

RESEARCH

Acquiring antecedents for reflexives when both L1 and L2 permit long-distance binding

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The present study examines second language (L2) acquisition of the Japanese reflexive *zibun* (self) by Chinese-speaking learners. The reflexive *zibun* allows both local and long-distance (LD) binding interpretations. In a recent analysis, *zibun* is categorized into three types: *zibun* bound locally by a co-argument, *zibun* bound by an empathic LD antecedent, and *zibun* bound by a logophoric LD antecedent. An empathic antecedent is the participant in a sentence that the speaker most empathizes with, whereas, a logophoric antecedent is an individual “whose speech, thoughts, feelings, or general state of consciousness are reported” (Clements, 1975). Chinese also has a reflexive, *ziji* (self), that can be bound by an LD antecedent, like Japanese *zibun*. However, Chinese *ziji* is categorized into two (not three) types: locally bound *ziji* and *ziji* bound by a logophoric LD antecedent (Huang, Li & Li, 2009). The goal of this study is to determine whether Chinese-speaking learners are able to distinguish the two different types of LD antecedent for *zibun* in Japanese. Twenty-eight Chinese-speaking learners of Japanese at advanced levels of proficiency and 36 native speakers of Japanese participated in the study. The results showed that Chinese learners were unable to distinguish between the two types of LD antecedents, showing a persistent presence of first language (L1) transfer.

Keywords: Reflexive binding; L2 Japanese; L1 transfer; Generative SLA

1. Introduction

Interpretations of reflexives by L2 learners have attracted much attention in previous L2 research. Among reflexive expressions used in natural languages, previous studies have mainly focused on two types of reflexives: a bi-morphemic reflexive, such as the English *himself* and the Japanese *kare-zisin*, (himself), which must be bound by an antecedent within its local domain, and a mono-morphemic reflexive, such as Japanese *zibun* (self) and Chinese *ziji* (self), which can be bound by an

antecedent outside of their local domain.¹ For example, the English reflexive *himself* in (1) cannot refer to the matrix subject, *Taro*, as it is outside of the local domain. The same restriction does not apply to *zibun* in (2) or *ziji* in (3), for which both the matrix and local subjects are possible antecedents. Reflexive expressions such as *zibun* and *ziji*, which can be bound by a non-local antecedent, are called long-distance (LD) reflexives. In addition, most LD reflexives are subject-oriented, with co-reference restricted to a clausal subject.

- (1) Taro₁ thinks [Ken₂ loves himself_{1/2}].
- (2) Taro₁-ga [Ken₂-ga zibun_{1/2}-o aisiteiru-to] omotteiru.
Taro-NOM Ken-NOM self-ACC love-that thinks.
'Taro₁ thinks Ken₂ loves him/himself_{1/2}.'
- (3) Zhangsan₁ zhidao [Lisi₂ xihuan ziji_{1/2}].
Zhangsan know Lisi like self.
'Zhangsan₁ knows Lisi₂ likes him/himself_{1/2}.'

Extensive research has studied the L2 acquisition of bi-morphemic reflexives by learners whose L1 has a mono-morphemic LD reflexive (e.g. Finer & Broslow,

1986; Hirakawa, 1990) and L2 acquisition of LD reflexives by learners whose L1 lacks them (e.g. Thomas, 1993; Yuan, 1998; Shirahata, 2006). These studies focused primarily

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on whether or not L2 learners are able to correctly figure out the appropriate binding domains for a reflexive in the target language. However, few studies have focused on L2 acquisition of LD reflexives by learners whose L1 also has an LD reflexive (e.g. Yuan, 1998; Yoshimura et al., 2012; Yoshimura et al., 2013). This is largely due to a broadly held assumption of L1 transfer. A learner's L1 grammar is assumed to transfer onto the initial state of a nascent L2 grammar (e.g. Schwartz & Sprouse, 1996), and as a result, if a learner's L1 has an LD reflexive, they would be expected to already know how LD reflexives are interpreted.

Although Japanese *zibun* and Chinese *ziji* are both LD reflexives, there are in fact differences between them in interpretation (e.g. Kuno, 1972; Huang et al., 1984; Oshima, 2004; Nishigauchi, 2015). The difference between the two LD reflexives comes from the type of LD antecedent that each reflexive can be bound by. In Japanese, there are two types of LD antecedents, empathic and logophoric, and both can bind *zibun* in a subordinate clause (e.g. Kuno and Kaburaki, 1977; Kuno, 1978; Oshima, 2004; Kishida, 2011). In Chinese, while LD binding of *ziji* by a logophoric LD antecedent is possible as well, LD binding by an empathic antecedent is marginal at best (Huang, 1984; Huang et al., 2009). In this study, we investigate whether or not Chinese-speaking learners of Japanese can acquire the two types of LD antecedents in Japanese and interpret *zibun* in a target-like way. The acquisition of the two types of LD antecedents was tested using a condition known as the blocking effect. The blocking effect refers to a phenomenon where LD binding of an LD reflexive is "blocked" in the presence of a first- or second-person pronoun in the local domain. In Japanese, an empathic LD antecedent is subject to the blocking effect but a logophoric LD antecedent is not. In Chinese, by contrast, the blocking effect does apply to a logophoric LD antecedent (i.e. the only LD antecedent permitted in Chinese). We conducted an experiment to test for the

presence/absence of the blocking effect in L2 Japanese interlanguage grammars (ILGs) to examine whether Chinese-speaking (CS) learners of Japanese are able to acquire the interpretation of an LD reflexive different from that of the LD reflexive in their L1.

