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ABSTRACT

This paper reports on a pilot study examining how Chinese-speaking learners of English reset the non-empty topic [-Te] parameter. Whereas Chinese allows empty topics coindexed with variables in both subject and object positions, English does not. With respect to this particular parameter, Chinese can be said to form a superset of English as the grammar of the former is more general than the latter. The results obtained in this study suggest that the Subset Principle does not apply in second language acquisition and that second language learners transfer the first language setting to the second language grammar. However, the transfer is asymmetric and selective; even advanced subjects have more difficulty in detecting the ungrammaticality of the variable coindexed with the empty topic in the object position than in the subject position. It is argued that this asymmetry is the effect of Universal Grammar in the learners' interlanguage grammars in combination with their parsing ability. (Contains 14 references.) (Author/JL)

Asymmetric Resetting of the Non-Empty Topic Parameter by Chinese-Speaking Learners of English.

ASYMMETRIC RESETTING OF THE NON-EMPTY TOPIC PARAMETER BY CHINESE-SPEAKING LEARNERS OF ENGLISH

Boping Yuan (DAL)

Abstract

This paper reports on a pilot study examining how Chinese-speaking learners of English reset the non-empty-topic [-Te] parameter. Whereas Chinese allows empty topics coindexed with variables in both subject and object positions, English does not. With respect to this particular parameter, Chinese can be said to form a superset of English as the grammar of the former is more general than the latter. The results obtained in this study suggest that the Subset Principle does not apply in L2 acquisition and the L2 learners transfer the L1 setting to the L2 grammar. However, the transfer is asymmetric and selective; even advanced subjects have more difficulty in detecting the ungrammaticality of the variable coindexed with the empty topic in the object position than in the subject position. It is argued that this asymmetry is the effect of UG in the learners' IL grammars in combination with their parsing ability.

1. Introduction

Within generative theory, Universal Grammar (UG) has been assumed to be a language acquisition device which all human beings are innately endowed with (Chomsky, 1981, 1986a)[1]. Human languages are extremely complex and subtle, and it is argued that L1 learners discover such complexity by means of innate linguistic structure, i.e. UG. UG contains principles and parameters; the former are true for all languages where applicable and the latter vary from language to language. Under the theory of parametric variation, the L1 learner can begin with one setting and switch to another when his initial hypothesis is disconfirmed by the primary data. Within learnability theory, it has been suggested (cf. Wexler and Manzini 1987) that the L1 learner does not start off with an overgeneralized grammar that would require negative evidence for disconfirmation; instead, he always chooses the narrower of two grammars compatible with a set of observed data and changes his grammar only when disconfirming evidence in the primary input data refutes his initial hypothesis. That is, language acquisition proceeds on the basis of positive evidence alone. This is known as the 'Subset Principle' (Berwick 1985; Wexler and Manzini 1987).

Assuming that UG constrains L1 acquisition and that the language learner sets the values of parameters on the basis of positive evidence, we may ask whether UG and the Subset Principle can be related to L2 language acquisition. In this paper I will present results of a pilot study investigating the resetting of the non-empty topic parameter by Chinese-speaking learners of English. While there is evidence of UG constrains in L2 acquisition in this study, the results suggest that the Subset Principle does not apply to L2 acquisition and L2 learners transfer the L1 setting to the L2 grammar. However, the

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transfer is asymmetric and selective, and does not involve all the properties subsumed by this particular parameter.

2. The empty-/non-empty topic parameter and the Subset Principle

Both Chinese and English grammars generate sentences with topics. But whereas Chinese allows base-generated optics, non-gap topics and empty topics, English does not:

A. Base-generated topics (BGT)

(1) a. zhe wei xiansheng$_1$ wo bu jide yiqian wo zai nar jian-guo (e_1)
this CL gentleman I not remember before I at where meet EXP OBJ
*b. This gentleman$_1$ I can't remember where I have met (e_1) before.

