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## 0. Introduction

With over a decade of fruitful Universal Grammar (UG)-based research in second language acquisition (SLA), White (in press) suggests that "...perhaps the time has come to stop asking the broad question: is UG available to second language (L2) learners or not? ... but it is now the turn of a somewhat more detailed focus on the precise nature of the linguistic competence of language learners". The present study contributes to research on the nature of interlanguage grammar of L2 learners by investigating the L2 acquisition of the Chinese long-distance reflexive *ziji* "self" by English-speaking and French-speaking adults within the Principles-and-Parameters framework (Chomsky, 1981 and subsequently). The major issues addressed are (i) whether L2 learners, based on positive evidence in the language input (utterances that are available to learners), would be able to know that Chinese allows *ziji* to be long-distance bound; (ii) whether L2 learners would be able to know, after they have acquired the properties of long-distance binding of *ziji*, that long-distance binding of *ziji* is not allowed when the potential antecedents do not agree with each other in person or number (known as the blocking effect).

The paper is organized as follows. I will first present the theoretical background of the relevant binding properties in Chinese, English and French in Section 1, concentrating on the long-distance reflexive *ziji* and blocking effects. I will then in Section 2 outline the relationship between linguistic theory and language acquisition by providing an overview of the studies on the L1 and L2 acquisition of *ziji*. In Section 3, I will report the details of my experiment. In the last section I will discuss the results and their implications.

## 1. Theoretical Background

There has been a consensus among linguists that English reflexives must find their antecedents in the local clause, whereas the Chinese reflexive *ziji* can take any clausal subject NP to be its antecedent. That is, *herself* can only refer to *Susan* in (1a) while *ziji* can refer to *Yuanyuan* or *Lingling* or *Fangfang* in (1b).<sup>2</sup>

- (1) a. Mary<sub>i</sub> thinks that [Jane<sub>j</sub> knows that [ Susan<sub>k</sub> criticized herself \*<sub>i</sub>/\*<sub>j</sub>/k ]
- b. Fangfang<sub>i</sub> renwei [Lingling<sub>j</sub> zhidao [Yuanyuan<sub>k</sub> piping le *ziji* <sub>i/j/k</sub> ] ]  
Fangfang think Lingling know Yuanyuan criticize ASP self  
"Fangfang thinks that Lingling knows that Yuanyuan criticized self"

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<sup>2</sup> In addition to *ziji*, the morphologically simplex reflexive or the bare reflexive, Chinese also has the morphologically complex reflexive in the form of pronoun + *ziji*, such as *ta ziji* "himself/herself" or *ni ziji* "yourself". For a detailed discussion of *ziji* and pronoun + *ziji*, see Huang (1994). In this study I only concentrate on the bare reflexive *ziji*. For the L1 acquisition of *ta ziji* by Chinese children, please see Chien et al (1993).

In addition, English differs from Chinese in that the former allows either the subject or the object to bind a reflexive whereas the latter only allows the subject to bind *ziji*, as in (2a) and (2b).

- (2) a. John<sub>i</sub> gave Tom<sub>j</sub> a picture of himself<sub>i/j</sub>.  
 b. Fangfang<sub>i</sub> songgei Lingling<sub>j</sub> ziji<sub>i/\*j</sub> de xiangpian  
 Fangfang give Lingling self DE picture  
 "Fangfang gave her own pictures to Lingling."

Linguists have also noted that when the features (i.e., person and number) of antecedents in different clauses are not matched with one another, the long-distance binding of *ziji* is blocked. In other words, the long-distance reflexive *ziji* requires a local antecedent in the situation where a non-third person NP (i.e., first or second person) is used as a subject for one of the clauses, while a third person subject is found in another clause. As illustrated in (3a)-(3c), *ziji* can only refer to the subject in the embedded sentence. This is called the blocking effect (Battistella 1989; Huang and Tang 1991; Tang 1985, 1989; among others).

- (3) a. Wo/Ni<sub>i</sub> juede [Fangfang<sub>j</sub> piping le ziji<sub>\*i/j</sub>]  
 I/You think Fangfang criticize ASP self  
 "I/You think that Fangfang criticized self"  
 b. Fangfang<sub>i</sub> juede [wo/nij piping le ziji<sub>\*i/j</sub> ]  
 Fangfang think I/you criticize ASP self  
 "Fangfang thinks that I/you criticized self"  
 c. Fangfang<sub>i</sub> juede [wo/nij zhidao [Yuanyuan<sub>k</sub> piping le ziji<sub>\*i/\*j/k</sub> ]  
 Fangfang think I/you know Yuanyuan criticize ASP self  
 "Fangfang thinks that I/you know that Yuanyuan criticized self"

Since English does not have long-distance binding reflexive, the property of blocking effects is not relevant in the language.

French has three kinds of reflexives: phrasal reflexives such as *lui-même/elle-même* which are like *himself/herself* in English or *ta ziji* "himself/herself" in Chinese; impersonal reflexive *soi* which is like *itself* in English and clitic reflexive *se* which does not have any equivalent in English or in Chinese. According to Everaert (1991) and Connell and Frank (1991), *se* takes a local antecedent, as shown in (4), while *soi* usually requires a long-distance antecedent, as shown in (5). The phrasal reflexives *lui-même/elle-même* are only emphatic reflexives (Tremblay, 1990), thus they are optional, as shown in (4).

- (4) Marie<sub>i</sub> se<sub>i</sub> parle (à elle-même).  
 Marier CL talk to herself  
 "Marie talks to herself."  
 (5) On<sub>i</sub> ne souhaite jamais que les gens ne regardent que soi<sub>i</sub>.  
 one not wish ever that the people not look at oneself  
 "One never wishes that people look only at oneself."