This paper is organized as follows: In section 2, the interpretations of *zibun* and *ziji* as well as their sensitivity to the blocking effect will be summarized. Section 3 summarizes relevant previous studies, and section 4 describes the task administered to investigate CS learners' acquisition of Japanese *zibun* along with the results from the study. Section 5 discusses the findings from the study and conclusions will be given in section 6.

2. Mono-morphemic Reflexives in Japanese and Chinese

As mentioned above, although both *zibun* and *ziji* are LD reflexives, their interpretations are not identical (e.g., Kuno, 1972; Huang, et al., 1984; Oshima, 2004; Nishigauchi, 2015). In Japanese, it has been claimed that there are three possible types of antecedent for *zibun*; genuine, empathic, and logophoric (Oshima, 2004; Kishida, 2011). According to Kishida (2011), the genuine binding of *zibun* is when *zibun* is bound by a co-argument within a local domain. It is claimed that a genuine reflexive interpretation is constrained by the syntactic condition of locality. Empathic and logophoric antecedents are both LD antecedents that are not constrained syntactically; rather, their interpretations are induced from pragmatic information. An empathic LD antecedent is the participant in a sentence that the speaker empathizes with or most identifies with (Kuno and Kaburaki, 1977; Kuno, 1987).² In (4), the sentence is uttered from the matrix subject's point of view, and thus *Takasi* is assumed to be its empathic locus. Such a participant in a sentence may be the antecedent of *zibun*, despite not being in the local domain containing *zibun*.

- (4) Takasi₁-wa [sensei-ga zibun₁-o yobi-ni kita toki] hon-o yondeita.
Takasi-TOP teacher-NOM self-ACC call came when book-ACC was.reading
'Takasi₁ was reading a book when the teacher came to call him₁.'

(adapted from Nishigauchi, 2015)

Another type of LD antecedent is logophoric. A logophoric antecedent is a participant whose "speech, thoughts, feelings, or general state of consciousness are reported" in

a sentence (Clements, 1975). An example of a logophoric antecedent is given in (5). The matrix subject is a logophoric participant and can be an LD antecedent of *zibun*.

- (5) Taro₁-ga [Ken-ga zibun₁-o nagutta-to] itta.
Taro-NOM Ken-NOM self-ACC hit-that said.
'Taro₁ said Ken hit him₁.'

(Adapted from Kuno (1978), p. 212)

The two different types of LD antecedents permitted for *zibun* lead to a number of differences (Oshima, 2004; Kishida, 2011). For example, an empathic antecedent of *zibun* cannot be a non-subject, but a logophoric non-local antecedent can be. In addition, while *zibun* bound by an empathic antecedent can be replaced by a pronoun, *zibun* bound by a logophoric individual cannot.

The blocking effect is another difference between the two types of LD antecedent. When there is a first-person pronoun within the local domain, *zibun* cannot be bound by an empathic LD antecedent, yet *zibun* can be bound by a logophoric LD antecedent even in the presence of a first-person pronoun in the local domain (Kuno, 1978; Oshima, 2004).

(6) *Taro₁-wa [boku-ga zibun₁-ni kasita] okane-o nakusite-simatta rasii.
 Taro-TOP I-NOM self-DAT lent money-ACC lost seems
 'It seems that Taro₁ lost the money I lent to him₁.'

(7) Taro₁-wa [boku-ga zibun₁-o butta]-koto-o mada urandeiru.
 Taro-TOP I-NOM self-ACC hit-fact-ACC still resent.
 'Taro₁ still resents that I hit him₁.'

(Kuno, 1978, pp. 212–213)

In (6), *zibun* cannot be co-referential with the matrix subject, *Taro*, but in (7) where the matrix subject is a logophoric individual, *zibun* can be co-referential with it. Thus, in Japanese, the blocking effect is induced with an empathic LD antecedent but not with a logophoric one.

Turning to Chinese, Huang et al. (2009) claim that there are two distinct types of *ziji*. One is a locally

bound genuine reflexive and the other is bound non-locally by a logophoric individual, as shown in (3) in the introduction. However, according to Huang et al., the empathic type of LD antecedent is only marginal as a co-referent of *ziji* for some native speakers of Chinese.

(8) ??[Zhangsan lai kan ziji₁ de shihou], Lisi₁ zheng zai kan shu.
 Zhangsan come see self DE moment Lisi now at read book.
 'Lisi₁ was reading when Zhangsan came to visit him₁.'

(Huang et al., 2009, p. 346)

Chinese *ziji* also differs from Japanese *zibun* with respect to the blocking effect. Unlike in Japanese, a logophoric

LD antecedent is subject to the blocking effect in Chinese (Huang, 1984), as shown in (9).

(9) Zhangsan₁ juede [wo₂ dui ziji_{1/2} mei xinxin].
 Zhangsan think I to self not confident.
 'Zhangsan₁ thinks I₂ have no confidence in him_{1/2}.'

(adapted from Nishigauchi, 2015)

Table 1 summarizes the properties associated with the interpretations of Japanese *zibun* and Chinese *ziji*. In Japanese, there are three types of antecedents for *zibun*: genuine, empathic and logophoric; the latter two are LD antecedents. In Chinese, on the other hand, there are two types of antecedents for *ziji*, genuine for local binding and logophoric for LD binding.

