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Acquiring topic structures in Mandarin Chinese

Abstract: Previous studies suggest that Chinese topic structures, especially base-generated structures, are difficult for L1 English L2 Chinese learners, and only at the very advanced stage do learners perform at the target-like level. Yuan (1995) hypothesizes that non-advanced L2 learners may have difficulty adding a topic node to the subject-predicate structure and that they tend to interpret the topic as the subject. The present study tests this hypothesis and seeks to find out if structure building is accessible to L2 learners before they reach an advanced stage. A grammatical judgment experiment was conducted on several types of topic structures. Results show that lower-level subjects behaved on a par with native speakers on certain types of topic structures. This result suggests that L2 learners are able to build new structures at an early stage.

Keywords: Mandarin Chinese, topic structures, base-generated, L2 acquisition

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1 Introduction

A major typological distinction between Mandarin Chinese (henceforth Chinese) and English concerns how the notion of topic plays a role in grammar. Chinese is a topic-prominent language in that topic structures, such as (1) are common and basic (Chao 1968; Li and Thompson 1976; Xu and Langendoen 1985), while English is a subject-prominent language, where topic structures are not common, as illustrated in (2):

- (1) *Shuxue zuoye, wo yijing zuowan le.*
math assignment I already do-finish PRT
'The math assignment, I already finished it.'
- (2) *?The math assignment, I've completed it.*

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This difference between the two languages plays an important role in L2 acquisition, as has been shown in a number of studies (e.g. Xie 1992; Jin 1994; Mu 1994; Yuan 1995; Li 1996; Xiao 2004). For speakers of Chinese acquiring English as L2, the issue arises whether learners transfer the topic-prominent characteristic of Chinese to English and analyze English sentences as topic and comment rather than subject and predicate. For speakers of English acquiring Chinese as L2, a different issue arises: are learners able to accept or produce sentences that have more structure than a subject-predicate sentence? This study is concerned with the latter issue. It examines how L1 English speakers acquire Chinese topic structures, in particular, whether adult L1 English speakers are able to build structure and add a topic node to the familiar subject-predicate structure at a non-advanced stage, in the first few years of study.

Earlier studies on L2 acquisition of topic structures (reviewed in Section 3) in general show that learners have difficulty with these structures. In the interlanguage of L2 Chinese speakers (Xie 1992; Jin 1994), topic features are generally absent at the beginning stage, emerging only at a later stage. In grammatical judgment (Mu 1994; Yuan 1995; Li 1996; Xiao 2004), learners in general do not accept base-generated topic sentences; this is so even among learners who have studied for four years (Yuan 1995). Thus for L1 English speakers acquiring L2 Chinese, the picture that emerges so far is that learners have great difficulty with topic-prominence, there is strong evidence of L1 transfer, and topic-prominent features only occur at the advanced stage.

This picture is discouraging; it suggests that many learners of Chinese are unlikely to achieve target-like level recognizing or producing structures that are considered 'basic' in Chinese grammar (Li and Thompson 1976). But the situation depicted may not be accurate. For one thing, the poor performance in production may reflect learners' productive knowledge, but it does not necessarily reflect learners' knowledge in general. It is possible that learners do have some knowledge about topic-prominent features even though they don't quite have the ability to use them in oral production. If we focus on grammatical judgment, the acceptance rate of based-generated topic structures that has been reported (Yuan 1995) is low. Yuan (1995) offers some explanations. He proposes that the difficulty is caused by a number of factors, including processing and grammatical factors. In processing, learners tend to analyze the first element of a sentence as the subject, rather than the topic; in grammatical analysis, learners tend to assign a minimal structure to sentences. Thus the CP (complementizer phrase) node, the node that includes the topic, is not postulated until much later even though positive evidence of the CP node has been available since the early stage.

Yuan's claim about L2 learners' inability to construct a CP node in the first few years has strong implications for L2 acquisition. It makes important

predictions on L2 development that could be tested in further research. For example, on this view we would expect to see the effect of the deficiency in a variety of environments. Thus besides Chinese topic structures, L1 English speakers would also encounter similar difficulty when they acquire topic structures in other languages, such as Japanese and Korean. And the effect would last for a few years. In the context of L2 Chinese, we would expect to see the difficulty showing up in other grammatical phenomena that also differ from English in having more structure, e.g. the structure of DP. Before we consider these and other implications, however, it is necessary to take a closer look at the finding that forms the basis for Yuan's claim, namely, learners' low acceptance rate of base-generated topic structures. Is this claim supported? Is it possible that his finding could be explained by other factors? For example, learners may have difficulty not because of inability to construct a CP node beyond the subject-predicate structure; rather, they may be deterred by the complexity of the test sentences independent of the presence of the topic. Since base-generated topic structures in Mandarin cover several types, it is possible that learners, even before they are very advanced, will accept some topic structures. This will then have implications for how L2 learners switch from a subject-prominent language to a topic-prominent language. How much obstacle does structure building pose for L2 learners? Is structure building accessible for non-advanced L2 learners (learners that have no more than four years of Chinese)? Or does it significantly delay the acquisition of topic structures? In this study, I will test Yuan's hypothesis by looking at how L2 learners judge a variety of topic structures. The goal is to find out if L2 learners are able to construct a node for the topic in the first few years of acquisition, before they reach the very advanced stage.

