The Acquisition of Some Properties of the BA Construction by Englishspeaking Learners of Chinese

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There have been numerous studies on the linguistic properties of the BA construction in Mandarin Chinese and the semantic meanings of this construction. However, there have not been as adequate studies on the acquisition of the BA, especially by L2 Chinese learners. This study examines the acquisition of some linguistic properties of the BA construction by the nature of those properties: some are pure syntactic, some involve knowledge from the interface of two domains: syntax and semantics. The results indicate that L2 Chinese learners' performance on properties in the core syntax domain is significantly better than on those at the syntax-semantics interface. However, this advantage is not consistent cross the core syntax domain. L2 Chinese learners' performances within the core syntax domain are significantly correlated but at different accuracy levels.

1. Introduction

The BA construction is a unique yet important construction in the grammar of Mandarin Chinese. It is a very commonly used construction in Chinese people's daily speech. The BA construction was also listed by the well-known Chinese linguist L. Wang as one of the five major changes in Chinese grammar over history (1958). This construction has aroused huge research interest among linguists who are interested in Chinese grammar. There has been numerous research on the linguistic properties of the BA construction, with every possible element of this construction being examined. However, there has always been debate over those issues due to some "difficult-tocharacterize, fuzzy" constraints that this construction has (A. Li, 2001, p.1). This construction has also imposed enormous difficulties when it is acquired by L2 Chinese learners. In spite of its notorious difficulties being well-observed by the instructors and learners, there has not been adequate research on the acquisition of the BA construction by L2 learners. Previous studies examined this issue either focusing on a subsection of the BA sentences or some properties/constraints without giving any justification why certain properties were chosen but others were not. This study examines the acquisition of some properties of the BA construction by the nature of those properties. This perspective was inspired by the Interface Hypothesis proposed by Sorace (2005, 2009), who proposes that the final attainment of a property in the target language varies in terms

of the nature of the property. The properties that belong to the pure syntax domain are fully acquirable in L2 acquisition, especially in the final attainment. However, the acquisition of the properties which require the integration of knowledge from syntax and other domain is more problematic. It presents "residual optionality in L2" (Sorace, 2005, p.56).

The goal of this study is to compare L2 Chinese learners' knowledge on some properties of the BA construction which belong to the "core" syntax domain with other properties which belong to the interface of syntax and semantics. By looking at the BA properties in terms of their nature, we are more likely to get a more general picture of L2 learners' difficulties. A better understanding on this issue can further facilitate classroom instruction by making it more targeted.

1.1 Properties of the BA construction

Many studies have examined the linguistic properties of the BA construction. Observations as well as proposals have been made to generalizing the properties and constraints that this constriction has. However, despite of numerous proposals, little consensus has been reached. This study will only focus on several properties that are true to most of the typical and frequently-used BA sentences, since the purpose of this study is to indentify the particular difficulties encountered by L2 Chinese learners.

In this study, two properties that belong to the core syntax domain and one that belong to the syntax-semantics domain were chosen. Two pure syntax properties were chosen instead of one is to examine if what Sorace proposes as "fully acquirable" properties are equally well-acquired by L2 learners. Some studies (Yuan, 2010, for example) claim that the acquisition of an interface property is not "domain-wide", but rather "variable-dependent".

1.1.1 Core syntax properties of the BA construction

Two core syntax properties were investigated in this study. The first is the non-canonical word order of the BA construction (the word order constraint). A regular Chinese sentence takes the SVO order: the subject goes first, followed by a verb phrase, and the object takes the postverbal position. However, in a BA sentence, the noun phrase introduced by BA (the Ba-NP) always goes before the verb. 1)a is an example of a regular Chinese SVO sentence, in which the object *his car* follows the verb phrase *mai le*. However, in a BA sentence, the object *his car* cannot stay in the postverbal position, as in 1)b, but must move to the preverbal position as in 1)c:

It is agreed in the literature that the predicate in a BA sentence cannot be a verb by itself (also referred to as a bare verb), it must take another grammatical unit (the X element from now on) (S. Lu, 1980; Sybesma, 1992; Liu, 1997; A. Li, 2001). This constraint is referred to as the complex verb constraint in this study. The postverbal X element in a BA sentence can be realized in different forms. One of the most typical forms that the X element takes in a BA sentence is a resultative complement, which "refer to the state, degree, accomplishment, achievement, or effect of the action" (Shi, 2002, p. 29). Another form that the X element frequently takes is a propositional phrase to denote destination. A propositional phrase like this usually follows a verb which denotes displacement of objects, as the following example illustrates:

2) ta ba shu fang zai zhuo shang. He BA book put at desk on 'He put the book on the desk.'

