive pronoun in (2) can be classified as a logophor. The study reported here examined whether animacy could influence L2 learners' interpretations of reflexives when the reflexives occur in logophoric domains.

II. Theoretical Background

Chomsky (1981) specified the conditions of binding theory as follows:

Condition A:　An anaphor is bound in its governing category.[3]

Condition B:　A pronoun is free in its governing category.

Condition C:　An R-expression is free.

(Where α is bound by β if and only if α and β are coindexed, β c-commands α, and β is in an A-position)[4]

Conditions A and B suggest an anaphor and a pronoun must be in the complementary distribution. This complementarity, however, breaks down in certain constructions, shown as in (4):

(4) Mary$_i$ found a snake near her$_i$/herself$_i$.

In (4) the anaphor and the pronouns occur in the same position. The Standard Binding Theory proposed by Chomsky (1981, 1986) cannot explain the cases as in (4). To counter the problem, Pollard and Sag (1992) and Reinhart and Reuland (1993) proposed coargument-based Binding Theory which claimed binding conditions applies only to coarguments. Charnavel and Sportiche (2016, p. 48) succinctly summarize Condition A in the coargument-based approach:

(5)　A SELF anaphor must be bound by an eligible syntactic coargument (eligibility varies from theory to theory). It is exempt if and only if it does not have such a coargument.

In the coargumet approach, the reflexive in sentence (4) is exempted from Condition A because the reflexive

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[3] β is a *governing category* for α if and only if β is in the minimal category containing α, a governor of α, and a SUBJECT accessible to α (Chomsky, 1981, p. 211).
[4] Node A c-commands node B if neither A nor B dominates the other and the first branching node dominating A dominates B (Reinhart, 1976).

is a single argument of the preposition *near*. Exempted from syntactic constraints, the reflexive is construed as a logophor which is subject to pragmatic/discourse constraints. Charnavel (2019, 2020) and Charnavel and Sportiche (2016) pointed out that the logophoric interpretation is ruled out when the antecedent is inanimate.

(6) [Cette auberge]$_i$ bénéficie du fait que son$_i$ (*proper) jardin est plus spacieux que celui des auberges voisines.

   '[This inn]$_i$ benefits from the fact that its$_i$ (*own) garden is more spacious than that of the neighboring inns.'

(Charnavel, 2019, p. 32)

(7) Marie bénéficie du fait que son$_i$ propre hôtel est plus spacieux que celui de ses concurrents.

   'Mary$_i$ benefits from the fact that her$_i$ own hotel is more spacious than that of her competitors.'

(Charnavel, 2019, p. 33)

Inanimate *son propre* in (6) is ungrammatical even though animate *son propre* is well-formed in identical structure as shown in (7). Charvanel argued that the animacy strategy can be employed to identify an exempt anaphor:

(8) Theory-neutral way to identify exempt anaphors

   An anaphor is exempt if it is animate and appears in a configuration disallowing inanimate anaphors.

(Charnavel, 2019, p. 32)

Son propre in (7) is an exempt anaphor because the identical configuration shown as (6) disallows an inanimate anaphor. Charnavel argued that an exempt anaphor is bound by a covert logophoric operator shown as in (9a), whereas (9b) represents a plain anaphor locally bound by the antecedent which can be either animate or inanimate. The syntactic status of logophoric operators is described in (10).

(9) a … (DP$_i$) … [XP   [YP [Logp   pro$_{log-i}$ [Op$_{log}$ … exempt anaphor$_i$ …]]]

   $\leftarrow - - - \rightarrow \leftarrow - - - - - - - - - - - - - - - - - \rightarrow$

            phase edge   Spell-Out domain

   b. ………… [XP   [YP   ….   DP$_i$ …   plain anaphor$_i$ ….   ]]

   $\leftarrow - - - \rightarrow \leftarrow - - - - - - - - - - - - - - - - - \rightarrow$

            phase edge   Spell-Out domain

(Charnavel, 2020, p. 706)

(10) The syntactic status of logophoric operators

・Each Spell-Out domain (tensed TP, vP, DP, or any other XP with a subject) can contain a dedicated perspectival projection LogP for Op$_{log}$ in its left periphery.

・Op$_{log}$ is a head taking a logophoric pronoun pro$_{log}$ as subject.

(Charnavel, 2020, p. 705)

Although Charnavel mostly focused on behaviors of two French anaphors, *elle-méme* (herself/itself) and *son* (his/her/its) as part of the expression *son propre* (his/her/its own), she argued for the universal application of her theory. Given that her theory can also be applied to English anaphors, sentences (11a) and (11b) could be schematically represented as in (12a) and (12b), respectively.

(11) a. Steve said that Jeff$_i$ saw a snake near himself$_i$.

   b. Steve$_i$ said that Jeff saw a snake near himself$_i$.