French does not show the property of blocking effects even though it does show the property of long-distance binding.

With respect to the variation in the properties of binding in general and the Chinese long-distance reflexives in particular, quite a number of accounts have been proposed, for

instance, Battistella (1989), Cole, Hermon and Sung (1990), Sung and Cole (1991), Cole and Sung (1994), Huang and Tang (1991).<sup>3</sup> Different from one another in terms of technical details, these analyses have one thing in common: *ziji* moves at Logical Form (LF).<sup>4</sup> For Battistella, *ziji* moves to INFL; for Cole, Hermon and Sung who employ the concept of Barrier by Chomsky (1986), *ziji* adjoins to a head position at LF; for Huang and Tang, *ziji* adjoins to IP, a non-argument position (A').<sup>5</sup> (6), (7) and (8) illustrate the application of INFL-to-INFL movement, the INFL-to-COMP-to-INFL movement and the IP-adjunction to the sentence like (1b) respectively.

- (6) Fangfang<sub>i</sub> *ziji* INFL renwei [Lingling<sub>j</sub> t'<sub>j</sub> INFL zhidao [Yuanyuan<sub>k</sub> t'<sub>k</sub> INFL piping le t ]]
- (7) Fangfang<sub>i</sub> *ziji* renwei [ t''<sub>i</sub> Lingling<sub>j</sub> t''<sub>j</sub> zhidao [ t''<sub>j</sub> Yuanyuan<sub>k</sub> t' piping le t ]]
- (8) Fangfang<sub>i</sub> renwei [ *ziji* Lingling<sub>j</sub> zhidao [ t' Yuanyuan<sub>k</sub> piping le t ]]

In (6), *ziji* undergoes LF-movement first from the object position of the lowest clause to the INFL position of that clause, and then from the INFL position of the lowest clause to the INFL position of the intermediate clause, and finally to the INFL position of the matrix clause. In (7), *ziji* first moves to the I position of the lowest clause, then to the C position of the same clause; the same cyclic movement of *ziji* occurs at the intermediate clause and the matrix clause. In (8), *ziji* first adjoins to the IP position of the lowest clause, then to the IP position of the intermediate clause. Since they all assume that the movement of *ziji* is successive-cyclic, *ziji* ends up to be long-distance bound.

To account for blocking effects, Battistella (1989) and Cole et al (1990) appeal to the covert agreement of  $\phi$ -features in INFL. The person feature of *ziji* is merged with AGR in INFL at LF. In the process of derivation from S-structure to LF, AGR and the subject of its clause are coindexed by an agreement-checking rule. Thus, long-distance binding of *ziji* will be blocked if feature agreement between one subject and the trace is not satisfied. For Huang and Tang, they account for blocking effects by assuming that Principle A is applied at S-structure for  $\phi$ -features and at LF for R(referential)-features and

<sup>3</sup>The work by Manzini and Wexler (1987) and Wexler and Manzini (1987) is another standard treatment of binding variation in the generative framework. This approach assumes Chomsky's (1981) Principle A (i.e., An anaphor is bound in its governing category) to be a principle of UG and parameterizes the notion of governing category and that of proper antecedent. Under this approach, the binding property of a language is accounted for by the two parameters. I will not go into the details of the work since the approach is not adopted in the present study simply for the reason that it cannot explain blocking effects in Chinese which will be discussed soon. For the criticism of the approach, refer to Cole and Sung (1994) and Thomas (1993).

<sup>4</sup> These analyses stem from the work by Pica (1987). Pica claims that anaphors are defective and thus must move at LF in order to get licensed: monomorphemic X<sup>0</sup> reflexives raise into INFL by head-to-head movement and are interpreted there; while compound X<sup>max</sup> reflexives are maximal projections, so they must adjoint to X<sup>max</sup> (i.e., VP) for an interpretation.

<sup>5</sup> In their 1990 paper, Cole, Hermon and Sung assume that INFL is lexical in Chinese but functional in English. On this assumption, they argue that in Chinese but not in English VP is L-marked and then not a barrier, which renders the movement of the reflexive out of VP possible. In their 1994 paper, Cole and Sung take a different assumption. Namely, INFL is functional in both Chinese and English, but INFL becomes lexical when a lexical item such as V or N moves to INFL.

that once *ziji* gets the  $\phi$ -index from its local  $\phi$ -binder, it cannot be R-bound by a higher NP that has a different  $\phi$ -index.<sup>6 7</sup>

In contrast to the three movement approaches discussed above, Progovac (1991, 1992, 1993) proposes a relativized SUBJECT analysis for long-distance reflexives cross-linguistically. Following Yang (1983) and Pica (1987), Progovac claims that Chinese *ziji* is morphologically simple (i.e., X<sup>0</sup> reflexive) and therefore can only take X<sup>0</sup> category to be its SUBJECT which is Agreement (AGR). As is well-known, Chinese does not show overt morphological AGR, but this does not mean that AGR is missing in the language. Instead there is a null AGR and the null AGR is "anaphoric" in the sense of Borer (1989). Namely, AGR is an N-type element which is referentially dependent on the subject. Since *ziji* has to be bound to the local AGR according to the relativized principle, since the local AGR is anaphorically linked to the higher AGR which is further anaphorically linked to the highest AGR, *ziji* is automatically bound to the highest AGR by transitivity. Since AGR is coindexed to its subject, this consequently allows *ziji* to be bound to the subject in each clause.<sup>8</sup> To use Progovac's words, there is an "AGR chain" which decides the property of long-distance binding of *ziji*. As an illustration, consider example (9), which is the repetition of (1b) with all AGRs, AGR-1, AGR-2 and AGR-3 being matched in pronominal features.