(2) a. na zuo fangzi$_1$ wo bu zhidao ta dasuan shenmo shihou mai (e_1)
that CL house I not know he intend what time sell OBJ
*b. That house$_1$ I don't know when he is going to sell (e_1)

B. Non-gap topics (NGT)

(3) a. ta jia li de ren, wo zhi jian-guo ta mama.
her family in GEN people I only meet EXP her mother.
*b. Members of her family, I have only met her mother.

C. Empty topics coindexed with the variables in the subject positions (ETS)

(4) a. zhe ge shiyan$_1$ yijing kaishi (e_1) wo xiangxin (e_1) hui chenggong.
this CL experiment already start TOP I believe SUB will succeed.
*b. This experiment$_1$ has already started> (e_1) I believe (e_1) will succeed.

(5) a. wo jian-guo tade nu-pengyou$_1$. (e_1) (e_1) zhang de hen piaoliang
I meet EXP his girl-friend TOP SUB look very beautiful.
*b. I have met his girl-friend$_1$. (e_1) (e_1) Looks very beautiful.

D. Empty topics coindexed with the variables in the object position (ETO)

(6) a. ta kan-guo zhe bu dianying$_1$, keshi (e_1) wo mei kan-guo (e_1).
he see EXP this CL film but TOP I not see EXP SUB
*b. He has seen this film$_1$, but (e_1) I haven't seen (e_1).

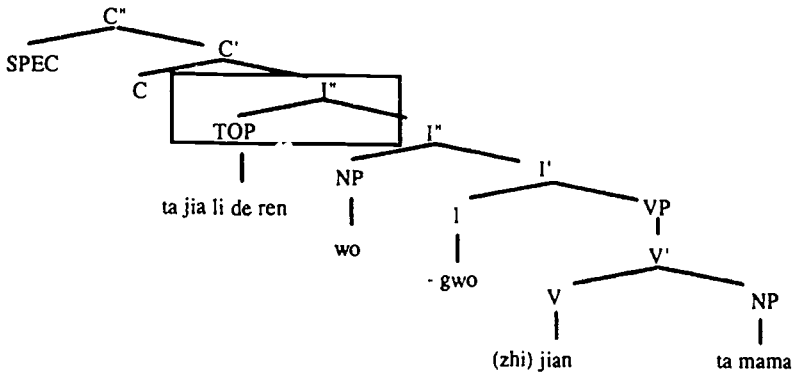
(7) a. yinwei zhe ge wenti$_1$ bu zhongyao, suoyi (e_1) women bu zhuenbei zai hui shang taolun (e_1)
as this CL question not important so TOP we not prepare at meeting on discuss OBJ
*b. As this question$_1$ is not important, (e_1) we are not going to discuss (e_1) at the meeting.

As is well known, violations of the Subjacency Principle in English give rise to ungrammatical strings, as in (1b) and (2b) (i.e. violations of the *wh*-island constraint). The Subjacency Principle seems not to apply to Chinese, as in (1a) and (2a). Huang

(1984a, 1984b, 1987) argues that the Subjacency Principle does apply to Chinese; as Chinese is a topic-prominent language (Li and Thompson, 1975), the topic position of a sentence must be available at D-structure. 'Therefore, for each variable bound to a topic, there are two possible ways to derive it: it may be created by movement as a wh-trace, or it may start out as an EC at D-structure and later be coindexed with the topic (and become a variable)' (Huang, 1984a:561). That is, the ECs in (1a) and (2a) are not created by movement (because they are blocked in nonsubjacent environments, i.e. the wh-islands) but must have been base-generated as a 'null resumptive pronoun' (cf. Riemsdijk and Williams, 1986: 300-301) and become a variable by definition at the point where it is coindexed with its A'-binder.