2 Basic topic structures

In the literature (Chao 1968; Li and Thompson 1976, 1981; Xu and Langendoen 1985; Xie 1992, Shi 2000, Huang et al. 2009, among others) several types of topic structures have been discussed. A basic distinction concerns whether the topic corresponds to a gap in the sentence (Huang et al. 2009). (1), repeated here, is a case of topic structure with a gap (represented by *t*), where the topic has been moved from the object position, leaving a gap behind. On the other hand, (3) is an example of topic structure with no gap:

- (1) *Shuxue zuoye, wo yijing zuowan t le.*
math assignment I already do-finish PRT
'The math assignment, I already finished it.'

- (3) *Zhege ren, erduo ruan* (Chao 1968: 95)
this person ear soft
 ‘(As for) this man, the ear is soft (He is gullible).’

Following Shi (2000) and Huang et al. (2009), I will assume that (1) is derived from movement, and following Xu and Langendoen (1985) and Huang et al. (2009), I will assume that (3) is base-generated, as there is no position in the comment where the topic *zhege ren* could move from. Another structure that is also derived from movement is illustrated in (4), where the movement of the subject to the topic position leaves a pronominal behind:

- (4) *Xiaoming, ta jintian mei lai*
Xiaoming he today not-PERF come
 ‘Xiaoming, he didn’t come today.’

Sentences like (4) have sometimes been referred to as left-dislocation (e.g. Xie 1992).

Base-generated topic structures, i.e. ones that are not derived from movement, have been referred to as double nominative structures. These structures display a number of relations between the topic and the subject. According to Chao (1968), the relations may be close or loose. Among the close relations are owner and owned (I will refer to it as possessive relation), whole and part, and class and member. These are illustrated in (3), (5) and (6) respectively.

- (5) *Shi ge li, wu ge lan le* (Chao 1968: 95)
ten CL pears five CL spoiled PERF
 ‘(Of) ten pears, five have spoiled.’
- (6) *Pengyou jiu de hao, yifu xin de hao* (Chao 1968: 95)
friend old DE good clothes new DE good
 ‘(Of) friends, old ones are best; (of) clothes, new ones are best.’

A loose relation is one where there is no particular relation between the topic and the comment; the topic is simply what the comment is about, illustrated in (7):

- (7) *Dianying wo kan bao le, mei shenme hao de*
movie I read newspaper PRT not-have any good DE
 ‘(As for) movies, I have read the newspaper; there aren’t any good ones.’
 (Chao 1968: 96)

Li and Thompson (1976) provide an example of another relation that can be considered a case of a close relation, that of kind-unit, as in (8):

- (8) *Zhe zhong douzi yi jin sanshi kuai qian*
this kind beans one catty thirty CL money
 ‘This kind of beans, a catty is thirty dollars.’
 (Li and Thompson 1976: 482)

I will refer to the base-generated topic structures illustrated above as basic base-generated topic structures; they are double-nominative structures that do not include an embedded structure. Among the types introduced, I will look at four: topic derived from movement (1), topic and subject forming a possessive relation (3), a whole-part relation (5), and a kind-unit relation (8). These four types of structures will be compared with the three types of topic structures that are used in Yuan’s (1995) study, to be introduced in Section 3. The total number of types of topic structures to be examined in this study is seven.

3 Previous studies

There have been a number of studies on L2 acquisition of Chinese topic structures by L1 English speakers on production as well as grammatical judgment, Xie (1992), Jin (1994), Yuan (1995), Li (1996), and Xiao (2004). These studies cover a variety of topic structures; Xie (1992) and Jin (1994) also look at features that characterize topic-prominent languages, such as zero-anaphora. We will restrict our review to topic structures only.

Xie (1992) investigates topic-prominence in American adult learners’ interlanguage of Chinese. He identifies four features as topic-prominent features: topicalization, zero-anaphora, left dislocation and double-nominative. Learners told stories based on pictures. Three of the four features involve topic structures. Xie finds that the use of topic structures is infrequent among learners. Of the three structures, left-dislocation is the easiest for learners, produced by intermediate as well as advanced learners, while topicalization and double-nominative are only found among advanced learners. Overall, learners’ interlanguage “does not come close to the level of the native speakers” (p. 98) with respect to topic-prominence.

Jin (1994) is also concerned with production data, collected from an oral interview, a story retelling and a composition. She examines how learners use three features of topic-prominence: null elements, specificity marking of nouns and double nominative construction. The data shows that learners produced a smaller number of double nominative construction (2 at level 1, 6 at level 2, 15 at

level 3 and 22 at level 4) than native speakers (36), although the number is higher as the proficiency level goes up. However, learners mostly produced tokens of left-dislocation where the topic is coreferential with the subject. There are only a few tokens (6 out of 45 total) of the non-coreferential, double nominative, type.