In 2), the proposition *zai* takes *zhuo shang* to for the complement of destination, and goes with the displacement verb of putting. In the tokens that target at the complex verb constraint, the X element only takes the form of a resultative complement or a propositional phrase.

1.1.2 Semantic property of the BA construction

Although most BA sentences have a non-BA counterpart, that is, a regular SVO sentence, they are not interchangeable under certain contexts. The BA construction implies some semantic properties and there are semantic constraints for a BA sentence to be acceptable. Like there is no agreement on the forms that the X element can take, there has also been debate on the semantic properties that the BA construction indicates. Some of the most well-known accounts include the disposal account, the causation account, and more recently, the displacement account. This study will stick with the affectedness account (A. Li 2001), which modifies the original disposal account and regards the BA construction as a "highly transitive" construction, in which the verb extends "a high degree of affectedness" on the object (p. 46), as the following example illustrates:

'I filled the pot with water.'

guozi li. b. wo ba shui zhuang zai I BAwater fill pot in. at 'I filled the water into the pot.' (example from A. Li, 2001, p. 46)

In 3)a., the pot, which is the BA NP, is affected in the sense that now it has water; whereas in 3)b., the water, which is the BA NP, is affected in the sense that its location has changed by being in the pot now.

1.2 Previous studies on the acquisition of the BA construction by L2 learners

Compared with the rich literature on the linguistic properties of the BA construction, studies on the acquisition of the BA construction by L2 Chinese learners are scarce.

In her study, Jin (1992) examined L2 Chinese learners' performance on the BA sentences in terms of the definiteness of the BA NP, the topicality of the BA NP, and the disposability of the VP. Her study indicates that there are clusters of BA sentences in terms of their learnability to L2 Chinese learners. Some BA sentences are acquirable to L2 Chinese learners cross all levels. On the contrary, some BA sentences seem to be beyond L2 Chinese learners at all levels in her study. Other BA sentences are acquired better with learners at higher proficiency levels. This variation in the BA acquisition is insightful.

Zhang (2002) examined the developmental process in the acquisition of the BA construction by L2 Chinese learners by testing their performance on six properties of the BA construction. She claims that there is a U-shaped developmental pattern in the BA acquisition, which is observed across all properties. An acquisition order of those properties was also proposed. However, there is no justification on the choice of these properties. Nor is there any explanation on the role each property plays in the BA construction.

Du (2004) examined the acquisition of two specific constraints on the BA construction by testing L2 learners' comprehension and production of the BA construction. The results indicate that the L2 Chinese learners performed better in accepting grammatical BA sentences than in rejecting ungrammatical BA sentences. L2 Chinese learners produced fewer BA sentences than native speakers of Chinese, however, their production achieved a high accuracy.

In her cross-sectional study, Wen (2010) examined L2 Chinese learners' performance on a sub-section of BA sentences (the displacement BA sentences). The results indicate that both frequency and accuracy of the BA construction usage increase as the proficiency level increases.

Quite different from what the scholars in the U.S. have done, scholars in Mainland China mainly investigated the acquisition of the BA construction by looking at L2 Chinese learners' performance at different types of BA sentences listed by linguists in Chinese. There are not many experimental or quasi-experimental studies. Many studies examined corpus-based data or data collected from learners' essays, exams and so forth. These error-analysis type of studies provides us with different pieces of the whole picture. However, a more systematic way is called for to gain a more comprehensive understanding of the issue.