What is the principle that allows the presence of an empty topic in Chinese, as in (4a), (5a), (6a) and (7a) but rules it out in English, as in (4b), (5b), (6b) and (7b)? According to Huang (1984b), a fundamental solution to the problem of properly formulating the empty topic parameter is that INFL is a proper governor in Chinese but not in English. What is dominated by INFL in Chinese is true lexical categories; this makes it possible for INFL in Chinese to properly govern the subject as well as the topic, and enables Chinese to have empty topics as well as variable subjects. As INFL in English is not a proper governor, the subject variables in (4b) and (5b) are in violation of the ECP (Chomsky, 1986b). Similarly, the fact that English does not allow empty topics also follows from the same account, for the topic is obviously not properly governed by INFL if the subject is not properly governed by it.

Huang's idea is further developed by Cole (1987), who suggests that there is a fundamental difference in the basic structures of Chinese and English. In Chinese the topic is a basic unit of a sentence, which is an adjunct being adjoined to IP (= I") (cf. Cole, 1987). As IP is the maximal projection of INFL, INFL properly governs the subject position. It is natural to expect in this case that the topic position is also properly governed. This has the consequence that the topic as well as the subject may each be an EC satisfying the ECP (Chomsky, 1986b), 'a situation that directly gives rise to the existence of empty topics' (Huang, 1984b:99). As INFL in Chinese is a proper governor governing the topic as well as the subject, the topic can be directly Case-marked, receiving nominal case like the subject (cf. Cole, 1987). This account also enables us to explain the sentence with a non-gap topic in Chinese like (3a), in which the topic is base-generated and Case-marked by INFL. (The following diagram reflects the sentence structure of (3a).)



According to Berwick's formulation of the Subset Principle, 'the learner should hypothesize languages in such a way that positive evidence can refute an incorrect guess' (Berwick, 1985:37). In the case when language data are compatible with two or more grammars thast generate languages in a subset/superset relation to each other, that is, when one of the languages is properly contained within the other with respect to a particular aspect of grammar, and if the learner mistakenly selects the more general grammar, the incorrect guess will result in overgeneralization that cannot be refuted on the basis of positive evidence. The Subset Principle predicts that the learner will initially hypothesize the less general subset grammar and switch to the more general superset grammar only when specific positive evidence exists to refute his initial hypothesis.

As Chinese has a topic adjunct in its D-structure and INFL in Chinese is a proper governor governing both the subject and the topic, it allows sentences with non-gap topics, base-generated topics and empty topics coindexed with both the variables in the subject position and in the object position, as well as sentences without non-gap topics, base-generated topics and empty topics. English, on the other hand, only allows the latter, i.e. sentences without non-gap topics, base-generated topics and empty topics. Thus, with respect to this particular aspect, the grammar of English is less general than the grammar of Chinese and is properly contained within it.

Assuming that the Subset Principle operates in L1 acquisition, we may then ask whether or not it operates in L2 acquisition. If it did operate in L2 acquisition, Chinese learners of English would assume the less general subset grammar, that is, sentences without non-gap topics, base-generated topics and empty topics. This would be the correct assumption. An there would be no evidence which can cause a change to a more general superset grammar. In that case, Chinese learners of English should not accept sentences with non-gap topics, base-generated topics and empty topics.

3. The experiment

3.1 Subjects

Subjects consisted of 20 adult native speakers of Chinese and 7 adult native speakers of English to serve as controls. The native Chinese speakers were research students at the University of Edinburgh or Heriot-Watt University and, in some cases, their wives. The subjects were divided into four different proficiency groups according to their performance on a long-established cloze test constructed by Davies (1965) (Group 1 = beginners, Group 2 = early intermediate, Group 3 = late intermediate and Group 4 = advanced). The controls were in Group 5; they were residents studying or working in Edinburgh. Non of them had any knowledge of Chinese.

In a one-way ANOVA, a significant difference is found between the mean scores of the five groups in the cloze test ($F = 33.51$, $p < 0.0000$). As the results of the Tukey test show (see Table 1), there are significant differences between the mean scores of Group 1 and the other four groups and between the mean scores of Group 2 and Groups 4 and 5.

