The L2 Acquisition of Japanese Relative Clauses by L1 Chinese Learners: Evidence from the Interpretation of the Universal Quantifier *zen’in* ‘all’

Yunchuan Chen

1. Introduction

Although Japanese and Chinese relative clauses (RCs) are both prenominal, they have been argued to have different syntactic structures (e.g., Aoun & Li, 2003; Fukui & Takano, 2000). According to previous studies, one crucial difference is that in Japanese RCs, the head NP is base-generated external to the RC (e.g., Fukui & Takano, 2000; Murasugi, 2000) whereas in Chinese RCs, the head NP is raised from within the RC (e.g., Aoun & Li, 2003; Simpson, 2002). This syntactic difference between Japanese and Chinese RCs leads to different reconstruction effects with respect to the scope of the universal quantifier *all* in the RC subject position: in Japanese RCs the head NP must have a wider scope over *all* while in Chinese RCs, there are two possible interpretations: the head NP has a scope over *all* or *all* has a scope over the head NP.

This study investigated whether L1 Chinese L2 Japanese learners can acquire the syntactic knowledge that the head NP of Japanese RCs is base-generated external to the RC. To that end, I examined how they interpret the universal quantifier *zen’in* ‘all’ in the subject position of Japanese RCs. To be specific, I investigated whether L1 Chinese L2 Japanese learners are able to acquire the target knowledge that the universal quantifier *zen’in* ‘all’ in the RC subject position cannot have a wider scope over the head NP. For L1 Chinese L2 Japanese learners, this restriction is underdetermined because it cannot be directly learned from input or their L1 Chinese and it is not explicitly taught in Japanese language classrooms (Schwartz & Sprouse, 2000, 2013). A truth value judgment experiment (Crain & Thornton, 1998) was conducted and the results suggest that L1 Chinese L2 Japanese learners can acquire the target knowledge of the interpretation of the universal quantifier in the subject position of Japanese RCs. It further implies that they are able to acquire the syntactic knowledge that the head NP of Japanese RCs is base-generated external to the RC.

*Yunchuan Chen, University of Utah, yunchuan.chen@utah.edu. I am grateful to the Language Acquisition Reading Group members at the University of Hawai‘i at Mānoa.

1 This study only focuses on relative clauses that have a gap and do not involve any complex NP island.

2. Head derivation in Japanese and Chinese relative clauses

Japanese and Chinese RCs are both prenominal, which means the head NP is located after the modifying clause. (1a) and (1b) are equivalent examples in Japanese and Chinese:

(1) a. \[ \text{NP} \left[ \text{CP} \ boku-ga \ ec_i \ yon-de-ru \right] \ hon_i]-ga \ kore-da. \]
   \[ \text{I-NOM} \ \text{read-GER-ASP} \ \text{book-NOM} \ this-COP \]
   ‘The book that I am reading is this’

b. \[ \text{NP} \left[ \text{CP} \ wo \ kan \ ec_i \ de \right] \ shu_i \] shi zhe-ben.
   \[ \text{I read} \ \text{DE book} \ this-CL \]
   ‘The book that I am reading is this.’

Despite such superficial similarities, previous studies on Japanese and Chinese RCs put forward different analyses for the derivation of the head NP. Following Kayne’s (1994) Antisymmetry approach to RCs, Fukui and Takano (2000) proposed that in Japanese RCs, the RC is left-adjointed to a base-generated head NP, which is compatible with Kayne’s proposal that only left-adjunction is allowed in the grammar. (2a) is analyzed as in (2b):

(2) a. \[ \text{CP} \ John-ga \ kinoo \ pro_i \ mita] \ [\text{NP} \ syashin_i] \]
   \[ \text{John-NOM} \ yesterday \ see-PST \ photo \]
   ‘the photo that John saw yesterday’ (Fukui & Takano, 2000, p. 230)

b.