For Chinese *ziji*, it has been argued that the blocking effect is induced by a perspective conflict.³ Huang et al. (1984) argue that a first- or second-person pronoun enters into a perspective conflict with a logophoric individual. In (9), for example, there are two logophoric individuals, the sentence-internal speaker, *Zhangsan*, and the speaker of the sentence represented by the first-person pronoun. Thus, there are two logophoric individuals in the sentence, which creates a conflict, leading to the logophoric LD antecedent *Zhangsan* being unable to bind *ziji*. In Japanese, on the other hand, a logophoric individual in a sentence alongside the speaker of the sentence expressed by a first-person pronoun does not lead to a perspective conflict, while the empathic locus alongside the speaker (the first-person pronoun) does.

It is not clear to us at this point why it is empathy, not logophoricity, that induces the blocking effect in Japanese, but in Chinese, it is logophoricity that

does so. Nevertheless, we might speculate that the difference could be caused by the use of empathy in Japanese. Empathy can be encoded linguistically and it is manifested in lexical items like *yaru/kureru* (give). The verb *yaru* (to give) has been analyzed as a giver-oriented verb but *kureru* (to give) as a receiver-oriented verb. In (10a), the verb *yaru* is acceptable if the empathy locus is on the subject *Taro*, but the verb *kureru* is also acceptable if the empathy locus is on the indirect object *Hanako* (because, for example, *Hanako* is the speaker's daughter). However, in (10b) the receiver-oriented verb *kureru* must be used because the speaker is him- or herself, the receiver of the book and the empathy locus has to be on him or her.

Table 1: Japanese and Chinese mono-morphemic reflexives.

	Local		LD
	Genuine	Empathic	Logophoric
Japanese <i>zibun</i>	Yes	Yes [blocking]	Yes
Chinese <i>ziji</i>	Yes	?	Yes [blocking]

- (10) a. Taro-ga Hanako-ni hon-o yatta/kureta.
Taro-NOM Hanako-DAT book-ACC give/give
'Taro gave Hanako a book.'
- b. Taro-ga boku-ni hon-o *yatta/kureta.
Taro-NOM I-DAT book-ACC give/give
'Taro gave me a book.'

Sentences in (11) and (12) show how linguistic empathy associated with the verbs *yaru/kureru* interacts with the interpretation of *zibun*. In order for the matrix subject, *Taro*, to be the LD antecedent of *zibun*, it has to be the empathy locus. In (11), since the giver-oriented verb *yaru* is used, the empathy locus is on the embedded subject,

Hanako, and *zibun* cannot refer to the matrix subject. In (12), on the other hand, the receiver-oriented verb *kureru* is used. In this case, the empathy locus is not on the giver, *Hanako*, so it can be on the matrix subject, *Taro*. Co-reference between *Taro* and *zibun* is, therefore, possible for (12).

- (11) *Taro₁-wa [Hanako-ga zibun₁-ni yatta] hon-o yonda.
Taro-TOP Hanako-NOM self-DAT gave book-ACC read.
'Taro read the book Hanako gave to him.'

- (12) Taro₁-wa [Hanako-ga zibun₁-ni kureta] hon-o yonda.
Taro-TOP Hanako-NOM self-DAT gave book-ACC read.
'Taro read the book Hanako gave to him.'

(adapted from Oshima, 2007)

We speculate that because Japanese is a language in which empathy plays an important role, it is empathy, rather than logophoricity, that enters into point-of-view conflict with a first-person pronoun, inducing the blocking effect.⁴

3. Previous Studies

A number of studies have investigated L2 acquisition of mono-morphemic reflexives, including *zibun* and *ziji*. The main focus of these studies were to investigate whether or not L2 learners, whose L1 lacks a mono-morphemic reflexive, acquire its non-local binding and its subject-orientation (Thomas, 1993; Yuan, 1998; Kano & Nakayama, 2004; Shiharata, 2006; Yoshimura et al., 2012). There are nevertheless a few studies that have included learners whose L1 does have a mono-morphemic reflexive. Yuan (1998), for example, tested English- and Japanese-speaking learners of Chinese at the intermediate and advanced levels using a multiple-choice comprehension test. Learners were asked to choose an LD subject, a local subject, or both as the

possible antecedent(s) of *ziji* in test sentences. The results showed L1 influence for the interpretations of LD reflexive *ziji* with Japanese speakers outperforming English speakers. They accepted LD binding of *ziji* and showed no statistical difference from the native speaker group, while their English-speaking counterparts were statistically different from both the NS group and the Japanese-speaker group, showing that they were less able to access LD interpretations of *ziji*.

Yoshimura et al. (2012) examined the interpretation of Japanese *zibun* by English and Chinese speakers. They assume that locally bound *zibun* is syntactically constrained and subject to Binding Principle A (Chomsky, 1981), whereas LD bound *zibun* is logophoric, induced by pragmatic information (Kuno, 1972). The participants were tested on a truth-value judgment task. Yoshimura et al. used bi-clausal, logophoric sentences with a finite embedded clause. The reflexive *zibun* appeared in a Genitive position in the embedded clause, as shown in (13).

- (13) Taro-wa Yasuo-ga zibun-no puramoderu-o gomibako-ni suteta to iimashita.
Taro-TOP Yasuo-NOM self-GEN plastic.model-ACC trash.can-in throw that said
'Taro said that Yasuo threw his plastic model away in the trash can.'