Table 1: Tukey Test of the cloze test: pair-wise comparisons between mean scores of the five groups in the cloze test.

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
Group 2	- 16.32**			
Group 3	- 22.50**	- 6.18		
Group 4	- 28.55**	- 12.23**	- 6.05	
Group 5	- 29.58**	- 13.26**	- 7.08	- 1.03

**$p<0.01$, *$p<0.05$

3.2 Method

The subjects were asked to do an acceptability judgement task, which was designed to test the resetting of [-Te] parameter. For each experimental sentence, there was a corresponding control sentence, which was identical to the experimental sentence in every way except for the linguistic feature being investigated, so that any difference in the judgements between the experimental sentence and the control sentence by the subject could be attributed to the linguistic feature under investigation.

What is presented here are the results of the subjects' judgements on 66 sentences (33 control sentences and 33 experimental sentences) out of 118 sentences included in the experiment. Examples of the experimental sentences of the four sentence types (i.e. BGT, ETS, NGT and ETO (see Section 2)) can be seen in Sentences (1b), (2b), (3b), (4b), (5b), (6b) and (7b) in Section 2.

3.3 Results

For the acceptability judgements on each of the three types of sentences, i.e. BGT, ETS and ETO (see Section 2), a two-way ANOVA was performed; the control sentences and the experimental sentences were two independent variables with the five proficiency groups forming five levels within each of the two independent variables. The dependent variables were the scores obtained by the subjects in judging the control and the experimental sentences. The results for the control sentences with BGT, ETS and ETO show that there is no significant difference between the means in any of the five groups, suggesting that the four groups of Chinese learners of English, like the native speakers, had mastered the sentence structures being tested. (See Figure 1.)

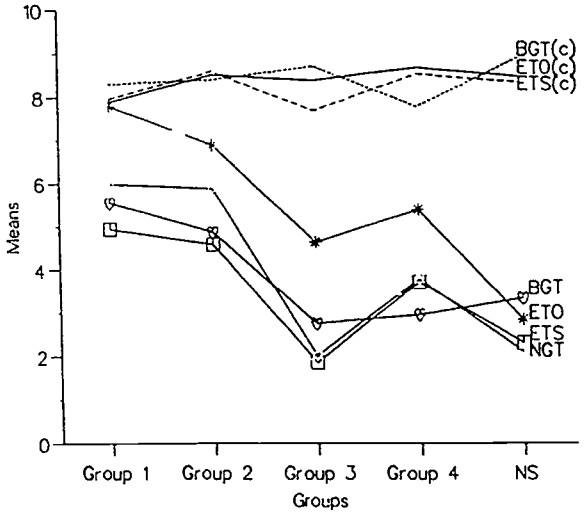


Figure 1: The mean scores by the five groups in judging the control sentences (c) and the experimental sentences of BGT, ETS, ETO and NGT.

Table 2: Tukey Test of BGT: pair-wise comparisons of mean scores between the groups in judging the experimental sentences.

	GROUP 2	GROUP 3	GROUP 4	GROUP 5
Group 1	0.68	2.81*	2.60*	2.22
Group 2		2.13	1.92	1.54
Group 3			-0.21	-0.58
Group 4				-0.38

** $p < 0.01$, * $p < 0.05$

In their judgements of the experimental sentences with BGT, Group 1 appears to be at an indeterminate stage (the mean = 5.556) and there is no significant difference in their judgements between the means of the control sentences and the means of the experimental sentences (the difference between the means = -2.74). The Tukey test also shows that Group 1's judgement of the experimental sentences of BGT is significantly

different from Groups 3 and 4. No significant difference is found between other groups. (See Table 2.)

In judging the experimental sentences with ETS, no significant difference is found between any of the five groups although Group 1 still appears to be at an indeterminate stage (the mean = 4.942) and their judgements of the experimental sentences are not significantly different from the control sentences (the difference between the means = -3.02). (See Table 3.)