- (9) Fangfang<sub>i</sub> renwei AGR-1 [Lingling<sub>j</sub> zhidao AGR-2 [Yuanyuan<sub>k</sub> piping AGR-3 le ziji<sub>i/j/k</sub>]]  
 Fangfang think Lingling know Yuanyuan criticize ASP self  
 AGR-1 = AGR-2 = AGR-3

When the features of all AGRs are not compatible with each other, the AGR chain is broken. As a result, only the local binding of *ziji* is allowed. Hence, the existence of blocking effects. Examples in (10) are the sentences in (3) with a first person subject *wo* "I" or a second person subject *ni* "you" situating in three different positions, making the intervening AGRs incompatible.

- (10) a. Wo/Ni<sub>i</sub> juede AGR-1 [Fangfang<sub>j</sub> piping AGR-2 le ziji \*i/j]  
 I/You think Fangfang criticize ASP self AGR-1≠AGR-2  
 b. Fangfang<sub>i</sub> juede AGR-1 [wo/ni<sub>j</sub> piping AGR-2 le ziji \*i/j ]  
 Fangfang think I/you criticize ASP self AGR-1≠AGR-2  
 c. Fangfang<sub>i</sub> juede AGR-1 [wo/ni<sub>j</sub> zhidao AGR-2[Yuanyuan<sub>k</sub> piping AGR-3 le ziji \*i/\*j/k]  
 Fangfang think I/you know Yuanyuan criticize ASP self  
 AGR-1 ≠ AGR-2 ≠ AGR-3

Under this approach, the property of blocking effects is logically connected with the property of long-distance binding. The crucial thing is AGR: when all the intervening AGRs match one another in person and number, the binding domain for *ziji* is unlimited;

<sup>6</sup> Huang and Tang stipulates that all NPs have both  $\phi$ -features and R-features and the monomorphemic reflexive like *ziji* has neither  $\phi$ -features nor R-features. For anaphors that do not have inherent  $\phi$ -features, the binding theory requires that  $\phi$ -features be determined at S-structure. Since *ziji* is not assigned R-features at S-structure, adjunction to IP at LF is possible and the R-features are determined there by a potential antecedent in the governing category of the reflexive.

<sup>7</sup> For criticisms of these movement approaches, see Bennett (1994), Bennett and Progovac (1993), Huang (1994) and Progovac (1993).

<sup>8</sup> From this the property of subject-orientation in (2) follows straightforwardly: when *ziji* is bound to AGR, it is bound to the subject.

when all the intervening AGRs are not matched in terms of pronominal features, the binding domain for *ziji* is restricted to where the mismatch of AGR starts.

Compared with the movement accounts, this non-movement approach also characterizes the data of long-distance reflexives across a number of languages.<sup>9</sup> Take the English reflexives *himself* and *herself* for example. Since they are morphologically complex (i.e., XP reflexives), they can only take XP categories to be their SUBJECTs which are XP specifiers such as (NP, IP) and (NP, NP), which further decides that *himself/herself* can only be short-distance bound.<sup>10</sup> As a further consequence, binding to subjects or non-subjects is allowed in English, as shown in (2a).

What is more, this approach takes language acquisition into a serious consideration and makes some interesting prediction about the acquisition of anaphors cross-linguistically in L1 and L2 (see Progovac (1993) and Bennett and Progovac (1993) for details).

The discussions above show that Progovac's approach is more explanatory and powerful in accounting for Chinese and English with respect to the phenomenon of anaphor.<sup>11</sup> Therefore, I will employ this analysis to investigate the L2 acquisition of *ziji* by non-Chinese-speaking adults.

## 2. Linguistic Theory and Language Acquisition

Over the past decade it has been generally agreed that a system of innate principles and parameters which take the form of UG mediates first language acquisition. The crucial argumentation for this claim is that if there were no such construct as UG it would be impossible to explain the logical problem--how small children finally get to master a language which is so complex that it is impossible to be derived merely from limited language evidence and little explicit instruction (Baker and McCarthy 1981, Hornstein and Lightfoot 1981). Within second language acquisition theory, it is still a controversial question whether UG is available to adults (Bley-Vroman 1989; Clahsen and Muysken 1986, 1989; du Plessis, Solin, Travis and White 1987; Gregg 1988; Schwartz 1987; White 1989, in press). However, it is generally agreed that a linguistic analysis of a certain phenomenon will allow some predictions about the L2 acquisition of that phenomenon.

In the following I will summarize some experiments on the L1 and L2 acquisition of Chinese reflexive *ziji* by small children and adults respectively.

### 2.1. Long-distance Binding of *ziji* in L1 Acquisition

The L1 acquisition of long-distance binding of *ziji* was first reported in Chien and Wexler (1987), which compares Chinese and English children's knowledge of reflexives and pronouns. Using an act-out task in a "party game", they found that Chinese children through age 6 showed a strong preference for the local binding of the bare reflexive *ziji*. In Chien et al (1993), using a picture-judgment task (whether a given picture matches a given sentence), again they found out that very few children consistently allowed *ziji* to be long-distance bound. Their explanations for the results are that either children did not move *ziji* at LF in the sense of Huang and Tang (1991) or children moved *ziji* at LF but they did not have any knowledge to transfer referential features from a higher NP to an NP in a non-

<sup>9</sup> See Progovac (1991, 1992, 1993), for detailed discussions in this aspect.

<sup>10</sup> Under this analysis, the compound reflexive *ta+ziji* in Chinese is morphologically complex, therefore it has a local antecedent, as is the case for English reflexives.