The results showed that both Chinese speaker (CS) and English speaker (ES) groups allowed local binding of *zibun* (CS: 92.2%, ES: 94.9%), but the CS learners allowed more LD binding than the ES learners (CS: 78.4%, ES: 56.4%). They argue that, like Yuan's (1998) study, the knowledge of an LD reflexive in a learner's L1 facilitates the acquisition of an LD reflexive in L2. However, they point out that the acceptance rate for LD interpretations ("true" responses) of *zibun* by the CS group was lower than for local interpretations. They argue that the CS learners had more difficulty with LD binding of *zibun*,

i.e. they allowed LD binding of *zibun* less frequently than local binding of *zibun*, because it requires integration of pragmatic information into sentence processing in order to determine the referent of the reflexive.⁵

The studies conducted by Yuan and by Yoshimura et al. have found that L2 learners whose L1 does not have an LD reflexive tend to prefer the reflexive taking an antecedent in its local domain. In contrast, L2 learners whose L1 has an LD reflexive are better at accessing LD interpretations. The results from Yoshimura et al. further suggest that L2 learners with an LD reflexive

background nevertheless initially prefer local binding over LD binding. It was assumed in these studies, however, that the mono-morphemic reflexives *zibun* and *ziji* have the same binding interpretations. In contrast, in our study below, we recognize that the interpretations of *zibun* and *ziji* are not identical and that CS learners must acquire the Japanese distinction between two types of LD antecedents, empathic and logophoric. In the following section, we present our study examining the acquisition of *zibun* by CS learners of Japanese.

4. Study

4.1. Research questions

As discussed earlier, Japanese has empathic and logophoric LD antecedents for reflexives, while Chinese has only the latter. Furthermore, in Japanese, only the empathic LD antecedents are subject to the blocking effect whereas in Chinese, its logophoric LD antecedents are. Assuming L1 transfer as the L2 initial state, CS learners are faced with learning that: i) *zibun* can be bound by empathic, in addition to logophoric, LD antecedents, and ii) the blocking effect holds for empathic but not for logophoric LD antecedents. If CS learners of Japanese fail to acquire these two properties associated with *zibun*, they should fail to accept empathic LD antecedents and show the presence of a blocking effect with logophoric LD antecedents. This study thus examines whether they in fact allow empathic LD antecedents for *zibun* and whether they recognize the blocking effect applying to empathic LD antecedents but not to LD logophoric antecedents.

(14) Type 1: Empathic condition

- A: Taro₁-ga [Hanako₂-ga kyoositu-de zibun_{1/2}-o hometa atode] kaetta.
 Taro-NOM Hanako-NOM classroom-at self-ACC praised after went.home
 'Taro went home after Hanako praised him/herself in a classroom.'
- B: Tosiko₁-ga [watasi₂-ga taikukan-de zibun_{1/2}-o semeta atode] nakidasita.
 Tosiko-NOM I-NOM gym-at self-ACC criticized after cried
 'Tosiko burst into tears after I criticized her in a gym.'

(15) Type 2: Logophoric condition

- A: Mituko₁-ga [Ryota₂-ga kittin-de zibun_{1/2}-o semeta-to] itta.
 Mituko-NOM Ryota-NOM kitchen-at self-ACC criticized-COMP said
 'Mituko said Ryota criticized her/himself in the kitchen.'
- B: Tutomu₁-ga [watasi₂-ga kafe-de zibun_{1/2}-o syookaisita-to] itta.
 Tutomu-NOM I-NOM café-at self-ACC introduced-COMP said
 'Tutomu said I introduced him/myself (to someone) at a café.'

Both LOC and LD binding are allowed in all sentence types but Type 1B, in which LD binding of *zibun* is prohibited by the blocking effect of an intervening first-person pronoun in the LOC domain.

4.2. Participants

Twenty-eight Mandarin-speaking learners of Japanese and 36 native speakers of Japanese participated in the study. All participants in the CS group were undergraduate or graduate students at a university in Japan at the time of testing. They were advanced-level learners of Japanese, having passed the highest level of the Japanese-Language Proficiency Test (N1) and/or scoring over 80% on the Minimal Japanese Test (MJT) (Maki, Dunton, & Obringer, 2003).⁶ Participants in the native-speaker (NS) group were undergraduate students living in Tokyo and its surrounding areas. **Table 2** summarizes participant ages, length of Japanese study and length of residence in Japan.

4.3. Tasks and procedures

The CS learners were asked to take two tests: first the MJT and then a truth-value judgment test (TVJT). The NS group took only the TVJT. The TVJT was presented as a paper-and-pencil test with no time limit for participants to complete the task.

In the TVJT, there were two types of LD antecedents, empathic and logophoric, and each type was further divided into two; one sentence type included both a third person LD subject and third person local (LOC) subject, shown in (14A) and (15A), and another type contained a third person LD subject but a first person LOC subject, as shown in (14B) and (15B). The latter two sentence types were included to test L2 learners' knowledge of the blocking effect.

Each sentence type is presented with either a LOC context, where binding of *zibun* to a LOC subject is required for the sentence to be judged *True*, or an LD context where binding of *zibun* to an LD subject is

Table 2: Participants.

		Age	Length of study	Length of residence
NS (n = 36)	Mean	21.4		
	Range	(20–25)		
CS (n = 28)	Mean	25.5	5;09	2;08
	Range	(21–33)	2;00–10;11	0;07–8;04

required. Thus, there are eight conditions, summarized in **Table 3**, with predicted interpretations for *zibun* by Japanese NSs. Examples of context-sentence pairs from each of the eight conditions are provided in Appendix A.⁷

Contexts and test sentences appeared in Japanese script with Chinese characters (i.e. *kanji*). Furthermore, kanji characters were annotated with syllabic transcriptions (*hiragana*) above to show their Japanese pronunciation. Test instructions appeared on the first page of the TVJT, directing participants to circle *True* if a test sentence matches the preceding context or circle *False* if it does not.