Mu (1994) and Yuan (1995) examine grammatical judgments of topic structures by L1 English speakers. The subjects in Mu's study were second-year and third-year learners of Chinese. She considers five types of sentences: *dou* 'all' sentences, verb copying, pseudo-passive, left-dislocation (referred to as 'coreferential local sentences') and double nominative (referred to as 'non-coreferential local sentences'). Only the last two types are relevant to us. Mu finds that the error rate of both types is high – 51.95% and 52.34% respectively. She also finds that the learners' proficiency level is a significant factor in their performance – learners at the level of three years did significantly better than learners at the two-year proficiency level. This result, however, is inconsistent with what Yuan (1995) finds in his study.

Yuan (1995) studies three types of base-generated topic sentences, illustrated in (9–11)¹:

- (9) *Ta jia li de ren wo zhi jian-guo ta mama*
her family in DE people I only meet-PERF her mother
 'Among people in her family, I have only met her mother.' (p. 570, (6))
- (10) *Zhe zuo fangzi wo bu zhidao ta dasuan shenme shihou mai*
This CL house I not know he intend what time sell
 'This house I don't know when he is going to sell.' (p. 572, (11))
- (11) *Na tai jisuanji ni xiang xianzai yong shi bu keneng de*
that CL computer you want now use is not possible PART
 'That computer that you want to use now is impossible.' (p. 578, (14b))

In (9), the topic forms a whole-part relation with the object. (10) contains an embedded *wh*-question, and the topic is related to the object of the embedded clause over an *wh*-island. (11) contains a sentential subject, whose object is related to the topic. The learners, ranging from one-year's Chinese study to more than 20 years, were divided into five levels on the basis of a proficiency test. Yuan finds that the acceptance rate of these sentences by the learners was

¹ In Yuan's study, these sentences are provided with bracketing information which I do not include here.

quite low; furthermore, the performance did not improve much even as the proficiency level goes up. For example, the structure illustrated in (11) received the mean score of 8.30 out of 10 from native speakers, but the score it received from the five levels of learners are 4.76 (level 1), 4.10 (level 2), 4.60 (level 3), 4.97 (level 4), and 7.10 (level 5). Only at level 5, where the learners had about 20 years' study of Chinese, was the performance target-like.

Li (1996) and Xiao (2004) collect two types of learner data: grammatical judgment and sentence translation. Li studies a wide range of topic structures, where the topic performs different semantic functions, indicating time, location, agent or patient. The subjects in the experiment have studied Chinese for a period of six months to eight years. In both tasks, Li finds variations both on sentence types and on proficiency levels. Subjects performed better on sentences where the topic serves as the time phrase of the entire sentence, or where the topic is moved from the object position, leaving a gap. In other sentence types the performance was considerably worse. She also finds that the learners' performance was correlated with two factors: the semantic function of the topic (e.g. time, location, agent, and patient) and L1 influence. Combined results from grammatical judgment and translation show that the rate of accuracy is also not high.

Xiao (2004) considers three types of sentences in grammatical judgment, and one of them is a double-nominative topic structure. Results show that the accuracy rates of the topic structures among all of the learners are not high, from 36.11% to 61.17%. And the subjects performed better on acceptable sentences than on unacceptable sentences. In the translation task, double nominative sentences were seldom used.

These previous studies have shown that L1 English speakers acquiring L2 Chinese in general have difficulty with base-generated topic structures. In production they produce few of these structures; in grammatical judgment the error rate is high and sometimes the learners show no improvement until they reach the very advanced stage. There is still much we do not understand about L2 acquisition of topic structure, however. For example, we do not yet know what non-advanced learners are capable of. Are some of the basic base-generated topic structures, as illustrated in (1, 3) and (5–8), recognized by these learners as acceptable sentences? Is it possible that learners have knowledge of the basic type of topic structures? This is the issue that I will explore in this study.

4 Methods

To find out whether base-generated topic structures are accessible to L2 learners, I will analyze data from grammatical judgments, which is a task also used in

Yuan (1995). I assume that if learners have knowledge about base-generated topic structures, it will be reflected in grammatical judgments. The research question is as follows: Do L2 learners with no more than four years of Chinese accept topic structures at the target-like level?

If L2 learners are unable to add a CP node until much later, after many years of study, as suggested by Yuan (1995), we would expect that they would treat different types of base-generated topic structure in the same way, especially at an early stage. They would have similar difficulty accepting simple topic structures (structures with no embedded structure), as well as topic structures that are more complex (structures with embedded structure) because the topic node needs to be built on both simple and complex structures. If, on the other hand, L2 learners are able to construct a CP node at a relatively early stage, we would expect them to react differently to different types of topic structures; in particular, simpler topic structures are likely to be accepted ahead of more complex topic structures. Thus a positive answer to the question would mean that L1 English learners of L2 Chinese are able to add structure to the existing subject-predicate structure at a relatively early stage. This would argue against Yuan's proposal and require us to reassess the situation, in particular, to reconsider what factors may play a role in the acquisition when learners go from a subject-prominent language to a topic-prominent language.

4.1 Participants

Sixty-four subjects from two US universities participated in a grammatical judgment task. At the time of the task, these subjects were all enrolled in a Chinese class, and their class level ranges from second semester of second year to second semester of fourth year. The length of their study of Chinese ranges from one year and a half to four years. All of the subjects are considered non-advanced learners; they have not studied Chinese for more than four years. The experiment was done on a voluntary basis, and it was performed online, with no time restriction.