The present study examined the acquisition of three specific constraints on the BA construction, namely the word order constraint, the complex verb constraint, and the affectedness on the BA NP constraint. These constraints differ in nature in terms of the knowledge they call for. The first two call for syntactic knowledge, whereas the last one calls for the knowledge from syntax and semantics. The specific research questions that this study examined are: 1) How well have the L2 Chinese learners acquired the core syntax properties and the interface properties at syntax-semantics? Is their performance native-like? Is there any difference between their performances in the two domains? 2) Within the core syntax domain, is L2 Chinese learners' performance consistent?

According the Interface Hypothesis, the acquisition of the core syntax properties is predicted to be native-like, whereas the acquisition of the syntax-semantics interface is not. It is also predicted there will be a significant difference between these two domains. However, the Interface Hypothesis was proposed on the basis of very advanced level L2 learners or bilinguals. Non-native-like performance in the core syntax domain may be observed since the L2 Chinese learners recruited for this study were mostly at intermediate level.

2. Method

This section introduces the design of this study. First of all, the subjects of this study will be introduced, which is followed by an introduction of the method and procedure used to collect data. The data coding criteria will also be introduced.

2.1 Subjects

There are two groups of participants involved in this study: English-speaking learners of Chinese (the L2 group hereafter), and native speakers of Chinese (the NS group hereafter). The L2 group is the target of this study, and the NS group serves as the control group, which provides a baseline of comparison.

Thirty-two English-speaking learners of Chinese participated in this study. The participants were recruited on a voluntary basis from students who were learning Chinese at a large university in the mid-west at the moment when this study was conducted. Most of them were second-year or third-year Chinese learners. Proficiency is not controlled as a factor, however, a proficiency test was given to all of the L2 group participants. A survey was conducted among the L2 group on their background information as learners

of Chinese, such as the age of onset of Chinese learning, length of Chinese learning, length of residence in Chinese-speaking communities, out-of-class exposure to Chinese, and so on. A brief summary of participants' information is presented in Table 1.

Table 1: Background	Information	of the L2	Group	Participants

Demographic features	Mean (range in	S.D.	
	parenthesis)		
Gender	F=16; M=16	n/a	
Age	22.7 (19-40)	4.2	
Age of onset of learning	19.6 (14-27)	3.1	
Length of learning	3.1 years (1-8)	4.2	
Residence in	0.5 years (0-7)	1.4	
a Chinese-speaking region			

Among all of the L2 participants, 59.4% of them were enrolled in Level II Chinese when this study was conducted; 31.2% of them were enrolled in Level III Chinese; 9.4% were enrolled in Level IV Chinese. Twenty-nine of them (90.6%) started to learn Chinese after 18. Twenty-five of the participants (78.1%) do not have any experience of living in a region where Chinese is spoken as a native language.

Twenty native speakers of Chinese participated in this study. They were undergraduate students at a university in the south-east part of China. The NS group participants were also recruited on a voluntary basis. The proficiency test was also given to the NS group participants so that it could provide a baseline for comparison. The NS group participants were asked to finish a brief survey on their experience of using Mandarin Chinese if they speak another dialect. All the NS data was collected in that university in China.

2.2 Materials

This study employs a grammaticality judgment task to elicit subjects' knowledge on the target properties of the BA construction. This section describes the selection of the tokens and the design of the task.

The grammaticality judgment task was employed for a couple of reasons. First, it makes it possible to collect sufficient data within a short period of time. Secondly, it allows us to tab on subjects' knowledge of a particular property from both sides: to accept grammatical ones and to reject ungrammatical ones.

The grammaticality judgment task used in this study consists of grammatical and ungrammatical sentences which represent the target properties: the word order constraint, the complex verb constraint, and the affectedness on BA NP constraint. There are altogether 80 sentences (tokens) in this task. The distribution of the tokens is shown in Table 2.

Table 2. Distribution of Tokens in the Grammaticality Judgment Task

Target properties	Grammatical tokens	Ungrammatical tokens
Word order constraint	8	8
Complex verb constraint	8	8
Affectedness constraint	8	8
Distracters (regular SVO)	16	16

Each constraint is represented by eight minimal pairs of sentences. A minimal pair consists of a grammatical sentence and its ungrammatical counterpart, which is identical with the grammatical one except for the target property. For example, a minimal pair that targeted at the word order constraint is as follows:

4)a. and 4)b. use exactly the same phrases. The only difference lies in the word order of the BA NP and the verb phrase. If a subject correctly accepts the grammaticality sentence and rejects the ungrammatical one in a minimal pair like 4), it is assumed that the target property has been acquired.