(12) a. Steve said that Jeff$_i$ saw [$_{vP}$ t$_i$ pro$_{log-i}$ a snake near himself$_i$].

   b. Steve$_i$ said that Jeff$_j$ saw [$_{vP}$ t$_j$ pro$_{log-i}$ a snake near himself$_i$].

Granted that non-core anaphors require animate antecedents, replacing them with inanimate referents results in ill-formedness:

(13) a. *The robot sensed that the drone$_i$ found the target below itself$_i$.

   b. *The robot$_i$ sensed that the drone found the target below itself$_i$.

III. Purpose of the Study

The study reported here investigated whether animacy could influence the interpretations of reflexives among Japanese-speaking learners of English. More specifically, it attempted to examine whether they could accept animate referents and reject inanimate referents when the reflexives occur in logophoric domains.

IV. Methodology

This study employed the magnitude estimation task (e.g., Bart, Robertson, & Sorace, 1996). The task consisted of two experiments. The first experiment asked participants to use a reference line to evaluate the length of six additional lines. First, participants were instructed to choose a positive number to represent the length of the reference line. They were then asked to evaluate the length of the additional lines relative to the reference line (subjects were instructed to use positive numbers to represent the length of the lines). The first experiment served as a pre-test that familiarized participants with the use of numbers to evaluate stimuli in relation to a reference stimulus.

   Upon completion of the first experiment, participants were instructed to complete the second experiments, which presented a series of sentences containing two underlined words. Participants were asked to evaluate the acceptability of each sentence when the two underlined words referred to the same person. As with the first experiment, participants used a reference stimulus (a reference sentence) to evaluate the acceptability of additional sentences; participants were also asked to use only positive numbers to evaluate all sentences.

   The second experiment used eight types of test sentences as shown in (14):

(14)   Type A   (Animate Locally-Bound Anaphors)

    John said that <u>Mike</u> hit <u>himself</u>.

   Type B   (Inanimate Locally-Bound Anaphors)

    The government argued that <u>the city of Regison</u> could rebuild <u>itself</u>.

   Type C   (Animate Long-Distance Anaphors)

    <u>Mike</u> said that Bob blamed <u>himself</u>.

   Type D   (Inanimate Long-Distance Anaphors)

    <u>The rural community</u> claimed that the neighboring city could support <u>itself</u>.

   Type E   (Animate Local Exempt Anaphors)

    Justin claimed that <u>Steve</u> spotted a giant eagle above <u>himself</u>.

   Type F   (Inanimate Local Exempt Anaphors)

The machine detected that <u>the robot</u> identified the object in front of <u>itself</u>.

Type G   (Animate Long-Distance Exempt Anaphors)

<u>George</u> realized that Justin found the note behind <u>himself.</u>

Type H   (Inanimate Long-Distance Exempt Anaphors)

<u>The sensor</u> detected that the robot recognized the rabbit in front of <u>itself</u>.

There were three tokens in each type of test sentences. 24 test sentences were randomly presented along with 24 fillers to the participants. Types A through D describe the canonical structures. Being plain anaphors, the reflexives are bound to only the local referents, shown as in (9b), whether the referents are animate or inanimate. It results in the well-formedness of Types A and B and ill-formedness of Types C and D, respectively. Types E through H describes anaphors in logophoric domains; therefore, only animate reflexives (Types E and G) are acceptable. The list of reference sentence and test sentences is described in the appendix.

L2 participants were recruited from among the students who were attending the experimenter's class at Kwassui Women's University in Nagasaki. They were all first language (L1) speakers of Japanese and were all English majors. Participants attended experimental sessions at their convenience and completed consent forms and demographic questionnaires prior to completion of the magnitude estimation task. The experimenter monitored the data collection process to answer any questions regarding the task procedures and to ensure participants did not communicate with each other during the session. They received a 1000-yen library card in exchange for their participation. Twenty-two L2 learners participated in the study.

L1 English-speaking control participants were recruited by a faculty member in the Department of East Asian Languages and Literatures at the Ohio State University. He asked his students and acquaintances for participation. Those who agreed to participate in the study were provided with an electronic copy of the demographic questionnaire and a written version of the magnitude estimation task and were asked to complete the materials at their convenience. Control participants were each paid $12.00 for their participation. Ten L1 speakers of English participated in the study.

V. Results

One L2 participant assigned zero to some of the test stimuli. One control participant used only two numbers to rate the acceptability of test stimuli. They were excluded from further analyses. The remaining 21 L2 participants were divided into two different proficiency groups based on self-reported TOEIC scores achieved within the past two years.[5] Table 1 lists the mean TOEIC scores for the two L2 groups.