The survey consists of 60 sentences, including 14 test items (of 7 types), 35 fillers, and 11 sentences that will be used for other purposes later. The filler items are sentences extracted from a placement test which included grammar patterns introduced up to the fourth semester of Chinese. Each sentence was given in Chinese simplified characters as well as pinyin. In addition, if a word has not been introduced in the textbook (*Integrated Chinese*) for subjects in the second-year class, English gloss was also provided. The 60 sentences were randomly ordered. The subjects were asked to judge each sentence on the Likert scale, from 2 to -2, as follows:

-2	-1	0	1	2
completely unacceptable	probably unacceptable	not sure	probably acceptable	completely acceptable

All of the 14 test items are acceptable; of the 35 fillers, 11 are acceptable and 24 are unacceptable. Subjects were divided into three levels on the basis of their performance on the proficiency tests items, which are the 35 filler sentences. An acceptable filler sentence receives a score of 1 (if it is judged to be somewhat acceptable or completely acceptable), 0 (if it is judged to be not sure) or -1 (if it is judged to be somewhat unacceptable or completely unacceptable). An unacceptable filler sentence receives a score of 1 (if it is judged to be somewhat unacceptable or completely unacceptable), 0 (if it is judged to be not sure) or -1 (if it is judged to be somewhat acceptable or completely acceptable). Thus the highest possible score is 35 and the lowest possible score is -35. The scores from the 64 learners range from -8 to 32. A score of -8 to 2 were assigned to level 1, a score of 3 to 11 to Level 2, and a score of 13 and above to level 3. On average, the division of levels corresponds to the length of study, as shown in Table 1; most of the subjects at level 3 were in the fourth-year class, while most of the subjects at level 1 were in the second-year class. The division was also made with an intention to keep the number of participants in the three levels relatively similar. The mean score and SD of each level are given in Table 1.

Table 1: Number of learners, mean score of the filler items, SD at each proficiency level.

	No. of subjects	Mean	SD	Average duration of study (months)
Level 3	17	17.71	6.00	33.5
Level 2	22	7.50	2.22	27.7
Level 1	25	-2.28	3.84	22.4

A one-way ANOVA was performed, comparing the scores of the filler items among the three groups, and the results show that there is a significant effect of proficiency levels ($F(2, 61) = 120.67, p < 0.001$). Post-hoc tests further show that each proficiency level is significantly different than the other two levels, ($p < 0.001$ between each pair).

Besides L2 learners, 20 native speakers of Chinese also participated in the task. They were recruited from the same two universities where the learner data was collected. They also performed the task online except that in the survey only characters, but no pinyin, were provided.

4.2 Test sentence structures

The test sentences consist of seven types, each with two sentences:

(a) The topic is derived from movement of the object

1. *Na ge dianying wo kan-guo le*
that CL movie I see-PERF PRT
'That movie, I have seen (it).'

2. *Jintian de zuoye wo yijing xie hao le*
today DE assignment I already write finish PRT
'Today's assignment, I have already finished (it).'

(b) The topic and the subject form a possessive relation

1. *Li You jintian duzi bu shufu, suoyi mei qu*
Li You today stomach not well therefore not-PERF go
shangke
have-class
'Li You, (his) stomach was not well today, therefore (he) didn't go to
class.'

2. *Zhe wei lao xiansheng shenti hen hao*
this CL old man health very good
'This old man, his health is very good.'

(c) The topic and the subject form a whole-part relation

1. *Wode pengyou dabufen zhuzai Niuyue*
my friends most live-at NewYork
'Among my friends, most (of them) live in New York.'

2. *Women ban de tongxue yiban zhuzai sushe, lingwai yiban*
our class DE students half live-at dorm other half
zhuzai xuexiao waimian
live-at school outside
'Among the students in my class, half live in the dorm and the other half
live off campus.'

(d) The topic and the subject form a kind-unit relation

1. *Disney de menpiao yi zhang yibai kuai qian, wo*
Disney DE ticket one CL 100 CL money I
juede youyidian gui
feel somewhat expensive
'Disney tickets, each one is \$100. I feel it is somewhat expensive.'

2. *Zhe zhong douzi yi jin sanshi kuai*
this kind beans one catty 30 CL
'This kind of beans, a catty is 30 dollars.'

Types (e) through (g) are adopted from Yuan's (1995) study or constructed in the same pattern:

(e) The topic and the object form a whole-part relation

1. (=9) *Ta jia li de ren wo zhi jian-guo ta mama*
her family in DE people I only meet-PERF her mother
'Among people in her family, I have only met her mother.'
 (Yuan 1995: 570, (6))
2. *Zhongguo de da chengshi wo zhi qu-guo Beijing*
China DE large cities I only go-PERF Beijing
'Among large cities in China, I have only been to Beijing.'
 (Yuan 1995: 570, (5))

(f) The topic corresponds to an empty object which is in an embedded question

1. (=10) *Zhe zuo fangzi wo bu zhidao ta dasuan shenme*
this CL house I not know he intend what
shihou mai
time sell
'This house I don't know when he is going to sell.'
 (Yuan 1995: 572, (11))
2. *Na ge gushi wo bu jide zai shenme difang ting-guo*
that CL story I not remember at what place hear-PERF
'That story, I don't remember where I heard (it) before.'