<sup>11</sup> It is not clear how this account captures the French clitic reflexive *se* which is monomorphemic but requires a local antecedent.

argument position. In Chien et al's (1994) follow-up study of children's acquisition of the subject-orientation property of *ziji*, the results indicated that unlike Chinese-speaking adults, children were willing to accept subject NP and object NP as the antecedent for *ziji*. They conclude that children lacked the movement of *ziji* at LF and therefore took *ziji* as bound at surface structure.

The work in the L1 acquisition of the Chinese anaphor has raised more questions than it has been able to answer (See Chien (1992), Chien et al (1993) for the discussions of the questions).

## 2.2. Long-distance Binding of *ziji* in L2 Acquisition

Little research has been done on the L2 acquisition of long-distance binding of *ziji* by non-Chinese speakers except two pieces of work. One is Yuan's (1992) investigation of the direction of difficulty in English-speaking adults' acquisition of Chinese long-distance *ziji* and Chinese-speaking adults' acquisition of English short-distance *himself/herself*. This study was based on the assumption that English learners of Chinese would find it easy to acquire the long-distance reflexive *ziji* with the help of language input; whereas Chinese learners of English would find it difficult to acquire the short-distance reflexives *himself/herself* because there is no positive evidence in the target language that shows English disallows reflexives to be long-distance bound. The experiment on 102 English learners of Chinese and 159 Chinese learners of English through an acceptability judgment task (with both written and oral stimulus) showed the opposite. Relevant to my purpose in this study is the findings about English-speaking learners' interpretation of *ziji*: they consistently bound *ziji* locally. Yuan concludes from this result that English-speaking learners of Chinese had difficulty in acquiring the long-distance reflexive *ziji* even though there was positive evidence in the input. He further attributes the lack of the long-distance binding of *ziji* to "fossilisation" (Cf. Selinker, 1972) in learners' interlanguage grammar.

Another work is Christie's (1992) examination of the issue whether L2 learners (including Spanish- and Chinese-speaking learners of English, English-speaking learners of Spanish and English-speaking learners of Chinese) would recognize the relationship between the binding domain and the proper antecedent in the sense of Cole et al (1990) and Sung and Cole's (1991) head movement of anaphors at LF. Regarding the interpretation of *ziji* by the English-speaking learners of Chinese, five out of seven advanced learners allowed long-distance binding and three of those five allowed binding of *ziji* to either subject or object. Christie concludes that the data from learners of Chinese is inconsistent with movement in LF, thus presenting little evidence that long-distance binding is in correlation with subject orientation in L2 learners' grammar. However, as noted by Thomas (1995), this conclusion is premature due to a narrow basis upon which the study is set.<sup>12</sup>

As will be seen in Section 3, the results obtained from the present experiment were parallel to the results reported in Yuan's study. That is, non-Chinese-speaking learners consistently chose a local antecedent for *ziji*. While the findings of my experiment seem to lend some support to Yuan's conclusion that L2 learners do not have the knowledge of long-distance binding, I will suggest that L2 learners' preference for the local antecedent for *ziji* could be an indication that Chinese reflexive *ziji* simply requires a local antecedent rather than a long-distance antecedent when it is used out of context. Therefore, the learners' interlanguages are still constrained by UG even if those learners do not show the knowledge of long-distance binding.

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<sup>12</sup> See Thomas (1995) for detailed criticisms.



### 3. Experiment

#### 3.1. Hypotheses

Given the analysis of long-distance reflexive *ziji* by Progovac (1991, 1992, 1993) which claims a logical connection between long-distance binding and blocking effects, predictions are represented by the following hypotheses for this research.

- (11) a. L2 learners would accept the long-distance binding of *ziji* since *ziji* is a simplex reflexive.
- b. If L2 learners acquire that Chinese allows *ziji* to be long-distance bound, they would automatically know that Chinese disallows *ziji* to be long-distance bound when the potential antecedents are not compatible with one another in person and number.

Hypothesis (a) predicts that through positive input in Chinese English-speaking and French-speaking learners would easily come to recognize the fact that *ziji* is morphologically simplex and that there is a syntactic AGR rather than a morphological AGR in Chinese. Once they realize these two facts, they would accept long-distance binding for *ziji*. Hypothesis (b) predicts that when the L2 learners get the knowledge of long-distance binding of *ziji*, this knowledge would automatically leads them to the knowledge that long-distance binding of *ziji* will be blocked if there is a mismatch of number/person features among potential antecedents.

Suppose hypothesis (a) does not hold, then hypothesis (b) would not either. Namely, learners know neither long-distance binding of *ziji* nor blocking effects. This possibility is logically compatible with Progovac's linguistic account. However, the other two related possibilities would not exist if Progovac's account were correct: (i) learners have the knowledge of long-distance binding of *ziji*, but no knowledge of blocking effects; (ii) learners do not have the knowledge of long-distance binding of *ziji*, but they know blocking effects.

#### 3.2. Subjects

Subjects for this experiment were 17 non-Chinese-speaking adult learners of Chinese of whom 8 had English as their L1 and 9 had French as their L1 (they all spoke good English). All of them (except two) were taking a Chinese course at McGill University or at the University of Montreal, Canada. Of the 17 subjects, there were eight Chinese-major students at the above two universities, two engineering students, one linguistics student and four graduate students majoring in Chinese studies at the Department of East Asian Studies, McGill (for detailed information about the subjects, In addition, there was a control group of 28 educated Chinese native speakers (most of them were graduate students of science at McGill University or at the University of Montréal, some were their spouses). All the subjects' Chinese proficiency was above the intermediate level by an independent measure of cloze test designed for this study. While the English subjects were significantly lower than the controls ( $F=5.83, P<.05$ ), and the French subjects significantly lower than the controls ( $F=4.163, P<.05$ ), no difference showed up between the two groups of L2 subjects in terms of Chinese proficiency ( $F=.127, P=.7267$ ).