As for Chinese RCs, many studies (Saito, Lin, & Murasugi, 2008; Simpson, 2002) claim that they involve a complementation structure, where the head NP is initially raised to [Spec, CP] and the remaining IP is moved to [Spec, DP]. (3a) is an example with its analysis in (3b):

(3) a. \[ \text{DP} \left[ \text{IP} \ Xiaoming \ mai \ t_i \right]_k \ \left[ \text{D'} \ de \ \left[ \text{CP} \ shu_i \ [c' \ t_i]]\right] \]
   \[ \text{Xiaoming buy} \ \text{DE} \ \text{book} \]
   ‘the book that Xiaoming bought’
According to Bianchi (2000), the raising of the head NP is triggered by the strong uninterpretable feature(s) of the external D. That is, the D has a strong selectional phi-features that have to be checked locally with an [+N] phrase. By following Bianchi’s analysis, I assume that in Chinese RCs, the raising of the head NP is triggered by the feature-checking requirements of D. In contrast, in Japanese RCs, there is no D and the RC is directly adjoined to a base-generated head NP (Fukui & Takano, 2000).

3. Scope of the universal quantifier in the RC subject position

The underlying difference between Japanese and Chinese RCs with respect to the head NP derivation results in different reconstruction effects of the morphologically simplex anaphors jibun ‘self’ and ziji ‘self’ in the two languages. When they occur inside the head NP, the Chinese anaphor ziji can be co-indexed with the RC subject (Aoun & Li, 2003) whereas the Japanese counterpart jibun cannot (e.g., Hoji, 1985). In addition, the syntactic difference between Japanese and Chinese RCs also leads to a difference in the scope interpretation of the universal quantifier in the RC subject position, as in the Japanese example (4a) and the Chinese example (4b):2

(4) a. [zen’in-no sensei-ga proi nonda] osake i-ga koko-ni aru.
   all-GEN teacher-NOM drink-PST wine-NOM here-at exist
   ‘The wine that all teachers drank is here.’ (wine>∀; the same set of wine)
   * ‘The wine that all teachers drank is here.’ (∀>wine; different sets of wine)

2 The universal quantifiers zen’in ‘all’ in Japanese and quanti ‘all’ in Chinese can be considered equivalent to each other because they only modify human beings.
b. \[\text{quantilaooshi he } \text{de } \text{jiu} \text{zai zheli.}\]
alldrteacher drink DE winexisthere

‘The wine that all teachers drank is here.’ (\(\text{wine} \triangleright \forall\); the same set of wine)

‘The wine that all teachers drank is here.’ (\(\forall \triangleright \text{wine}\); different sets of wine)

In the Japanese RC in (4a), the head NP osake ‘wine’ always has a wider scope over the universal quantifier zen’in ‘all’ while in the Chinese RC in (4b), the head NP jiu ‘wine’ can have a wider scope over the universal quantifier quanti ‘all’ or quanti can have a wider scope than jiu. This difference between Japanese and Chinese can be accounted for by the different head derivation strategies in the two languages. In Japanese RCs such as (4a), since the head NP is base-generated external to the RC, the universal quantifier in the RC subject position is not predicted to have a wider scope over the head NP. In contrast, in Chinese RCs such as (4b), since the head NP is raised from within the RC, the universal quantifier in the RC subject position should be able to have a wider scope over the head NP because the head NP can reconstruct to be interpreted at its original position inside the RC at LF (see Aoun & Li, 2003, for a discussion of anaphor reconstruction in Chinese RCs).

4. The L2 issue

Recall that Chinese RCs involve movement of the head NP, which is triggered by strong uninterpretable features of D. On the one hand, under the ‘partial access to UG’ accounts such as Interpretability Hypothesis (Tsimpli & Dimitrakopoulou, 2007), uninterpretable features and their values cannot be accessed after the critical period, which means if some uninterpretable features or feature values were selected only in the target language but not in the learners’ L1, they would not be acquired by adult learners. In addition, although the ‘partial access to UG’ accounts do not explicitly claim this, logically, we also predict that if some uninterpretable features or feature values were selected only in the learners’ L1 but not in the target language, they would be difficult to be dropped or revised (Kong, 2011, 2017). On the other hand, under the ‘full access to UG’ accounts such as Full Transfer/Full Access Model (Schwartz & Sprouse, 1994, 1996), the functional domain of UG is still available to L2 learners after the critical period. Thus, we have two different predictions concerning whether L1 Chinese L2 Japanese can acquire the syntactic knowledge that the head NP of Japanese RCs is base-generated external to the RC. Under the ‘partial access to UG’ accounts, we predict that L1 Chinese L2 Japanese learners always project a raised head NP for Japanese RCs because the strong uninterpretable features that were selected in Chinese should not be revised in the L2 Japanese. In contrast, under the ‘full access to UG’ accounts, L1 Chinese L2 Japanese learners should be able to project a base-generated head NP for Japanese RCs.

