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DIRECTIONALITY OF DIFFICULTY
IN
SECOND LANGUAGE ACQUISITION OF CHINESE AND ENGLISH

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ABSTRACT

This thesis is concerned with the investigation of directionality of difficulty in second language acquisition (SLA) by Chinese-speaking learners learning English as a foreign language (EFL) and by English-speaking learners learning Chinese as a foreign language (CFL). Chinese allows both subject PRO in finite clauses and object *pro*. However, subject PRO in finite clauses and object *pro* give rise to ungrammaticality in English. Unlike Chinese, in which topics can be base-generated, English does not allow a base-generated topic. Chinese and English are also different in that while English reflexives can only take a local subject in finite clauses as their antecedent (thus a short-distance reflexive), the Chinese reflexive *ziji* can take the matrix subject as well as the embedded subject as its antecedent (thus a long-distance reflexive). With respect to these differences between the two languages, our focus is on whether it is more difficult for CFL learners to acquire subject PRO, object *pro*, base-generated topics and the long-distance reflexive in the acquisition of Chinese than for EFL learners to unlearn subject PRO, object *pro*, base-generated topics and the long-distance reflexive in the acquisition of English. The results of our study suggest that there is no single direction of difficulty in the SLA of Chinese and English. In terms of object *pro*, the direction of difficulty is from Chinese to English. However, in acquiring and unlearning the subject PRO, neither CFL learners nor EFL learners seem to have much difficulty. As for base-generated topics, it is found that the acquisition of this feature by CFL learners is more difficult than the unlearning of this feature by EFL learners. The results concerning the acquisition of the Chinese long-distance reflexive *ziji* by CFL learners suggest that a lack of long-distance binding for *ziji* is fossilized in these learners' interlanguage (IL) grammars of Chinese. Based on the findings in this study, we argue that the directionality of difficulty in SLA can only be studied with respect to individual language features and that the mere existence of relevant positive evidence in the input is not a guarantee that there will be a change in the learner's IL grammar. There are many factors involved in deciding the direction of difficulty in SLA. These factors include the availability of informative evidence to the learner, the possibility that the learner makes use of the evidence available for the restructuring of his IL grammar of the target language, the learners' ability to process the relevant data in the input, and the interaction between the structure in the learners' L1 and the inherent developmental stage of the target language.

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DECLARATION

This thesis has been composed by myself and the work presented here is entirely my own.

A large black rectangular redaction box covers the signature area, obscuring the author's name and any handwritten notes.

28th January 1993

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ABBREVIATIONS

A-binding	argument-binding
A'-binding	non-argument-binding
AGR	agreement
ANOVA	analysis of variance
AP	adjective phrase
A-position	argument position
A'-position	non-argument position
A/ <i>pro</i> /M	animate object <i>pro</i> in main sentence
A/ <i>pro</i> /S	animate object <i>pro</i> in subordinate sentence
ASP	aspect
BC	blocking category
BEI	a preposition similar to the English <i>by</i> in a passive voice
BTE _x	base-generated topic in sentence with extraposed clause
BTS	base-generated topic in sentence with sentential subject
BTWh	base-generated topic in sentence with wh-island
C	complementizer
CA	Contrastive Analysis
CC	Creative Construction
CFL	English-speaking learners learning Chinese as a foreign language
CL	classifier
DE	a modifying marker in Chinese that occurs at the end of a prenominal modifier
DET	determiner

EC	empty category
ECP	the Empty Category Principle
EFL	Chinese-speaking learners learning English as a foreign language
EPP	Extended Projection Principle
EXP	experiential aspect marker
EXP/R	expletive in raising-predicate sentence
EXP/W	expletive in weather-predicate sentence
FEC	free empty category
FUT	future aspect marker
GB	Government and Binding
GC	governing category
GCR	Generalized Control Rule
GF	grammatical function
GPP	Generalized Projection Principle
HMC	the Head Movement Constraint
I	INFL
IL	interlanguage
I/ <i>pro</i> / A-adjunct	inanimate object <i>pro</i> coindexed with an argument in an adjunct
I/ <i>pro</i> /M	inanimate object <i>pro</i> in main sentence
I/ <i>pro</i> /S	inanimate object <i>pro</i> in subordinate sentence
L1	first language
L2	second language
LDB	long-distance binding
LDR	long-distance reflexive
LF	logical form
L-marking	lexical-marking

N	noun
NEG	negative
NGT	non-gap topic
NP	noun phrase
PART	particle
PF	phonetic form
PFV	perfective aspect marker
PP	preposition phrase
PR	preverbal reflexive
Pred	predicate
<i>pro</i> /EX	object <i>pro</i> in extraposed clause
<i>pro</i> /SS	object <i>pro</i> in sentential subject
<i>pro</i> /wh	object <i>pro</i> in wh-island
PRO/E	sentence with subject PRO in embedded sentence
PRO/M	sentence with subject PRO in matrix sentence
PRO/ <i>pro</i>	sentence with both subject PRO and object <i>pro</i>
PRG	progressive aspect marker
SDB	short-distance binding
SDR	short-distance reflexive
SLA	second language acquisition
SPEC	specifier
TC	topic chain
TNS	tense
UG	Universal Grammar
V	verb
VP	verb phrase
X ⁰	head category
X ^{max}	maximal projection

CHAPTER 1

INTRODUCTION

One of the characteristics of second language acquisition (SLA) by adults is that unlike children who uniformly succeed in attaining native competence in their first language (L1), adults generally fail to achieve native competence in the acquisition of a second language (L2) (Bley-Vroman 1989). This lack of success in SLA can be related to quite a few factors, one of which is the fact that L2 learners have already acquired the knowledge of another language, that is, their L1, and they bring the knowledge of their L1 to the task of SLA. But how does the knowledge of the L1 affect the acquisition of an L2? Are all L2 features equally susceptible to L1 influence? Or are there any aspects of L2 which are more or less difficult to acquire than others? If the former were the case, there would be no directionality of difficulty in SLA; English speakers would have the same degree of difficulty in learning Chinese as a foreign language as Chinese speakers in learning English as a foreign language. If the latter is correct, we have to explain why some L2 features are more or less difficult to acquire than others; we have to provide an account for the directionality of difficulty if it occurs in SLA.

According to the model of contrastive analysis (Fries 1945, Lado 1957), which was very influential in SLA research prior to the late 1960's, L2 learners would find

easy those L2 structures which were similar to their L1 and would have difficulties where the two languages differed. This model had the implication that there was no directionality of difficulty in SLA and that differences between two languages always led to difficulty in SLA whether, say, Chinese speakers were learning English as an L2 or English speakers were learning Chinese as an L2. A serious problem the contrastive analysis model had was that the comparison between the L1 and L2 was made on the basis of superficial characteristics of the two linguistic systems, rather than on the learners' performance in the L2. As a result, the predictions made by researchers working with contrastive analysis often turned out to be inaccurate.

From the learnability point of view, White (1985, 1986a,b, 1987) takes the position that directionality of difficulty in SLA depends on the availability of positive evidence to the L2 learners.¹ If a language feature in L2 is more inclusive than that in the learner's L1, that is, if the language feature in L2 includes a structure which is not instantiated in the L1 feature, the positive evidence in the L2 input can indicate to the L2 learner that his or her L1 grammar is incompatible with the grammar of the L2 with respect to the language feature concerned and the change is motivated. In this case, learning is always easier. However, where the L1 is more inclusive than the L2 in terms of a certain language feature, the L2 learner will not have positive evidence in the L2 input data to help him or her to unlearn the structure instantiated in the L1 and thus difficulty will occur. White (1986a) predicts that the L1 structure which cannot be disconfirmed by the L2 data is likely to persist and remain as a candidate for what Selinker (1972) calls 'fossilization'.

Results from several studies are adduced in support of White's predictions above. Liceras (1983), in her study of adult native speakers of English learning Spanish, a language which prohibits preposition stranding, finds that almost half of her 15 beginning level learners judged preposition stranding in Spanish to be acceptable and produced some stranded prepositions in a translation task. Tarallo and Myhill (1983), using a grammaticality judgement task, study the acquisition of relative clauses by native speakers of English learning languages prohibiting preposition stranding. They find that acceptance of preposition stranding occurred in a number of cases, particularly by those learning German, but also by those learning Japanese. Liceras (1988) investigates the pro-drop phenomenon in SLA. She chose Spanish, a pro-drop language as the target language, and English- and French-speaking learners of Spanish as her subjects. The results indicate that the subjects do not have much difficulty in acquiring the pro-drop option in Spanish and the non-pro-drop option is seldom transferred into the interlanguage of Spanish. Liceras suggests that the ease that the English- and French-speaking learners of Spanish have in acquiring the pro-drop option is attributable to the fact that they have positive evidence available to them.

Based on White's predictions and the study results mentioned above, it seems that it is the availability of positive evidence in the L2 input that determines the directionality of difficulty in SLA. In recent years, however, some doubts have been expressed about the role of the availability of positive evidence in determining ease or difficulty in SLA (cf. White 1989; Sharwood Smith 1991; Sorace 1991). The availability of positive evidence is not a guarantee that L2 learners make use of it for the restructuring of their interlanguage grammars.

This thesis is concerned with the investigation of directionality of difficulty in SLA by Chinese-speaking learners learning English as a foreign language (EFL) and by English-speaking learners learning Chinese as a foreign language (CFL). Our focus is on comparisons of the developmental patterns of SLA between the two language groups. In this investigation, it will be taken as a working hypothesis that the availability of positive evidence of a property P in the L2 input leads to the ease of acquiring that property and that non-availability of positive evidence leads to difficulty. The questions we will pursue in this work are those in (1).

- (1) a. With respect to the language features involved in the investigation, is it more difficult for English speakers to acquire Chinese than for Chinese speakers to acquire English, or vice versa?
- b. What gives rise to the directionality of difficulty if it occurs? And if it does not occur, why not?
- c. Is the availability of positive evidence in the L2 input a guarantee for the non-occurrence of fossilization?
- d. Does the non-availability of positive evidence of a property P in the L2 input always result in difficulty in acquiring that property?

In addressing these questions, we will use the language features in (2) - (5) as the linguistic focus of the inquiry^{2,3}. Detailed discussions of these language features will be presented in Chapter 3.

(2) Null/Non-Null Subject

- eg: a) zhe ge shiyan yijing kaishi, wo xiangxin
 this CL experiment already start I believe
 e hui chenggong.
 will succeed
- b) *The experiment has been started. I am sure e
 will be successful.

(3) Null/Non-Null Object

eg: a) ruguo ni xiechu yi ben hao shu, wo yiding
 if you write a CL good book I definitely
 mai e.
 buy

b) *If you write a good book, I'll definitely buy e.

(4) Base-Generated/Non-Base-Generated Topics

eg: a) zhe ben shu wo bu zhidao weishenmo ta bu
 this CL book I not know why he not
 xihuan.
 like

b) *This book I don't know why he doesn't like.

(5) Short-/Long-Distance Reflexives

eg: a) Wang Ping_i renwei Zhang Bo_j xiangxin ziji_{i/j}.
 Wang Ping think Zhang Bo believe self

b) John_i thinks Bill_j trusts himself_{*i/j}.

Chinese allows both a null subject in finite clauses and a null object, as is shown in (2a) and (3a). However, the null subject in finite clauses and the null object give rise to ungrammaticality in English, as in (2b) and (3b). Unlike Chinese, in which topics can be base-generated, as *zhe ben shu* (=this book) in (4a), English does not allow a base-generated topic, as is shown in (4b); the topic in English has to be the result of movement and is subject to the Subjacency Principle (see 2.3.8). Chinese and English are also different in that while English reflexives can only take the local subject as its antecedent, as in (5b), the Chinese reflexive, *ziji*, can take the matrix subject as well as the embedded subject as its antecedent, as in (5a).

There are reasons for choosing these language features as the linguistic focus of the inquiry. First as I was a teacher of English in China and as I am now teaching Chinese as a foreign language in the U.K, I have

encountered some errors made by my students, which are related to some of the linguistic features in (2) - (5). From the point of view of second language research, it would be a great waste if we just give pedagogical treatments to these errors without relating them to the inner workings of the linguistic mind. As Corder (1967) pointed out in his article *The Significance of Learners' Errors*, the language of the L2 learner may reflect a true transitional competence, which, when examined, will reveal underlying patterns of consistency and rule-based performance; the learner's errors will provide a window on the status of his acquisition, permitting researchers to see how far the learner has progressed and how the learner's transitional competence differs from the competence of the native speaker. Secondly, the language features in (2) - (5) are among those which are treated in depth both in Chinese linguistics in particular and in linguistics in general. This is particularly true of the features concerning the empty categories; much syntactic research has focused on accounting for the effects of empty categories cross-linguistically (eg. Chomsky 1981; Huang 1982; Rizzi 1986; Jaeggli and Safir 1989a; Cole 1987). And another reason is that there seems to be a gap in the field of SLA. Considerable research effort has been directed towards addressing psycholinguistic problems for both first-language acquisition (eg. Hyams 1986; Radford 1990) and second-language acquisition (eg. White 1985; Flynn 1988) of English. However, although Chinese is spoken by over 1,100,000,000 people, about a quarter of the world's population, to the best of my knowledge, little research effort has gone into investigating the acquisition of Chinese as a first language, to say nothing of Chinese as a second language. This is really a very unfortunate situation. This thesis constitutes an attempt to contribute to bridging this gap in the field of SLA.

In this thesis, both the acquisition of Chinese by English-speaking learners and the acquisition of English by Chinese-speaking learners are accounted for within the framework of Universal Grammar (UG), as elaborated by Chomsky (1981, 1986a,b) and others. UG theory makes specific claims about the first language acquisition process --- indeed one of its major goals is to explain it --- and makes no claims about the process of L2 acquisition. Theories of how second languages are learned have been approached from a variety of perspectives: sociolinguistic, educational, neurolinguistic, psycholinguistic, linguistic, etc. However, SLA research on a firm theoretical linguistic basis with explanatory power and as an independent nonapplied discipline (cf. Sharwood Smith 1985) has a relatively short history. Ever since the 1980's, there have been important theoretical and empirical advances led by the theory of UG in the field of SLA. The principal impetus for this development can be traced to work in linguistics which shifted the focus of study 'from behavior or the products of behavior to states of mind/brain that enter into behavior' (Chomsky 1986a:3). Research within the field of SLA has begun to seek to isolate and specify the properties of the underlying competence necessary for language learning. According to UG theory, there are abstract and linguistically significant principles underlying all languages. There are also parameters which account for variations between languages. Languages differ in subtle ways, depending on which setting is adopted for a certain parameter. The setting of a particular parameter can have a range of deductive consequences for the grammar of a language.

It has been noted by many SLA researchers that the language faculty described by UG, although it is biologically determined, is not necessarily identical in the child and the adult. An obvious fact in L2

acquisition is that the L2 learner has already activated UG in learning his or her mother tongue. In SLA, many learners will be faced with situations where the settings for some parameters differ from L1 to L2. In such circumstances, there is a need to reset or readjust the parameter for the second language.

Chapter 2 of this thesis is devoted to the discussion of UG as a theory of grammar and the linguistic facts concerning the language features focused on in this thesis. This is done within the framework of Government-Binding theory. In Chapter 2, some space is also devoted to the discussion of UG as a theory of first language acquisition. On the basis of Chapter 2, linguistic contrasts are made in Chapter 3 between Chinese and English with respect to the language features in (2) - (5). In Chapter 4, we pursue some theoretical issues in SLA. These include the interlanguage hypothesis, the first language transfer, learnability, parsability, etc. The description of the empirical study is presented in Chapter 5, which serves as a bridge between the general theoretical concerns discussed in the preceding chapters, and chapters 6-8, where specific issues which have been raised in (1) in this chapter are pursued. Chapter 6 presents the study of the acquisition and the unlearning of null/non-null subjects and base-generated/non-base-generated topics by CFL and EFL learners. Chapter 7 concerns an investigation of the acquisition and the unlearning of null/non-null objects. Chapter 8 presents the study of the acquisition of short-distance/long-distance reflexives by CFL and EFL learners. Finally, in Chapter 9, we summarize the findings in the study of directionality of difficulty in second language acquisition of Chinese and English and draw some conclusions on the basis of the results obtained.

Notes to Chapter 1

1. White (1985, 1986a, 1987) discusses learnability in SLA in terms of markedness. As there are many definitions of markedness in the field of linguistics and psycholinguistics, the terms concerning markedness are not used here to avoid confusion.
2. Initially I was to study the resetting of what Huang (1984a) calls the discourse-/sentence-oriented parameter by CFL learners and EFL learners. The language features in (2) - (5) are taken by Huang (1984a) and Cole et al. (1990) as properties clustering around the discourse-/sentence-oriented parameter. My whole experiment design was mainly based on Huang's theory (1982, 1984a,b, 1987), which seemed very convincing to me when I made the design two years ago. As I now disagree with Huang on quite a few major points in his theory now (see Chapter 3), some parts of the design have become redundant and some insufficient to me now. However, on the whole, the experimental design remains valid for my research interests.
3. For the Chinese sentences in this thesis, the *pinyin* system of transcription, a Chinese phonemic system, is used. Under each *pinyin* word, the English gloss is given. The English version of each Chinese sentence is given in single quotes and, where necessary, the English paraphrase is given in double quotes. The interpretations of the abbreviations used in the glosses can be found in the list of abbreviations on Page xi.

CHAPTER 2

UNIVERSAL GRAMMAR

2.0 INTRODUCTION

Universal Grammar is a theory of properties of grammars as well as a theory of the initial biological endowment for language. It specifies that there are abstract and linguistically significant principles underlying all languages. It is argued that these principles define the 'initial state' of the L1 learner's mind (Chomsky 1980a:69). Alongside the unvarying principles that apply to all languages, UG incorporates 'parameters' of variation; a language 'sets' or 'fixes' the parameters according to the limited choice between two or more possibilities.

In this chapter, we will first briefly discuss UG as a theory of grammar and its properties since this is the motivation for the subsequent empirical study. This discussion will then be followed by the introduction of the relevant linguistic facts concerning the language features involved in the study of the SLA of Chinese and English. And finally, we will briefly examine the role of UG as a theory of first language acquisition.

2.1 UNIVERSAL GRAMMAR AS A THEORY OF GRAMMAR

The goal of UG as a theory of grammar is to provide 'the system of principles, conditions and rules that are elements or properties of all human languages, not merely by accident, but by necessity... the essence of human language' (Chomsky 1976:29). Chomsky's earlier model of transformations within the standard model of transformational grammar 'was highly complex, with conditions and stipulations built in here and there in response to particular problems that arose in the process of devising grammars that approach the goal of descriptive adequacy' (Horrocks 1987:81). Now the emphasis has been shifted away from the development of the more or less descriptively adequate rule systems to the development of more explanatorily adequate theories of universal grammar, which seek to explain why the rule systems needed to explain the competence of native speakers have the properties that they appear to have. The current theory, which couches UG in terms of the specific proposals advanced in the model known as 'Government-Binding (GB) theory' (Chomsky 1981, 1986a,b)¹, leads to a complex overall theory involving abstract subtheories but at the same time creates a new simplicity; knowledge of language comes down to variations in a small number of properties. This is the major shift of the theory; rules and stipulations are to be explained as the interaction of principles and lexical properties rather than existing in their own right.