In total, 64 test items were created, eight items per condition. Since the same test sentences are used once in a LOC context and once in an LD context, two sets of TVJT test items were created using a 2 × 2 Latin square design to preclude any single participant from reading the same test sentence twice. Consequently, each participant read four test items per condition. In addition, 64 filler items were also constructed using pronouns *kare* (he) or *kanozoyo* (she) in sentence structures similar to, but different from, the test items. Since there was an imbalance between true test items and false test items (see **Table 3**), the truth-values for the filler items were manipulated so that there would be an equal number of *True* and *False* answers across the complete set of stimuli. Each version of the TVJT consisted of 64 items, 32 test items and 32 fillers.

If CS learners adopt the interpretation of Chinese *ziji* for interpreting Japanese *zibun*, they should diverge from Japanese NSs in their LD interpretations of Types 1A and 2B, (**Table 3**). Predictions for the interpretation of *zibun* by CS learners based on L1 transfer are summarized in **Table 4**. They are predicted to reject LD binding for Type

1A, in which the LD antecedent is empathic, and to reject binding of *zibun* with a logophoric LD antecedent for Type 2B.

4.4. Results

4.4.1. Group results

Results from the Type 1 empathic condition are summarized in **Table 5**, showing the mean number of *True* judgments for each condition. Since each participant answered four tokens per condition, the maximum number is four. In the empathic condition, we expect three out of the four conditions to elicit *True* responses, while LD interpretations for Type 1B ought to be impossible due to the blocking effect. As can be seen in the table, native speakers did not choose *True* for Type 1A as frequently as expected for either LD or LOC interpretations of *zibun*, responding *True* at only about 60%. As for Type 1B, the NS group accepted LOC interpretations of *zibun* but rejected LD interpretations as expected, confirming the presence of the blocking effect. The CS group overall presents similar response patterns for Types 1A and 1B. In the LD interpretation of Type 1B, they also demonstrated sensitivity to the blocking effect. For the other three conditions, *True* response rates were lower than they were for the NS group but higher than the NS group for the LD condition of Type 1B.

One-way repeated measures ANOVAs conducted separately for Types 1A and 1B⁸ revealed a significant main effect for context (LOC vs. LD) (1A: $F(1, 62) = 4.86, p = 0.031, \eta^2 = 0.07$, 1B: $F(1, 62) = 268.99, p < 0.001, \eta^2 = 0.81$) but not for group (1A: $F(1, 62) = 1.92, p = 0.171$, 1B: $F(1, 62) = 0.004, p = 0.952$) and no significant interaction between context and group (1A: $F(1, 62) = 0.42, p = 0.518$, 1B: $F(1, 62) = 3.13, p = 0.082$). Thus, the results indicate that both groups distinguished LD and LOC contexts, but the CS group was not different from the NS group for Type 1 conditions.

Table 6 shows the mean numbers of *True* judgments for the Type 2 logophoric condition, for which both LOC and LD interpretations of *zibun* are predicted to be possible. As with Type 1, however, some native speakers responded *False* where *True* was expected. This is particularly evident for the LOC interpretations of Type 2A items and for both Type 2B conditions. CS learners, on the other hand, showed a sharp distinction between LOC and LD conditions with Type 2B items, rejecting the LD interpretation of *zibun*.

For Type 2A, ANOVAs showed a significant main effect for context (LOC vs. LD) ($F(1, 62) = 14.68, p < 0.001, \eta^2 = 0.19$) and a significant interaction between context and group

Table 3: Test conditions and predictions of True or False.

Sentence type	A		B	
	LOC	LD	LOC	LD
1 Empathic	True	True	True	False
2 Logophoric	True	True	True	True

Table 4: Predictions based on transfer of Chinese *ziji* interpretation.

Sentence type	A		B	
	LOC	LD	LOC	LD
1 Empathic	True	False	True	False
2 Logophoric	True	True	True	False

Table 5: Type 1 empathic condition: The choices of True (out of 4 tokens).

Context	Target	1A		1B	
		LOC	LD	LOC	LD
		TRUE	TRUE	TRUE	FALSE
NS (n = 36)	Mean	2.72 (68.1%)	2.33 (58.3%)	3.22 (80.6%)	0.47 (11.8%)
	SD	1.09	1.17	0.98	0.77
CS (n = 28)	Mean	2.61 (65.2%)	1.89 (47.3%)	2.96 (74.1%)	0.75 (18.8%)
	SD	1.40	1.47	0.83	0.93

Table 6: Type 2 logophoric condition: The choices of True (out of 4 tokens).

	Context	2A		2B	
		LOC	LD	LOC	LD
		TRUE	TRUE	TRUE	TRUE
NS (n = 36)	Mean	1.86 (46.5%)	3.44 (86.1%)	2.30 (57.6%)	2.52 (66.1%)
	SD	1.22	1.02	1.32	1.38
CS (n = 28)	Mean	2.39 (59.8%)	2.53 (63.2%)	2.64 (66.1%)	0.92 (23.2%)
	SD	1.25	1.34	1.12	1.05

($F(1, 62) = 10.22, p = 0.002, \eta^2 = 0.14$). However, there was no significant main effect for group ($F(1, 62) = 0.84, p = 0.360$). For Type 2B, there were significant main effects for context ($F(1, 62) = 9.79, p = 0.003, \eta^2 = 0.13$) and group ($F(1, 62) = 9.49, p = 0.003, \eta^2 = 0.13$), as well as a significant interaction between context and group ($F(1, 62) = 6.50, p < 0.001, \eta^2 = 0.21$).