#### 3.3. Task

A written stimulus-question-answer task was used to explore L2 learners' interpretation of *ziji*. In this task there was a statement like *Wang Xianshen shuo Li Xianshen zhidao ziji de taitai hen piaoliang* "Mr. Wang said that Mr. Li knew that self's wife was very beautiful", followed by a question *Gengju Wang Xianshen de guan dian, Wang Xianshen de taitai hen piaoliang ma?* "According to Mr. Wang, was Mr. Wang's wife very beautiful?" Subjects were then required to judge, by circling *shi* "yes", *bu* "no" or *bu qingchu* "not clear", whether the question raised out of the given statement was true or not. This was actually a kind of truth-value judgment task which was designed to elicit subjects to make a grammaticality judgment about certain structures without their conscious focus on sentence forms.<sup>13</sup> This way, subjects' answers indirectly reflected their interpretation of *ziji*.

The test had two parts: Part 1 was related to long-distance binding of *ziji* including four types of structures with five tokens for each type (n=20). All the four types of structures involve three finite clause, but *ziji* takes four different positions in the local clause: (i) as the subject; (ii) as the subject modifier; (iii) as the object; (iv) as the prepositional object. The first two types of structures of *ziji* were purposefully chosen in addition to the structures which have *ziji* appearing as the object of a verb or the object of a preposition so that learners' interpretation of *ziji* in various positions can be compared. All the sentences in this part require a YES answer. In other words, an interpretation of long-distance binding for *ziji* is forced on the subject.

Part 2 was related to blocking effects. There were four types of structures with five tokens for each type (n=20). All the sentences in this part were the same as those in Part 1 except that the subject in the intermediate clause was either a first person or a second person NP. There were ten sentences with a first person NP as the subject of the intermediate clause (five in its singular form, and five in its plural form); the other ten sentences had a second person NP as the subject of the intermediate clause (five in its singular form and five in its plural form). An interpretation of local binding for *ziji* is forced on the subject. All the sentences in this part require a NO answer.

The verbs used in the test were controlled: the verb in the matrix clause was *shuo* "say" and the verbs in the intermediate clause were *zhidao* "know" and *faxian* "find out". With four distracters which also involved *ziji*, altogether there were 44 sentences. (12a) is a test example of the long-distance binding in Part 1 and (12b) is a test example of blocking effects in Part 2.

- (12) a. S: John shuo Tom zhidao ziji chenggong le  
           say      know self succeed ASP  
           "John said that Tom knew that self succeeded"
- Q: Gengju John de guandian, John chenggong le ma?  
           according to John DE viewpoint succeed ASP Q-marker  
           "Did John succeed according to John?" (Y)
- b. S: John shuo ni zhidao ziji chenggong le  
           say you know self succeed ASP  
           "John said that you knew that self succeeded"
- Q: Gengju John de guandian, John chenggong le ma?  
           according to John DE viewpoint succeed ASP Q-marker  
           "Did John succeed according to John?" (N)

<sup>13</sup> Chien et al (1993; 1994) uses a truth-value task to investigate knowledge of binding principles in L1 acquisition; Bruhn-Garavito (1993), Thomas (1995) and White (In press, 1994) use truth-value story task in L2 acquisition.

### 3.4. Procedure

Subjects were tested individually. Test instructions were given in written Chinese but an oral English explanation was also provided so as to ensure that subjects understood what they were expected to do in the test. A bilingual list of vocabulary including proper names, new words and expressions used in the test was given to the subjects and they could study it before the test or consult it during the test. This preparation was meant to reduce subjects' possible difficulty in doing the test, which could be caused merely by their unfamiliarity with the words used in the test. The test did not start until the subject thoroughly understood what s/he was required to do after trying two examples. Although *bu qingchu* "not clear" was allowed as a possible answer, subjects were instructed to avoid choosing it unless they really had difficulty in making a judgment based on the given statement. The testing was not timed but most of subjects finished the task within an hour, for which they were paid 10 Canadian dollars.

### 3.5. Results

Recall that the question which forces an interpretation of long-distance binding of *ziji* requires a YES answer. But as a matter of fact, the majority of Chinese native speakers provided a NO answer. In other words, they bound *ziji* locally rather than long-distance. Since the Chinese natives were used as a control in this test, I took their judgment as a standard criterion to examine the two groups of learners' judgment. Put another way, I consider the learners' answers to be correct only if they are in agreement with the answers given by the majority of controls regardless of the fact whether the majority has 50% or more than 50% of people. With this method, Table 1 presents the majority of Chinese natives' answers to the questions in Part 1 and the answers by the two groups of learners. Together in the same table are the answers (under the column ExpAns) given by the native controls which indicates that there is a small number of Chinese speakers who accepted long-distance binding of *ziji*.