Table 3: Tukey Test of ETS: pair-wise comparisons of mean scores between the groups in judging the experimental sentences.

	GROUP 2	GROUP 3	GROUP 4	GROUP 5
Group 1	0.36	3.08	1.24	2.64
Group 2		2.73	0.88	2.28
Group 3			-1.84	-0.45
Group 4				1.45

**p<0.01, *p<0.05

With ETO, the results of the judgements of the experimental sentences present a different picture. As the results of the Tukey test indicate (see Table 4), all the learner groups, except Group 3, made significantly different judgements from the native speakers group (i.e. Group 5), and even group 4, the advanced learners, who showed no significant difference from Group 5 in the cloze test, fail to reject these sentences accurately. What is more, there is almost no difference in Group 1's judgement between the control sentences and the experimental sentences (the difference between the means = -0.08). It seems clear that the subjects in Group 1 transferred their L1 grammar into the L2, assuming that the sentence with the empty topic coindexed with the variable in the object position was grammatical in English.

Table 4: Tukey Test of ETO: pair-wise comparisons of the means between the groups in judging the experimental sentences.

	GROUP 2	GROUP 3	GROUP 4	GROUP 5
Group 1	0.91	3.90**	2.48**	4.96**
Group 2		2.99**	1.57*	4.05**
Group 3			-1.41	1.06
Group 4				2.48**

**p<0.01, *p<0.05

Pair-wise comparisons were also made between the means of the three types of sentences, i.e. BGT, ETS, and ETO, within each of the five groups. Again, no significant difference is found between the means of the control sentences of the three types in any of the five groups (see Figure 2). In the judgements on the experimental sentences, no significant difference is found between the means of BGT and ETS in any of the five groups. However, except in Group 3 and the native group, and except between ETO and ETS in Group 4, we find significant difference between ETO and the other two types, i.e. BGT and ETS, in pair-wise comparisons in all the groups (see Figure 2 and Table 5). This indicates that almost all learners including the advanced learners had more difficulty in detecting the ungrammaticality of the ETO sentence than the other two types.

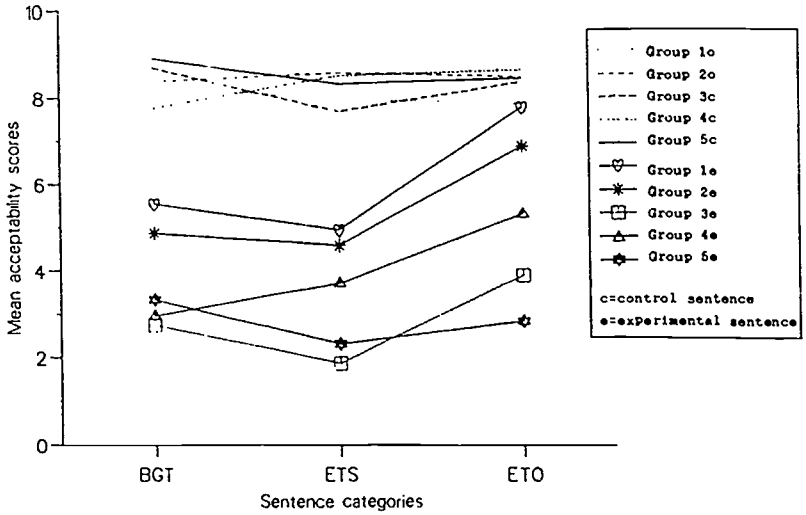


Figure 2: Mean scores for BGT, ETS and ETO within each of the five groups.

Table 5: Tukey Test: pair-wise comparisons of mean scores between the three types of experimental sentences in each of the five groups.