(g) The topic corresponds to an empty object which is in a sentential subject

1. (=11) *Na tai jisuanji ni xiang xianzai yong shi*
that CL computer you want now use be
bu keneng de
not possible PART
**'That computer that you want to use now is impossible.'*
 (Yuan 1995: 578, (14b))
2. *Na liang che ni xiang xianzai xiuhao shi bu keneng de*
that CL car you want now fix-done be not possible DE
**'That car that you want to have (it) fixed now is impossible.'*

The seven types are of three groups: movement (type a), basic base-generated topic structures (types b, c, d) and Yuan's sentences: (types e, f, g). The last three

types are grouped together because they are the basis on which Yuan finds that topic structures are difficult for L2 learners. Our purpose is to see if any of the basic based-generated topic structures, types (b, c, d), are accepted at the target-like level by the learners, and if these sentences are accepted at the same level as structures that are derived from movement (type a) or the topic structures used in Yuan's study (types e, f, g).

In the coding, each sentence receives one of five scores, 2, 1, 0, -1, -2, depending on how a subject judged the sentence according to the Likert scale given above. For each sentence, the mean score assigned by subjects at each of the four proficiency levels (level 1, level 2, level 3 and native) and their standard deviation were taken.

5 Results

The first thing we would like to find out is whether the results for the sentence pair of each type are homogeneous. If yes, it would mean that the subjects were consistent with respect to a given type of topic structures, and we would be able to combine the results from the two sentences and consider them together as a type. 28 *t*-tests were performed, and the results are given in Table 2.

Table 2: Comparability between the two sentences of each type of topic structures.

	Level 1		Level 2		Level 3		Native	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Type a movement	2.79	0.01*	1.53	0.14	0.94	0.36	1.0	0.33
Type b possessive	1.07	0.29	0.7	0.49	0	1.0	1.45	0.16
Type c whole-part	2.18	0.04*	2.51	0.02*	1.65	0.12	0.2	0.84
Type d kind-unit	1.17	0.25	1.55	0.13	1.24	0.23	1.00	0.32
Type e whole-part obj	0	1.0	0.57	0.57	1.69	0.11	0.81	0.43
Type f <i>wh</i> -island	0.68	0.50	2.85	0.009*	0.38	0.70	1.42	0.17
Type g sentential subj	2.49	0.02*	2.04	0.054	0.45	0.65	0.57	0.57

Note: * = Difference is significant at $p < 0.05$.

Table 2 shows that 5 of the 28 *t*-tests result in a significant difference. A closer look reveals that the significant differences are all found among level 1 or level 2 subjects; in contrast, level 3 subjects and native speakers treated each pair on a par for all seven types, i.e. accepting the two sentences at a comparable level. In particular, level 1 learners treated the two sentences in type (a), type (c) and type (g) differently, while level 2 learners treated the two sentences in type (c) and

type (f) differently. In these types (a, c, f, g) level 1 and level 2 subjects accepted one of the sentence more than the other. Since in four of the seven types the two sentences could not be combined, we will consider each of the 14 sentences separately as we compare the learner performance with the performance of the native speakers. The mean and SD of each sentence at each proficiency are given in Table 3.

Table 3: Performance of each proficiency level on the 14 test sentences.

	Level 1		Level 2		Level 3		native		F (3, 80)	p
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
(a)1	1.52	0.82	1.59	0.80	1.59	0.87	1.95	0.22	1.48	0.2262
(a)2	0.76**	1.20	1.09	1.31	1.35	0.86	1.90	0.31	4.81	0.0039
(b)1	0.48**	1.19	0.64**	1.18	1.35	1.00	1.90	0.30	9.18	<0.0001
(b)2	0.84**	1.03	0.32**	1.52	1.35	0.86	2.00	0.44	10.05	<0.0001
(c)1	0.48**	1.19	0.18**	1.40	0.88	1.17	1.70	0.73	6.75	0.0004
(c)2	1.17	1.01	1.14	1.15	1.35	0.86	1.65	0.75	1.37	0.2519
(d)1	1.12	1.23	1.23	0.92	1.06	1.30	1.85	0.37	2.53	0.0630
(d)2	0.72**	1.06	0.68**	1.21	1.41	1.06	1.75	0.44	5.88	0.0001
(e)1	0.40**	1.44	-0.05**	1.21	0.53**	1.18	1.75	0.44	9.13	<0.0001
(e)2	0.43*	1.32	0.14**	1.40	1.18	1.24	1.55	1.05	5.58	0.0015
(f)1	-0.16**	1.40	-0.05**	1.53	0.76	1.25	1.60	0.68	8.76	<0.0001
(f)2	0.08**	1.44	0.73*	1.24	0.88	1.36	1.85	0.37	8.18	<0.0001
(g)1	-0.40**	1.22	-0.23**	1.48	0.29**	1.45	1.75	0.55	13.30	<0.0001
(g)2	0.40*	1.38	0.41*	1.40	0.53*	1.62	1.70	0.57	4.81	0.0039

Note: * = Difference between the level and native speakers is significant at $p < 0.05$.