In order to test L1 Chinese L2 Japanese learners can acquire the underlying syntactic knowledge of the head derivation in Japanese RCs, an experiment was conducted to examine whether they can acquire the native-like interpretation of
the universal quantifier zen’in ‘all’in Japanese RCs. As we have seen in the last section, the universal quantifier in the RC subject position is interpreted differently in Japanese and Chinese because of the different types of head NP derivation. In Chinese RCs, the universal quantifier can have two possible interpretations: it can have a wider scope over the head NP (‘∀>head NP’) or the head NP can have wider scope over it (‘head NP>∀’). However, in Japanese RCs, only the latter interpretation (‘head NP>∀’) is available.

This difference between Chinese and Japanese poses a challenge for L1 Chinese L2 Japanese learners: can they acquire the knowledge that the interpretation of ‘∀>head NP’ is unavailable in Japanese RCs? This is indeed a poverty of the stimulus question to L1 Chinese L2 Japanese learners. First, the restriction in Japanese cannot be directly derived from the learners’ input. Second, since the word order of RCs with an object gap is exactly the same in Japanese and Chinese, as shown in (1a) and (1b), it is impossible for L1 Chinese L2 Japanese learners to derive the target knowledge from the equivalent Chinese sentences. Third, based on my consultation with Japanese language instructors in China, the restriction in Japanese RCs is never taught in Japanese language classrooms or textbooks. By examining whether L1 Chinese L2 Japanese learners can acquire the underdetermined restriction, we can approach the issue of whether they can acquire the underlying syntactic knowledge that the head NP of Japanese RC is base-generated external to the RC.

5. Experimental design

A picture-matching truth value judgment experiment (TVJT) was conducted to investigate whether L1 Chinese L2 Japanese learners can acquire the underdetermined knowledge that the universal quantifier zen’in ‘all’in the RC subject position does not have a wider scope over the head NP in Japanese RCs. A Japanese version and an equivalent Chinese version of the TVJT were created. All Japanese sentences in the Japanese task were closely translated into Chinese in the Chinese task. Seven characters from Journey to the West were used in the tasks, which include four students, Monkey (5a), Xuanzang (5b), Pigsy (5c), and Sandy (5d), and their teachers, Sakyamuni (5e), Maitreya (5f) and Bodhisattva (5g).3 These characters are shown below:

![Characters](image.png)

3 Before the experiment, I checked with each participant to make sure that they had no problem in recognizing the seven characters in the experiment.
Each experimental item begins with a story in Japanese/Chinese. Here is an example: One day, the 4 students made their own wines, and they put their face photos on the wine barrels to declare the possessions, as illustrated in (6):

(6)

Then the 3 teachers tasted different students’ wines: Sakyamuni tasted Monkey’s and Xuanzang’s wines, Maitreya tasted Monkey’s and Pigsy’s wines and Bodhisattva tasted Monkey’s and Sandy’s wines, as shown in (7):

(7)

Then a wolf comes out and says a Japanese sentence (8a) or a Chinese sentence (8b), both of which mean ‘the wine that all teachers drank is here.’

(8) a. koko-ni aru-no-wa [zen’in-no sensei-ga proi non-da] [osake]-da  
here-at exist-one(s)-TOP all-GEN teacher-NOM drink-PST wine-COP  
‘The wine that all teachers drank is here.’ (head NP>∀, the same wine)  
* ‘The wine that all teachers drank is here’ (∀>head NP, different wines)

b. zai-zheli de shi [quanti laoshi he-le ti de][jiu]i  
at-here DE is all teacher drink-PST DE wine  
‘The wine that all teachers drank is here.’ (head NP>∀, the same wine)  
‘The wine that all teachers drank is here.’ (∀>head NP, different wines)
For each experimental item, there are two conditions: an intersection reading condition (‘head NP>∀’) and a union reading condition (‘∀>head NP’), which are varied by the picture showing the entities the wolf points at. (9a) is the ‘head NP>∀’ condition while (9b) is the ‘∀>head NP’ condition.