UG is a theory of knowledge, not of behaviour. It prefers general statements that cover many instances rather than particular statements that cover only one. It specifies those aspects of rules and principles that are uniformly attained in human language. Furthermore, within UG, there

are parameters that specify dimensions of structural variation across all languages. The values of these parameters are assumed to be fixed by experience gained in the language learning process. Chomsky suggests that setting the value in one way or another may have deductive consequences for the rest of the grammar; 'in a tightly integrated theory with fairly rich internal structure, change in a single parameter may have complex effects with proliferating consequences in various parts of the grammar.' (1981:6) However, there is no consensus among researchers as to the nature of elements with which parameters are associated. Chomsky (1981, 1982, 1986a) suggests that parameters are associated with the principles of UG. These parameters, generally perceived as options made available by UG, are presumed to be 'fixed' or 'set' between two or more possibilities on the basis of experience available to the language learner in the acquisition process. A different view is advanced by a number of other researchers (cf. Borer 1983; Wexler and Manzini 1987; Henry 1989). According to these researchers, there is no parametrization in the principles of UG and parametric variation should be regarded as the result of variation in the properties of lexical items. In her study of clitics in Hebrew and Romance languages, Borer illustrates the important role of inflections in parametric variation and argues that 'Languages will differ in the availability of particular inflectional rules...' (1983:27). A similar view is expressed in the study of the governing category parameter by Wexler and Manzini (1987), whereby a given language can be expected to manifest more than one value of a given parameter in terms of different lexical items. They use anaphoric elements and pronominal elements to demonstrate that the binding domain tends to differ from one lexical item to another not only across languages but within the same language. In a recent paper, Chomsky (1991) also shifts his position from the parametrization

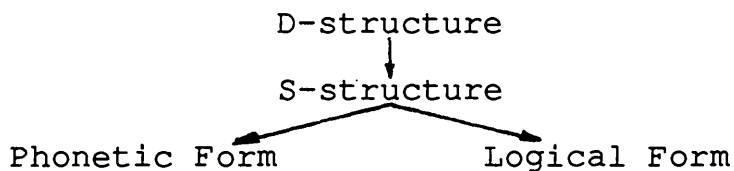
of the principles of UG to the parametrization of the properties of functional elements. He claims that 'If substantive elements (verbs, nouns, and so on) are drawn from an invariant universal vocabulary, then only functional elements will be parametrized' (Chomsky 1991:419). From the theory of lexical parametrization suggested by the researchers above, Ouhalla (1991) proposes a further development, claiming that parametric variation involving substantive elements is determined by variation in the properties of functional categories.² According to Ouhalla, some affixes which have been represented under the single node, I, such as AGR and TNS, are independent syntactic categories and therefore should be structurally represented as such. The shift from the parametrization in the principles of UG to the parametrization in the properties of functional elements is certainly a promising trend. Unlike substantives, such as nouns, verb, etc. which have uniform properties across languages, functional categories are known to have properties which differ from one language to another (cf. Emonds 1985). For example, as we will see in Chapter 3, AGR is available for the agreement features in English but it is absent in Chinese. Language variation may not necessarily be determined exclusively by functional categories, but at least it can be considered to be determined to a large extent by functional categories.

2.2 GOVERNMENT AND BINDING THEORY

To study human language better, Chomsky (1981, 1982 1986a,b) developed the Government and Binding theory. Within this theory, the 'T-model' proposed by Chomsky and Lasnik (1977) is adopted to make a basic tripartite differentiation of grammar (syntax, phonology and semantics) (see Figure 2-1). Sentences are assigned

representations at each of the four levels shown in Figure 2-1: D-structure, S-structure,³ phonetic form (PF) and logical form (LF). For example, D-structures require an account of the phrase structures, which are achieved by the subtheory of X-bar system, and the lexicon. These D-structures express semantically relevant grammatical functions and relationships. S-structures are the products of the application of transformational rules to D-structures through the application of 'move- α ' or 'do anything anywhere' (Lasnik and Saito 1984). PF phonetically represents S-structures through the application of the PF rules (rules determining Phonetic Form, plus rules that effect various optional contractions, deletions, etc.) to S-structures. LF rules apply to S-structures to derive representations of the contribution made by the grammar to the meaning of the particular sentences, such as quantifier scope, etc.

Figure 2-1: T-Model



(Lasnik and Uniagereka 1988:1)

The representations at each level and the rule 'move- α ' are constrained by an additional set of principles. For example, X-bar theory severely restricts the options for phrase structure rules. The projection principle requires all the levels of syntax to observe the specifications for each lexical item given in its entry in the lexicon. The subadjacency principle sets constraints on movement. It basically disallows moving something 'too far' in one operation of movement. Binding theory concerns the reference relationships of Noun Phrase (NP) and empty categories, such as traces, variables, etc. Other

subsystems of principles include θ -theory, Case theory, government theory, etc. (cf. Chomsky 1981).

It is necessary to emphasize that GB describes knowledge of language as an interlocking set of subtheories consisting of principles and parameters. All the principles mentioned above are closely related in several ways. For example, principles, such as the projection principle, constrain representations at several levels of the 'T-model' in Figure 2-1. The projection principle prohibits the addition or subtraction of thematic material (thematic roles assigned by the verb to argument positions) through a derivation. And the government theory enters into the formulation of most other principles within UG. It is clear that the overriding goal of GB is never to deal with isolated phenomena but always with a continuous interaction of principles and subtheories; 'small changes in the characterization of principles and concepts have wide-ranging and complex consequences for some particular language under investigation and for others as well' (Chomsky 1986a:128).

2.3 SUBTHEORIES OF GB THEORY

2.3.0 Introduction

The instantiations of the language features illustrated in (2) - (5) in Chapter 1 are determined by the interactions of a number of subtheories of GB theory. In this section, we will look at these relevant subtheories of GB theory in order to pave the way for the subsequent chapters.

2.3.1 X-bar Theory

In X-bar theory, the emphasis is on expressing general principles of UG. At its most general level, X-bar theory specifies a universal form for phrase structure rules; it captures properties of all phrases, not just those of a certain type. By strictly limiting the set of possible phrase structure rules, X-bar theory succeeds in capturing significant cross-categorial generalizations and parallelisms. For example, a phrase in X-bar syntax always contains at least a head as well as other constituents and any lexical category is the head of a maximal projection. X-bar theory can be expressed in terms of the form in (1) (cf. Chomsky 1986b).

- (1) a. $X' = X (XP)$
 b. $XP = (XP) X'$

In (1a), X' is the single-bar projection of the head X , while XP in (1b) is the double-bar, or the maximal projection of the head X . (XP) in (1a) is the complement of X and (XP) in (1b) is the specifier of X (or X' or XP). We put brackets around the XP to the right of X in (1a) and the XP to the left of X' in (1b) to indicate that specifiers and complements are generally optional. Note that both the specifier and the complement in (1a) and (1b) are maximal projection, that is, XP . The order of XP in relation to X is subject to crosslinguistic variation given that in some languages complements precede their heads, while in others they follow.

Originally, this X-bar schema ranged mostly over some lexical categories, such as Noun ($[+N, -V]$), Adjective ($[+N, +V]$) and preposition/postposition ($[-N, -V]$). To obtain conformity in the structural representation of all categories, Chomsky (1986b) extends the X-bar schema in order to allow certain abstract and non-lexical

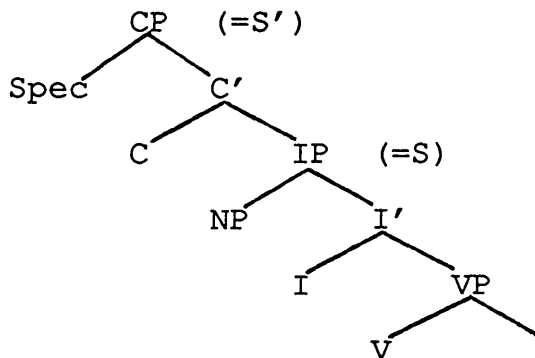
categories to function as head as well. The clausal categories previously labelled S and S' are now labelled IP and CP (I=INFL; C=complementizer), as shown in (2) and (3).

(2) a. $S = I'' = [NP [I', [VP V \dots]]]$ ⁴

b. $S' = C'' = [\dots [C' C I'']]$

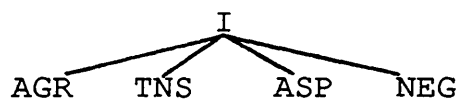
(Chomsky 1986b:3)

(3)



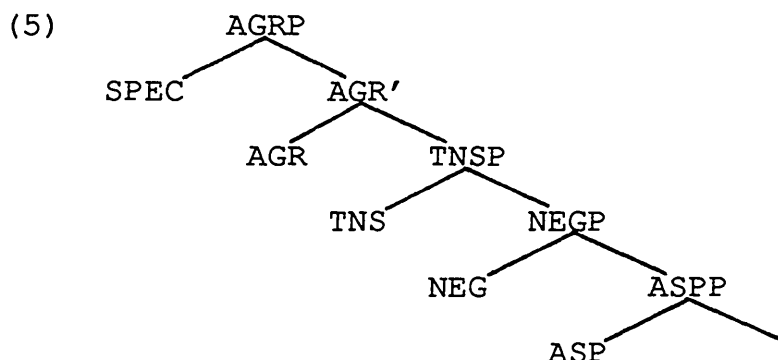
Under this extended X-bar theory, I is assumed to be the position where elements of AGR(eement), TNS (tense), ASP(ect) and NEG(ative) originate, as shown in (4).

(4)



However, as Ouhalla (1991) points out, the analysis in (4) is problematic. First, NEG in languages like English should not be treated as an inflectional element; and the fact that I is multiheaded is not in conformity with the isomorphic constraint on categories and their projection implied in X-bar theory. Furthermore, the elements under the node I can differ from one language to another (cf. Ouhalla 1988) and if all the elements are assumed to be under a single node, i.e. I, it would be impossible to predict variations in word order among languages.

To solve these problems, Ouhalla (1991) suggests that all the elements previously assumed under the node of I should be regarded as independent syntactic categories. Thus, (4) can be treated as (5)⁵.



Following the suggestions by Ouhalla, we will assume in this work that AGR, TNS, NEG and ASP are independent syntactic categories. This assumption is very important in Chapter 6, where it is claimed that the instantiations and non-instantiations of AGR and TNS in English and Chinese have important consequences for the acquisition and the unlearning of the null-subject and the base-generated topic by CFL learners and EFL learners. However, as I is used in most of the literature of GB, we will continue treating the I node as the head of IP unless elements of AGR, TNS, NEG and ASP are dealt with specifically.

2.3.2 C-command and M-command

C-command (i.e. constituent-command) is designed by Chomsky as follows:

(6) α c-commands β iff α does not dominate β and every γ that dominates α dominates β .

(Chomsky 1986b:8)

Following Aoun and Sportiche (1983), Chomsky proposes another notion called m-commanding (1986b:8). The

definition of m-command is that if γ in (6) is restricted to maximal projections, then α is said to m-command β under these circumstances. The m-commanding elements must be in a position which is higher than or in the same maximal projection as the elements it m-commands.

2.3.3 Government

Government refers to a particular syntactic relationship of high abstraction between a 'governor' and an element that it governs. Government 'plays a central unifying role throughout the system' (Chomsky 1982:7). As we will see shortly, the Empty Category Principle crucially depends on government; Case is assigned under government.

The governor must be a head category, i.e. X^0 . Thus, a verb is said to govern its object, a preposition its object and so on. In addition, the functional category, AGR, is considered to govern the subject. The important point to bear in mind is that the necessary requirement for a government relation to hold is mutual m-command. Inside a VP, V governs its complement given that both elements m-command each other due to the fact that they are contained inside the same maximal projection; however, although all the elements inside VP have a mutual m-command relation between each other, the complement cannot be a governor simply because it is not a head category. Chomsky defines the notion of government as follows (1986b:9).

- (7) α governs β iff α m-commands β and there is no γ , γ a barrier for β , such that γ excludes α .

Here 'excludes' is defined as follows:

- (8) α excludes β if no segment of α dominates β .

In other words, α governs β if α m-commands β and there is no barrier γ that dominates β but not α ; α does not govern β if no segment of α dominates β .

Then, what is a barrier? According to Chomsky, lexical categories are L-markers and the L-marking determines what constitutes a barrier. However, Chomsky makes a distinction between a blocking category (BC) and a barrier; and not every BC is a barrier. The following are the definitions of BC and barrier (Chomsky 1986b:14)⁶.

(9) γ is a BC for β iff γ is not L-marked and γ dominates β .

(10) γ is a barrier for β if (a) and (b):
 a. γ immediately dominates δ , δ a BC for β ;
 b. γ is a BC for β , $\gamma \neq$ IP.

Notice that in (10a), *immediately dominate* is a relation between maximal projections. Thus, non-L-marked maximal projections are barriers (except for IP) but L-marked maximal projections are not. In fact, a barrier is any maximal projection which blocks a government relation between two elements. It follows from the above definition of barrier that all maximal projections governed by a functional category are barriers (except IP) given the conclusion that functional categories are not L-markers. According to this definition, VP becomes a barrier because its governor, I, is a functional category. However, it is argued in Chomsky (1986b) that verb-raising, that is, V-movement to I has the effect of 'voiding' or 'circumventing' the barrierhood of VP, in the sense that as a result of this movement, I becomes an L-marker by virtue of containing an element, i.e. the moved verb, which is a lexical category and therefore, an L-marker.

2.3.4 Binding Theory

Binding theory specifies the structure relations that determine the distribution and interpretation of three major nominal classes: anaphors (reciprocals and reflexives), pronominals (pronouns) and referring-expressions (names or lexical NPs). The three principles of the binding theory are as follows:

(11) Binding Theory

- (A) An anaphor is bound in its governing category.
- (B) A pronominal is free in its governing category.
- (C) An R-expression is free.
 - (i) α is a governing category for β if and only if α is the minimal category containing β , a governor of β , and a SUBJECT accessible to β .
 - (ii) a SUBJECT is AGR or the subject of an infinitive, a gerund, an NP or a clause.
 - (iii) α is accessible to β if and only if β is in the c-command domain of α and assignment to β of the index of α would not violate $*[\gamma... \delta]$, where γ and δ bear the same index.

Central to all principles of binding theory are c-command and governing category. An element is said to bind another element if it c-commands it and has the same index; ' α binds β if α c-commands β and is coindexed with β ' (Chomsky 1986a:164). The importance of governing category lies in the fact that the local domain needs to be defined in terms of governing categories.

However, the correct definition of Governing Category (GC) is somewhat controversial. A number of alternative proposals have been made. For example, Wexler and Manzini (1987) suggest that the definition of Governing Category may differ from one lexical item to another not only across languages but inside the same language. Huang (1982) suggests that the governing category for anaphors and that for pronominals are different; while the former

requires a SUBJECT which is accessible, the latter does not.

According to the binding theory in (11), the positions in which anaphors are bound are precisely those positions where pronouns are free; and anaphors and pronominals share the same governing category. This can be illustrated in (12) and (13).

- (12) a. They_i AGR trust themselves_i.
 *b. They_i AGR trust them_i.
- (13) *a. They_i AGR knew that themselves_i had won.
 b. They_i AGR knew that they_i had won.

The governing category for the anaphor and the pronoun in (12a) and (12b) is the clause in which they appear. In this category, the reflexive is bound to the subject, which satisfies Principle A of the binding theory; however, the pronoun is also bound to the subject, which is in violation of Principle B of the binding theory. In (13a) and (13b), the governing category for the reflexive and the pronoun is the embedded clause; it is the minimal category containing an accessible SUBJECT, i.e. the embedded AGR. In this category, the reflexive is free, thus violating the binding requirement for anaphors. The pronoun is also free. In the latter case, no binding requirement is violated.

However, the overlapping of the governing category for the anaphor and that for the pronoun is not available in Chinese, as is shown in (14) and (15).

- (14) Zhangsan_i zhidao [ta_i ying-le].
 Zhangsan know he win PART
 'Zhangsan knew that he had won.'
- (15) Zhangsan_i zhidao [ziji_i ying-le].
 Zhangsan know self win PART
 *'Zhangsan knew that himself had won.'

If we assume that the embedded clause in both (14) and (15) is the governing category for the reflexive and the pronoun in the sentences, we expect that the reflexive should be bound and the pronoun should be free. However, this expectation is not fulfilled. In (14), the pronoun, *ta*, in the subject position of the embedded clause is coindexed with the matrix subject, *Zhangsan*, thus satisfying the binding requirement for pronouns. In (15), the reflexive is in embedded subject position and is also coindexed with the matrix subject, *Zhangsan*. Apparently, this seems to violate Principle A of the binding theory in (11). However, this sentence is perfectly grammatical in Chinese. The sentences in (14) and (15) suggest that the governing category for the anaphor and that for the pronoun are not identical. For this reason, Huang (1982) modifies the notion of the governing category as in (16).

(16) Governing Category:

α is a governing category for β if and only if α is the minimal category containing β and a SUBJECT which, if β is an anaphor, is accessible to β .

According to this modified definition of governing category, for pronouns, a SUBJECT does not have to be accessible and for anaphors, there is no modification: a SUBJECT has to be accessible. Since AGR is absent in Chinese (see Section 3.1 in Chapter 3), the only SUBJECT in the embedded clause in (15) is the reflexive, *ziji*. However, this SUBJECT is not accessible to *ziji*. The only accessible SUBJECT for the reflexive is the matrix subject, *Zhangsan*. The minimal category containing this SUBJECT is the matrix clause, in which the reflexive is bound and the sentence is well-formed. In (14), the SUBJECT in the embedded clause is the pronoun, *ta*. As the SUBJECT for pronouns does not have to be accessible, the embedded clause in (15) is the governing category for the pronoun, *ta*. In this governing category, the pronoun, *ta*, is free; no violation of the binding requirements occurs.⁷

2.3.5 θ -Theory

θ -Theory is responsible for determining the structural representation of thematic relations between constituents. It is concerned with the assignment of thematic roles to sentential constituents, such as agent, patient (or theme), beneficiary, goal, etc. It is assumed that these are assigned to the complements of lexical items as a lexical property. It is also assumed that the majority of verbs ' θ -mark' the subject position of sentences containing them. A lexical entry can assign θ -role only to those positions that conform to particular grammatical configurations of subject or object. An argument position (A-position) is a Grammatical Function (GF) position such as subject or object at D-structure; θ -roles are only assigned to A-positions. It must be pointed out, however, that θ -roles such as Patient should not be confused with GFs; a Patient may be assigned anywhere in the appropriate projection, not just to the GF object position. θ -role such as Patient and Goal are internal θ -roles because they are within the maximal projection of, say, a verb. The Agent is an external θ -role because it goes outside the maximal projection of the verb. As the Extended Projection Principle (see 2.3.7) enables the assignment of θ -roles to affect a broader domain, the subject GF can be assigned a θ -role although it is outside the maximal projection of the verb.