To compare the results from the NS and CS groups for Type 2 logophoric conditions, a t-test for independent samples was conducted. Results are summarized in **Table 7**.

The differences between the NS and CS groups were significant for the LD conditions of both Types 2A and 2B. For Type 2A, the NS group accepted the LD interpretation of *zibun*, while the L2 group did so less frequently, leading to a statistically significant difference between the groups. For Type 2B, in which there is a first-person pronoun in the local domain of *zibun*, NS participants allowed LD binding of *zibun*, but the CS group rejected it, a response similar to the LD interpretation of *zibun* in the Type 1B condition.

Results from paired sample t-tests examining participants' distinctions between LOC and LD contexts for Type 2 are shown in **Table 8**. The NS group distinguished between Type 2A conditions but not between Type 2B conditions. The distinction made for Type 2A follows from the preference NSs showed for LD interpretations. The CS group, on the other hand, distinguished between LOC and LD contexts for Type 2B but not for Type 2A. For Type 2B, the results in **Table 8** suggest that the CS group rejected

Table 7: Type 2 logophoric condition: Statistical results from group comparisons.

	A		B	
	LOC	LD	LOC	LD
t-value df = 62	1.70	3.06	1.07	5.07
p-value	.093	.003	.286	<.001
Cohen's <i>d</i>	.280	.550	.177	.883

Table 8: Type 2 paired sample t-test results: LOC vs. LD contexts.

	Type	t-value	p-value	Cohen's <i>d</i>
NS	A	5.43	<.001	1.41
	B	0.64	.521	0.16
CS	A	0.41	.684	0.10
	B	5.48	<.001	1.58

LD interpretations, as they did for Type 1B. In both types of sentences, a first-person pronoun appeared in the local domain of *zibun*, and participants showed preference for the local antecedent, as expected for Type 1B but not for Type 2B.

As shown above, responses from the CS group for the Type 1 empathic conditions were similar to those from the NS group, with no statistical difference between groups. Significant differences were found for the Type 2 logophoric conditions. First, the CS group did not seem to allow the LD interpretation for Type 2B sentences, which suggests that the interpretation is blocked by the presence of the first-person pronoun for the Chinese group, though not for the NS group. The second difference found was for the Type 2A conditions. The NS group showed preference for the LD interpretation of *zibun*, but the Chinese group did not.

4.4.2. Individual results

In order to see whether there are any individual differences, responses were examined per participant. **Table 9** summarizes the number of NS participants who made each truth value judgment (*True* or *False*) for each condition. Participants included in the *True* row judged at least 3 out of 4 tokens *True*, and those in the *False* row at least 3 out of 4 tokens *False*. Those who chose *True* and *False* each twice appear in the *Neither* row. As **Table 9** shows, there appears to be substantial individual variability in the responses from native speakers, except for Types 1B (LOC, LD) and 2A (LD). In the group results, mean percentages from the NS group were lower than expected. The individual results show that for a sentence where *True* judgments are predicted, many Japanese native speakers nevertheless chose *False*, especially for Types 1A (LD), 2A (LOC), and 2B (LOC, LD).

The individual results from the CS group are shown in **Table 10**. As with the NS group, CS learners exhibit some variability in their responses, again with the exception of Types 1B (LOC, LD) and 2B (LD). Different patterns between the NS and CS groups emerge for Types 2A (LD) and 2B (LD), similar to our findings from the group results.

5. Discussion

The aim of this study was to examine whether CS learners of Japanese are able to acquire target-like interpretations of the Japanese reflexive *zibun*. Recognizing their L1 knowledge of an LD reflexive, Chinese *ziji*, the focus was on whether they can acquire the following properties of *zibun*:

Table 9: Individual NS truth value judgments (n = 36).

Type	Type 1				Type 2			
	A		B		A		B	
Condition	LOC	LD	LOC	LD	LOC	LD	LOC	LD
Predicted	T	T	T	F	T	T	T	T
TRUE	22/36 61.1%	17/36 47.2%	28/36 77.7%	1/36 2.7%	11/36 30.5%	30/36 83.3%	16/36 44.4%	24/36 66.7%
FALSE	6/36 16.7%	8/36 22.2%	3/36 8.3%	32/36 88.9%	18/36 50.0%	4/36 11.1%	11/36 30.6%	8/36 22.2%
Neither	8/36 22.2%	11/36 30.6%	5/36 13.9%	3/36 8.3%	7/36 19.4%	2/36 5.6%	9/36 25.0%	4/36 11.1%

Table 10: Individual CS truth value judgments (n = 28).

Type	Type 1				Type 2			
	A		B		A		B	
Condition	LOC	LD	LOC	LD	LOC	LD	LOC	LD
Predicted	T	T	T	F	T	T	T	T
TRUE	15/28 53.6%	11/28 39.3%	20/28 71.4%	1/28 3.6%	14/28 50.0%	15/28 53.6%	15/28 53.6%	2/28 7.1%
FALSE	6/28 21.4%	12/28 42.9%	1/28 3.6%	24/28 85.7%	6/28 21.4%	6/28 21.4%	4/28 14.3%	21/28 75.0%
Neither	7/28 25.0%	5/28 17.9%	7/28 25.0%	3/28 10.7%	8/28 28.6%	7/28 25.0%	9/28 32.1%	5/28 17.9%

- (16) a. *Zibun* can be bound by an empathic LD antecedent
- b. The blocking effect is present for empathic LD antecedents, not for logophoric LD antecedents.