Thirty-two Chinese sentences in the canonical SVO order were used as distracters to keep the target properties from being obviously revealed to the subjects. On the other hand, in order not to "overdistract" the participants, those SVO sentences are limited to those with verb complements of potential. Sixteen of the sentences are grammatical sentences with potential complements, and the rest are their ungrammatical counterparts.

The vocabulary used in this task is largely limited to the words the subjects have learned so far. For those words (only a few) that might be new to some subjects were given a brief definition in English.

2.3 Procedures

The tokens in the grammaticality judgment task were put into two blocks, with each sentence of a minimal pair in one block. As a result, each block has 24 target sentences and 16 distracters, with 20 grammatical sentences and 20 ungrammatical ones. For each participant, the sentences in each block were presented in a random order. In order to eliminate the effect of task order, each subject was randomly assigned to do block 1 or block 2 first.

The sentences were presented in the form of an untimed slide show by using *Paradigm*, a software program designed for experimental studies in behavioral science. All of the sentences were presented in Chinese characters, with Pinyin above each character. A simplified characters version and a traditional characters version were provided. The subjects got to choose one of them. In doing so, the possible impact from students' unfamiliarity with the characters has been eliminated.

After reading the task instructions, the subjects were also given two trials before the real task began so that they could get familiar with the task. During the task, the subjects read one sentence on the screen, made judgment by clicking a corresponding box, and then the next sentence was shown on the screen. Subjects were forced to take a rest between two blocks, but they were also allowed to take a rest during the process of one block if they requested.

In the grammaticality judgment task, the subjects got one score for each correct judgment they made and got zero for each wrong judgment. Their total score for each target property was divided by possible total score and resulted in a percentage of the accuracy rate.

3. Results

This section presents the descriptive results of this experiment as well as the results of the statistical analysis conducted to get more information from this experiment.

3.1 L2 learners' acquisition of the core syntax properties vs. syntax-semantics interface properties

The results of the L2 group subjects' performance on the core syntax properties and the syntax-semantics interface property in terms of accuracy rate are presented in Table 3. The accuracy rates on the core syntax properties were obtained by averaging the accuracy rates on the word order constraint and the complex verb constraint. The results from the NS group were also presented for comparison.

Table 3. Accuracy Rates (%) on Core Syntax Properties vs. Syntax-semantics Interface Properties (the L2 group (N=32); the NS group (N=20))

Properties	Mean		Range		S.D.	
	NS	L2	NS	L2	NS	L2
Core syntax	98.9	81.0	93.9-100	59.4-	2.1	10.7
				96.9		
Syntax-semantics	97.2	69.5	87.5-100	50-88	4.3	11.4

As the descriptive statistics in Table 3 shows, the NS group in this study scored a mean accuracy rate of 98.9% (SD=2.1) on the core syntax properties of the BA construction. They scored a mean accuracy rate of 97.2% (SD=4.3) on the syntax-

semantics properties of the BA construction. The statistics indicate that there is not much variation among native speakers' response to the properties from both the core syntax domain and the syntax-semantics interface domain, though the variation in the latter is a bit larger than the former.

A paired sample T-test was conducted to test if there was a significant difference between the NS group's accuracy rates between the core syntax properties and the syntax-semantics interface properties. The results show that there was no significant difference between the accuracy rates on the two domains [t(19)=1.68, p=.110].

As the descriptive statistics in Table 3 shows, the L2 group in this study scored a mean accuracy rate of 81.0% (SD=10.7) on the core syntax properties of the BA construction. They scored a mean accuracy rate of 69.5% (SD=11.4) on the syntax-semantic interface properties. Compared with the NS group, the L2 group shows more variation in their responses to the properties from both domains. A similar trend was found among the L2 subjects that they show larger variation in the syntax-semantics interface domain than in the core syntax domain.