(9) a. head NP>∀  

b. ∀>head NP

Within each item, the wolf’s sentence is intended to be either an intersection reading or a union reading, depending on the picture. The participants were asked to judge whether the wolf’s sentence is correct under the given context. On the one hand, since Japanese only allows the ‘head NP>∀’ reading, we expect that L1 Japanese speakers would accept the wolf’s Japanese sentence in the ‘head NP>∀’ condition like (9a) but reject the same sentence in the ‘∀>head NP’ condition like (9b). On the other hand, since Chinese allows both readings, we expect that L1 Chinese speakers would accept the wolf’s Chinese sentence in both conditions.

There were 24 sentences of different lexicalizations, each of which was then combined with a picture of either ‘head NP>∀’ or ‘∀>head NP’ reading. It results in 48 sentence-picture pairs, which were distributed into two lists so that each list contained only one condition from the same lexicalization. Thus, there were a total of 24 critical stimuli in each list and each condition had 12 stimuli. Moreover, the same 48 fillers were included in each list. The order of all items was pseudo-randomized.

In addition, a Japanese proficiency test (Marsden, 2004) was used to assess the L2 participants’ Japanese proficiency. It is a cloze test, where the participants were asked to fill in a total number of 42 blanks with appropriate words. The full score is 42 and I adopted 15 as the minimal score to select advanced learners.4 A maximum of 30 minutes were given to complete the test.

A total of 29 L1 Chinese learners of L2 Japanese participated in both Japanese and Chinese tasks. They were 2nd and 3rd year Japanese major

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4 Marsden (2004) used 13 to select advanced L2 learners because it was the lowest score that her L1 Japanese participants got. However, after checking her 30 L1 Japanese participants’ data, I found that 13 was actually an outlier so I chose 15, the second lowest score from the data set, to select advanced L2 learners.
undergraduate students from two universities in China. Based on my survey, their age ranged from 20 to 23 and all of them started learning Japanese after 17. Additionally, none of them had experience living in Japan. There were also 5 L1 Japanese speakers participating in the Japanese task as native controls.

6. Findings

The data from the 5 L1 Japanese participants were first analyzed. Their mean frequencies of accepting the items in the ‘head NP>∀’ condition and the ‘∀>head NP’ condition were 12 and 0.4, respectively. This result was predicted because in Japanese RCs with the universal quantifier *zen'in 'all' in the RC subject position, only the ‘head NP>∀’ reading is allowed. Then the L1 Japanese participants’ individual data were examined. Since there were 12 items in each condition, based on binominal distribution, if a participant accepted or rejected 9 items or more out of 12, we would be 95% confident that they did not make random judgments. Thus, I used 9 items as the cut-off point to see whether the participants made consistent judgments or not. In other words, if a participant accepted or rejected 9 items or more in one condition, she will be considered to have consistently accepted or rejected the items in that condition. The L1 Japanese participants’ individual data showed that all 5 participants accepted all items of ‘head NP>∀.’ Four of them rejected all items of ‘∀>head NP’ and 1 participant rejected 10 items. Thus, the L1 Japanese participants’ results support the analysis that the ‘∀>head NP’ reading of the universal quantifier in the RC subject position is unavailable in Japanese RCs because the head NP is base-generated external to the RC.

We now check the data from the 29 L1 Chinese L2 Japanese learners. Recall that they participated in both Japanese and Chinese versions of the task. First, a preliminary screening of their data showed that 4 participants consistently rejected the items of the ‘∀>head NP’ condition in both Japanese and Chinese tasks. Since we expect L1 Chinese speakers to accept all items of ‘∀>head NP,’ their data were excluded for further analysis.\(^5\)

The rest of the 25 L2 participants’ acceptance mean frequency for each condition, along with its standard deviation (SD) and standard error (SE), was calculated and summarized in Table 1.