The acquisition of (16a) can be assessed from results on the LD condition of Type 1A with an empathic LD subject. The CS group interpreted *zibun* with an empathic LD antecedent at a rate of 47.3% for Type 1A, while the NS group allowed an empathic LD antecedent at 58.3%.⁹ The results from both groups showed no statistical difference. Therefore, although the rate of LD interpretations was low, the results suggest that the CS learners allow binding between *zibun* and an empathic LD antecedent, showing that the acquisition of the property indicated in (16a) is possible.

As for (16b), results showed that the CS group did not allow LD binding of *zibun* in Types 1B and 2B conditions.

This suggests that the blocking effect is present not only with logophoric LD antecedents but also with empathic LD antecedents, showing that the property indicated in (16b) has not been acquired.

The LD binding of *zibun* by an empathic antecedent can be acquired based on input such as (17), in which *zibun* is unambiguously bound by an empathic LD antecedent, *Taro*, as the meaning of the verb, *kasu* (lend) makes it pragmatically implausible to lend oneself money. This type of positive evidence potentially leads CS learners of Japanese to acquire that *zibun* allows non-logophoric LD antecedents.

- (17) Taro₁-wa [Hanako-ga zibun₁-ni kasita] okane-o mudanisite-simatta.
Taro-TOP Hanako-NOM self-DAT lent money-ACC waste.up-ended.up
'Taro wasted all the money that Hanako lent to him.'

(Kishida, 2011, p. 26)

Although CS learners appear to allow both empathic and logophoric LD antecedents for *zibun*, the application of the blocking effect seemed to remain non-target-like. As discussed in section 2, a perspective conflict causes the blocking effect in Chinese. The results from this study suggest that a perspective conflict between a first-person pronoun and an LD antecedent still appears to be operative in Chinese-Japanese ILGs. For both sentences

in (18), the first-person pronoun *watasi* (I), appears in the embedded clause. This first-person pronoun enters into a perspective conflict with the matrix subject, *Tosiko* in (18a) and *Tutomu* in (18b), and neither of them can bind *zibun* as its antecedent. The results, therefore, suggest that the CS learners have failed to acquire that it is empathy, rather than perspective, that induces the blocking effect in Japanese.

- (18) a. Empathic LD antecedent
 Tosiko-ga [watasi-ga taikukan-de zibun-o semeta atode] nakidasita.
 Tosiko-NOM I-NOM gym-at self-ACC criticized after cried
 'Tosiko burst into tears after I criticized her in a supermarket.'
- b. Logophoric LD antecedent
 Tutomu-ga [watasi-ga kafe-de zibun-o syookaisita-to] itta.
 Tutomu-NOM I-NOM café-at self-ACC criticized-COMP said
 'Tutomu said I introduced him/myself at a café.'

In order to acquire this property, learners must be exposed to sentences such as (18b) in contexts where the intended antecedent of *zibun* is the logophoric LD subject. Although positive evidence of this type is in principle available, it is likely to be extremely rare and more complex compared to examples like (17), as it has to occur with a first- or second-person pronoun in the embedded clause while *zibun* refers to the preceding logophoric LD antecedent. This may prevent CS learners from positing a blocking effect in Japanese logophoric sentences.

In addition, notions such as logophoricity and empathy are related to pragmatics. As argued by proponents of the Interface Hypothesis (IH) (e.g., Tsimpli & Sorace, 2006; Sorace & Filiaci, 2006), properties associated with external interfaces, such as the syntax-discourse interface, are problematic for L2 learners, even at the near-native level. Tsimpli & Sorace (2006) argue that external interfaces are more difficult because learners have to integrate pragmatic and contextual information into the language system, whereas internal interfaces only deal with formal properties of language. If the IH is on the right track, CS learners may have difficulties distinguishing the pragmatic notion of empathy from logophoricity, as used in the interpretation of *zibun*, or they may have difficulty acquiring a linguistic notion of empathy. In this study, however, whether the CS learners have mastered linguistic empathy in Japanese was not independently tested.¹⁰ Therefore, further investigation is necessary to determine whether or not the cause of CS learners' inability to distinguish the two types of Japanese LD antecedents might lie with their problems with linguistic empathy.

A difference between the NS and CS groups was also found for the Type 2A condition. In this sentence type *zibun* has either a LOC or an LD subject as its antecedent. However, the NS group seemed to accept the LD antecedent, i.e. a logophoric individual, as the antecedent of *zibun* more easily, accepting the LD interpretation at 86%, but only accepting the LOC interpretation at 46%. The high acceptance rate of LD interpretations was expected, but the low acceptance rate of LOC interpretations was not, as the LOC interpretations should also be acceptable. We believe these results are an indication that Japanese speakers have a clear preference for an LD antecedent for *zibun* in logophoric sentences. This is likely because a logophoric individual in the sentence forces a pragmatic preference for *zibun* to refer back to that individual. The CS group, however, did not show such preference,

accepting LOC antecedents at 57% and LD antecedents at 63%, with no statistical difference between them. These results, again, are in line with the IH and also with the results from Yoshimura et al. (2012) as L2 learners are less able than the NSs to integrate pragmatic information, i.e. logophoricity, into a sentence interpretation.