The subject GF is also different from the other A-positions in that a θ -role may not necessarily be assigned to it. In English we often use the nominal expletive 'there' and 'it' in subject position which are not assigned any external θ -roles. Verbs such as 'seem' and 'appear' do not assign external θ -roles. Thus, there are A-positions, to which θ -roles have been assigned, which are θ -marked and there are A-positions, to which θ -

roles have not been assigned, which are not θ -marked. All θ -roles are assigned to A-positions but not all A-positions have θ -roles.

The fundamental principle of θ -theory is the θ -Criterion, which requires that 'each argument bears one and only one θ -role' (Chomsky 1981:36).

2.3.6 Movement Theory

Just like the gradual elimination of the peculiarities of individual rules by the development of the X-bar theory, many separate rules previously known as transformations have been subsumed into the general principle of movement. UG is seen once again as limiting the ways in which movement can take place, narrowing down the possible human languages. The starting point is to consider that there may be no restrictions on movement at all: any part of the sentence could be moved anywhere. This can be stated as:

Move α (where α is a category available, i.e. designates any random category you care to choose).
(Radford 1988:537)

Move- α can affect either maximal projections (X^{\max}) or head categories (X^0). But the X^{\max} can only move to maximal projections and X^0 to head positions. This is the result of a constraint imposed by the Structure Preserving Condition (cf. Emonds 1976, Chomsky, 1986b).

There is also a constraint specifically on head movement, called the Head Movement Constraint (HMC). Following Travis (1984), Chomsky (1986b) and Baker (1988), Ouhalla (1991) defines the HMC as in (17).

- (17) The Head Movement Constraint (HMC)
A head category can only move to the head position immediately preceding it.

The theory of movement explores the restrictions that human languages actually place on movement. Generally speaking, it is a property of UG that only certain elements may be moved, to certain locations, and not more than a certain distance. NP movement can apply to phenomena such as the raising that often occurs with sentences with *seem*. At the D-structure, the subject position in the sentence in (18a) is empty.

- (18) a. *e* seem they to be very happy.
 b. They seem *e* to be very happy.

At the S-structure, *They* is moved to the subject position, as in (18b), leaving a trace behind. NP movement is subject to various restrictions; it must take place between A-positions. The position the NP is to move to should not only be empty but not have already been assigned a θ -role; otherwise the θ -criterion would be breached by the same argument having two θ -roles. For NP movement to work, the empty position *e*, to which it is going to move, must be unavailable for θ -assignment.

Another type of movement is known as 'wh-movement' and concerns the movement of wh-phrases. Questions in English are a typical case in point. One difference between NP-movement and wh-movement is that wh-movement can move the wh-phrase into a non-A-position (A'-position). The A'-position to which the wh-phrase is moved should be an empty position in the D-structure at the beginning of the sentence. The specifier position immediately dominated by CP now proves its usefulness. The reason is that this position is empty except when a phrase like a wh-phrase moves into it. Wh-movement takes a wh-phrase from an A-position and moves it to the specifier of CP, leaving a trace *t* behind it; this type of trace is consequently a wh-trace, also known as a variable. As the specifier of CP is not an A-position, θ -role cannot be assigned to it

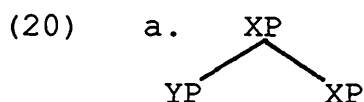
originally; wh-movement goes from an A-position to a A'-position. This does not violate the θ -criterion since the specifier of CP does not carry any competing θ -roles.

A further movement rule known generally as 'topicalization', like wh-movement, also involves movement of a phrase from an A-position into the specifier of CP, a A'-position. Emonds (1976:31) argues that sentences such as those in (19) are examples of topicalization (his examples):

- (19) a. [_{NP} These steps] I used to sweep _____ with a broom.
 b. [_{NP} Each part] John examined _____ carefully.
 c. [_{NP} Our daughters] we are proud of _____.
 d. [_{NP} Poetry] we try not to memorize _____.

The bracketed NPs originate in the position marked _____, and are preposed into the underlined position by the rule of topicalization. Since the topicalization involves movement of a phrase into the specifier of CP, it excludes any preposed wh-phrase in the specifier of CP.

Generally speaking, there are two types of movement processes, substitution and adjunction (Chomsky 1986b). Substitution involves the movement of a X^{\max} or a X^0 to a maximal or head position which is empty. Thus, the NP raising in sentences with *seem*, wh-movement and topicalization are instances of substitution movement. Adjunction refers to the movement of the X^{\max} or X^0 to another maximal or head category. The movement of the verb to I in finite clauses is an instance of adjunction movement. (20a) and (20b) below illustrate the structures of adjunction.



In (20a) YP is the adjoined X^{\max} , which is moved and adjoined to another X^{\max} , that is, XP. (20b) is the structure which results from adjoining a moved X^0 to another X^0 , that is X. It is possibly subject to parametric variation whether the category is adjoined to the left or the right of the host.

2.3.7 The Projection Principle and the Extended Projection Principle

The lexical entry is said to 'project' onto the structure of the sentence; 'representations at each syntactic level (i.e. D-structures, S-structure and LF) are projected from the lexicon in that they observe the subcategorization properties of lexical items' (Chomsky 1981:29). For example, the verb, *give*, projects two complements, and the verb, *beat*, projects one complement. The Projection Principle requires that these complements be structurally represented, i.e. present in some form or another, at all levels of analysis, that is, at all stages of the derivation of sentences. According to the Projection Principle, moved elements must leave a trace, an empty category of the appropriate type, in the position from which they have moved. The trace acts on behalf of the moved element with respect to a number of grammatical relations, in the sense that it is construed as the virtual element that has been moved.

The Projection Principle only applies within the maximal projection, beyond which the properties of the lexical entries for the head no longer apply. To extend the principle to affect a broader domain, Chomsky modifies the Projection Principle with a codicil called the Extended Projection Principle (1982:10) to the effect that all sentences have subjects.

2.3.8 Bounding Theory

'Bounding theory poses locality conditions on certain processes and related items' (Chomsky 1981:5), so that movement is prohibited if too many 'bounding nodes' intervene between the starting point and the finishing point of each movement. Chomsky (1977) proposes a principle called the 'Subjacency Principle', which states that a trace may not be separated from its antecedent by more than one 'bounding node'; in other words, no element may be moved across more than one bounding node. The bounding nodes for English are considered to be IP and NP (cf. Chomsky 1977, Lasnik and Uriagereka 1988). Cumulatively, the bounding nodes prevent movement; individually, however, they do not. For example, if wh-movement in questions or in relative clauses can undergo the 'successive cyclic movements', the number of bounding nodes it can go through can be more than one.

Subjacency, first proposed in detail in Chomsky (1977), is an attempt to generalize over a number of earlier specific conditions on movement, such as the Sentential Subject Constraint and the Wh-island Constraint (cf. Ross 1967); the former forbids the extraction of constituents from sentential subjects; the latter forbids extraction of constituents from wh-islands (i.e. sentences introduced by wh-expressions). Obviously, these constraints are much too specific to be realistic candidates as innate principles. In this thesis, the terms, such as the sentential subject and wh-island are still used, but just to distinguish them from other types of sentences and other types of violations of the subjacency principle.

2.3.9 Case Theory

Case theory deals with the principles of Case assigned to constituents. Although case⁸ is an overt property only of pronominal NPs in English, Chomsky assumes that all NPs with lexical content are assigned (abstract) Case. 'In some languages, Case is morphologically realized, in others not, but we assume that it is assigned in a uniformed way whether morphologically realized or not' (1986a:74). Case is generally thought to be assigned under Government, and is assigned in the S-structure. It is taken as 'structural' Case because it is assigned according to the Grammatical Function configurations of the sentence. In each of these Grammatical Functions, a particular element acts as the 'Case assigner'. Generally, it is thought that verbs assign objective Case (also known as accusative Case), prepositions oblique Case and AGR or TNS nominative Case (also known as subjective Case); sentences without AGR and TNS do not have subjects in the nominative Case.

As we will see in Chapter 3, AGR and TNS are absent in Chinese. Therefore the subject position in Chinese is ungoverned and Case cannot be assigned structurally in this position. However, according to Chomsky (1981), Case can also be assigned inherently. This is particularly true in some non-configurational languages. It is assumed that in Chinese, lexically realized NPs in subject position are inherently Case-marked (cf. Henry 1989).

One of the most important principles of Case theory is the Case filter, which states that 'every phonetically realized NP must be assigned (abstract) Case' (Chomsky 1986a:74). The Case filter excludes overt NPs which have either no Case or more than one Case. This has significant consequences for the application of Move- α ,

forcing it to apply in some instances and making its application impossible in others.

The use of the Case filter can be seen in NP movement in sentences with verbs such as *seem*. Given a D-structure like (21a), we cannot derive (21b), which would violate the Case filter, since both the objective and nominative Case would be assigned to *Mary*. In contrast, in (21c), since the verb *seem* does not assign Case to the elements that follow it and therefore the position *John* occupies at D-structure is not Case-marked, it is possible and also obligatory to move the infinitival subject *John* into the matrix subject position. Otherwise, *John* would be Caseless at S-structure.

- (21) a. _____ seems John to like Mary.
 *b. Mary seems John to like t .
 c. John seems t to like Mary.

Thus, NP traces, whose antecedents are in Case-marked position, must always be in non-Case-marked positions. This is the case in sentences with *seem*, *appear*, the passive morphology, etc. Similarly, wh-elements move to the specifier position of CP, a non-Case-marked position and therefore, the terminal traces left by the wh-elements must always be in a Case-marked position.

2.3.10 Empty Categories and the Empty Category Principle

In GB theory, four types of empty categories have been widely recognized; NP-trace, wh-trace (=variable), PRO and *pro*. PRO occurs in the subject position of infinitive clauses and therefore it is ungoverned and can never be Case-marked. It is constrained by Control Theory which 'determines the potential for the reference of the abstract pronominal element PRO' (Chomsky 1981:6). PRO can take as its antecedent an NP that may be subject or

object in the matrix sentence. This is known as 'obligatory control'. Or it may have indefinite arbitrary reference. This is known as 'arbitrary control'. With obligatory control, PRO must be bound within its governing category, i.e. be an anaphor. PRO with arbitrary control must refer outside its governing category, i.e. be a pronominal. On the basis of binding theory, PRO has the features of both [+anaphor] and [+pronominal].

pro is the null subject of the tensed sentence found in pro-drop languages, which have a rich enough subject-verb agreement system to determine the content of the null subject (cf. Taraldsen 1978; Chomsky 1982). Unlike PRO, *pro* is not controlled and has the normal pronominal capacity for independent reference. In terms of binding, it is free in its governing category and subject to Principle B of the binding theory. Hence, *pro* is the empty category counterpart to the pronominal NP and is [+pronominal].

NP movement takes the NP from an A-position, leaving an NP trace behind. The moved NP is coindexed with the trace within the same governing category. Hence, Principle A of the binding theory suggests that the empty category NP-trace behaves like the overt NP category of anaphor; it has the feature of [+anaphor].

In wh-movement, a wh-phrase is moved to the specifier of CP, a A'-position, leaving a wh-trace behind.

Consequently, the wh-trace must refer outside IP and be bound by the specifier position of CP. By Principle C of the binding theory, wh-trace is an r-expression like a full NP and has the feature of [-anaphor] and [-pronominal]. Principle C of the binding theory requires that no r-expression, including variables, should be bound anywhere by a c-commanding NP in an A-position.

This does not preclude the possibility of 'A-binding of variables, i.e. the binding of variables by a c-commanding element in the specifier position of CP.

The similarities between overt and empty categories of NP are summarized by Cook (1988:164) in the chart in (22).

(22) Type of Noun Phrase

	overt	anaphor	pronominal
anaphor	+	+	-
NP-trace	-	+	-
r-expression	+	-	-
wh-trace	-	-	-
pronominal	+	-	+
pro	-	-	+
PRO	-	+	+

The Empty Category Principle (ECP) requires that a trace must be properly governed (Chomsky 1981). There are two ways in which a trace can be properly governed. The first can be called lexical government, as stated in (23), and the second antecedent government, as stated in (24).

(23) Lexical Government
 α properly governs β iff α is a lexical head and β is its complement.

(24) Antecedent Government
 α is antecedent-governed by β iff α is bound and locally coindexed with β .

As is pointed out in Lasnik and Uriagereka (1988), the term *Empty Category Principle* is rather misleading. In fact, it is only about NP traces and wh-traces, rather than all empty categories. PRO and pro are not subject to the requirement that they be properly governed.

The sentences in (25) are typical examples illustrating the effect of ECP, which is often called 'that-trace' phenomenon.

- (25) a. Who_i do you think [CP t_i [IP t_i saw Bill]].
 *b. Who_i do you think [CP that [IP t_i saw Bill]].
 c. Who_i do you think [CP that [IP John saw t_i]].

In (25a), the trace in the subject position of the embedded sentence is not lexically governed. However, it is locally antecedent-governed by another trace left at the landing-site by the *wh*-element, *who*. In (25b), where an overt complementizer, *that*, is immediately followed by a trace, the trace is not locally antecedent-governed. Thus, ungrammaticality results. However, an overt complementizer, *that*, may co-occur with a trace in object position without ungrammaticality resulting, as in (25c). This is because the trace in object position is lexically governed by the verb. Thus, the ECP is satisfied.

2.4 UG AS A THEORY OF ACQUISITION

Apart from a theory of grammar, UG is also a theory of acquisition. It is hypothesized that children are innately predisposed to acquire language; they come to the L1 acquisition task with biologically endowed knowledge, a set of abstract principles and parameters, which constrain the class of attainable grammars and specify the predetermined range that particular grammars may fall within. These principles and parameters are a mental structure, which constitute the children's initial state of their L1 acquisition. Since children are capable of acquiring any language they are exposed to, the initial state of their L1 acquisition, that is, UG, cannot be structured with a bias for or against the grammar of any particular language. Therefore, the children's initial state of L1 acquisition is compatible with the diversity of existing grammars and is

sufficiently rich and restrictive in structure to guarantee that each of the grammars can develop in the mind on the basis of limited evidence the children are exposed to.

The arguments for the innateness in L1 acquisition are based on the following facts. First, the evidence that the child has to rely on in acquiring his or her native language (i.e. the speech of those around him or her) is degenerated (i.e. incomplete and imperfect) (cf. Chomsky 1972). In consequence, the extremely rich and complex linguistic rules which the child eventually acquires are underdetermined by this evidence, that is, the evidence on its own is not sufficient for the child to be able to work out the relevant rules. This is what Chomsky (1987, 1988) calls 'the poverty of the stimulus' and 'Plato's problem'.

Further evidence in support of the argument for the innateness in L1 acquisition is the fact that all adult native speakers come up with comparable L1 competence and all children acquire their native language in a remarkably short period of time although they have been exposed to different kinds of language data.

Chomsky (1986a) reasons that whatever knowledge a native speaker has about his language which he cannot have acquired through experience must be attributable to innate knowledge; and whatever is innate must therefore be universal.

Although it is generally agreed that language is acquired with the help of the biologically endowed knowledge, that is, a set of abstract principles and parameters, it is still quite controversial what elements parameters are associated with and how they are 'fixed' or 'set'. The traditional view is that parameters are associated with

principles and the values of these parameters are fixed by experience gained in the language learning process (Chomsky 1981). A different view has been suggested (Borer 1983, Wexler and Manzini 1987, Cook 1990, Chomsky 1991) that parameters are associated with lexical items and that children set parameters by acquiring lexical properties of a particular language; 'there is only one human language, apart from the lexicon, and language acquisition is in essence a matter of determining lexical idiosyncrasies' (Chomsky 1991:419). Recently, a further development has been made; parametric variation in syntax is suggested to be due to differences between the properties of functional categories in different languages (Ouhalla 1991) and fixing of parameters means acquiring all the properties of functional categories (Radford 1990, Tsimpli 1991). Functional categories, such as determiners, complementizers and inflection, constitute a closed class and they c-select the category of their complements (for c-selection, see 3.1.2). Unlike functional categories, lexical categories s-select their complements, that is, they choose their complements according to the thematic roles they assign (Ouhalla 1991). This s-selection is, in fact, a characteristic of all lexical categories. If it can be maintained that parametric variation among languages is restricted to functional categories, we can say that children do not have to learn the properties of lexical categories, which would be innate and universal. This would explain the fact that children acquire lexical categories before functional categories (Radford 1990, Tsimpli 1991, Anyadi 1992).

2.5 CONCLUSION

Second language acquisition involves a complex interaction between L1 and L2 and UG. It is this interaction that makes the study of SLA challenging. To

meet this challenge, we have to resort to various sophisticated tools. The subtheories and principles of UG are a useful tool for characterizing the properties of structures in the SLA learners' interlanguage grammars (for interlanguage grammar, see Chapter 4). In this work, we take GB theory, developed by Chomsky (1981, 1986a,b) and others, as the theoretical linguistic framework for the study of the acquisition of English and Chinese by Chinese-speaking learners and English-speaking learners. In the following chapter we will make a contrastive survey between Chinese and English with respect to the language features involved in this work. This contrastive survey will be based on the subtheories and principles we have discussed in this chapter.

Notes to Chapter 2

1. *Government-Binding (GB) Theory* is sometimes called *Principles-and-Parameters Approach*. Chomsky (1988, 1991) points out that the latter is a more accurate term than the former. However, as the former is very widely used in the literature, we will use it in this thesis while bearing in mind the misleading concept the term might present.
2. One of the differences between Ouhalla's (1991) approach and Borer's (1983) is that while Ouhalla's approach is based on a set of functional categories, Borer's approach involves a set of 'inflectional rules'.
3. The term, D-structure, was originally *deep-structure* and S-structure, *surface-structure*. As *deep* was often taken to mean 'profound' or 'important' in other fields, such as anthropology, literary criticism, the current terms are used instead to indicate that neither level is any more profound or important than the other (Lasnik and Uriagereka 1988).
4. I think that (2a) should be:

$$S=I"=[NP[I,I [VP V \dots]]]$$
5. According to Ouhalla (1991), the order of the categories in (5) varies from one language to another. This variation gives rise to different surface orders.
6. In (10a), the category γ inherits barrierhood from a BC that it dominates and in (10b), γ is a barrier intrinsically, by virtue of its own status as a BC.
7. Huang (1982) also uses his modified definition of governing category to account for English sentences like (i) and (ii) below.
 - (i) They_i expected that [_S[pictures of each other_i] AGR would be on sale].
 - (ii) They_i expected that [_S[pictures of them_i] AGR would be on sale].

However, Aoun (1985) challenges Huang's modified definition of governing category with the sentences in (iii) and (iv) below.

- (iii) They_i AGR want [_S'for[_Sthemselves_i to win]]].
- * (iv) They_i AGR want [_S'for[_Sthem_i to win]]].