\(^5\) There is a remaining issue of why the 4 L2 participants consistently rejected the items of ‘∀>head NP’ in the Chinese task. The reason might be that the interpretation of ‘∀>head NP’ was not accessed by them. It is likely that the ‘head NP>∀’ reading is easier to get than the ‘∀>head NP’ reading because the head NP does not have to be interpreted inside the RC through reconstruction in the former reading. Thus, as soon as they got the ‘head NP>∀’ reading, they simply blocked the ‘∀>head NP’ reading because it is less preferable.
Table 1. L2 participants’ judgments in the Japanese and Chinese TVJT's

<table>
<thead>
<tr>
<th>Language</th>
<th>Scope</th>
<th>Mean (SD)</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td>Head NP&gt;∀</td>
<td>11.52 (2.4)</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>∀&gt;head NP</td>
<td>9.12 (5.23)</td>
<td>1.05</td>
</tr>
<tr>
<td>Chinese</td>
<td>Head NP&gt;∀</td>
<td>10.68 (3.51)</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>∀&gt;head NP</td>
<td>11.44 (1.58)</td>
<td>0.32</td>
</tr>
</tbody>
</table>

From Table 1, we can see that there were two factors: (i) **Language Type** (Japanese or Chinese) and (ii) **Scope Type** (whether the head NP has a wider scope over the universal quantifier). The ANOVA and pairwise comparison tests were performed on both participant ($F_1$ and $t_1$) and item ($F_2$ and $t_2$). First, two-way repeated measures ANOVA revealed no main effect of the language type in the participant analysis ($F_1(1, 24) = 1.33, p = .26$) but there were main effects in the item analysis ($F_2(1, 23) = 68.69, p < .01$). As for the scope type, there was no main effect in the participant analysis ($F_1(1, 24) = 0.94, p = .34$) but there were main effects in the item analysis ($F_2(1, 23) = 130.87, p < .01$). Moreover, there were significant interactions between the two factors in both the participant and item analyses ($F_1(1, 24) = 7.83, p = .01; F_2(1, 23) = 54.5, p < .01$). Pairwise comparisons showed that the difference between the two scope types in Japanese is marginally significant in the participant analysis ($t_1(24) = 2, p = .06$) and is significant in the item analysis ($t_2(23) = 10.66, p < .01$). In addition, the difference between the two scope types in Chinese is not significant in the participant analysis ($t_1(24) = 0.96, p = .35$) and is significant in the item analysis ($t_2(23) = 3.43, p < .01$). Furthermore, pairwise comparisons also revealed that the difference between Japanese and Chinese with respect to the ‘head NP>∀’ reading is significant in both participant and item analyses ($t_1(24) = 2.15, p = .04; t_2(23) = 4.62, p < .01$) and the difference regarding the ‘∀>head NP’ reading is not significant in the participant analysis ($t_1(24) = 1.55, p = .14$) but is significant in the item analysis ($t_2(23) = 8.85, p < .01$). One crucial implication from the group data is that the L1 Chinese L2 Japanese learners as a group might not clearly know the ‘∀>head NP’ reading is unavailable in Japanese RCs, as their mean acceptance frequencies of the ‘∀>head NP’ items were not significantly different between Japanese and Chinese under the participant analysis.

Now we examine the L2 participants’ individual data. It showed that 19 participants accepted 9 items or more in the ‘∀>head NP’ condition in both Japanese and Chinese, which means they consistently accepted the items in that condition. It suggests that these L2 participants treated the universal quantifiers *zen’in* ‘all’ and *quantí* ‘all’ in the RC subject position in the same way. In their L2 grammar of Japanese RCs, the universal quantifier *zen’in* ‘all’ is allowed to have a wider scope over the head NP. In contrast, the rest of the 6 participants all rejected 12 items in the ‘∀>head NP’ condition in Japanese, which means their rejection was consistent in that condition and their judgments were similar to those of the L1 Japanese participants. At the same time, 5 of them accepted
12 items in the ‘∀>head NP’ condition in Chinese, which suggests that they made a clear distinction between Japanese and Chinese with respect to the scope interpretation of the universal quantifier in the RC subject position. The other one participant accepted 8 items in the ‘∀>head NP’ condition in Chinese. Although she did not consistently accepted the items in that condition, she did not consistently reject them as well. Therefore, she may also be considered as a participant who made a clear distinction between Japanese and Chinese regarding the universal quantifier in the RC subject position.