Table 1: Answers to Questions about LD Binding by all Subjects (%)

| Type I: <i>ziji</i> as S, e.g., John said Mary knew self succeeded                |           |        |         |              |              |
|---|-----------|--------|---------|--------------|--------------|
| SenNo   | ExpAns    | ActAns | Control | English      | French       |
| 6   | (Y 21.43) | N      | 64.29   | 62.50        | 88.89        |
| <u>15</u>   | (Y 17.86) | N      | 67.86   | 50.00        | <u>22.22</u> |
| 31  | (Y 0 )    | N      | 85.71   | 100          | 66.67        |
| <u>34</u>   | (Y 35.71) | N      | 53.57   | <u>37.50</u> | 55.56        |
| <u>39</u>   | (Y 35.71) | N      | 57.14   | <u>25.00</u> | 44.44        |
| Type II: <i>ziji</i> as SM, e.g., Helen said Jack thought self's Chinese was good |           |        |         |              |              |
| SenNo   | ExpAns    | ActAns | Control | English      | French       |
| 13  | (Y 14.29) | N      | 46.43   | 50.00        | 44.44        |
| 18  | (Y 25.00) | N      | 57.14   | 75.00        | 55.56        |
| <u>21</u>   | (Y 10.71) | N      | 57.14   | 75.00        | <u>22.22</u> |
| 33  | (Y 22.22) | N      | 51.85   | 62.50        | 44.44        |
| 38  | (Y 28.57) | N      | 60.71   | 50.00        | 55.56        |

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 Type III: *ziji* as O, e.g., James said Tom knew John annoyed self  
 -----

| SenNo | ExpAns    | ActAns | Control | English | French |
|-------|-----------|--------|---------|---------|--------|
| 10    | (Y 17.86) | N      | 75.00   | 100     | 66.67  |
| 22    | (Y 14.29) | N      | 78.57   | 75.00   | 66.67  |
| 23    | (Y 25.00) | N      | 57.14   | 75.00   | 55.56  |
| 29    | (Y 35.71) | N      | 57.14   | 62.50   | 66.67  |
| 40    | (Y 17.86) | N      | 75.00   | 87.50   | 55.56  |

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 Type IV: *ziji* as PO, e.g., Jane said Mary knew Susan made an address for self  
 -----

| SenNo | ExpAns    | ActAns | Control | English | French |
|-------|-----------|--------|---------|---------|--------|
| 3     | (Y 17.86) | N      | 75.00   | 62.50   | 66.67  |
| 5     | (Y 21.43) | N      | 60.71   | 62.50   | 55.56  |
| 16    | (Y 17.86) | N      | 78.57   | 85.71   | 77.78  |
| 30    | (Y 14.29) | N      | 75.00   | 100     | 77.78  |
| 42    | (Y 14.29) | N      | 75.00   | 75.00   | 66.67  |

Table 1 shows that except some sentences (Sentences 15, 34, 39, 21) all the learners had judged as the majority of controls did: they chose NO answer to the question which expects a YES answer according to the theory assumed here. The exceptional cases in which less than 40% of the learners chose the NO answers to the YES questions are mainly caused by the big number of subjects who chose NOT CLEAR. Sentence 13 was an exception for controls. For this sentence, 39.29% of controls chose NOT CLEAR and 14.29% of them chose YES. I do not have any explanation for this phenomenon.

From Table 1 we can see that both English-speaking and French-speaking learners preferred to bind *ziji* locally instead of long-distance. Since the Chinese native controls also consistently bound *ziji* locally, we need to be very cautious in interpreting these data. These results seem to indicate that the learners transferred the local binding of anaphor from L1 to L2, and that they had no knowledge of long-distance binding of *ziji*.

Recall that the question which involves blocking effects requires a NO answer. Most of the controls provided a NO answer to the NO question with the intervening non-third person NP. Using the controls' judgment as a criterion, Table 2 shows the judgment of blocking effects by all subjects.

Table 2: Answers to Questions about Blocking Effects by all Subjects (%)

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 Type I : *ziji* as S, e.g., John said you knew self succeeded  
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| SenNo | ExpAns    | ActAns | Control     | English | French |
|-------|-----------|--------|-------------|---------|--------|
| 26    | (N)       | N      | 89.29       | 87.50   | 55.56  |
| 4     | (N)       | N      | 64.29       | 50.00   | 55.56  |
| 14    | (N)       | Y      | 42.86/42.86 | 50      | 33.33  |
| 44    | (N)       | N      | 71.43       | 25.00   | 55.56  |
| 19    | (N 32.14) | Y      | 57.14       | 50.00   | 66.67  |

-----  
 Type II: *ziji* as SM, e.g., Helen said I thought self's Chinese was good  
 -----

| SenNo     | ExpAns    | ActAns | Control      | English      | French       |
|-----------|-----------|--------|--------------|--------------|--------------|
| <u>1</u>  | (N)       | N      | <u>21.43</u> | <u>37.50</u> | <u>44.44</u> |
| 41        | (N)       | N      | 53.57        | 50.00        | 44.44        |
| <u>11</u> | (N 28.57) | Y      | 46.43        | 75.00        | <u>22.22</u> |
| <u>32</u> | (N 21.43) | Y      | 53.57        | 50.00        | <u>44.44</u> |
| <u>24</u> | (N 28.57) | Y      | 57.14        | 50.00        | <u>33.33</u> |

-----  
 Type III: *ziji* as O, e.g., James said you knew John annoyed self  
 -----

| SenNo | ExpAns | ActAns | Control | English | French |
|-------|--------|--------|---------|---------|--------|
| 27    | (N)    | N      | 82.14   | 75.00   | 77.78  |
| 7     | (N)    | N      | 85.71   | 87.50   | 88.89  |
| 43    | (N)    | N      | 64.29   | 62.50   | 44.44  |
| 35    | (N)    | N      | 48.15   | 62.50   | 50.00  |
| 37    | (N)    | N      | 75.00   | 87.50   | 66.67  |