In (iii), the matrix clause is the governing category for the reflexive, *themselves*, because it is the minimal clause containing a SUBJECT accessible to this reflexive. In this governing category, the reflexive is bound to the matrix subject, *they*, and the sentence is well-formed. According to Huang's modified definition of governing category, the governing category for the pronoun, *them*, in (iv) is the embedded clause because it contains the SUBJECT, i.e. *them*, which does not have to be accessible to the pronoun. In (iv), the pronoun is free. On the basis of Huang's modification, nothing should prevent the pronoun, *them*, from being bound by the matrix subject, *They*. However, (iv) is ill-formed.

8. We use the small *c* in 'case' to indicate morphologically realized case and *C* to indicate abstract Case.

CHAPTER 3

A CONTRASTIVE SURVEY OF CHINESE AND ENGLISH

3.0 INTRODUCTION

In order to empirically investigate the directionality of difficulty in the second language acquisition of Chinese and English by CFL learners and EFL learners, it is necessary to make a contrastive survey of Chinese and English with respect to the language features involved in the investigation. In this chapter, aspects of the two languages relevant to the language features involved in the investigation will be reviewed on the basis of Government and Binding theory. We will first discuss aspects related to null/non-null subjects and base-generated/non-base-generated topics in Chinese and English. These two language features are believed to be closely related and subject to the same syntactic constraint. We will then look at aspects concerning null/non-null objects in the two languages. And finally we will present a discussion of the different behaviours of reflexives in Chinese and English.

As English is a better-studied language than Chinese, the discussions in this chapter will not be balanced between Chinese and English; more space will be given to the discussions of Chinese than English.

3.1 NULL/NON-NULL SUBJECTS AND BASE-GENERATED/NON-BASE-GENERATED TOPICS IN CHINESE AND ENGLISH

3.1.0 Introduction

It is generally accepted that the null subject in finite sentences occurs in languages like Italian and Spanish which have a rich enough subject-verb agreement system to determine the content of the null subject (cf. Taraldsen 1978; Chomsky 1982). It is argued that this element cannot occur in languages like English because English lacks a sufficiently rich agreement system. It is well-known that Chinese has no subject-verb agreement at all. And based on the observations made above, it could be predicted that the null subject in finite sentences would not be allowed in Chinese. On the contrary, the null subject occurs rather freely in Chinese, which can be seen in (1) and (2).

(1) wo mai-le yi tai xinde jisuanji_i, e_i shi Riben zao de.
 I buy PFV one CL new computer be Japan make PART
 *'I have bought a new computer, e is made in Japan.'

(2) wo wen ta Li Ming_i jintian lai bu lai, ta shuo e_i
 I ask him Li Ming today come not come he say
 yiding hui lai.
 certainly will come
 *'I ask him whether Li Ming will come or not today, he says e will certainly come.'

In (1), the subject of the second coordinate clause is empty, which refers to the object of the first coordinate clause, *jisuanji* (=computer). In (2), the embedded subject of the second sentence is empty, which is coindexed with the embedded subject of the first sentence, *Li Ming*. As can be seen in the English versions of (1) and (2), null subjects in finite sentences are not allowed in English.

Another characteristic of Chinese is that it allows base-generated topics, that is, topics not created through movement, as in (3) and (4). However, base-generated topics are not possible in English.

(3) Zhongguo de da chengshi, wo zhi qu-guo Beijing.
 China DE big city I only go EXP Peking
 *'Big cities in China, I have only been to Peking.'

(4) ta jia li de ren, wo zhi jian-guo ta mama.
 her family in DE people I only meet EXP her mother
 *'People in her family, I have only met her mother.'

The topics in (3) and (4), *Zhongguo de da chengshi* and *ta jia li de ren*, are non-gap topics, that is, they are base-generated rather than derived from any non-topic constituents of the sentences.

The topics in (5) and (6), *zhe wei xiansheng* and *zhe zuo fangzi*, are also base-generated and should not be regarded as topics derived from the embedded wh-islands; otherwise, the subjacency principle would be violated (for the Subjacency Principle, see Chapter 2).

(5) zhe wei xiansheng wo bu jide yiqian wo zai nar
 this CL gentleman I not remember before I in where
 jian-guo e .
 meet EXP
 *'This gentleman, I cannot remember where I have met e before'.

(6) zhe zuo fangzi wo bu zhidao ta dasuan shenmo shihou
 this CL house I not know he intend what time
 mai e .
 sell
 *'This house I don't know when he is going to sell e.'

From the English versions of (3-6), we can see that English does not allow base-generated topics.

In 3.1.1, we will review previous analyses of the null subject and the base-generated topic in Chinese. We will

then present an analysis of the null subject and the base-generated topic on the basis of AGR, TNS and NEG categories in 3.1.2. And 3.1.3 is a conclusion of this section.

3.1.1 Previous Analyses of the Null Subject and the Base-Generated Topic in Chinese

Huang (1982, 1984a,b, 1989) suggests that in Chinese the null subject in finite sentences can be *pro* or a variable. One problem that arises if *pro* exists in Chinese concerns how to interpret *pro* in Chinese. According to Chomsky (1981, 1982), the distribution of *pro*-drop is determined by the principle of recoverability, or what Jaeggli (1982) terms the 'identification hypothesis'. This requirement is taken to mean that *pro* must be identified by coindexing with AGR, the agreement features of the INFL category of a finite clause (cf. Chomsky 1982:85-86). In a language like Italian or Spanish, the subject of a finite clause may drop, because the agreement marking on a finite verb is sufficiently rich to recover or identify the reference of a missing subject. As agreement markings in a language like English are too meagre to sufficiently determine the reference of a missing subject, *pro*-drop is prohibited from the subject position of a finite clause. Since Chinese has no AGR features, the proposal that *pro* occurs in languages with sufficiently rich agreement will not work for Chinese. However, Huang suggests that 'the *pro*-drop phenomenon may happen in one of two types of languages, either a language with a very rich agreement system, or in a language without agreement at all. On the other hand, a language with a rather meagre system of agreement, such as English, does not allow *pro*-drop' (Huang 1982:366-367)¹. Huang (1982, 1984a,b, 1989) defends his position that the element in question is *pro*, arguing that *pro* can occur in Chinese if it is locally identified by a nominal element (rather than by AGR, as Chomsky and others propose). He suggests a modification of the condition,

called 'a Generalized Control Rule' (GCR), under which both *pro* and *PRO* may occur.

- (7) Generalized Control Rule (GCR): (Huang 1989)
 An empty pronominal [*pro* or *PRO*] is controlled in its control domain (if it has one).
- (8) α is the control domain for β iff
 a. α is the lowest cyclic node (S or NP) that contains β or the minimal maximal category containing β , and
 b. α contains a SUBJECT accessible to β .

According to Huang's GCR, an empty pronominal takes the closest nominal element as its antecedent. By a nominal element, Huang means either NP or AGR.² If this is correct, *pro* should be identified by its 'closest nominal element', which, in the case of a *pro*-drop language, is AGR, but in the case of the subject of a subordinate clause in Chinese like (9), is the subject of the next higher clause.

- (9) Zhangsan_i shuo [e_i jian-guo Lisi].
 Zhangsan say meet EXP Lisi
 *'Zhangsan says that e has met Lisi.'

According to Huang, the null subject of the embedded clause in (9) is *pro*, coindexed with the subject of the matrix sentence, *Zhangsan*, because there is no AGR in the embedded sentence and the closest nominal element is the matrix subject.

Huang analyzes the null subject in matrix sentences as a variable, as in (1). He also notices that the null subject in finite embedded clauses is not always coindexed with the subject in the matrix sentence; it may take its reference from outside the sentence, as in (2); in this case, it is argued by Huang to be a variable. According to Huang, the subject variable is A'-bound by an empty topic in the specifier position of CP; and this empty topic is coindexed with the topic in the discourse. Following Huang, the proper representations of (1) and (2) would be (10) and (11) (irrelevant details are omitted).

- (10) wo mai-le yi tai xinde jisuanji_i, [TOP e_i] [IP e_i shi
 I buy PFV one CL new computer be
 Riben zao de].
 Japan make PART
- (11) wo wen ta Li Ming_i jintian lai bu lai, [TOP e_i] [IP
 I ask him Li Ming today come not come
 ta shuo [CP[IP e_i yiding hui lai]].
 he say certainly will come

Huang's analysis of Chinese assumes that INFL in Chinese is a proper governor because what is dominated by INFL in Chinese is some true lexical category like 'le (liao)/to finish' (the perfective aspect marker), 'zai/at' (the progressive aspect marker), 'hui/to have the ability to do' (the future aspect marker), etc; these aspect markers make it possible for the subject variable and the empty topic to be properly governed by INFL, thus satisfying the ECP.

It is true that aspect markers in Chinese can be used as lexical words, such as verb, preposition, etc. However, the fact is that even if INFL contains Aspect, this does not make INFL a governor. As Henry points out, 'in languages in general, INFL is a governor only if it contains AGR' (1989:108). Obviously, Huang ignores the distinction between TNS and AGR on the one hand, and ASP on the other. He believes that in Chinese the aspect markers can be used to identify finite clauses and non-finite clauses; and only verbs in finite clauses can be attached with aspect markers. Using this method, Huang (1982) identifies the embedded sentences in the following sentences as non-finite and the null subjects in them as PRO.

- (12) wo bi Lisi [PRO lai].
 I force Lisi come
 'I force Lisi to come.'

(Huang's (108) in Ch 3)

- (13) wo zhuenbei [PRO mingtian lai].
 I prepare tomorrow come

'I prepare to come tomorrow.'

(Huang's (87) in Ch 5)

(14) wo quan Zhangsan [PRO bu mai zhe ben shu].
 I persuade Zhangsan not buy this CL book
 'I persuaded Zhangsan not to buy this book.'

(Huang's (88) in Ch 5)

Huang is right in identifying these embedded clauses as non-finite. However, as can be seen in the following sentences, taken from Hou (1988), the fact that the embedded clauses are non-finite does not prevent the use of aspect markers in them, and thus aspect markers cannot be used to distinguish the finite from the non-finite. ((15), (16), (17) = Hou's (14), (15) (17)).

(15) ta bi Lisi lai -guo, (couqiao ni bu zai jia).
 he force Lisi come EXP fortunately you not at home
 *'He forced Lisi to have come; (fortunately you were not at home.)'

(16) (xingkui) wo quan Zhangsan mai-le zhe ben
 fortunately I persuade Zhangsan buy PFV this CL

shu (xianzai mai bu dao le).
 book now buy not get PART

'(Fortunately), I persuaded Zhangsan to have bought this book; (now you won't be able to buy it.)'

(17) wo zhuenbei lai -zhe bu zou, (kan ni na wo zenmo
 I prepare hang-on PRG not leave see you take me how

ban.)
 deal-with

'I prepare to be hanging on and refuse to leave (and see how you will deal with me).'

Tense (TNS) and Aspect (ASP) are two independent categories (see Section 3.1.2). As Quirk et al. point out, 'the term ASPECT refers to a grammatical category which reflects the way in which the verb action is *regarded* or *experienced* with respect to time. Unlike tense, aspect is not deictic, in the sense that it is not relative to the time of utterance. For some purposes, the two aspect contributions of English, the perfective and progressive, can be seen as realizing a basic

contrast of aspect between the action viewed as complete (perfective), and the action viewed as incomplete, i.e. in progress (imperfective or progressive).' (1985:188-189)

Since aspect markers do not refer directly to time, they can be used in non-finite clauses. This is the case in English (see (18), (19)) as well as in Chinese (see (15), (16), (17)).

(18)to have done.....

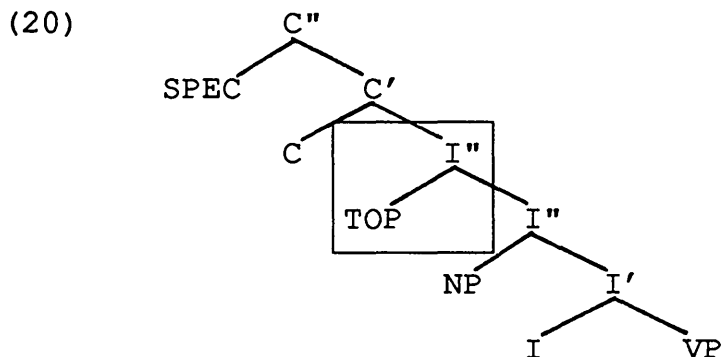
(19)to be doing

Following Lu et al. (1981), who argue that verbs in Chinese cannot be distinguished in terms of TENSE, but can be distinguished in terms of ASPECT, we believe that as there is neither tense nor agreement in Chinese verbs, the categories of TNS and AGR are absent in Chinese syntax (see 3.1.2 for more details). If this is correct, we can reject Huang's analysis of INFL in Chinese as a proper governor; since AGR and TNS are absent in Chinese, the subject in Chinese is not governed, to say nothing of the empty topic being properly governed.

For our analysis of Chinese, Huang's GCR is not accepted either, because it runs into difficulty when it is used to explain the object *pro* (cf. Cole 1987, also see Section 3.2). The closest nominal element to the object *pro* would be the subject of the clause in which the object *pro* occurs; however the object *pro* cannot be coindexed with its closest SUBJECT as this would violate the binding conditions.³

Although Huang's analysis of the null subject and the empty topic fails to explain the linguistic features concerned in Chinese, his explanation of the topic in Chinese seems quite convincing. As Chinese is a topic-prominent language (cf. Li and Thompson 1976), Huang believes that 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). Cole (1987) further develops Huang's idea by proposing that there is a fundamental difference in the basic structure between Chinese and English. According to Cole, the topic in Chinese is a basic unit of a sentence, which is an adjunct being adjoined to I", as in (20).⁴



The accounts given by Huang and Cole here provide us with insightful explanations for sentences like (3) and (5), repeated here.

(3) Zhongguo de da chengshi, wo zhi qu-guo Beijing.
 China DE big city I only go EXP Peking
 *'Big cities in China, I have only been to Peking.'

(5) zhe wei xiansheng wo bu jide yiqian wo zai nar
 this CL gentleman I not remember before I in where
 jian-guo e .
 meet EXP
 *'This gentleman, I cannot remember where I have met e
 before.'

Based on Huang and Cole's accounts, the topic in (3), *Zhongguo de da chengshi*, is not derived from some non-topic constituent of the sentence and it must be base-generated; this is what we call 'non-gap topic'. The same analysis is available for (5), where the topic, *zhe wei xiansheng*, is not created through movement like a wh-trace, otherwise the subadjacency principle would be violated. In (5), the topic is

base-generated and the empty object in the embedded wh-clause is also base-generated and becomes a variable after it is coindexed with the topic.

Huang's analysis is perhaps the best-known analysis of ECs in Chinese. Besides Huang, some other linguists have also made some contribution to the analysis of ECs in Chinese. Xu (1986) rejects the idea that Chinese ECs can be analyzed according to the four types of empty categories suggested by Chomsky (1982:78), that is, NP-trace, *pro*, *PRO* and variable. Instead, he states that Chinese ECs, including the null subjects we have discussed above, are Free Empty Categories (FEC), which, he believes, are completely devoid of features. Let us look at two of Xu's arguments concerning the relation between the topic and the empty category. Xu argues that the EC in (21) (=Xu's (16)), where the EC bound by the topic is within a relative clause, is not a variable because it is not subject to the subjacency principle.

- (21) zhe ben shu wo mei jian-guo yige NP[S[neng du-
 this CL book I not meet EXP one can read-
 dong e de] ren].
 understand DE person
 *'This book I haven't met anyone who can understand e.'
 "I haven't met anyone who can understand this book."

As we can see above, topic in Chinese is a basic unit of a sentence and is available at D-structure. Therefore, the topic in (21), *zhe ben shu*, is base-generated and the EC in the relative clause is also base-generated and becomes a variable by definition when it is coindexed with the topic (see Chomsky's (1982) functional definition of ECs).

Another argument Xu makes against the analysis of variable-topic relation is that topic constructions appear to violate Koopman and Sportiche's (1982) bijection principle --- the requirement that an operator bind exactly one variable, as in (22) (=Xu's (14b)).

- (22) Zheben shu_i s[ta pp[zai NP[s[wo du e_i de] shihou]]
 this book he at I read DE time
 yijing du -guo e_i le].
 already read EXP PART
 'This book, at the time when I was reading e, he had
 already read e.'

As Henry (1989) points out, this sentence could be an example of a parasitic gap type of construction and therefore may not constitute a genuine argument against the identification of the EC as a variable.

Battistella (1985) suggests that there is a disjunction between the governing category (GC) for pronominal binding and that for anaphoric binding in Chinese (see (23), (24) = Battistella's (23), (24)) and that as an EC can occur in the subject position of a finite clause in which the pronominal and anaphoric governing categories do not overlap (see (25) = Battistella's (25)), the EC should be treated as PRO because PRO is usually defined as [+pronominal, +anaphor].

- (23) [Zhangsan_i shuo [ta_i hui lai]].
 Zhangsan say he will come
 (24) [Zhangsan_i shuo [ziji_i hui lai]].
 Zhangsan say self will come
 (25) [Zhangsan_i shuo [PRO_i hui lai]].
 Zhangsan say will come

In (23), the embedded clause is taken as the GC, since it is the minimal category containing *ta*, its governor (INFL, and a SUBJECT, i.e. *ta*). In (24), as the SUBJECT, *ziji*, in the embedded clause cannot be self-accessible, the matrix clause, not the embedded clause, is the GC. (See 2.3.4 for a more detailed discussion of the different Governing Categories for anaphors and pronominals in Chinese). And in (25), PRO, a pronominal anaphor, is permitted in the subject position of the embedded clause because as an anaphor it is bound in its anaphoric GC (the matrix), and as a pronominal it is free in its pronominal GC (the embedded clause).

Battistella argues that PRO may occur not only in ungoverned positions but positions where the GC would differ from anaphors and pronominals. As the GCs for anaphors and pronominals in English overlap, PRO in the subject position of a finite clause is not permitted.

While Battistella is correct in claiming that the null subject of a finite clause in Chinese is PRO, the basis on which he builds up his accounts is untenable. In fact, there is no clear distinction between the anaphoric GC and the pronominal GC in Chinese. Chinese allows two types of reflexives; the bare reflexive, *ziji* (=self), and the phrasal reflexive, pronoun+*ziji*, (see 3.3 of this chapter), and the latter shares the same GC as the pronominal.

Like Battistella, Henry (1989) also argues that the null subject of the finite clause in Chinese should be regarded as PRO. However, Henry uses different data to support her argument. According to Henry, the unifying characteristic of ECs is the absence of Case-marking and the availability of base-generated ECs does not depend on recoverability of content, but the (optional) absence of Case marking at PF. Following Bouchard (1983), Henry suggests that PRO and NP trace are Caseless and wh-trace usually has its Case absorbed by the wh-phrase. In pro-drop languages, as AGR is rich enough, it can absorb all the features of the subject, including Case, thus leaving the null subject without Case marking. And in non-configurational languages, given their very free word order, Case cannot be assigned structurally. Chinese does not have AGR elements and the subject position is ungoverned. Therefore, Case cannot be assigned structurally to this position in any event. If the subject is realized by a lexical NP, instead of structural Case, inherent Case is assigned to it. Thus, Henry claims that absence of Case may derive from different parameters, for example, from the lack of overt Case-marking (as in



Chinese), from a rich AGR (as in the pro-drop languages) or from non-configurationality.