As was mentioned earlier, a Japanese cloze test was used to measure the L2 participants’ Japanese proficiency. The mean of the 25 participants was 15.88 and the standard deviation is 3.55. Their scores ranged from 9 to 24. There were 14 participants who scored at 15 or higher so they were categorized as advanced learners. The other 11 participants were categorized as intermediate learners. As for the 6 participants who behaved like the L1 Japanese participants by consistently rejecting the items of ‘∀>head NP’ in the Japanese task, 5 of them were advanced learners and 1 was an intermediate learner. In addition, out of the 19 participants who consistently accepted the items of ‘∀>head NP’ in the Japanese task, 9 were advanced learners and 10 were intermediate learners. Overall, it seems that advanced learners are more likely to acquire the target undetermined knowledge but the high Japanese proficiency alone does not guarantee the successful acquisition.

7. Discussion

The data showed that the majority (19 out of 25) of the L2 participants considered the scope interpretation of the universal quantifiers *zen’in* ‘all’ and *quanti* ‘all’ in the RC subject position is the same in Japanese and Chinese, which suggests that they projected a raised head NP for Japanese RCs, as what they do for Chinese RCs. This is not surprising because Japanese and Chinese RCs with an object gap are superficially similar in their word order, as shown in (1a) and (1b). The experimental result is further compatible with the ‘full transfer’ proposal (e.g., Schwartz & Sprouse, 1994, 1996) that the L1 grammar is entirely transferred to the L2 in the initial state. For L1 Chinese L2 Japanese learners, they initially project a syntactic structure for Japanese RCs based on their L1 Chinese grammar. In addition, the data also suggested that 6 L2 participants have acquired the target knowledge that the ‘∀>head NP’ reading is not available for the universal quantifier in the subject position of Japanese RCs. It further implies that they have acquired the underlying syntactic knowledge that the head NP is base-generated externally in Japanese RCs. Since L1 Chinese L2 Japanese learners are found to initially project a raised head NP for Japanese RCs, this finding indicates that they are able to restructure their interlanguage grammar later and project a base-generated head NP for Japanese RCs. Furthermore, when L1 Chinese L2 Japanese learners initially project a raised head NP for Japanese RCs, there must be a functional DP involved in the their L2 representation of Japanese RCs, where the D triggers the raising of the
head NP. As their Japanese proficiency develops, they may restructure their interlanguage grammar and project a base-generated head NP for Japanese RCs, which suggests that the strong uninterpretable feature of the D must have been revised. Thus, the experimental findings in this study support the claim from the Full Transfer/Full Access Hypothesis (Schwartz & Sprouse, 1994, 1996) that all aspects of UG, including the functional domain, are available in adult L2 acquisition. Simultaneously, the findings argue against the ‘partial access to UG’ accounts such as the Interpretability Hypothesis (Tsimpli & Dimitrakopoulou, 2007), under which the strong uninterpretable features of D that trigger the raising of the head NP are not expected to be accessed or revised after the critical period.

A further remaining question is why the 6 L2 participants managed to come to know that the Japanese universal quantifier zen’in ‘all’ has a different scope from the Chinese counterpart quanti ‘all’ in the RC subject position. In other words, what triggers the acquisition?

Recall that according to previous studies, Japanese and Chinese RCs with a gap differ in their head derivation: the head NP is raised out of the RC in Chinese but is base-generated external to the RC in Japanese. Such syntactic difference results in the difference of the scope interpretation of the universal quantifier in the RC subject: both the readings of ‘head NP>∀’ and ‘∀>head NP’ are available to the universal quantifier in Chinese but the latter is missing in Japanese. Although there is no direct evidence for such restriction in Japanese, L1 Chinese L2 Japanese participants are expected to know this restriction as long as they can acquire the underlying syntactic knowledge of the head NP derivation in Japanese RCs. It seems that acquisition of this syntactic knowledge is possible through some linguistic evidence.

As we have seen in our data, L1 Chinese L2 Japanese learners seem to project a raised head NP for Japanese RCs in the initial state. Then we want to know whether there is any positive evidence that indicates the head NP in Japanese RCs cannot be raised. The following example is one piece of such evidence:

(10) Ashita John-ga [proj/k/h kyoo e: tsukuru] [Mary-no keiki]-o
tab eru
(i) ‘Tomorrow John, will eat Mary’s cake that he is making today.’
(ii) ‘Tomorrow John will eat Mary’s cake that she is making today.’
(iii) ‘Tomorrow John will eat Mary’s cake that someone else is making today.’