-----  
 Type IV: *ziji* as PO, e.g., Jane said we knew Susan made an address for self  
 -----

| SenNo | ExpAns | ActAns | Control | English | French |
|-------|--------|--------|---------|---------|--------|
| 20    | (N)    | N      | 89.29   | 75.00   | 77.78  |
| 28    | (N)    | N      | 85.71   | 87.50   | 77.78  |
| 25    | (N)    | N      | 82.14   | 62.50   | 88.89  |
| 9     | (N)    | N      | 71.43   | 75.00   | 77.78  |
| 2     | (N)    | N      | 75.00   | 50.00   | 66.67  |

There are five exceptional cases (Sentences 14, 19, 11, 32 and 24) in which only around 50% or less than 50% of controls and L2 learners gave YES answers to the NO questions. The reason why such results showed up is that all these five sentences involved the intervening first-person NP in its singular form in the intermediate clause. Since the first-person NP in singular form sounds similar to the direct speech, subjects might be affected by the confusion of the two structures. Sentence 14 is a marginal case: excluding those (14.29%) who chose NOT CLEAR, half (42.86%) of the controls chose YES and half (42.86%) chose NO. Sentence 1 is also problematic, because this was the first item in the test and the intermediate subject was a singular second-person.

On the whole, the two groups of learners consistently bound *ziji* locally when the intermediate subject was inconsistent with the local subject in terms of AGR. These results suggest two possibilities: (i) the learners chose the local antecedent for *ziji* because of language transfer, implying that they did not know blocking effects; (ii) the learners bound *ziji* locally because they noticed the blocking factor of the non-third person in the intermediate clause, suggesting that they knew blocking effects. I will discuss these two possibilities in the next section.

Since the relationship between the knowledge of long-distance binding of *ziji* and the knowledge of blocking effects is of particular concern in this study, a correlation test was run between subjects' judgment on sentences in Part 1 and their judgment on sentences in Part 2. As given in Table 3, the results show that for each type of testing structure there was a negative correlation between the two for all the subjects. This means that either the subjects did not know long-distance binding of *ziji* but knew blocking effects, or they knew long-distance binding of *ziji* but did not know blocking effects.

Table 3: Correlation between LD and Blocking Effects by all Subjects

|          | I: LD -- BL | II: LD -- BL | III: LD -- BL | IV: LD -- BL |
|----------|-------------|--------------|---------------|--------------|
| Controls | -.311       | -.36         | -.359         | -.44 *       |
| English  | -.357       | -.637        | .938 **       | -.715 *      |
| French   | -.649       | -.448        | -.44          | -.491        |

\*P&lt;.05 \*\*P&lt;.001

Table 4 presents ANOVA results of the overall judgments on long-distance binding and blocking effects among all the three groups of subjects. There was no significant difference between controls and English subjects, no significant difference between controls and French subjects and no significant difference between English and French subjects.

Table 4: ANOVA Results for LD Binding and Blocking Effects Among Subjects

|                           | Long-distance Binding |                  | Blocking Effects |                  |  |
|---------------------------|-----------------------|------------------|------------------|------------------|--|
| Control<br>vs.<br>English | Type I                | F=.844, P=.3647  | Type I           | F=3.314, P=.0775 |  |
|                           | Type II               | F=.049, P=.8254  | Type II          | F=.773, P=.3853  |  |
|                           | Type III              | F=.205, P=.653   | Type III         | F=.124, P=.7271  |  |
|                           | Type IV               | F=.186, P=.699   | Type IV          | F=.756, P=.3908  |  |
| Control<br>vs.<br>French  | Type I                | F=1.117, P=.2977 | Type I           | F=1.019, P=.3198 |  |
|                           | Type II               | F=.838, P=.3664  | Type II          | F=1.269, P=.2676 |  |
|                           | Type III              | F=.056, P=.814   | Type III         | F=.277, P=.6019  |  |
|                           | Type IV               | F=1.148, P=.2914 | Type IV          | F=.042, P=.8397  |  |
| English<br>vs.<br>French  | Type I                | F=.006, P=.9389  | Type I           | F=.175, P=.6818  |  |
|                           | Type II               | F=.166, P=.6896  | Type II          | F=0.059, P=.812  |  |
|                           | Type III              | F=.053, P=.8217  | Type III         | F=.478, P=.5001  |  |
|                           | Type IV               | F=1.12, P=.3067  | Type IV          | F=.214, P=.6503  |  |

To sum up, the results obtained from the present experiment are the following: (i) the learners consistently bound *ziji* locally throughout the test; (ii) the learners provided their judgments just as the native controls did with regard to the sentences involving long-distance binding of *ziji* and the sentences involving blocking effects; (iii) the English learners of Chinese were not significantly different from the French learners of Chinese regarding their interpretation of *ziji*.

#### 4. Discussions

The data reported above reveal that learners accepted only local binding. That is, they bound *ziji* locally for sentences which are assumed to require a long-distance binding and they bound *ziji* locally for sentences with blocking effects which are assumed to require a local binding. As mentioned in the previous section, the L2 learners' consistent choice of the local binding for sentences involving the long-distance binding in Part 1 suggests that these learners tested in the study had no knowledge of long-distance binding of *ziji*. This seems true. In terms of the learners' consistent choice of the local binding for sentences involving blocking effects in Part 2, the data could be interpreted in two ways: (i) they did not know blocking effects because of transfer; (ii) they knew blocking effects because they

realized the mismatch of pronominal features in the intervening antecedents. In the following I will discuss these two possibilities.