To support her argument of the null subject in Chinese as PRO, Henry uses the sentences in (26) and (27) (=Henry's (53) and (54)) to demonstrate that the null subjects in these sentences have only arbitrary interpretations, which is characteristic of PRO but not *pro*.

(26) e yao xue hao Zhongwen, e yingai duo shuo duo
want study well Chinese should more speak more

lianxi.
practise

"If one wants to study Chinese well, one must speak a lot and practise a lot".

(27) [e mai e de] gen [e zu e de] dou hao.
buy DE with rent DE both good
"What one buys and what one rents are both good."

(28) e yao xue hao Yingwen, Zhangsan yingai duo shuo
want study well English Zhangsan should more speak

duo lianxi.
more practise

"If Zhangsan wants to study English well, he must speak a lot and practise a lot."

(29) Zhangsan yao xue hao Yingwen, e yingai duo shuo
Zhangsan want study well English should more speak

duo lianxi.
more practise

"If Zhangsan wants to study English well, he must speak a lot and practise a lot."

In (26), the null subjects can only have arbitrary interpretations. To have referential interpretations for (26), we have to use lexically realized referring-expressions or pronouns in subject position of either the matrix sentence, as in (28) or the embedded sentence, as in (29). In (27), the null subjects contrast with the null

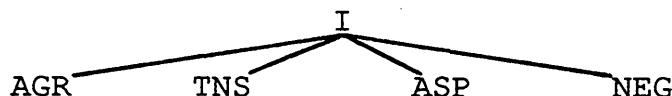
objects in that only the former but not the latter can have arbitrary interpretations. That is, a reading like 'Those who buy things and those who rent things are both good' is not available.⁵ We can put (27) in a context of a mother speaking to her two sons. Suppose that her first son has bought a TV set and her second son has rented a TV set. If the mother says (27), the only interpretation of what the mother says is that both the bought TV set and the rented TV set are good. The subjects have to have arbitrary interpretations.

Henry has provided an insightful account of the empty categories in Chinese and her position that the null subject in Chinese is PRO is adopted in this work. In the following subsection, we will provide an account of availability of null subjects and base-generated topics in Chinese and unavailability of null subjects and base-generated topics in English on the basis of parametric variations in the properties of functional categories. This account will form the basis for the explanations in Chapter 6 of the acquisition and unlearning of the null/non-null subjects and base-generated/non-base-generated topics by CFL learners and EFL learners.

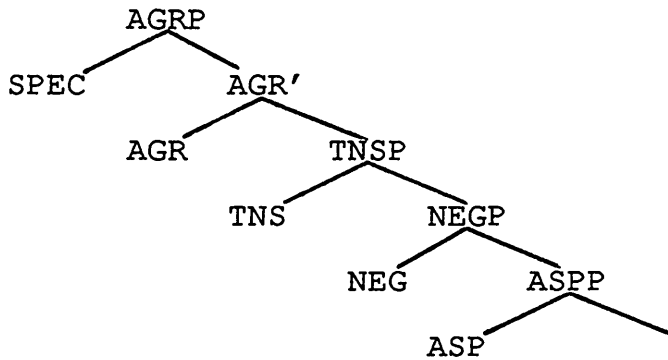
3.1.2 Differences between Chinese and English in the Properties of Functional Categories

We have seen above (2.3.1) that Ouhalla (1991) suggests that all the elements previously assumed under the node of I should be regarded as independent syntactic categories. Thus, (30) can be treated as (31).⁶

(30)



(31)



On the basis of Ouhalla's analysis, we believe that the difference between Chinese and English in allowing and disallowing the null-subject in finite sentences is a direct result of the fact that while the AGR and TNS elements are available in English for tense and agreement features, they are absent in Chinese. Thus, English has the setting of [+AGR, +TNS] and Chinese [-AGR, -TNS]. As nominative Case is assigned by AGR (and perhaps also by TNS), the absence of AGR and TNS in Chinese leads directly to the possibility of PRO in the subject position of a finite sentence.

Before demonstrating the differences between Chinese and English with respect to AGR and TNS, let us first look at some new concepts introduced in Ouhalla (1991). Unlike the widely-adopted view about the VP predicate phrase in the literature, Ouhalla defines the predicate phrase (PredP) as follows:

(32) The predicate phrase is the domain of theta-marking and theta-receiving elements only.

(1991:31)

Here, 'predicate phrase' is meant to be any maximal projection which contains a semantic head of the construction and its internal arguments. And any element which does not participate in the relation of theta-marking and theta-receiving is excluded from the predicate phrase. The followings are the examples (adapted from Ouhalla's (30) Ch.1).

- (33) a. The boy [kicked the ball].
 b. John is [in the garden].
 c. John and Mary are not [very happy].

Notice that the copula *be* is a non-theta assigner and does not enter into semantic predication relations and therefore is excluded from the domain of the predicate phrase (see (33b,c)).

Ouhalla believes that functional categories play a very important role in accounting for variations among languages. He identifies some unique properties of functional categories, two of which are listed in (34):

- (34) Only functional categories have:
 (i) c-selectional properties
 (ii) m-selectional properties

Here c-selection refers to categorial selection⁷ and m-selection to morphological selection. The c-selectional properties specify the type of syntactic categories that a particular functional category can select. The m-selectional properties include information as to whether the category in question is affixal or non-affixal and, if it is the former, they specify the nature of the item it can attach/adjoin to.

To preserve the well-formedness of each sentence at various stages of derivation, the Projection Principle is proposed as a fundamental principle of UG (Chomsky 1981, also see 2.3.7), which states that the selectional properties of lexical items must be satisfied at all levels of syntactic analysis. However, Ouhalla notices that AGR and TNS are not attached or adjoined to a category of the appropriate type at the D-structure level and therefore the m-selectional properties do not have to be satisfied at all syntactic levels. He revised the Projection Principle and proposes a principle called the Generalised Projection Principle (GPP):
 ((35) and (36)=Ouhalla's (18) and (19) in Ch.1)

- (35) The Generalised Projection Principle (GPP):
The selectional properties of lexical items must be satisfied at the relevant levels of representation,

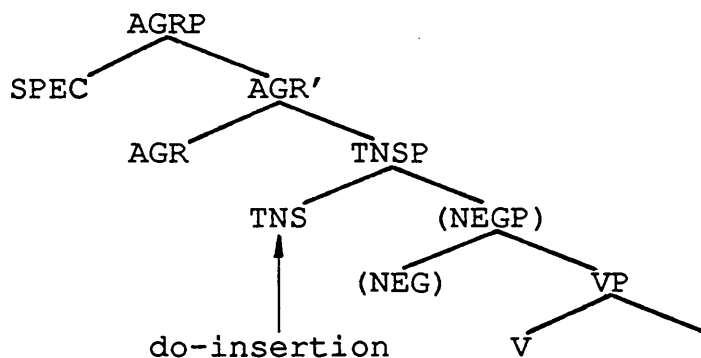
where the relevant levels are specified in (36i) and (36ii):

- (36) (i) The s-selectional and c-selectional properties must be satisfied at all syntactic levels.⁸
(ii) The m-selectional properties must be satisfied at the S-structure level.

In the following let us analyze the difference between Chinese and English with respect to the specification of AGR and TNS on the basis of Ouhalla's account of the functional categories. In English, the appearance of the NEG element prevents the verb from merging with AGR and TNS, which can be seen in (37a,b,c).

- (37) a. John knows Bill.
*b. John knows not Bill.
c. John does not know Bill.

d.



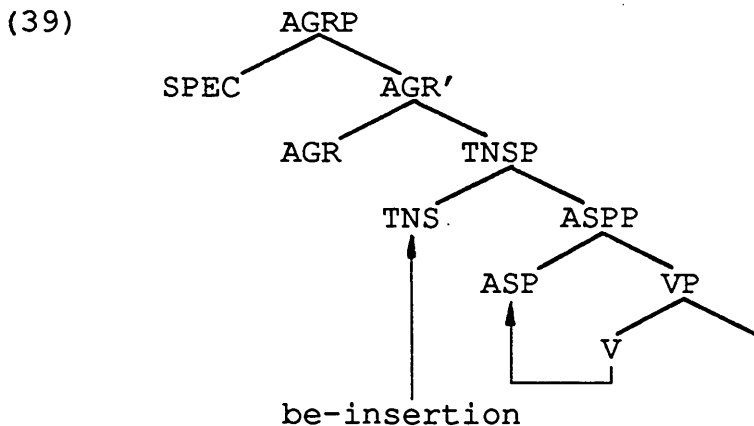
In (37a), NEG is absent and the verb, *know*, is able to move to TNS and then to AGR, and merge with them. However, in (37b), the verb, *know*, is unable to move to TNS and AGR because of the presence of NEG. If the verb moves directly to TNS and AGR, that is, across NEG, this movement will give rise to a violation of the Head Movement Constraint (HMC) (See 2.3.6), hence the ungrammaticality of (37b). V-movement to TNS and AGR through NEG, which would be consistent with the HMC, is also excluded because neither the verb nor the NEG element is affixal. In other words, V-movement to NEG is

unmotivated. In this situation, TNS and AGR would be 'stranded'; they are affixal, but they have nothing to attach to. However, as pointed out by Ouhalla, English resorts to the process of 'do-support', which inserts the verbal expletive *do*⁹ to serve as a 'bearer' for the 'stranded' AGR and TNS elements, as in (37d), thus deriving (37c).

To insert a bearer for AGR and TNS in negative sentences is a language-specific strategy which English resorts to. As AGR and TNS are absent in Chinese, the 'bearer' for AGR and TNS is not required, which can be seen in (38).

- (38) Zhangsan bu renshi Lisi.
 Zhangsan not know Lisi.
 'Zhangsan does not know Lisi.'

Ouhalla (1991) suggests that ASP is a category in its own right, base-generated between TNS and VP, as outlined in (39): (=Ouhalla's (35) Ch.2)



According to Ouhalla, the *-ing* form is the progressive ASP element in English and is attached to the main verb; AGR and TNS are attached to the 'bearer', *be*¹⁰, as in (40).

- (40) He was holding a gun in his hand.

In (40), we can see that in the progressive form in English, the AGR and TNS elements appear on the semantically empty

verb, *be*, while the ASP element is realized on the main verb. The verb, *hold*, moves to ASP, forming a [V+ASP] complex. However, the main verb moves only as far as ASP, further movement to TNS and AGR being excluded. Then a question arises as to what prevents the [V+ASP] complex from moving to TNS and AGR, thus resulting in the 'be-insertion'. Ouhalla argues that the answer to this question lies in the categorial nature of the ASP element in combination with the m-selectional properties of the TNS element and the GPP. According to Ouhalla, the *-ing* form in the progressive aspect is nominal in nature, because the same form appears in gerundive constructions, which are widely recognized as nominal, given their distributional properties similar to those of simple noun phrases. Ouhalla argues that 'although the 'two forms' are one and the same lexical element, they differ in that while the progressive form is marked (positively) for an aspectual feature, the gerundive form is not, hence the fact that gerundives do not necessarily have a (progressive reading).' (1991:81)

If Ouhalla's analysis of the *-ing* form in the progressive aspect as a nominal element is correct, we can see why the verb cannot undergo a successive cyclic movement and have all the three inflectional elements in ASP, TNS and AGR attached to it. As we have seen above, the verb can move to ASP, forming the [V+ASP] complex, which is legitimate. However, the movement of the [V+ASP] complex to TNS leads to a violation of the m-selectional properties of TNS; since the *-ing* form in the progressive aspect in English is nominal, it cannot be selected by TNS because TNS m-selects only verbal elements. The violation of the m-selectional properties of TNS also results in a violation of the GPP.¹¹ Given the impossibility of [V+ASP] movement to TNS in English, a strategy similar to that in English negative sentences is used to 'rescue' the stranded TNS and AGR, that is, a semantically empty verbal element is inserted under TNS, creating a complex, which subsequently moves to AGR.

Unlike the nominal *-ing* form in the progressive aspect, *be* is a verbal category and therefore is capable of satisfying the m-selectional properties of the TNS element.¹²

Obviously, the auxiliary *be* in the progressive aspect in English is also a bearer for AGR and TNS, similar to the do-support in English, and is purely 'supportive' in nature.¹³

Cases of the nominal [V+ASP] complex are not uncommon. The following examples from Irish in McCloskey (1983) (cited in Ouhalla (1991)) illustrate some properties of the [V+ASP] complex which are usually associated with nominal categories:

- (41) Bhí muid ag quartú tí.
 were we PTC seek(PROG) house(GEN)
 'We were looking for a house.'
- (42) Bhí siad mo chuartú.
 were they my seek(PROG)
 'They were looking for me.'

In (41), where the object is non-pronominal, the object is marked with genitive Case, and in (42), where the object is pronominal, the object is realized as a possessive. Ouhalla argues that all these properties are clear indications that the [V+ASP] complex is indeed nominal in nature.

Aspect markers in Chinese can also be assumed to be nominal as they are derived from substantive categories and most of them can occur as independent verbs (cf. Huang 1982, 1984b, 1987; Cole 1987; Cole, et.al 1990; also see 3.1.1). In Chinese, movement of the verb to ASP makes the [V+ASP] complex nominal. However, as AGR and TNS in Chinese are absent, the verbal expletive is not required. This can be seen in (43), the Chinese translation of (40), where the verb, *na* (=hold), moves to ASP to form an [ASP+V] complex with *-zhe*, a progressive aspect marker, and no auxiliary is needed.

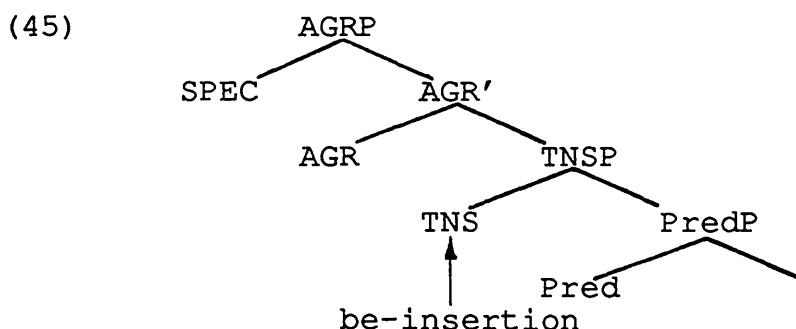
- (43) ta shou li na -zhe yi zhi qiang.

he hand in hold PRG one CL gun
 'He was holding a gun in his hand.'

We have seen in (32) that elements which do not enter into an internal thematic relation with the verb and/or its internal arguments originate outside the predicate phrase. The copula *be* is a non-theta-assigner and therefore is unable to take arguments. This can be seen in (44):

- (44) a. My daughter is [seven years old].
 b. Her mother was [in the garden].
 c. They are [very happy].

In (44a), the predicate is an NP, in (44b) a PP and in (44c) an AP. The copulas in these sentences have no semantic relations with either the subject NPs or the predicate phrases. Then we may ask what function the copula, *be*, has. Let us look at (45). Suppose that PredP in (45) stands for the maximal projections functioning as the predicate phrases in (44a-c). As TNS m-selects verbal categories, in the sense that they can only attach to verbs, Pred is unable to move to TNS. Given this situation, the verbal expletive *be* is inserted directly under TNS to support the element occupying it and subsequently moves to AGR. Like the 'do-support' and the auxiliary in the progressive aspect, the copula *be* is also a bearer for TNS and AGR.



In striking contrast with English sentences in (44), the Chinese counterparts in (46) do not require the copula; since AGR and TNS are absent in Chinese, nothing is needed to bear them.

- (46) a. wode nuer qi sui.
 my daughter seven age
- b. ta mama zai huayuan li.
 her mother at garden in
- c. tamen hen gaoxing.
 they very happy

According to the Predicate Requirement of UG, all predicates must have a structural subject to license them (cf. Williams 1980; Rothstein 1983; Chomsky 1986a; Ouhalla 1991)¹⁴. If the predicate has a thematic subject, it appears in the SPEC position of AGRP. In the case where the predicate does not have a thematic subject, a nominal expletive is inserted in the subject position in a language like English to function as a formal subject of the sentence, that is, as a licensing subject (as in (47)); the inserted nominal expletive can also function as a receiver of the nominal Case assigned by AGR, otherwise there would be nothing for AGR to assign nominal Case to. In a language like Chinese, where AGR is absent, no nominal expletive is needed to play the role of the structural subject in a sentence with the predicate which does not require a thematic subject (as in (48)).

(47) It is eight o'clock. I must go to school now.

(48) ba dian le, wo gai shangxue qu le.
 eight o'clock PART I should to-school go PART

3.1.3 Summary

In this section, we have discussed previous analyses of the null subject and the base-generated topic in Chinese. We take Henry's (1989) position that the null subject in the finite clause in Chinese is PRO. As for the topic, following Huang (1984a), we believe that there are two ways to generate a topic in Chinese; it can be base-generated or it can be the result of movement. However, the topic in English cannot be base-generated; it can only be created by movement

as a wh-trace. We have also seen that in English negative sentences, sentences with progressive aspect and sentences whose predicate is not headed by a verb require the insertion of the verbal expletives, *do* or *be*, to bear AGR and TNS, while in Chinese, these sentences do not need any types of bearer for AGR and TNS because AGR and TNS in Chinese are absent. These observations are in fact in support of the claim that the null subject in Chinese is PRO and the lexically realized NP in the subject position has inherent Case rather than structural Case. By inference, the base-generated topic in Chinese is also assigned inherent Case. In the sentence, where the predicate does not have a thematic subject, English requires the insertion of a nominal expletive, *it* or *there*, in the SPEC position of AGR while Chinese does not.

The discussions in this section are very important for Chapter 6, where we will pursue the questions of how CFL learners, whose L1, English, allows neither the null subject in the finite clause nor the base-generated topic, have the information that the null subject and the base-generated topic are possible in the target language, Chinese, and how EFL learners have the contrary information.

3.2 THE NULL/NON-NULL OBJECT IN CHINESE AND ENGLISH

3.2.0 Introduction

Unlike English, which allows neither null subjects in finite clauses nor null objects, Chinese allows null objects as well as null subjects in finite clauses. This is illustrated in (49).

- (49) Zhangsan shuo [e bu renshi e].
 Zhangsan say not know
 *'Zhangsan said e didn't know e .'
 "Zhangsan said (he) didn't know (him)."

In this section, we will first look at the analyses of the null object in Chinese and the non-null object in English by Huang (1982, 1984a) and other researchers. And then, we will provide an account for the nature of the null object in Chinese. Finally, we will discuss why Chinese allows the null object but English does not.

3.2.1 Huang's Analysis

Huang (1982, 1984a) presents perhaps the best known analysis of ECs in Chinese. In his analysis, he suggests that the ECs in subject position can be PRO, *pro* or a variable, but that the ECs in object position are always variables. He notices that in Chinese there is an asymmetry of the ECs in subject position and object position: although null subjects of complement clauses can be coindexed with arguments of the matrix clause, null objects cannot. This is illustrated in (50) and (51).