Lastly, unexpected variability in responses among NS participants was found for sentence types 1A and 2B. Both LOC and LD antecedents should be acceptable for both types, but acceptance rates were only about 50–60% for both interpretations. NSs did not show preference for one interpretation over another for these types of sentences; rather, they show that as a group, neither LOC nor LD interpretations appear to be fully available. One possible explanation for such variability might be attributable to problems with the test instrument. It could be that our TVJT, including contexts paired with test sentences and the instructions given to participants, was somehow inadequate. However, we find that unlikely since we were able to obtain target-like judgments from the NS group for Type 1B sentences, which tested the presence of the blocking effect. If the test materials themselves were flawed, we would also expect variable results from Type 1B sentences. Instead, we have concluded that response variability was most likely obtained due to ambiguity of the test sentences. Our original rationale for use of a TVJT was in the first place to examine separately the two interpretations for each ambiguous test sentence. However, the results might nevertheless reflect preferences for one interpretation over another. For example, for Type 1A in the individual results, 17 out of 36 (47.2%) NS participants accepted the empathic LD antecedent, but eight out of the 36 (22.2%) rejected it. This shows that there were some NS participants who consistently accepted LD antecedents, while others consistently rejected them. To be sure, a TVJT is indeed an appropriate task for testing ambiguous sentences, but in this experiment, contexts may not have been adequately biased to override individual participant preferences towards one interpretation of the ambiguous test sentences.

6. Conclusions

The present study investigated whether Chinese learners of Japanese acquire the distinction between two types of LD antecedents, empathic and logophoric, for the Japanese reflexive *zibun*. Although Chinese speakers permitted empathic LD antecedents for *zibun*, they were unable to

distinguish the two types of LD antecedents with respect to the blocking effect. While in Japanese the blocking effect is present only for empathic LD antecedents, the results showed that the blocking effect is also present for logophoric LD antecedents among the CS learners. These results suggest that CS learners apply the blocking effect under the same conditions as in their L1, thus being unable to overcome the effects of L1 transfer. We proposed two possible explanations for their non-target-like interpretation of *zibun*. First, the positive evidence necessary to demonstrate that the blocking effect does not apply with logophoricity may be insufficient in Japanese input generally. Another possible reason we suggested was, following a claim put forward as part of the Interface Hypothesis, that Chinese speakers are unable to acquire the two types of LD antecedents because of their difficulty distinguishing two types of pragmatic conditions, empathy and logophoricity. Further investigation will be necessary to determine how linguistic empathy is interpreted and used by CS learners of Japanese.

Additional File

The Additional file for this article can be found as follows:

- **Appendix A.** Test materials. DOI: <https://doi.org/10.22599/jesla.14.s1>

Notes

- ¹ We assume the definition of local domain to be a governing category as postulated in Principle A of Binding Theory (Chomsky, 1981).
 - (i) a) An anaphor is bound in its governing category.
 - b) α is a governing category for β if and only if α is the minimal category containing β , a governor of β , and a SUBJECT accessible to β .
- ² Kuno (1987) defines linguistic empathy as in (i).
 - (i) *Empathy*: Empathy is the speaker's identification, which may vary in degree, with a person/thing that participates in the event or state that he describes in a sentence. (Kuno, 1987, p. 206)
- ³ Another, perhaps more widely discussed account, for the blocking effect involves movement at LF (e.g. Huang & Tang, 1991; Katada, 1991). Such an account, however, does not seem to explain all the data related to the blocking effect. For this reason, we adopt the pragmatic account instead. See Huang et al. (2009) and Giblin (2016) for an overview of the LF movement account and its inadequacy in accounting for the blocking effect.
- ⁴ See Kuno & Kuburaki (1977), Kuno (1978, 1987), and Oshima (2004) for detailed discussion on the role empathy plays in the pragmatics of Japanese.
- ⁵ Yoshimura et al. (2012) attribute this claim to the Interface Hypothesis (IH) (Tsimplici & Sorace, 2006, a.o.). In section 5 in the discussion, we also make reference to a part of our results to the IH. See section 5 for more details about the IH.
- ⁶ The MJT is a Japanese proficiency test designed by Maki, Dunton & Obringer (2003). It consists of 43 sentences with a blank to be filled for each one.

Audio recordings of the sentences are played and test takers of the MTJ fill in a blank while listening to the recording.

- ⁷ A reviewer has expressed concern about the possibility of lexical effects in generating differential interpretation. Unfortunately, space limitations prevent us from supplying a complete list of stimulus items.
- ⁸ We thank two anonymous reviewers for their input regarding the statistical analysis conducted for this study.
- ⁹ A reviewer pointed out to us that the variability found in the CS group data might have been caused by differences in their length of exposure to Japanese in Japan. We calculated a linear regression to examine whether length of stay in Japan among the CS learners correlates with their responses in the task. We did not find any significant regression equations between the length of exposure and any of the eight conditions (all $p > 0.05$).
- ¹⁰ Kano & Nakayama (2004) investigated the L2 acquisition of *zibun* by English-speaking learners, using the empathy-inducing receiver-oriented verb, *kureru* (to give), as shown in (12) in section 2. Their results suggest that the notion of empathy might be difficult for L2 learners to incorporate into their interpretation of *zibun*. That study was conducted with English-speaking learners of Japanese; therefore, it is not clear whether the results extend directly to CS learners of Japanese. This will be one direction we will pursue in future research.

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