A paired-sample T-test was conducted between the L2 group's performance on the core syntax properties and the syntax-semantics interface properties. The results show that the difference between L2 group's performances on these two domains is significant [t(31)=4.564, p<.001]. In terms of accuracy, the L2 group performed significantly better with core syntax properties than with syntax-semantics interface properties.

In order to examine if the L2 group has achieved native-like performance on the core syntax properties and on syntax-semantics interface properties, two independent-samples T-tests were conducted to compare the L2 group with the NS group. In those tests, the mean accuracy rate scored by each subject on each domain was used as the dependent variable. Levene's test for equality of variance in each independent samples T-test is significant. Therefore, the *t* values that do not assume equal variance are reported instead of the standard *t* values. Table 4 summarizes the results of these T-tests.

Table 4. Independent Samples T-tests of accuracy rates between the L2 group and the NS Group

Properties	Dependent Variables	df	t
Core syntax	Accuracy rate	34.72	9.19*
Syntax-semantics	Accuracy rate	42.98	12.26*

^{*.} The t value is significant at the .05 level

As the results of the T-tests show, the differences in accuracy rates between the L2 group and the NS group in both the core syntax domain and the syntax-semantics interface domain are significant at α =.05 level. It means that the L2 group has not achieved native-like performance on the core syntactic properties of the BA construction as well as the properties at the syntax-semantics interface.

3.2 L2 learners' performance within the core syntax domain

This study also attempts to examine if L2 Chinese learners' acquisition of the properties that belong to the core syntax domain is consistent. In order to do this, L2 learners' performances on the two properties within the core syntax domain (the word order constraint and the complex verb constraint) were measured separately in terms of their accurate rates on the two constraints. The results are presented in Table 5. The accuracy rates among the NS group is also presented for comparison.

Table 5. Accuracy Rates (%) on Core Syntax Properties (the L2 group (N=32); the NS group (N=20))

Properties	Mean		Range		S.D.	
	NS	L2	NS	L2	NS	L2
Word order	99.7	93.1	93.9-100	75-100	1.4	7.3
Complex verb	98.1	69.1	87.5-100	37.5-100	4.1	17.3

As the descriptive statistics show in Table5, the native speakers achieved an accuracy rate of 99.8% (SD=1.4) on the word order constraint, with little variation. They scored an accuracy rate of 98.1% (SD=4.1) on the complex verb constraint, with a bit bigger variation. A paired-sample T-test was conducted and the results show that there was no significant difference between the NS group's performance on the word order constraint and the complex verb constraint [t(19)=1.561, p=.135].

The picture of the L2 group is somewhat different. The L2 group achieved an accuracy rate of 93.1% (SD=7.3) on the word order constraint, with some variation. They scored an accuracy rate of 69.1% (SD=17.3) on the complex verb constraint, with big variation among the subjects. A paired-sample T-test was conducted and the results show that the difference between L2 group's performances on the word order constraint and on the complex verb constraint is significant at α =.05 level [t(31)=8.493, p<.001].

An independent-samples T-test was conducted in order to examine if the L2 group has achieved native-like performance in the word order constraint. The results show that the difference between these two groups with their performance on the word order constraint was significant at α =.05 level [t(34.5)=4.92, p<.001]. It means that the L2 group has not achieved native-like performance on the word order constraint. However, as has been pointed out earlier, this finding could be due to the fact that the L2 participants were not advanced enough. The top-25 per cent sub-group within the L2 group scored an accuracy rate of 96.9%.

The L2 group scored similar accuracy rates on the complex verb constraint (69.5%) and the affectedness on the BA NP constraint (69.1%). However, their performance on the word order constraint and complex verb constraint was significantly different. These findings may make people consider that the complex verb constraint, like the affectedness constraint, belongs to the interface domain rather than the core syntax

domain. Correlation tests were conducted to examine if this is the case. The results show that the L2 group's performance on the word order constraint and the performance on the complex verb constraint was significantly correlated at α =.05 level [r=.384, p=.03]. However, the L2 group's performance on the complex verb constraint and the affectedness constraint was not significantly correlated [r=.268, p=.138].