** = Difference between the level and native speakers is significant at $p < 0.01$.

A sentence is considered accepted if it receives a mean of 1.00 or above; it is considered rejected if it receives a mean of -1.00 or below. Acceptance at the mean of 0.50 or below is considered low acceptance, and a mean in the negative indicates a tendency to reject a sentence. Looking at the performance overall, the first thing we can observe is that while the native speakers were consistent in accepting all of the sentences, with a mean score from 1.55 to 2.00, the mean scores among the three proficiency levels show great variations, from -0.40 to 1.59. The range is the widest among subjects at level 1 (between -0.40 and 1.52), but the variation among level 3 is also quite large, between 0.29 and 1.59. This is strong indication that the learners did not judge the test sentences in the same way. All three levels accepted some of the sentences, while the two lower levels also showed a tendency to reject some sentences, which receive negative mean scores. A closer look reveals that three sentences that were accepted by all levels are (a1), (c2) and (d1), and the sentences receiving a negative mean score from

subjects at one or both of level 1 and level 2 are (e1), (f1) and (g1), which are all sentences from Yuan's study. In addition, all six sentences of type (e), (f) and (g) have a low acceptance rate by level 1 and level 2 subjects, receiving a mean score below 0.5. This shows that the three sentence patterns from Yuan's study, types (e), (f) and (g), are uniformly difficult for learners at the lower two levels.

Table 3 also gives results of a one-way ANOVA, which compares the four proficiency levels. The results show that 11 sentences reveal a significant effect of proficiency level, while three sentences, (a1), (c2) and (d1), do not. That is, the performance of these three sentences by each proficiency level is comparable to native speakers. Looking at each level, level 3 subjects reached target-like level on most of the sentences (11 out of 14); level 2 subjects reached target-like level on four of the 11 sentences accepted by the level 3 subjects: (a1), (a2), (c2) and (d1); and level 1 subjects performed target-like on three of the four sentences accepted by level 2 subjects: (a1), (c2) and (d1). As noted earlier, the three sentences were accepted by all learners, each receiving a mean score above 1.00. The ANOVA results further show that these sentences were all accepted at the target-like level, comparable to the performance of the native speakers.

Turning to sentences in (e), (f) and (g), all of the sentences in (e), (f) and (g) show an effect between the native speakers and level 1 subjects, and between native speakers and level 2 subjects; in addition, (e1), (g1) and (g2) also show an effect between the native speakers and level 3 subjects. Earlier it was noted that all six sentences in (e), (f) and (g) received low acceptance rate from level 1 and level 2 subjects; here we see that these subjects' acceptance for the most part fails to reach the target level.

Thus among the seven types of sentences, (e–g) sentences were more challenging to the learners: level 1 and level 2 subjects had difficulty with both members of each type; level 3 subjects had difficulty with three of the six sentences, which are the only ones among the 14 test sentences that level 3 subjects did not perform target like.

In short, the results show that learners at all three levels treated the various types of topic structures differently, preferring some of them while having difficulty with others. None of the learner levels reached the target for all sentences, and neither did any of the levels fail to reach the target for all sentences. The types of topic structures that learners were better at are sentences derived from movement, sentences where the topic and the subject form a whole-part or kind-unit measure relation, while sentences of types (e), (f) and (g) present a challenge to the learners, especially the lower level learners.

6 Discussion

On the basis of the results from the grammatical judgment task, we can now answer the research question posed earlier, repeated here: Do L2 learners with no more than four years of Chinese accept topic structures at the target-like level?

The results show that indeed some of the topic structures were accepted at the target-like level by all learners, including level 1 subjects. These sentences are of three types: sentences derived from movement (type a) and sentences where the topic forms a whole-part relation (type c) or a kind-unit relation with the subject (type d), the latter two being basic base-generated structures. This suggests that the three types of sentences are probably easier for the subjects to acquire. On the other hand, Yuan's sentences (types e, f, g) are more difficult for the learners, as none of the sentences was accepted at the target-like level by level 1 or level 2 learners, and even for level 3 learners half of the sentences in this group did not reach the target-like level.

On a closer look, we consider whether basic base-generated structures (types b, c, d) were accepted at the same level as sentences derived from movement (type a) or Yuan's sentences (types e, f, g). Since there are only two test items for movement, the results may not be generalizable; nonetheless, the data does suggest some tendencies. At level 1, the acceptance of types (b, c, d) is comparable to the acceptance of type (a), as both groups have sentences that reach the target-like level, and all of the mean scores are positive, whereas there are no target-like level acceptance among types (e, f, g) sentences, which also includes negative scores. Level 2 shows a similar pattern: target-level acceptance is found in the first two groups – type (a) and types (b, c, d), but not in Yuan's sentences, and the latter has negative scores that are not found in type (a) or types (b, c, d) sentences. At level 3 sentences in the first two groups all reach the target-like level, while half of Yuan's sentences display a significant difference from the native speakers. Thus at all three proficiency levels the basic base-generated topic structures were treated more like sentences derived from movement, but not very similar to Yuan's sentences.