Table 1. L2 Participants' TOEIC Scores

L2 Group	N	M	SD
Low-Proficiency	10	547	51
High-Proficiency	11	705	70
Total	21	629	101

Data from all participants were normalized by dividing the value assigned to test items by the value assigned to the reference sentence. Data were then transformed using the decadic logarithm, which has a base of 10. Figure 1 displays the mean normalized, log-transformed acceptability scores for the eight sentence types.

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[5] Kwassui Women's University administers TOEIC IP several times a year. English-majors are required to take the test at least once a year.
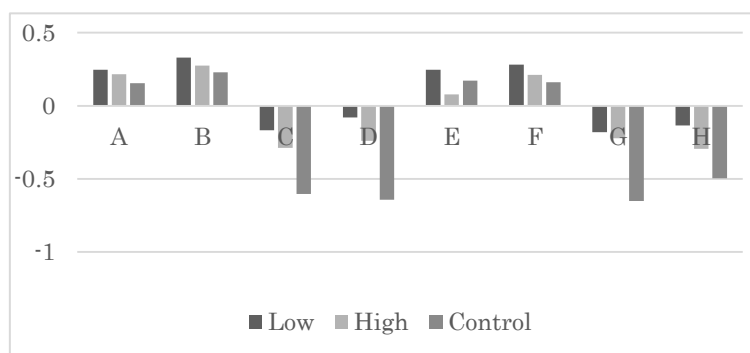
Figure 1: Test Sentence Acceptability Ratings

The graph shows the same tendencies across all groups. That is, they were likely to accept Type A, B, E, and F stimuli and reject Types C, D, G and H. Two-way ANOVA (see Table 2) revealed significant main effects for participant group ($p < .0001$) and sentence type ($p < .0001$); yet the interaction was not significant ($p = .5956$).

Table 2.   ANOVA Summary Table: Participant Group and Sentence Type

Source	df	SS	MS	F	p
Participant Group (SG)	2	2.965	1.483	10.154	<.0001*
Sentence Type (ST)	7	18.285	2.612	17.890	<.0001*
SG * ST	14	1.772	.127	.867	.5956
Residual	216	31.539	.146		
Total	239	54.561			

Post-hoc Fisher's PLSD tests indicated significant differences ($p < .05$) between the control group and both the low- and high-proficiency groups; acceptability ratings for Sentence Types A, B, E and F were also found to be significantly different from ratings for C, D, G, H stimuli ($p < .05$).

VI. Discussions

Although the control group showed wider range of acceptability ratings than the two L2 groups, the overall tendencies were identical. That is, participants in all groups accepted only the local referents, whether they were animate or inanimate or whether they were in co-argument positions or in exempt positions. The claim by Charnavel that the animacy strategy can identify an exempt anaphor is not supported by this study. Instead, the results of this research are more consistent with Standard Binding Theory proposed by Chomsky (1981, 1986), which does not subscribe to the core/non-core distinctions.

While Charnavel and Sportiche argued that the animacy is a necessary condition for an exempt anaphor, Marty (2020) pointed out that many of the inanimate examples used by Charnavel and Sportiche are pragmatically infelicitous and do not provide enough information to entertain an alternative reading. For example, Charnavel and Sporiche noted that sentence (14) is ungrammatical because the long-distance reflexive is an exempt anaphor and the referent is inanimate.

(14)   [La Terre]$_i$ subit le fait que de nombreux satellites tournent autour d'elle$_i$-(*même).

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'[The earth]$_i$ suffers from the fact that many satellites revolve around it$_i$(*self).'

(Charnavel and Sportiche, p. 45)

Marty argued that (14) can be grammatical if more information is provided to highlight a plausible, salient contrast:

(15)   [La Terre]$_i$ est faiblement affectée par l'effet des satellites qui tournent autour de la Lune. En revanche, [elle]$_i$ subit le fait que [de nombreux satellites] tournent autour d'elle$_i$-(*même).

'[The earth]$_i$ is weakly affected by the effect of the satellites that revolve around the Moon. However, [it]$_i$ suffers from the fact that [many satellites] revolve around it$_i$(self). '

(Marty, p. 191)

Marty concluded that animacy is a facilitating but not a necessary condition for exemption. If the animacy strategy fails to distinguish between core and non-core anaphors, the results of this study do not reflect the L2 learners' knowledge of reflexives in logophoric domains. In fact, the results from the native speakers corroborate Marty's assertation.

VII. Conclusion

This study investigated whether examine whether Japanese-speaking L2 learners of English could accept animate referents and reject inanimate referents when the reflexives occur in logophoric domains. The results revealed animacy did not affect L2 learners' interpretations of reflexives and they opted for the local referents in all test sentence structures. The results were more consistent with the Standard Binding Theory which does not subscribe to the notion of logophoricity.

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References

Akiyama, Y. (2002). Japanese adult learners' development of the locality condition of English reflexives. *Studies in Second Language Acquisition*, *24*, 27-54.