Group 1

	ETS	ETO
BGT	0.61	-2.25*
ETS		-2.86**

Group 2

	ETS	ETO
BGT	0.29	-2.02**
ETS		-2.31**

Group 3

	ETS	ETO
BGT	0.89	-1.16
ETS		-2.05

Group 4

	ETS	ETO
BGT	-0.75	-2.36**
ETS		-1.62

Group 5

	ETS	ETO
BGT	1.03	0.49
ETS		-0.54

**p<0.01, *p<0.05

To test the existence of the topic adjunct in the learner's IL grammars and to use the NGT sentence to predict the BGT and ETS sentences, two simple linear regressions were carried out with the NGT sentence as an independent variable and the BGT and ETS sentences as dependent variables respectively. The underlying hypothesis of this analysis is that the status of the topic adjunct parameter is a condition on the acceptability of the BGT and ETS sentences. If the topic adjunct parameter in the IL grammars is reset to the negative value, that is, the topic adjunct has been unset, we would expect that the BGT and ETS sentences would be unacceptable to the learner. As the results in Tables 6 and 7 show, the t-values in both predictions are significant. As the sample here is very small, we have to treat the results with caution. However, the results do imply that the score obtained in the judgement on the NGT sentence is at least useful as a predictor of the scores in the judgements on the BGT and ETS sentences.

Table 6: Simple linear regression of BGT using NGT as a predictor.

The regression equation is:	DF	R-SQ	T-ratio
BGT = 1.05 + 0.664 NGT	18	41.5%	3.57*

**p<0.01, *<0.05

Table 7: Simple linear regression of ETS using NGT as a predictor.

The regression equation is:	DF	R-SQ	T-ratio
ETS = 0.155 + 0.811 NGT	18	63.3%	5.57**

**p<0.01, *p<0.05

4. Discussion

As we have seen, the results of the experiment suggest that Chinese learners of English initially assume English to be like Chinese, transferring the value of their L1 parameter into L2. This is particularly true in the judgements of the ETO sentences, where the learners in Group 1 almost totally accept the experimental sentences. The results here are inconsistent with the Subset Principle; if the Subset Principle had applied, all the sentences with base-generated topics and empty topics would have been totally rejected. The opposite is found here.

However, the transfer revealed by our experiment is asymmetric; almost all learners including advanced learners had more difficulty in detecting the ungrammaticality of the ETO sentences than the BGT and ETS sentences. This asymmetry cannot be attributed to the availability of positive evidence (i.e. misleading evidence) since English has a stronger constraint on null objects than on null subjects. The following are some example sentences from Schmerling (1973:582), which exhibit some missing subject pronouns in colloquial English.

(8) Seems you can't do that in Texas.

(9) Guess I should be going.

(10) Ever been to Chicago?

But even in colloquial English no null objects are allowed.

It could be argued, on the other hand, that the processing demands raised by the variables in the subject position and the object position are different as the former often forms a 'gap' at the surface level with both sides bounded by other constituents of the sentence, as is shown in (4b), and the latter often appears at the end of the sentence without any bounding constituent on the right side except the full stop, as in (6b). The unavailability of a 'complete gap' in the object position could be argued to cause more difficulty for the learner in locating the gap, and this would explain their failure to detect the ungrammaticality of the ETO sentence. However, the test also contains some ETO sentences which do form 'gaps' with both sides bounded by other constituents of the sentences, as in (7b). And these sentences caused as much difficulty as the sentences like (6b). Furthermore, the null subject also exists as an 'incomplete gap' without any bounding constituent on the left side, as in (5b), and this type of sentence does not cause more difficulty than the sentence with a 'complete gap' in the subject position.

The asymmetry could also be attributed to the differing recoverability of the contents of the null subject and the null object. As is shown in (11), there could be three potential competing arguments for the null subject; and the learner could reject the sentence because of the confusion caused by the three competing arguments. However, a similar possible confusion can also be found in the sentence with the null object, as in (12) and many subjects accepted the sentence in spite of this possible confusion.

(11)* We have planted some trees and flowers in the garden. Are growing quite well.

(12)* She has seen the film, but I haven't seen yet.