It is reasonable that if learners have not yet acquired the knowledge of long-distance binding, then we cannot expect them to know blocking effects. This is because the acquisition of blocking effects is the acquisition of long-distance binding plus the realization of the pronominal feature conflicts in the potential antecedents. This falls into the prediction by Progovac's account concerning the L2 acquisition of anaphor. What is not logical is that learners do not know long-distance binding of *ziji*, but they know blocking effects. This is because learners start with the local binding for *ziji*, and therefore there would be no long-distance domain for learners to narrow down to short-distance domain. Thus, it can be claimed that learners cannot obtain any knowledge of blocking effects if they have not shown long-distance binding.

As matter of fact, among those few learners (24.26 %) who accepted the interpretation of long-distance binding of *ziji*, only 9.31% chose the right answer to the questions concerning blocking effects. This indicates that the learners tested in this experiment did not possess the knowledge of blocking effects.

Now we may conclude that the L2 learners in this study had neither knowledge of long-distance binding of *ziji* nor knowledge of blocking effects. These findings are against Hypothesis (a) but in favor of Hypothesis (b). It is not surprising that the learners did not have the knowledge of blocking effects if they did not have the knowledge of long-distance binding, since the former rests upon the latter. But it is surprising that the learners did not have the knowledge of long-distance binding of *ziji*, given the fact that there was enough positive evidence in the language input which shows that *ziji* is morphologically simplex in Chinese.

What has made it so difficult for the learners to extend the local domain to the long-distance domain for *ziji*? Why is positive evidence not sufficient enough to trigger the long-distance domain? To answer these questions, I'd like to suggest an alternative to interpret the data concerning the consistent preference for the local binding of *ziji*. My claim is that *ziji*, when used out of a clear context, might require a local antecedent as a default interpretation, even though it can be grammatically bound long-distance. The argumentation for this claim is as follows.

First, it is possible that at the beginning stage, L2 learners transferred the local domain of anaphor in their L1 to L2 while judging Chinese sentences with *ziji*. That is, the English learners considered *ziji* to be the same as *himself/herself* in English and the French learners mistook *ziji* to function more or less like *se* in French. As a result, local binding was favored. If this argumentation were correct, then how to explain the results from the Chinese native controls? Can it be argued that the Chinese speakers considered *ziji* to be phrasal reflexives like pronoun + *ziji* and thus treated *ziji* as the local anaphor *ta ziji*? Given that it has been repeatedly reported in almost all the relevant studies (i.e., Chien et al 1987; Chien et al 1993; Chien et al 1994; Yuan 1992) that most of Chinese native speakers tested also consistently bound *ziji* locally, it is most likely that what has been reported in the literature regarding the syntactic behavior of *ziji* may not be completely accurate. To put it more precisely, *ziji* can be grammatically bound by the long-distance antecedent as well as the local one, but when it appears in an isolated sentence without a context, it behaves more like a local reflexive. Therefore, the default interpretation of *ziji* is a local anaphor unless a given context forces it to have an antecedent beyond its local domain. Hence, both the L2 learners and controls liked to bind *ziji* locally.

Second, there is some evidence for this attempted claim from the thinking-aloud from the subjects in this study. When asked whether *ziji* could refer to the antecedent in the higher or the highest clause, most subjects replied that *ziji* could refer to the antecedent in the higher or the highest clause, but since there was no pragmatic context that forces this reading, it would be unambiguous and better for *ziji* only to refer to the nearest antecedent. This brings up issues of pragmatics. To examine how pragmatics will work in this aspect is beyond the scope of this study. But the crucial implication from the findings

is that pragmatic factors should not be ignored when Chinese reflexivization is examined. For a pragmatic theory of Chinese anaphors, see Huang (1994).

Some questions arise in here: what has made *ziji* show a nature of local anaphor when it is presented in an isolated sentence? Could there be any modular difference in terms of the presentation of *ziji* in the task: the written stimulus might arouse a default interpretation of local anaphor *ziji* but the oral stimulus with a certain stress pattern might change this default interpretation? I do not have answers to these questions.

Two more questions need to be addressed. First, what is the role of L1? Does it crucially affect the learners in their interpretation of *ziji*? Second, are the learners' interlanguage grammars UG-sanctioned?

The answer to the first question would be NO. As suggested by Table 4, no significant differences showed up between the English-speaking learners of Chinese and the French-speaking learners of Chinese, even though English differs from French in terms of binding domain. If L1 plays an essential role, we should have expected the English learners of Chinese had done worse than the French learners of Chinese, since English only requires a short-distance binding whereas French has a mixture of both long-distance and short-distance binding. If my previous argumentation were on the right track that the Chinese reflexive *ziji* behaves like a local anaphor than a long-distance one, then the issue of "fossilisation" brought up by Yuan (1992) is not relevant.

While the L2 learners did not do as expected by the theory assumed here, their interlanguage grammar did not appear to be a wild grammar. The results present a very clear pattern: consistent preference for the local binding for the sentences which allow a long-distance binding and consistent preference for the local binding for the sentences which involve blocking effects. This pattern shows that the L2 learners' interlanguage is actually constrained by UG. This is how binding works in many languages. Furthermore, the similar performance by the two groups of learners also indicates that UG plays a role in mediating the acquisition of *ziji*.

## 5. Conclusions

I started this study by asking the question whether there might be a clustered connection between L2 learners' knowledge of long-distance binding of *ziji* and their knowledge of blocking effects. This question was examined by experimenting on two groups of non-Chinese-speaking adults learning Chinese as a second language. The results show that the L2 learners preferred to bind *ziji* locally and they did not know blocking effects. These findings suggest that *ziji* may not be a perfect long-distance anaphor as described in the literature of the government and binding framework since it requires a local antecedent for a natural interpretation. It is also suggested by this study that while learners did not show the knowledge of long-distance binding, their interlanguages are constrained by UG.

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