- (50) Zhangsan_i shuo e_{i/j} bu renshi Lisi.
 Zhangsan say not know Lisi
 "Zhangsan_i says (he_i) doesn't know Lisi"
- (51) Zhangsan_i shuo Lisi bu renshi e_{*i/j}.
 Zhangsan say Lisi not know
 "Zhangsan_i says Lisi doesn't know (him_i)."

According to Huang, the null subject in (50) can be coreferential with the subject of the matrix clause or with someone mentioned outside the matrix clause. In the case of the former, the EC is *pro* and in the latter, the EC is a variable.¹⁵ In (51), as it is governed by the verb, *renshi* (=know) and cannot be coindexed with the

matrix subject, *Zhangsan*, the null object in the embedded clause can neither be a PRO nor a *pro*. Huang argues that it can only be a variable because this is in accordance with Principle C of the binding theory (Chomsky 1981) that a variable, like other referring expressions, cannot be coreferential with a c-commanding nominal occurring in an argument position, i.e. it cannot be A-bound.

Huang argues further that when a topic NP appears in addition to a matrix NP subject, an embedded null object is most naturally interpreted as bound by that topic, as shown in (52).

- (52) *neige ren_i Zhangsan shuo Lisi bu renshi e_i.*
 that man Zhangsan say Lisi not know
 'That man, Zhangsan said Lisi didn't know e.'

Huang believes that the sentence in (51) can be structurally assimilated to that in (52). The only difference between (51) and (52) is that in the former the topic is not overtly present in the sentence but can be probably inferred in the discourse. The sentence in (51) may be represented as (53), with an empty topic binding the embedded null object,¹⁶ corresponding to (52) with a lexical topic (cf. Huang 1984a):

- (53) (TOP e_i), *Zhangsan shuo [Lisi bu renshi e_i].*
 Zhangsan say Lisi not know
 *'(TOP e_i), *Zhangsan said Lisi didn't know e_i .*'

The assumption here is that there is simply nothing missing in object position in (51). The embedded object has been topicalized and appears in the sentence initial position. Similarly, within the analysis of topicalization, there is nothing missing in object position in (53). What is really missing in (53) is the topic, that is, 'an object is topicalized first before it is deleted from the topic position.' (Huang 1984a:542)

As the above examples show, movement is involved in topicalization in Chinese. However, the movement apparently does not seem to be subject to the Subjacency Principle. This can be seen in (54) and (55).

(54) ni dangran keyi yong zhe tai jisuanji_i, danshi (TOP
you certainly can use this CL computer but

e_i) [CPni xianzai yong e_i] shi bu keneng de.
you now use be not possible PART.

*'You can certainly use this computer, but that you want to use e now is not possible.'

"You can certainly use this computer, but it is unlikely that you are able to use (it) now."

(55) zheben shu hen youyisi, ke (TOP e_i) [NP[CPkan
this book very interesting but look

guo e_i de] ren] bu duo.
EXP DE people not many.

*'This book is very interesting, but people who have read e are not many.'

"This book is very interesting, but there are not many people who have read (it)."

As is well known in English, the movement out of a sentential subject (as in (54)) is in violation of the subjacency principle and the movement out of a complex NP clause (as in (55)) also gives rise to an ungrammatical string. But (54) and (55), which constitute a violation of the Subjacency Principle under the assumption that the topics are derived by movement, are grammatical sentences in Chinese. Huang (1984a,b;1987) argues that the Subjacency Principle does apply to Chinese; as Chinese is a topic-prominent language (cf. Li and Thompson 1976), 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 null objects in (54) and (55) are 'not created by movement but must have been generated in the base (and

identified as a *pro* at D-structure, that is, an empty resumptive pronoun) and become a variable by definition at the point where it is coindexed with its local A'-binder.' (Huang 1987:331)

Huang uses the sentences in (56) and (57) (=Huang's (1984a) (78) and (79)) to show that the Subjacency Principle is indeed available in Chinese and that there are two ways of deriving a topic in Chinese.

- (56) a. Zhangsan_i, [e_i changge de] shengyin hen
 Zhangsan sing DE voice very
 haoting.
 good-to-hear
 *'Zhangsan_i, the voice with which e_i sings is good.'
- b. *Zhangsan_i, wo hen xihuan [e_i changge de]
 Zhangsan I very like sing DE
 shengyin.
 voice
 *'Zhangsan_i, I like the voice with which e_i sings.'
- (57) a. Zhangsan_i, [e_i xie de] shu bu shao.
 Zhangsan write DE book not few
 *'Zhangsan_i, the books that e_i writes are not few.'
- b. *Zhangsan_i, wo nian-le bu shao [e_i xie de]
 Zhangsan I read PFV not few write DE
 shu.
 book
 *'Zhangsan_i, I have read quite a few books that e_i wrote.'

On the basis of the sentences in (56) and (57), extraction appears to be possible from a complex NP in subject position, as in (56a) and (57a), but such an extraction is not permitted out of a complex NP in object position, as in (56b) and (57b). Huang argues that if the Subjacency Principle did not apply to Chinese, which appears to be the case with (56a) and (57a), (56b) and

(57b) should be well-formed in Chinese; but they are not. Huang maintains that the Subjacency is relevant to Chinese. The ECs in (56a) and (57a) are not derived by movement; they are base-generated pronominals. According to Huang's GCR (see 3.1.1), a pronominal must be identified by the closest nominal element. There is no nominal element within the relative clause containing *e* in either (56a) or (57a). The heads of the relative clauses, *shengyin* (=voice) (in (56a)) and *shu* (=book) (in (57a)), are the closest nominal elements, but they cannot serve as the controllers for the ECs, because they are already coindexed with something else; in (56a), the head of the relative clause, *shengyin* (=voice), is the antecedent of the relativized instrument of *changge* (=sing) (after *changge* in (56a), there should be another EC, which, however, is not indicated in Huang's sentence); and in (57a), the head of the relative clause, *shu* (=book), is the antecedent of the EC (which should appear after the verb, *xie* (=wrote)) in the object position of the relative clause. In other words, Huang claims that the head of the relative clause which is already coindexed with something cannot act as a potential antecedent of another. If this is correct, the next nominal elements in (56a) and (57a) are the topics, *Zhangsan*, which can be coindexed with the ECs. Thus, (56a) and (57a) are well-formed because the ECs may start out as pronominals and become variables when they are coindexed with the topics in accordance with the GCR.

However, the ECs in (56b) and (57b) cannot be derived in the same manner, because the closest nominal elements for the ECs are the matrix subjects, *wo* (=I), not the topics, which leads to ungrammaticality. Therefore, on the basis of Huang's analysis, there are two distinct syntactic processes for the topics: movement and base-generation. For the former, it has to be subject to the Subjacency Principle and for the latter the GCR.¹⁷

3.2.2 Against Huang's Analysis

Huang's analysis is first challenged by Xu and Langendoen (1985) and Xu (1986). Xu's (1986) main criticism of Huang's analysis is his claim that all embedded null objects are coreferential with topics and not with matrix subjects, making them A'-bound almost unexceptionally. Following are some counter-examples given by Xu (1986) ((58), (59)=Xu's (6), (9)):

(58) John_i ta_i shuo ni bu ken bangzhu e_i.
 John he say you not will help
 "John, he said that you wouldn't help (him)."

(59) Xiaotou_i yiwei mei ren kanjian e_i.
 thief think no men see
 "The thief thought nobody saw (him)."

Huang (1987) argues that sentences like (59), in which null objects are bound by a matrix subject, are not pragmatically neutral; that is, one could not derive an appropriate reading for such sentences without envisioning a unique surrounding context. However, as Li, X.G. (1988) points out, if the matrix subject, *xiaotou* (=thief), in (59) is replaced with a semantically neutral word, *Zhangsan*, the embedded null object can still be bound by the matrix subject, as shown in (60).

(60) Zhangsan_i yiwei mei ren kanjian e_i.
 Zhangsan think no man see
 "Zhangsan thought nobody saw (him)."

The above examples indicate that embedded null objects can be bound by matrix subjects and that Xu's argument against Huang appears to be correct here.¹⁸

Huang's analysis is also challenged by other linguists. Among them are Li, Y.F. (1985), Li, X.G. (1988) and Henry (1989). But unlike Xu, who regards null objects as the FEC (see 3.1.1), these linguists take null objects as *pro*, which can be coindexed with arguments in the matrix clause. The following examples are from Li, X.G. (1988) ((61), (62), (63) = Li's (5), (20c), (21c) respectively).

(61) Lisi_i danxin Bei Da bu luqu e_i.
 Lisi_i worry Peking University not accept
 *'Lisi was worried that The Peking University wouldn't accept e.'

(62) Lisi_i xiwang Zhangsan lijie e_i.
 Lisi_i hope Zhangsan understand
 *'Lisi hoped that Zhangsan understood e.'

(63) Lisi tixing Zhangsan_i you ge ren genzung e_i.
 Lisi remind Zhangsan have CL person follow
 *'Lisi reminded Zhangsan that there was someone following e.'

Notice that in these examples, null objects can be bound not only by matrix subjects (as in (61) and (62)) but also by matrix objects (as in (63)).

Huang (1984a) generalizes his claim by stating that *pro* cannot occur in object position in Chinese, nor in any languages in the absence of an identifying clitic or object-verb agreement. To him, pronominal null object is universally non-existent. His generalization is obviously incorrect. Rizzi (1986) points out that in Italian, *pro* occurs in object position although its interpretation is restricted (i.e. it cannot be referential). Cole (1987) also demonstrates that Huang would make false predictions in languages like Korean and Thai, which 'allows both null pronominal and null variable objects' (Cole 1987:603). We believe that Chinese falls in the same group as Korean and Thai in Cole's typology.

3.2.3 The Nature of the Null Object in Chinese

Within GB theory, we can analyze the nature of the null object in Chinese with respect to the features [+/-pronominal] and [+/-anaphoric]. Obviously, the null object in Chinese cannot be [+anaphoric]. If it were, Binding Principle A would require an antecedent for it within its governing category. That is, it would have to be bound by the subject of the embedded clause in which the null object occurs. In all the examples we have looked at so far, the null object has no such antecedent at all. Therefore, the null object in Chinese is [-anaphoric]. This rules out an NP trace as a possible type. As the null object is always governed by V, PRO is also excluded.

The only two types of ECs left are *pro* [-anaphoric, +pronominal] and variable [-anaphoric, -pronominal], both of which are required by the binding theory to be free in their governing categories. A generally held view is that a null object is *pro* if it is base-generated (i.e. not created as a result of movement) and bound by an argument outside its governing category (i.e. A-bound) and it is a variable if it is created by movement and bound by a non-argument (A'-bound).

In 3.2.1, we saw that Huang argues that the null object in Chinese cannot be bound by an element in an argument position and it can only be analyzed as a variable. His analysis is based on the assumption that the null object is bound by an empty topic which is always properly governed by INFL. And we have seen many example sentences (eg. (58), (59), (60), (61), (62), (63) in 3.2.2), where a null object can be A-bound. These examples have indicated very clearly that Huang's argument that the

null object in Chinese cannot be A-bound is problematic. As for Huang's claim that the empty topic in Chinese is properly governed by INFL, we have illustrated in 3.1.1 that it is an invalid claim. Even if INFL in Chinese contains ASP, which is lexical in nature in Chinese, it does not necessarily govern the subject. What governs the subject position in finite clauses are AGR and TNS. As has been shown in 3.1.2, AGR and TNS in Chinese are absent, which is a clear indication that neither the subject nor the topic in Chinese is governed, to say nothing of their being properly governed. In fact, Huang's analysis of INFL in Chinese as a proper governor has been challenged by an increasing number of linguists (see Si (1988), Li, X.G. (1988), Henry (1989), among others). Even Cole (1987), an advocate of Huang's theory, has given up the idea of INFL in Chinese as a proper governor (see Sung and Cole (1991), Note 1).

Having rejected Huang's analysis of the null object as a variable bound by an empty topic, we do not mean that the null object in Chinese cannot be a variable. Actually, Huang (1984a) is correct in claiming that there are two possible ways of deriving a null object in Chinese. It can be created through topicalization like a wh-trace; or it may be base-generated. In the former case, the null object is a variable while in the latter it is a *pro*. The null object created by movement and bound by an overt topic is obviously a variable, as in (64). On the basis of Chomsky's (1982) functional definition of ECs, the Chinese null object bound by an overt topic but blocked in a nonsubjacent environment, such as a sentential subject or a wh-island, is also regarded as a variable. Following Engdahl (1983), Chomsky tries to explain the well-formedness of some parasitic gap constructions with a functional approach. According to him, no matter how it is derived, an EC is a variable if it is in an A-position and is locally A'-bound. As the EC in (65) is in an A-

position and bound by the topic, it is by definition a variable.

(64) zhei ge fangjian_i wo zhidao ta mei tian dasao e_i.
 this CL room I know he every day clean
 'This room I know he cleans e every day.'

(65) zhei zuo fangzi_i wo bu zhidao ta dasuan shenmo
 this CL house I not know he intend what
 shihou mai e_i.
 time sell
 *'This house, I don't know when he is going to sell
 e.'

(51) Zhangsan_i shuo Lisi bu renshi e_{*i/j}.
 Zhangsan say Lisi not know
 "Zhangsan_i says Lisi does not know (him_j)."

It goes without saying that the null object coindexed with the subject or object in the matrix sentence is *pro*, as in (61), (62) and (63) above. As for the null object in a sentence like (51), repeated here, which is analyzed by Huang as a variable bound by an empty topic, it can be considered to be a *pro*. Huang's analysis is based on the assumption that the variable object is always licensed by government of an empty topic by INFL. As there is strong evidence that INFL in Chinese is not a governor at all, Huang's analysis of the null object as a variable no longer holds; hence *pro* is the only interpretation left to us. In fact, there is nothing to prevent *pro* in the object position from referring to an entity outside the matrix sentence. If we consider *pro* to be pronominal, we expect it to behave like a lexically realized pronoun. Principle B of the binding theory only states that a pronominal must be free in its governing category; it says nothing that prohibits a pronominal from being coreferential with some element outside the matrix sentence. This can be seen in the English sentence in (66), where the object pronoun obviously refers to someone not referred to in the matrix sentence.

(66) Mary says she no longer loves him.

Generally speaking, Chinese allows both lexically realized objects and phonetically null objects to occur. However, the lexically realized object often sounds redundant and makes the sentence stylistically heavy. Furthermore, the third person pronoun in object position is obligatorily absent if it refers to an inanimate entity, as is shown in (67) and (68).

(67) Wang Ping wen wo jian mei jian-guo Nuwang_i, wo shuo
 Wang Ping ask me see not see EXP Queen I say
 wo zai dianshi shang jian-guo (ta_i).
 I at TV on see EXP her
 'Wang Ping asked me whether I had seen the Queen. I
 said I had seen her on TV.'

(68) *tade zixingche_i huai le, wo dasuan mingtian bang
 her bike bad PART I plan tomorrow help
 ta xiuli ta_i.
 her repair it
 'Her bike has gone wrong. I am going to help her to
 fix it tomorrow.'

3.2.4 Licensing Conditions of the Object *pro* in Chinese

One may ask what licenses *pro* in object position in Chinese. One important type of explanation that has been proposed for the *pro*-drop phenomenon in languages like Italian and Spanish is based on the idea of recoverability and the existence of rich inflectional morphology, in particular, a rich system of agreement (see Chomsky (1981, 1982), Jaeggli (1982), Taraldsen (1978), among many others). According to this explanation, languages like Italian and Spanish allow a pronoun to drop from the subject position of a tensed clause because there is a rich system of subject-verb agreement in these languages. The agreement marking on a

verb is rich enough to determine, or recover, the content (i.e. reference) of a missing subject; therefore, *pro*-drop is allowed. However this explanation does not apply to Chinese because Chinese has neither a system of subject-verb agreement nor verb-object agreement.

Huang (1984a, 1989) puts forward the GCR (see 3.1.1), which is not based on the agreement marking and which covers both PRO and *pro*. According to the GCR, an empty pronominal takes the closest nominal element as its antecedent. A nominal element can be either NP or AGR. However, the GCR runs into difficulty when it is used to explain the object *pro*. As Cole points out, 'Regardless of whether Infl contains Agr, the clause in which a *pro* object occurs contains a SUBJECT accessible to the *pro* object. The SUBJECT is either Agr or the subject. Thus, the GCR requires that object *pro* be controlled in its own clause. But the binding theory prevents a pronominal from being coindexed with a noun phrase in its governing category (its own clause in this case)'. 'Thus there is no way that a *pro* object can satisfy both the GCR and the binding theory unless it is controlled by a verb-object agreement or by a verbal clitic.' (1987:610-611)

Another approach to the explanation of the occurrence of *pro* is the approach of morphological uniformity (Huang 1982, 1989; Jaeggli and Safir 1989b). According to this approach, *pro* is possible only in languages with strong AGR or no AGR at all --- hence, in Italian and Chinese, but not English. However, there are some empirical problems with the approach of morphological uniformity. As Rizzi notices, '*pro* is possible in languages with weak Agr; moreover, as Sten Vikner points out (p.c.), mainland Scandinavian languages generally do not manifest any Agr specification on verbs, and still they do not allow *pro* to occur.' (1986:545)

On the basis of some data from Italian and English, Rizzi (1986) makes a proposal of licensing conditions for *pro* in both subject position and object position. According to Rizzi, Italian allows not only subject *pro* but also object *pro* although the latter is restricted to non-referential interpretations. Let us look at the English sentences in (69) and their corresponding Italian sentences in (70) (=Rizzi's (6) and (8)).

- (69) a. This leads people to the following conclusion.
 b. This leads to the following conclusion.
 c. This leads people [PRO to conclude what follows].
 *d. This leads [PRO to conclude what follows].

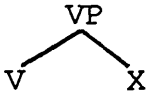
- (70) a. Questo conduce la gente alla seguente conclusione.
 b. Questo conduce _____ alla seguente conclusione.
 c. Questo conduce la gente a [PRO concludere quanto segue].
 d. Questo conduce _____ a [PRO concludere quanto segue].

Rizzi suggests that the ungrammaticality of (69d) is due to the constraint, known as 'Bach's generalization' (Bach 1979):

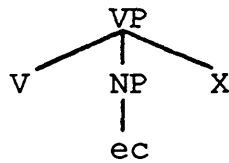
- (71) In object control structures the object NP must be structurally represented.

In (69d), no structurally represented null object is possible in English and (69d) has the VP representation in (72), in which no structural position is specified between the verb and the control clause (i.e. X). In Italian, the object controller is always structurally represented although it can always phonetically missing. And this explains the grammaticality of (70d), which has the VP representation in (73). Two more examples are given in (74) and (75) (=Rizzi's (9c,d)).

(72)



(73)



(74) Un generale può constringere _____ a [PRO obbedire ai suoi ordini].

*'A general can force _____ to obey his orders.'

(75) In questi casi, di solito Gianni invita _____ a [PRO mangiare con lui].

*'In these cases, generally Gianni invites _____ to eat with him.'