(10) has at least three possible interpretations, as in (i)-(iii). For (i), it is John who is co-indexed with the pro in the RC subject position, which means John is the person who is going to make a cake for Mary today. For (ii), the pro is co-indexed with Mary, i.e., it is Mary who is going to make a cake for herself. For (iii), the pro is co-indexed with someone else rather than John or Mary. What is
crucial here is that the interpretation (ii) is available in (10), which is not expected under the head-raising analysis. If the head NP *Mary-no keiki* ‘Mary’s cake’ is raised from within the RC, it would have to reconstruct into the RC and be interpreted within the RC at LF. Then the R-expression *Mary* within the head NP would be bound by the *pro* in the RC subject position, resulting in a Condition C violation (Chomsky, 1981). This is exactly what happens in the Chinese RC (11), which is equivalent to (10):

(11) Mingtian John hui chi [pro/*h jintian zuo t de] [Mary/*de dăngao],
     cake
     (i) ‘Tomorrow John will eat Mary’s cake that he is making today.’
     (ii)∗ ‘Tomorrow John will eat Mary’s cake that she is making today.’
     (iii) ‘Tomorrow John will eat Mary’s cake that someone is making today.’

In (11), the interpretation (ii) is not available, which is compatible with the head-raising analysis for Chinese RCs. Thus, if L1 Chinese L2 Japanese learners initially project a raised head NP for Japanese RCs, we predict that Japanese sentences like (10) with an intended interpretation like (ii) can be triggers for them to ‘unlearn’ the head-raising strategy and project a base-generated head NP for Japanese RCs.

Moreover, it would be safe to assume that this type of sentences with the intended meaning (ii) is very rare in the input, which explains why there were only a few L2 participants who seem to have successfully learned the head-base-generation derivation in Japanese RCs. In future studies, I will explore L1 Chinese L2 Japanese learners’ acquisition of the following two pieces of Japanese knowledge: (i) the knowledge of the possible co-indexation between the RC subject *pro* and the R-expression inside the head NP in Japanese RCs and (ii) the knowledge of the unavailability of ‘∀>head NP’ in Japanese RCs. If the two pieces of knowledge co-occur among L1 Chinese L2 Japanese learners, it would support my proposal that they can acquire the underlying syntactic knowledge that the head NP is base-generated in Japanese RCs through evidence such as (10).

8. Conclusion

This study investigated whether L1 Chinese L2 Japanese learners can acquire the knowledge that the scope interpretation of the universal quantifier *zen’in* ‘all’ in the RC subject position is more restricted than its equivalent in Chinese. Since this knowledge is underdetermined, its successful acquisition can strongly imply that L1 Chinese learners can acquire the underlying syntactic knowledge that the head NP of Japanese RCs is base-generated external to the RC. A truth value judgment task was conducted to investigate whether L1 Chinese L2 Japanese learners can acquire the same knowledge as L1 Japanese
speakers with respect to the restriction of the universal quantifier zen’in ‘all’ in the RC subject position. The results showed that most of the L2 participants treated the Japanese universal quantifier in the same way as that the Chinese counterpart, i.e., the Japanese universal quantifier zen’in ‘all’ can have a wider scope than the head NP in Japanese RCs. It suggested strong L1 transfer effects. However, there were 6 L2 participants who managed to acquire the target knowledge that the Japanese universal quantifier in the RC subject has a more restricted scope, even though such knowledge is underdetermined. It in turn implies that L1 Chinese L2 Japanese learners are able to acquire the underlying syntactic knowledge that the head NP of Japanese RCs is base-generated external to the RC. Since changing from a raised head NP into a base-generated one entails revising the strong uninterpretable features of the D that trigger the raising of the head NP, the experimental findings in this study support the claim of the Full Transfer/Full Access Hypothesis (Schwartz & Sprouse, 1994, 1996) that all aspects of UG, including the functional domain, are available in adult L2 acquisition.

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