As mentioned earlier, among the 14 pairs of test sentences there are five pairs whose members are not homogeneous; the learners responded to the two sentences of each pair differently. In three pairs one sentence had a target-like acceptance, while the other didn't. In the other two pairs neither member had a target-like acceptance, but one received a positive mean score, the other a negative mean score. In both cases the inconsistency is an indication of an unstable stage, a stage that learners go through as they develop knowledge of

the topic structures. During this stage learners' grammatical judgment could be affected by a number of factors, including syntactic and semantic complexity (one-clause or multi-clause, embedded clause or not, semantic transparency), the length of a sentence, lexical items (whether learners are familiar with the words used), input (whether learners have been exposed to sentences that are similar to the test items; how frequent and how recent the exposure is) and L1 influence. These factors could affect how learners judge not only sentences within a sentence type, between the two members of a pair, but also sentences across different types. Below I will examine further how syntactic and semantic complexity of structure influences learners' acceptance of Yuan's sentences.

Overall the findings differ from what has been presented in previous studies. In Section 3 we saw that earlier studies have claimed that L2 acquisition of topic structures is difficult for learners. In particular, Yuan's (1995) study shows that only subjects at the most advanced level, those who have studied Chinese for more than 20 years, performed comparably to native speakers. All other learners, even ones who have studied Chinese for four years, did not have the knowledge of topic structures yet, as their performance was significantly different than native speakers. In view of the findings in this study, however, the situation needs to be reassessed. In particular, our findings directly challenge Yuan's conclusion that topic structures are beyond reach by non-advanced learners, learners who have studied Chinese for four years or less. Rather, the subjects in our study treated topic structures non-uniformly. Sentences that were found to be difficult for the subjects in Yuan's study were also challenging to the subjects in this study; at the same time, however, the subjects in the current study, including ones at the lower levels, also found some topic structures to be acceptable, including base-generated structures with a whole-part relation and a kind-unit relation.

What is important to us is that these findings suggest that the learners are able to build topic structures. The test sentences are all double nominative structures, the first nominal serving as the topic and the second nominal serving as the subject. The fact that all of the learners accepted three topic structures, one movement and two base-generated, at the same level as native speakers, is an indication that they can make sense of these sentences by adding a node to the familiar subject-predicate structure. Before we draw this conclusion, however, we need to consider possible alternative explanations for the findings. In particular, are the findings also compatible with the hypothesis that L2 learners analyze topic structures in terms of a subject-predicate frame? Recall in Yuan's analysis, an explanation for L2 learners' difficulty is that they tend to analyze the topic as the subject. On this hypothesis L2 learners would be more likely to accept a sentence if it can be analyzed as a subject-predicate structure, and less

likely to do so if a sentence does not fit the subject-predicate analysis. This hypothesis works well for sentences in (e), (f) and (g) – these sentences do not fit the subject-predicate frame, there being a second nominal before the verb, and the learners indeed did not accept them well.

However, on this hypothesis sentences in types (a), (c), and (d) should also cause difficulty for learners, as they also do not fit the subject-predicate analysis. In each sentence in (a) and (c) there are two nominals before the verb. If the first nominal is regarded as the subject by the learners, it would be difficult to assign a role to the second nominal. In particular, (c2) involves a coordination of two clauses, both making a comment on the topic. On the subject-predicate analysis, it would be difficult to make sense of the coordination. In (d) sentences there is no verb, which also makes it difficult to fit the subject-predicate frame. The only type where the subject-predicate analysis would work is type (b), where the topic and the subject form a possessive relation and the two nominals together could form an NP. However, the acceptance rate for the two sentences is inconsistent: the rate for (b1) was low for level 1 subjects and that for (b2) was low for level 2 subjects. Therefore, the findings for sentences in types (a)-(d) are not explained by the subject-predicate hypothesis. I conclude that at a relatively early stage L1 English learners of L2 Chinese are able to build new structure in L2, of the type that goes beyond the subject-predicate structure.

How can we explain the poor performance on sentences of the types (e), (f) and (g) then? All six sentences presented a challenge for level 1 and level 2 subjects, and half of them (e1, g1 and g2) were difficult for level 3 subjects. I suggest it has to do with the syntactic and semantic complexity of these sentences independent of the topic. Consider the (f) and (g) sentences first. These sentences differ from sentences in (a)-(d) in an obvious way: they display a long-distance antecedent-gap relation. As Yuan (1995) says, these sentences are based-generated in L1 Chinese. However, in the interlanguage of L2 learners, especially non-advanced learners, the long distance dependency may be associated with movement. This assumption is based on the fact that English does not allow a based-generated empty category in the same environment; thus due to L1 influence, L2 learners may treat the empty category in these sentences not as base-generated, but as a gap resulting from movement, not unlike the gap that occurs in a *wh*-question, such as *What did you buy t?*

Now it is well-known that movement is subject to island constraints, e.g. subjacency (Chomsky 1973). Given that L1 English speakers obey island constraints when they process *wh*-movement in English, we can assume that when these speakers apply movement to Chinese topic structures in L2, they will do the same. This assumption is also supported theoretically. Island constraints are considered part of UG by some researchers (e.g. Li 1998; White and Juff 1998),

and not part of UG by other researchers, (e.g. Johnson and Newport 1991; Schachter 1989, 1990). Regardless of the differences, however, researchers in general agree that if island constraints are active in L1, they are likely to operate in L2 as well (e.g. Johnson and Newport 1991; Schachter 1989, 1990; White and Juff 1998; White 2003). Therefore, in the case here, we can assume that L1 English speakers will carry them to Chinese topic structures. In fact, positive evidence in L2 is required for L2 learners who have been exposed to island constraints in L1 to undo these constraints.