Rizzi believes that the parameter differentiating English and Italian with respect to the object *pro* involves the licensing conditions of *pro*. However, it is noticed by Rizzi that in the theory of empty categories, *pro* is differently treated from the other three ECs, i.e. PRO, trace and variable. In PRO, trace and variable, the conditions that formally license the EC (i.e. the conditions that allow the EC to occur in a given environment) and the way of recovering the content of the EC from the phonetically realized environment are treated separately, while in *pro*, they are unified. *pro* is both licensed and recovered through government by rich AGR. On the other hand, trace and variable are formally licensed by the Empty Category Principle (ECP) and the recovery of their content is made possible through the formation of an A- or A'-chain with the antecedent in A- or A'-position respectively. PRO is formally licensed only in ungoverned positions, and its content is recovered through the theory of control.

In an attempt to separate the licensing conditions from the content recovery procedure for *pro*, Rizzi proposes (76) as the licensing principle for *pro* (=Rizzi's (40)).

(76) *pro* is governed by X^0_y .

By (76), Rizzi means that *pro* is licensed by a governing head of type y , where the class of licensing heads can vary from language to language. The class of X_y^0 includes both AGR and V in Italian, but it is not available in English. To obtain the content recovery procedure for *pro*, Rizzi suggests (77) (=Rizzi's (41)).

(77) Let X be the licensing head of an occurrence of *pro*: then *pro* has the grammatical specification of the features on X coindexed with it.

On the basis of (77), to recover *pro*'s content is to bind *pro* to (features on) the local head. In subject position, *pro* is coindexed with the features of AGR; and in object position, *pro* is coindexed with the slot in the θ -grid of the verb. Thus, the object *pro* is similar to the subject *pro* in the way suggested in (78) (=Rizzi's (44)).

(78) pro_i Infl V pro_j
 | |
 Agr _{i} θ_j

In the case of object *pro* in Italian, the Projection Principle syntactically projects the object position, but the θ -role assigned by the verb is saturated by the verb, thus, *pro* occurs. In English, the saturation of the θ -role by the verb occurs in the lexicon; the object θ -role is saturated before the Projection Principle applies and therefore it is not projected to a syntactic position. This explains the fact that there is no structural object position after the verb, *leads*, in (69b) and (69d).

Although the content of the object *pro* in Italian is restricted to arbitrary interpretations, Rizzi's proposal seems to be a very satisfactory solution for the licensing conditions for the object *pro* in Chinese. As Xu points out, 'If Italian can be different from English in that arbitrary EOs are allowed, why cannot Chinese be different from Italian in that referential EOs are also

allowed?' (1989:10). Consider the following two Chinese sentences.

(79) [_{CP}Zhangsan mai le yi tai xin jisuanji_i], dan [_{CP}ta
Zhangsan buy PFV one CL new computer but he

bu zhidao zenmo yong e_i].

not know how use

*'Zhangsan has bought a new computer, but he doesn't know how to use e .

(80) [_{CP}Zhangsan de zixingche_i huai le], [_{CP}wo dasuan
Zhangsan's bike bad I plan

mingtian bang ta xiuli e_i].

tomorrow help him repair

*'Zhangsan's bike has gone wrong. I am going to help him repair e tomorrow.'

The second sentences in (79) and (80) both have *pro* in object position. We can assume that this is because Chinese V belongs to a licensing class X^0_y for *pro* and, similar to Italian V, can saturate the θ -role it assigns to the object position. And the object *pro* is coindexed with the slot in the θ -grid of the verb. (Notice that here the saturation does not take place until the Projection Principle applies. In other words, the object position must be structurally represented, otherwise the verb would be intransitive.) In (79) and (80) the θ -roles that the object *pros* receive from the verbs are instrument (in (79)) and patient (in (80)) respectively. These θ -roles can be considered to be understood in a sense that they are part of the lexical meaning of the verbs and we can even name the θ -roles that the object *pros* receive by looking at the verbs *yong* (=to use) and *xiuli* (=repair) without any syntactic or discourse context.

However, one may ask why the understood θ -role can be saturated by V in Chinese while it cannot be saturated in English. Before answering the question, let us first look

at the analysis of the topic chain in Chinese by Shi (1989), who argues that what Tsao (1977) calls the topic chain in Chinese¹⁹, a category that has been considered as a discourse category and excluded from the syntax, is actually a basic unit in Chinese syntax. He points out that like an S' (=CP) in English, the topic chain is the largest syntactic unit in Chinese and has all the syntactic functions normally assumed for an S', i.e. it can be the subject (as in (81) = Shi's (14b)), the verbal complement (as in (82) = Shi's (13a)), the modifier of an NP (as in (82) = Shi's (17)), etc.²⁰

- (81) [TC[_S Zhemo youming de yanyuan_i meiyou jizhe
so famous Part. actor no reporter
genzong e_i]. [_S meiyou dianshitai caifang e_i] [_S ye
follow no TV station report also
meiren renchulai e_i]] zhengshi qiwen.
nobody recognize really be strange-news
"It is really strange that no reporter follows such a
famous actor, no TV station has given live report on
(him) and no one has recognized (him)."

- (82) Wo tingshuo [TC[_S Lisi mai le yi zhi xiao gou_i]
I hear-say Lisi buy PFV one CL little dog
[_S e_i zhi chi niurou], [_S ta taitai bu xihuan e_i]].
only eat beef his wife not like
"I heard that Lisi bought a puppy, and (it) eats
nothing but beef, and his wife does not like (it)."

- (83) [NP[TC[_S Jingcha zuotian zhuadao e_i] [_S e_i jintian
police yesterday arrest today
jiu paodiao le]de nei ge xiaotou_i] bei faxian
PART escape PFV COMP that CL thief BEI spotted
le.
PFV
"The thief whom the police arrested yesterday and
(who) escaped today has been spotted."

Let us return to the question why V in Chinese can saturate the θ -role it assigns to the object position

while V in English cannot. If Shi (1989) is correct, we can assume that there is a syntactic difference between English and Chinese; in the former, the largest syntactic unit is CP while in the latter, the topic chain (TC) is the largest syntactic unit, which consists of more than one CP and has all the syntactic functions normally assumed for CP. In this sense, sentences in (79) and (80) should be regarded as two topic chains respectively. The two CPs in (79) form a topic chain with the NP, *yi tai xin jisuanji* (= a new computer), as a chain topic; and in the same manner, the two CPs in (80) also form a topic chain with the NP, *Zhangsan de zixingche* (Zhangsan's bike) as a chain topic. Consequently, the object *pro*s and their antecedents are dominated by the same TC, the largest syntactic unit in Chinese, and the referential content of the object *pro* can be determined within the same TC; that is, the content of the object *pro* can be understood within a TC (=CP). However, this is impossible in English because the largest syntactic unit in English is a sentence rather than a topic chain. If V in English could saturate the θ -role it assigns to the object position, the referential content of the object *pro* could not be understood within the CP. In view of the different syntactic structures between Chinese and English, it seems very reasonable to say that 'a θ -role is saturated when it is associated with some referential content - that is, when we can understand 'who does what' in the situation referred to.' (Rizzi 1986:508)

3.2.5 Summary

In this section, we have seen that both English and Chinese allow variables coindexed with topics to occur in object position. However, while these variables in English are the results of movements, variables coindexed with topics in Chinese can be created in two different

ways; they can be created through movement or they can be base-generated as pronominals and become variables after being coindexed with the topics.

Unlike English, Chinese allows object *pro* and a verb in Chinese can saturate the θ -role it assigns to the object position after the Projection Principle applies. This is because V in Chinese, similar to V in Italian, belongs to a licensing class for *pro* and the referential content of the object *pro* can be recovered within the TC (=CP), the largest syntactic unit in Chinese.

The discussions in this section are very important for Chapter 7, where we will look at the ease and the difficulty that CFL and EFL learners have in acquiring the null/non-null object in Chinese and English.

3.3 LONG-DISTANCE AND SHORT-DISTANCE REFLEXIVES IN CHINESE AND ENGLISH

3.3.0 Introduction

Another important difference between English and Chinese is the fact that in the former, reflexives can take only a local antecedent, whereas in the latter, they can have a long-distance antecedent as well. This can be illustrated by examples in (84) and (85):

(84) Wang Ping_i renwei Zhang Bo_j xiangxin ziji_{i/j}.
 Wang Ping think Zhang Bo trust self

(85) John_i thinks Bill_j trusts himself_{*i/j}.

In (84), the reflexive *ziji* can be interpreted as coreferential with either the subject in the matrix sentence *Wang Ping* or the subject in the embedded sentence *Zhang Bo*.

In contrast, in the English sentence in (85), the reflexive *himself* can only have the subject in the embedded sentence, *Bill*, as its antecedent. This indicates that English only allows Short-Distance Reflexives (henceforth, SDR), whereas Chinese allows the Long-Distance Reflexive (henceforth, LDR) as well as the SDR.

In addition to the reflexives in object position as shown in (84), the reflexive *ziji* can also appear in preverbal positions, as in (86) and (87).

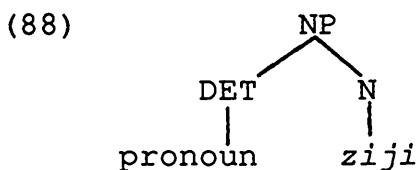
(86) Zhang Bo_i renwei ziji_i neng dedao jiangxuejin.
 Zhang Bo think self can get scholarship
 *'Zhang Bo thinks that himself can get a scholarship.'

(87) tade nuer cai san sui, danshi ziji yijing hui
 his daughter only three age but self already can
 chuan yifu le.
 put-on clothes PART
 *'His daughter is only three years old, but herself is
 able to put on her clothes.'

From the translations of the sentences in (86) and (87), we can see that the English counterparts are ungrammatical in English.

3.3.1 Analyses of the LDR and SDR

Tang (1985, 1989) points out that, in addition to the use of the bare reflexive *ziji*, Chinese also has what Cole et al. (1990) call the phrasal reflexive, in which *ziji* is preceded by a pronoun. Battistella and Xu (1990) suggest that the phrasal reflexive has a structure in (88):



Li and Thompson treat the phrasal reflexives as free variants of the bare reflexive *ziji*, stating that *ziji* 'may optionally be preceded by a pronoun that is coreferential with the subject of the sentence' (1981:137). Thus, we have the following phrasal reflexives:

wo	ziji	myself	women	ziji	ourselves
ni	ziji	yourself	nimen	ziji	yourselves
ta	ziji ²¹	himself	tamen	ziji	themselves
		herself			
		itself			

In fact, the phrasal reflexive is not just a free variant of *ziji*. As noted by Wang and Stillings (1984), the bare reflexive *ziji* is different from the phrasal reflexive 'pronoun+*ziji*' in that for the latter the binding distance is shortened so that only the closest subject is a possible antecedent. Consider the sentence in (89), which is exactly the same as (84) except that the bare reflexive *ziji* in object position in (84) is replaced with a phrasal reflexive *ta ziji* (himself) in (89). Note here that the phrasal reflexive, like the English reflexive, *himself*, permits only the embedded subject to function as its antecedent.

- (89) Wang Ping_i renwei Zhang Bo_j xiangxin ta ziji_{*i/j}.
 Wang Ping think Zhang Bo trust himself
 'Wang Ping thinks that Zhang Bo trusts himself.'

We saw in 2.3.4 that Chomsky (1981) proposes (90) as the binding theory for anaphors and pronominals:

- (90) (A) An anaphor is bound in its governing category
 (B) A pronominal is free in its governing category
- (i) α is a governing category for β if and only if α is the minimal category containing β , a governor of β , and a SUBJECT accessible to β .
- (ii) a SUBJECT is AGR or the subject of an infinitive, a gerund, an NP or a clause.

- (iii) α is accessible to β if and only if β is in the c-command domain of α and assignment to β of the index of α would not violate $*[\gamma \dots \delta]$, where γ and δ bear the same index.

From the above examples, we can see that the bare reflexive *ziji* does not seem to obey principle (A) in the binding theory; it behaves like a pronominal, having its antecedent outside its governing category. For example, if we replace the reflexive *ziji* in (86) with a pronominal *ta* (=he) as in (91), the sentence is still well-formed:

- (91) Zhang Bo_i renwei ta_i neng dedao jiangxuejin.
 Zhang Bo think he can get scholarship
 'Zhang Bo thinks that he can get a scholarship.'

In an attempt to account for a wide variety of Chinese binding phenomena, Huang (1982) proposes a modified notion of the governing category, as in (16) in Chapter 2 and repeated here in (92).

- (92) α is a governing category for β if and only if α is the minimal category containing β , and a SUBJECT which, if β is an anaphor, is accessible to β .

According to this modification, the governing category for *ziji* in (86) is the matrix sentence because the only accessible subject it has is the matrix subject. In (91), the governing category for *ta* is the embedded sentence because it contains *ta* and a SUBJECT (namely *ta*) which does not have to be accessible to *ta*. Therefore, *ziji* in (86), a reflexive and subject to Principle A of the binding theory, is bound in its governing category and *ta* in (91), a pronominal and subject to Principle B of the binding theory, is free in its governing category.

While Huang's modification to the notion of the governing category can be a possible account for sentences such as (86) and (91), it fails to account for sentences like (84), in which the reflexive *ziji* is in object position in the embedded sentence. In (84), *Zhang Bo* is an accessible

SUBJECT to *ziji*, and thus the embedded sentence, *Zhang Bo xiangxin ziji*, must be the governing category for *ziji*; this means that *ziji* can only have *Zhang Bo* as its antecedent. However, Chinese grammar allows *ziji* to have the matrix subject *Wang Ping* as its antecedent as well, which indicates that Huang's redefinition of the governing category still cannot account for all the behaviours of the bare reflexive *ziji*.

In order to accommodate the binding of the bare reflexive *ziji* into Universal Grammar (UG), Wang and Stillings (1984) suggest that the binding theory be modified so that the bare reflexive, which they call an anaphoric pronoun, can be included as a member of new category in the binding theory. According to Wang and Stillings' Anaphoric Pronominal Binding Rule, 'An anaphoric pronoun must be bound in its root governing category' (1984:106). By 'root governing category', they mean 'the entire category dominated by the matrix root (S', INFL, V or whatever notion is used) of the sentence in which the anaphoric pronoun appears' (Wang and Stillings 1984:106).

While the strategy pursued by Wang and Stillings can provide an explanation for the bare reflexive *ziji*²², the modification of the binding theory obviously affect the binding theory in terms of being restrictive.

Tang (1989) takes an alternative approach to the analysis of the bare reflexive *ziji*, which retains the standard version of the binding theory and analyzes the long-distance effects of *ziji* as arising from language-particular mechanisms independent of the core binding theory options. Tang observes that long-distance binding of the bare reflexive *ziji* to the matrix subject is blocked unless the subjects of all clauses between *ziji* and the matrix subject happen to agree in person features. Thus, we have the following

sentences from Tang (1989) ((93), (94) and (95) = Tang's (48), (50) and (51)):

- (93) Wo_i $juede$ ni_j dui $ziji_{*i/j}$ mei $xinxin$.
 I think you to self no confidence
 'I thought that you had no confidence in yourself.'
- (94) $Zhangsan_i$ $juede$ wo/ni_j dui $ziji_{*i/j}$ mei $xinxin$.
 Zhangsan think I you to self no confidence
 'Zhangsan thought that I/you had no confidence in myself/yourself.'
- (95) $Zhangsan_i$ $zhidao$ wo/ni_j $juede$ $Lisi_k$ dui $ziji_{*i/*j/k}$ mei
 Zhangsan know I you think Lisi to self no
 $xinxin$.
 confidence
 'Zhangsan knew that I/you thought that Lisi had no confidence in himself.'

If we replace *wo* (=I) and *ni* (=you) in these sentences with the third person pronoun *ta* or with another name, then the matrix subject is a possible antecedent.

According to Tang, the reflexive *ziji* has a structure of *pro+ziji*, in which the *pro*, after the application of the binding theory, may transfer optionally its features such as person, number and gender to *ziji*, simultaneously converting it to a long-distance reflexive. The *ziji* then undergoes a language-particular reindexing rule which reindexes *ziji* to the subject of the next higher governing category.

Reindexing of the long-distance reflexive is obligatory and iterative. As reindexing is to be applied iteratively and *ziji* is to be reindexed in each step, long-distance binding is impossible if the feature-matching requirement between the long-distance antecedent and the reindexed reflexive is not met. This explains why long-distance binding is barred in (93), (94) and (95).

While appreciating Tang's revealing description of the blocking effect, Battistella (1989) challenges Tang's

proposal by questioning why the analysis proposed by Tang works in the way that it does. 'Why should copying the pronominal features of the compound reflexive have the effect of changing the status of *pro ziji* to a long-distance anaphor? Why does it trigger indexing?' (Battistella 1989:997). Battistella rejects the language-particular status of the reindexing as proposed by Tang and suggests 'that a more optimal solution would be one in which the mechanisms of long-distance reflexivization and blocking are more closely connected to core binding theory and could be viewed as one instantiation of it' (1989:997).

Following Lebeaux (1983) and Chomsky (1986a), Battistella (1987, 1989) proposes that the Chinese reflexive *ziji* undergoes Logical Form (LF) movement and adjoins to the INFL node which is closest to the NP (i.e. the subject) that binds the reflexive. The LF of (84), repeated here, will be (96):

(84) Wang Ping_i renwei Zhang Bo_j xiangxin ziji_{i/j}.
 Wang Ping think Zhang Bo trust self

(96) Wang Ping_i ziji_{i/j}-INFL renwei Zhang Bo_j t''-INFL
 xiangxin t'.

In (96), *ziji* has moved from object position in the embedded clause to the INFL of its own clause, from there to the INFL of the matrix sentence, thus explaining the possibility that *ziji* may refer to *Zhang Bo* or *Wang Ping*.

According to Battistella, INFL-to-INFL²³ movement must be cyclic. This explains the 'blocking effects' discussed above; INFL and the subject are the locus of grammatical-agreement rules in UG, and *ziji* or its trace, once moved into INFL position, behaves like the node of AGR. When *ziji* occurs in the matrix sentence at LF, the subject of each clause that *ziji* has passed through will have a trace of *ziji* in INFL. As a result, the subject of each of these clauses must agree with one another since agreement will

obtain between each subject and the AGR-like features of the trace of *ziji* in INFL.²⁴

While the analysis of the LDR under the Movement-to-INFL theory provides an insightful account for the long-distance binding effect in Chinese, the reason why the LDR is allowed in Chinese but excluded in English remains unclear.