4. Discussion

In the previous section, the results of the grammaticality judgment task were summarized. The results show that the L2 group' performance on the word order constraint achieved high accuracy, whereas their performances on the complex verb constraint and the affectedness constraint were not as high.

The first research question that this study attempts to examine is the L2 Chinese learners' performance on the properties that belong to the core syntax domain vs. their performance on the properties at the interface of syntax-semantics. The results indicate that there is a significant difference between their performances on the two domains. The L2 Chinese learners performed significantly better on core syntax properties. Their performances in both domains are significantly different from the native speakers of Chinese

The findings partially conform to what the Interface Hypothesis would predict concerning the acquisition of linguistic properties of the BA construction. The Interface Hypothesis predicts that the acquisition of the syntax-semantics interface properties will not be as good as the acquisition of the core syntax properties, which is supported by the findings of this study. It also predicts that native-like performance on the core syntax properties, which is not supported by the findings of this study. The reason for this could be the proficiency level of the L2 group. The Interface Hypothesis was proposed on the basis of studies on near-native speakers and bilingual speakers. Obviously, the L2 group subjects in this study have not been there yet. A sub-group (N=8) from the L2 group, who has scored at the top 25 per cent of the proficiency test, achieved an mean accuracy rate of 92.8% on the core syntax properties. The difference between this sub-group and the NS group is much smaller. No T-tests were conducted due to the small number of subjects in this sub-group. However, it is still reasonable to expect near-native performance regarding the core syntax properties if more advanced L2 Chinese learners were examined.

Another question that this study attempts to find an answer to is whether the L2 Chinese learners' performance within the core syntax domain is consistent domain-wide. The results show that there is a significant difference between their performance on the word order constraint and the complex verb constraint. They did better in the former than in the latter. The findings are, to some extent, similar to the findings in Yuan's (2010) study, which claims that L2 learners' performance is variable-dependent rather than domain-wide in the syntax-semantics domain. On the other hand, the L2 Chinese learners' performances on the two constraints are significantly correlated. The observed difference

in accuracy rates may be attributed to the driving forces of these two constraints. The non-canonical word order is solely driven by a syntactic constraint in Chinese. In Chinese, the elements that can occur postverbally are limited (A.Li, 2001, p.4). When the postverbal position is occupied by an "internal object" (M. Wang, 1987, p. 61), the real object (the syntactic object) is forced to move preverbally. The complex verb constraint rules out those ungrammatical BA sentences when the predicate is a bare verb. An element, such as a resultative complement, is used to indicate the achievement, state, effect, as a result of the action denoted by the verb. This use of a resultative complement is driven by the semantic meaning of the BA construction. In this sense, this constraint leans towards the interface of syntax and semantics than the word order constraint. However, the L2 Chinese learners took it as a syntactic constraint more than an interface one. Moreover, the L2 Chinese learners' low accuracy rate on this constraint might also be accounted for by their performance on resultative verb compound (RVC). This is only an assumption and needs further research before any connection can be established.

5. Conclusion

The results have shown that in learning the BA construction, the core syntax properties are better acquired by the L2 Chinese learners than the syntax-semantics interface properties, though neither of their performance has achieved native-like level. These findings, in part, support Sorace's (2005) Interface Hypothesis that L2 learners have a delayed acquisition of properties at interfaces. However, contradictory to what the Interface Hypothesis would predict, the findings of this study also indicate that the advantage of core syntax properties over interface properties is not consistent. Further research is needed to explore the possible reasons for this inconsistency. This study examines the acquisition of the BA construction properties and constraints by looking at the different performances among L2 learners in terms of the nature of these properties. It helps to pinpoint the difficulties that L2 Chinese learners are experiencing in acquiring the BA construction properties. This knowledge helps teachers make their classroom instruction and practice more targeted and effective. One limitation of this study is that the proficiency levels of the subjects were only loosely controlled by excluding the beginning level L2 Chinese learners. The results would be more informative if more L2 Chinese were recruited and put into different groups. In future research, a more detailed examination could be conducted on the factors that may contribute to the L2 Chinese learners' deviation in performance from the native speakers' on the BA construction properties.

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