Bard, E. G., Robertson, D., & Sorace, A. (1996). Magnitude estimation of linguistic acceptability. *Language*, *72*, 32-68.

Charnavel, I. (2019). *Locality and logophoricity: A theory of exempt anaphora*. Oxford: Oxford University.

Charnavel, I. (2020). Logophoricity and locality: A view from French anaphors. *Linguistic Inquiry, 51,* 671-723.

Charnavel, I., & Sportiche, D. (2016). Anaphor binding: What French inanimate anaphors show. *Linguistic Inquiry, 47*, 35-87.

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

Chomsky, N. (1986). *Knowledge of language*. New York: Praeger.

Chomsky, N. (1995). A minimalist program for linguistic theory. In N. Chomsky (Ed.), *The Minimalist*

Program (pp. 167-217).   Cambridge, MA: MIT.

Cook, V. (1990). Timed comprehension of binding in advanced L2 learners of English. *Language Learning, 40*, 557-599.

Felser, C., Sato, M., & Bertenshaw, N. (2009). The on-line application of binding principle A in English as a second language. *Bilingualism: Language and Cognition*, *12*, 485-502.

Finer, D. L., & Broselow, E. I. (1986). Second language acquisition of reflexive binding. *Proceedings of the Sixteenth Annual Meeting of the North Eastern Linguistic Society*, 154-168.

Hamilton, R. (1998). Underdetermined binding of reflexives by adult Japanese-speaking learners of English. *Second Language Research, 14*, 292-320.

Hirakawa, M. (1990). A study of the L2 acquisition of English reflexives. *Second Language Research, 6*, 60-85.

Marty, P. (2020). What do French inanimate anaphors really show? *Linguistic Inquiry, 51*, 184-198.

Matsumura, M. (2007). Semantics behind the structure and how it affects the learner: A new perspective on second language reflexives. *IRAL*, *45*, 321-352.

Pollard, C., & Sag, I. A. (1994). *Head-driven phrase structure grammar*. Chicago: The University of Chicago.

Reinhart, T. (1976). *The syntactic domain of anaphora*. Retrieved from DSpace@MIT. (http://hdl.handle.net/1721.1/16400)

Reinhart, T., & Reuland, E. (1993). Reflexivity. *Linguistic Inquiry, 24,* 657-720.

Thomas, M. (1993). *Knowledge of reflexives in a second language*. Philadelphia: John Benjamins.

Wakabayashi, S. (1996). The nature of interlanguage: SLA of English reflexives. *Second Language Research*, *12*, 266-303.

Appendix
Modulus and Test Sentences

Modulus (Reference Sentence)
David talked to Richard about his wife.

Test Sentences
Type A   Animate Locally-Bound Anaphors
(1) John said that Mike hit himself.
(2) Rick argued that Donald accused himself.
(3) Paul claimed that Andrew admired himself.

Type B   Inanimate Locally-Bound Anaphors
(4) Germany claimed that Japan could defend itself.
(5) The government argued that the city of Regison could rebuild itself.
(6) The newspaper reported that the organization blamed itself.

Type C   Animate Long-Distance Anaphors
(7) Mike said that Bob blamed himself.

(8) <u>Charles</u> argued that Mark praised <u>himself</u>.

(9) <u>Jim</u> claimed that David criticized <u>himself</u>.

Type D   Inanimate Long-Distance Anaphors

(10) <u>The rural community</u> claimed that the neighboring city could support <u>itself</u>.

(11) <u>The company</u> argued that the nation could rescue <u>itself</u>.

(12) <u>The computer</u> determined that the robot could fix <u>itself</u>.

Type E   Animate Local Exempt Anaphors

(13) Steve said that <u>Jeff</u> saw a snake near <u>himself</u>.

(14) Justin claimed that <u>Steve</u> spotted a giant eagle above <u>himself</u>.

(15) Jonny found out that <u>Randy</u> wrote a book about <u>himself</u>.

Type F   Inanimate Local Exempt Anaphors

(16) The machine detected that <u>the robot</u> identified the object in front of <u>itself</u>.

(17) The robot sensed that <u>the drone</u> found the target below <u>itself</u>.

(18) The computer system recognized that <u>the AI robot</u> heard something close to <u>itself</u>.

Type G   Animate Long-Distance Exempt Anaphors

(19) <u>Rick</u> noticed that Jim broke a glass near <u>himself</u>.

(20) <u>George</u> realized that Justin found the note behind <u>himself.</u>

(21)   <u>Alan</u> said that Douglas found the toy beside <u>himself</u>.

Type H   Inanimate Long-Distance Exempt Anaphors

(22) <u>The AI speaker</u> recognized that the robot detected radiation near <u>itself</u>.

(23) <u>The sensor</u> detected that the robot recognized the rabbit in front of <u>itself</u>.

(24) <u>Times</u> reported that Newsweek wrote a horrible story about <u>itself</u>.