Returning to the test sentences in (f) and (g), we consider how they are processed by L2 learners as involving movement. In type (f) the topic has moved across a *wh*-island, while in type (g), including a sentential subject, the topic has moved across two bounding nodes. Both movements include violations of sub-jacency. The low acceptance rate by level 1 and level 2 learners can therefore be explained if, as suggested here, the learners applied island constraints to these sentences. Thus (f) and (g) sentences are difficult to process not because they are based-generated topic structures but because they involve island constraint violations.

What about type (e) sentences? There are no violations of island constraints in these sentences, as the sentences include a single clause only. I suggest the difficulty subjects have with these sentences has to do with semantics rather than syntax, in particular, the transparency (or lack of thereof) of the relation between the topic and the element it is associated with. A relation between the topic and its associated element may be overtly specified, or it may be implicit, its existence being recognized by world knowledge. Examples of the former include the relation between *women ban de tongxue* ‘students in my class’ and *yiban* ‘half’, which shows a whole-part relation, and between *Disney de menpiao* ‘Disney tickets’ and *yizhang* ‘one (ticket)’, which gives a kind-unit relation. Examples of the latter include the relation between *ta jiali de ren* ‘his family members’ and *ta mama* ‘his mother’, which is a whole-part relation, and between *Xiao Li* ‘Xiao Li’ and *duzi* ‘stomach’, which is a possessor-possessed relation. A comparison between the two types of relation, specified and unspecified, reveals one major difference: in a specified relation, the dependency between the topic and its associated element is inherent in the sense that the associated element can only be interpreted by making reference to the topic. In an unspecified relation, however, both the topic and the element it is associated with have independent reference and it is only by inference that an association between the two can be established. In processing, unless strongly implied by the context, an unspecified relation would take more effort, as processing it requires one more step, that of identifying an element with independent reference that can potentially be associated with the topic. On the other hand, when

processing an overtly specified relation, it is clear which element is to be associated with the topic – the one without an independent reference. I suggest the extra step involved in unspecified relations is one reason why L2 learners, especially non-advanced learners, have more difficulty with sentences that include such a relation. Learners at the early stage might be confused as to how to relate the topic to the rest of the sentence.

One might wonder why the learners did not seem to have difficulty with the relation between *zhewei lao xiansheng* ‘this old man’ and *shenti* ‘body (health)’ in (b1), which is also unspecified. This is a case where the possessor-possessed relation is not only implied contextually but also reinforced by proximity, as the two expressions occur next to each other, one as the topic and the other as the subject.

In summary, we have seen that it is not the case that topic structures are all beyond the reach for non-advanced learners. The learners in the study did perform well on a few test sentences, suggesting that they are able to build structures. Thus rather than trying to explain why L2 learners have difficulty with topic structures in general, we should try to explain why learners have difficulty with certain types of topic structures. I have offered two explanations, from L1 transfer and semantic considerations. Syntactically, L2 learners with L1 English are likely to apply their knowledge of island constraints to topic structures. Semantically, learners may be sensitive to the nature of the relation between the topic and the rest of the sentence. An unspecified relation is less transparent and is challenging to learners at an early stage.

7 Conclusion

When acquiring topic structures in Chinese, an L2 learner is faced with a number of challenges, including adding a topic node to a subject-predicate structure, making sense of the relation between the topic and the rest of the sentence, and finding the element in the sentence that is associated with the topic. This study has been mainly concerned with the first issue: whether structure-building is accessible to L2 learners of Chinese who have studied Chinese for no more than a few years, as typically found among university students in the US. To answer this question, I tested L1 English and L2 learners of Chinese on their knowledge of base-generated topic structures. Results from grammatical judgments show that these learners do have some knowledge about topic structures, as even the learners at the lowest level performed on a par with native speakers with respect to some topic structures. In these

structures the topic and the subject exhibit a whole-part relation or a kind-unit relation. This would not have been possible if non-advanced learners were incapable of structure building. In addition, level 3 learners, with no more than four years of Chinese, performed at the target-like level on most of the test sentences, showing that L2 learners are not only capable of structure-building, they can do it well within a few years' time.

I briefly discussed why the acceptance rate of some of the topic structures is low. I suggested that it is possible that L2 learners, influenced by L1 English, treat based-generated empty categories as if they are left behind by movement, thereby applying island constraints to based-generated topic structures as well. This explains why learners have difficulty accepting topic structures that include island violations. In addition, L2 learners may find it difficult to make sense of a dependency relation that is not overtly specified.

There are, of course, other challenges that L2 learners face, e.g. the ability to produce topic structures, both based-generated and from movement. When we investigate these aspects of acquisition, however, we can proceed with the assumption that L2 learners do not suffer from inherent inability to construct a new node in L2 at the early stage. They can and do add a topic node to a subject-predicate structure when they process Chinese topic structures.

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Bionote

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