We suggest that the asymmetry in the resetting on non-empty-topic parameter by the Chinese learners of English is the effect of UG in the learner's IL grammar in combination with the learner's parsing ability. As aspect markers in English can be frequently seen as bound morphemes in the input, such as affix-hoppings in negative or interrogative sentences, the learner 'knows', at a quite early stage, that INFL in English does not have lexical status as it does in Chinese. The lack of lexical status of INFL makes it impossible for the topic adjunct to exist in the learners' IL grammars since if INFL is not lexical, the topic adjunct will not be properly governed and Case-marked. Consequently, sentences with non-gap topics, base-generated topics and empty topics are rejected as ungrammatical. Because of the establishment of the functional status of INFL in these learners' IL grammars of English, they had to unset the topic adjunct. And as a result, the learners in Groups 2, 3 and 4 were able to detect, like the native speakers, the ungrammaticality of the sentences with base-generated topics and empty topics coindexed with the variables in the subject position. This is also supported by the results obtained from the simple linear regression, in which the acceptance of the non-gap-topic sentence is used as a predictor for the acceptance of the sentences with the base-generated topic and the empty topic coindexed with the variable in the subject position. It would be a violation of UG if the non-gap topic were rejected but the base-generated topics and empty topics were accepted.

However, if they had unset the topic adjunct, why were most learners, including the advanced learners, unable to detect accurately the ungrammaticality of the sentence with the empty topic coindexed with the variable in the object position? We believe that because of their limited parsing ability, they have to adopt a 'bottom-up' strategy to parse the input data. As a result, they can parse the input data only through a very narrow 'window' (Zobl, 1988). As the variable in the object position is properly governed by the verb locally, the learners simply judge the sentence as acceptable on the basis of the data observed locally through the narrow window. As the window expands, more data can be parsed. Gradually, the ungrammaticality of the coindexation of the variable in the object position with the empty topic is discovered and the sentence rejected.

For example, when a beginning learner comes across a sentence like (13), the narrow 'window' he has only allows him to analyze the few words exposed within the scope of the 'window'; if the words exposed within the scope of the 'window' are "going to repair [e]", the learner may accept the variable in object position on the basis of it being properly governed by the verb "repair". At this stage, the learner may not be aware that the variable is blocked in a nonsubjacent environment (i.e. a wh-island) because the wh-word "when" falls outside the scope of the 'window'. Only when the scope of the 'window' is wide enough to cover the variable in object position, the wh-word "when" and perhaps also the empty topic, will the learner be able to discover the ungrammaticality of the sentences, i.e. the violation of the Subjacency Principle.

(13) He wants to repair this car, but [e] I don't know when he is going to repair [e].

5. Conclusion

As the number of the subjects involved in the pilot study is very small, any conclusion we reach here must be tentative. However, the results obtained from the study do indicate an asymmetry in the resetting of the non-empty-topic parameter; Chinese learners of English are able to reject the base-generated topic and the empty topic coindexed with the variable in the subject position at a much earlier stage than the empty topic coindexed with the variable in the object position. The reason, we believe, is that as the former are adjacent to the non-proper governor, INFL, learners do not have much difficulty in detecting the ungrammaticality even when their parsing 'windows' are still 'narrow'; while the latter, as the variable is properly governed locally and is distant from the empty topic coindexed with it, cannot be rejected until the learner's parsing window is wide enough to cover the whole ungrammatical coindexation. The results from the study do not support the prediction of the Subset Principle that once learners have hypothesized a more general grammar, it will be impossible to refute the wrong hypothesis on the basis of positive evidence. Our study suggests that there can be other forms of disconfirming evidence, such as the bound morphemes (i.e. aspect and tense markers) under the node of INFL in our study, which can cause the resetting of the correct parameter.

Note:

1. A short version of this paper was presented by Antonella Sorace and Boping Yuan at the International Conference on SLA in the Chinese Context, Hong Kong, 1991. I am indebted to Antonella Sorace and Dan Robertson for their valuable comments on an earlier version of the present paper.

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