Based on Battistella's Movement-to-INFL analysis of Chinese reflexives, Cole, Hermon and Sung (1990) and Sung and Cole (1991) make a proposal which predicts correctly that the LDR is allowed in Chinese but blocked in English. This is the approach we adopt in the study of the acquisition of reflexives in this work.²⁵

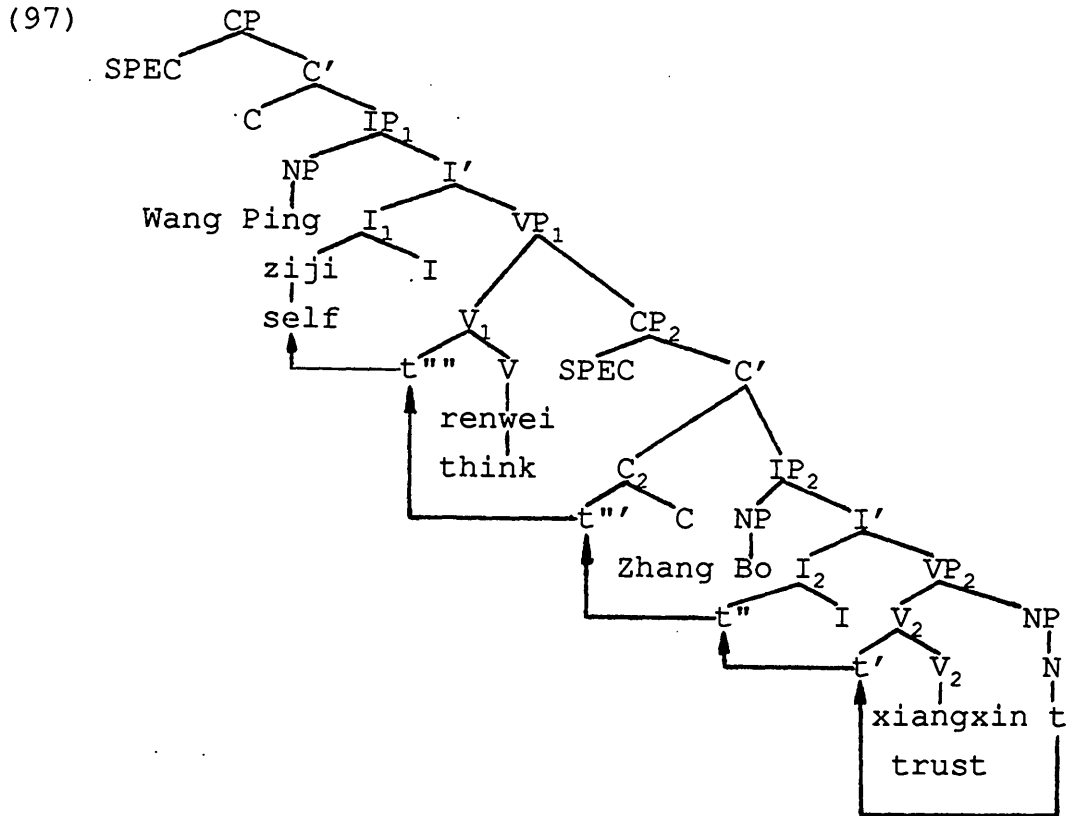
Following Chomsky (1986b) and Pollock (1989), Cole et al. (1990) and Sung and Cole (1991) assume that head-movement is a process of adjunction rather than substitution; only X^0 can adjoin to a head position and an X^{\max} projection, in contrast, must adjoin to a maximal projection. All movements are subject to the usual conditions, including the ECP.

As Sung and Cole (1991) analyze the difference between the reflexives in Chinese and in English within the framework of Chomsky's (1986b) *Barriers*, it is useful to recall what constitutes a barrier first (see 2.3.3). According to Chomsky, lexical categories are L-markers and the L-marking determines what constitutes a barrier. However, Chomsky makes a distinction between a blocking category (BC) and a barrier; and not every BC is a barrier. Non-L-marked maximal projections are barriers (except for IP) but L-marked maximal projections are not.

In Sung and Cole (1991), the reflexive form, *ziji*, is an invariant noun and crucially, not the NP dominating that noun.²⁶ Therefore, it will undergo X^0 movement. The trace left by the movement is subject to proper government defined

as being either lexically or antecedent governed. The application of head movement to (84), repeated here, will yield (97).

- (84) Wang Ping_i renwei Zhang Bo_j xiangxin ziji_{i/j}.
 Wang Ping think Zhang Bo trust self
 'Wang Ping thought that Zhang Bo trusted himself.'



Let us examine whether this derivation violates the ECP. The movement of *ziji* (an X^0 element) from its base-generated position to the V of its own clause crosses no barrier. As IP₂ is not a lexical category and does not L-mark VP₂, VP₂ is a barrier. However, when N (i.e. *ziji*) moves from VP₂ to IP₂, the adjunction of N to I₂ (i.e. t'') has the effect of making IP₂ lexical,²⁷ and as a result, IP₂ L-marks VP₂, voiding the barrierhood of VP₂. Therefore, t' is antecedent-governed by t'' . Although IP₂ is a BC, it is not a barrier (see (9) and (10) in Chapter 2 and also see the above brief discussion about the barrier). Thus the antecedent government is also satisfied in the next movement of *ziji* to

C_2 . In moving from C_2 to V_1 , *ziji* crosses no barrier because CP_2 is the complement of VP_1 and is L-marked by VP_1 . In the same way as the movement from V_2 to I_2 , further movement of *ziji* from V_1 to I_1 meets the requirement of antecedent government. From (97), we can see that the LDR involves successive cyclic head movement.²⁸

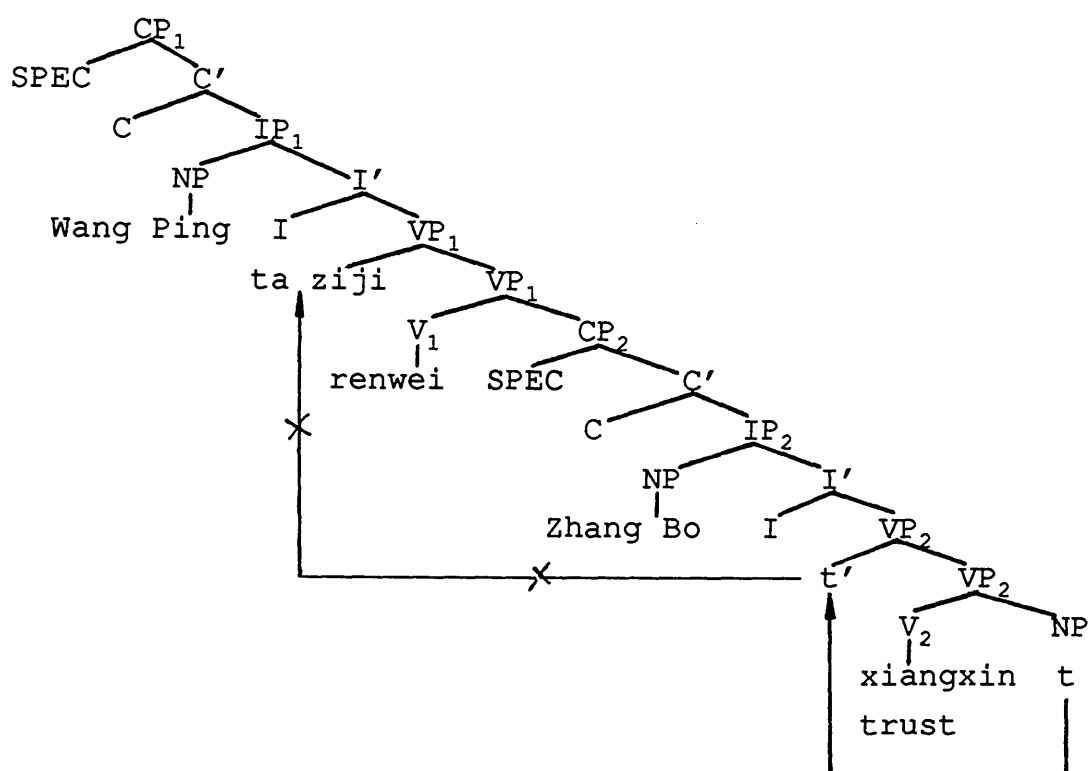
In addition to the successive cyclic head movement of the LDR, Sung and Cole (1991) note that there is an important factor that determines whether a reflexive form can be long distance or has to be strictly local, that is, whether the reflexive form is phrasal or non-phrasal. The non-phrasal form, i.e. *ziji*, can move up the tree, and thus is long-distance and the phrasal reflexive, i.e. pronoun+*ziji*, does not move out of its clause, and thus is short-distance. As pronoun+*ziji* is an NP, i.e. a maximal projection, it cannot adjoin to INFL and it must adjoin to X^{\max} . Let us consider the structure underlying (89), repeated here, which is shown in (98).

In (98), the whole NP, *ta ziji*, first adjoins to VP_2 , which is well formed because no barriers are crossed (though it does cross one segment of VP_2). The movement of *ta ziji* out of VP_2 from the position of t' causes no problem either because what it crosses is also just a segment of VP_2 . However, following Chomsky (1986b), Sung and Cole suggest that the adjunction of *ta ziji* to IP followed by further movement is ill-formed just as in the case of wh-movement. As CP is an argument, the adjunction of *ta ziji* to CP_2 is also excluded because it violates the principle concerning adjunction that 'adjunction is possible only to a maximal projection (hence, X'') that is a nonargument. In particular, adjunction to NP or CP is ruled out when these are arguments' (Chomsky 1986b:6). Thus *ta ziji* in (98) must move directly from VP_2 to VP_1 , crossing CP_2 , a barrier by inheritance from IP_2 . It is clear then that the phrasal reflexive in Chinese has to take a strictly local rather

than a long distance antecedent. Sung and Cole (1991) believe that the same principle applies in languages like English, in which reflexives are always phrasal and therefore always take local antecedents. This prediction is in fact correct and what is illustrated in (98) also applies to reflexives in English.

- (89) Wang Ping_i renwei Zhang Bo_j xiangxin ta ziji_{*i/j}.
 Wang Ping think Zhang Bo trust himself

(98)



Our discussion so far has been restricted to reflexives in object position. Let us now look at reflexives in preverbal position. Unlike English, Chinese allows the bare reflexive, *ziji*, to occur in preverbal position, as shown in (86) and (87), repeated here:

- (86) Zhang Bo_i renwei ziji_i neng dedao jiangxuejin.
 Zhang Bo think self can get scholarship
 *'Zhang Bo thinks that himself can get a scholarship.'

(87) tade nuer_i cai san sui, danshi ziji_i yijing hui

his daughter only three age but self already can
 chuan yifu le.
 put-on clothes PART
 *'His daughter is only three years old, but herself is
 able to put on her clothes.'

As noted by Tang (1989), Battistella (1989) and Wilcoxon (1989), *ziji* in (86) and (87) is an emphatic reflexive:²⁹ (86) is opposed to someone else being likely to get a scholarship, and (87) is opposed to other people helping her to put on her clothes. In (86) and (87), the emphatic *ziji* can also be preceded by an appropriate pronoun (eg. in (86), *ta*(=she/he) and in (87) *ta* (=she)). However, the pronoun preceding the reflexive is not an integral part of the emphatic reflexive; the pronoun is an independent pronoun occupying an A-position (i.e. the subject position), and the emphatic reflexive is a reflexive with an 'adverblike capacity' which 'occurs before the verb phrase and serves to contrast oneself with others' (Li and Thompson 1981:138-139). This can be illustrated in (99), where the pronoun in subject position is separated from the emphatic reflexive *ziji* by the adjunct *mingtian* (tomorrow).

(99) Zhang Bo shuo (ta) mingtian ziji hui lai.
 Zhang Bo say he tomorrow self will come
 'Zhang Bo said that tomorrow he himself will come.'

As Chinese allows PRO to occur in subject position of finite clauses (see Section 3.1 of this chapter), the pronoun, *ta*, in subject position in (99) is optional. Thus, we can say that the underlying structures of (86) and (87) are (100) and (101) (irrelevant information is omitted):

(100) Zhang Bo_i renwei [_{CP}[_{IP} PRO_i ziji_i neng dedao
 jiangxuejin.]]

(101) tade nuer_i cai san sui, danshi [_{CP}[_{IP}PRO_i ziji_i yijing
 hui chuan yifu le.]]

In both (100) and (101), the emphatic reflexive *ziji* is bound by PRO in subject position, which is, in turn, coreferential with *Zhang Bo* in (100) and *tade nuer* in (101) respectively. This is believed to be a correct analysis. For otherwise it would be impossible for *ziji* in (101) to have a c-commanding antecedent.

In fact, the behaviour of the emphatic reflexive in Chinese is very similar to that in English. What makes them different is that English does not allow null subject in finite clauses while Chinese does. Reflexives in English are always phrasal while reflexives in Chinese can be non-phrasal as well as phrasal.

3.3.2 Summary

Unlike English, which has only one type of reflexive, that is, the phrasal reflexive, there are two types of reflexives in Chinese, the bare reflexive, *ziji*, as well as the phrasal reflexive, pronoun+*ziji*. The phrasal reflexives in both English and Chinese are maximal projections (X^{\max}) and cannot move out of their own clauses to undergo successive movements because they are prevented by certain barriers from moving up the tree. Therefore, the phrasal reflexive has to take a strictly local antecedent. Thus, it is a short-distance reflexive (SDR). However, the bare reflexive, *ziji*, being a head noun (X^0), can undergo a successive cyclic head movement up the tree. As a result, it can take long-distance antecedents as well as the local antecedent. The long-distance binding for the bare reflexive, *ziji*, however, is subject to the 'blocking effect'; that is, the bare reflexive, *ziji*, cannot take the matrix subject as its antecedent unless the subjects of the clauses between *ziji* and the matrix subject all agree in person features.

Chinese also allows *ziji* as an emphatic reflexive to occur in preverbal position without being preceded by a lexically realized subject. As Chinese allows PRO to occur in subject position of the finite clause, the preverbal reflexive, *ziji*, is bound by PRO in subject position, thus satisfying the binding theory.

3.4 CONCLUSION

The contrastive survey in this chapter of the grammars of Chinese and English has provided an account for the differences between Chinese and English with respect to the language features of the null/non-null subject, the base-generated/non-base-generated topics, the null/non-null object and the short-distance/long-distance reflexive. As AGR and TNS are absent in Chinese, the null subject in the finite clause in Chinese is PRO and the lexically realized NP in subject position has inherent Case rather than structural Case. However, PRO, or more generally, the null subject is not possible in the finite clause in English because AGR in English, although very meagre, governs the subject position of the finite clause in English. All topics in English are the result of movement like the *wh*-phrases. Unlike English, Chinese has two ways of deriving a topic in Chinese; it can be created through movement like the topic in English, or it can be base-generated. The EC in object position coindexed with the base-generated topic is also generated in the base; it is generated as an empty resumptive pronoun at D-structure and becomes a variable when it is coindexed with the base-generated topic in the A'-position.

The EC in object position in Chinese can be either a variable or *pro*. It is a variable if it is coindexed with the topic whether the topic is the result of movement or

base-generation. If it is not bound by a topic, the EC in object position in Chinese is *pro*; it can be bound by an NP in an A-position in the matrix clause, or it may be coreferential with some element outside the matrix clause. The fact that object *pro* is allowed in Chinese but disallowed in English is attributable to the licensing condition for *pro*; V in Chinese belongs to a licensing class for *pro*, whereas, V in English does not. As the largest syntactic unit in Chinese is the Topic Chain (TC), which may consist of more than one CP, the referential content of the object *pro* can be recovered within the TC.

Another language feature that contrasts Chinese with English is that reflexives in English can only take a local antecedent, whereas reflexives in Chinese can take a long-distance antecedent as well as a local antecedent. This difference in the distance of binding is due to the fact that while reflexives in English are always phrasal reflexives, Chinese has the bare reflexive as well as phrasal reflexives. Phrasal reflexives are maximal projections (X^{\max}), and because of barriers blocking their way up the tree, they are unable to move out of their own clauses. Therefore, they can only take a local antecedent. Unlike phrasal reflexives, the bare reflexive is a head noun (X^0) and it is able to undergo a successive cyclic head movement up the tree, taking long-distance antecedents as well as the local antecedent. The bare reflexive in Chinese can also occur in a preverbal position without being preceded by a lexically realized subject. Here, it is an emphatic reflexive rather than an anaphoric reflexive, and it is bound by PRO in the subject position.

We summarize our discussions in this chapter in (102).

(102)

	TOPIC		SUBJECT ³⁰		OBJECT		REFLEXIVE	
	Base-generated	Non-base-generated	Null (PRO)	Non-null	Null (pro)	Non-null	LDR	SDR
CHINESE	+	+	+	+	+	+	+	+
ENGLISH	-	+	-	+	-	+	-	+

From (102), we can see that Chinese is more inclusive than English with respect to these language features involved in the investigation; the grammar of Chinese allows all the sentence structures that are allowed by the grammar of English. It also includes sentence structures which are not instantiated in English. However, the reverse is not the case. From the learnability point of view (see 4.4), it could be predicted that it would be easier for CFL learners to acquire these features in Chinese because they are likely to have positive evidence in their input to motivate their learning progress. Unlike CFL learners, EFL learners would have no positive evidence to disconfirm any L2 hypotheses they may have built on the basis of their L1 grammar, that is, Chinese. Based on these predictions, we could say that in terms of the language features involved, the direction of difficulty in the second language acquisition of English and Chinese would be from Chinese to English rather than from English to Chinese. However, we will see in Chapters 6, 7, 8, that this prediction is only partially confirmed.

Notes to Chapter 3

1. This is later developed by Jaeggli and Safir (1989b) as an approach of morphological uniformity to the explanation of the null subject phenomenon.
2. Following Manzini (1983), Huang (1984a) believes that the choice between subject and object as the controller of an empty pronominal is largely determined by pragmatic factors, as is shown in (i) and (ii) (=Huang's (63) and (64)).
 - (i) a. John_i promised Bill [e_i to come].
b. John promised Bill_i [e_i to be allowed to come].
 - (ii) a. John asked Bill_i [e_i to come].
b. John_i asked Bill [e_i to be allowed to come].
3. Huang argues that it is this contradiction which rules out the possibility of empty pronominal objects in languages in general.
4. Cole (1987) shared the view with Huang that INFL in Chinese is a proper governor. As I" is a maximal projection of INFL, INFL properly governs the topic position as well as the subject position. However, in Sung and Cole (1991), the view of INFL in Chinese as a proper governor is given up.
5. Huang (1984a) uses such sentences to support his claim that the empty object cannot be a pronominal. But Henry (1989) argues that what these sentences show is that the empty object cannot be a pronominal with arbitrary interpretation, that is, it cannot be PRO.
6. Notice that according to Ouhalla, the order of the categories in (31) varies from one language to another. This variation gives rise to different surface orders.
7. Substantives also have c-selectional properties. For example, the verb *hit* c-selects an NP, and *persuade* c-selects an NP and a CP as complements. As there is a correspondence relation between semantic categories and syntactic categories, c-selection is regarded as redundant (cf. Chomsky 1986b).
8. The s-selectional properties are unique properties for substantives, which refer to semantic selections in terms of thematic roles.

9. 'Expletives are items which lack a semantic content, in the sense that they do not contribute to the overall meaning of the sentence, but whose presence is required by an independent principle of UG. Expletives divide into two categorial classes, nominal (*it* and *there*), and verbal (*do*-support and auxiliary/copula *be*).' (Ouhalla 1991:22)
10. Ouhalla (1991) argues that the auxiliaries, *have* and *be*, differ in that *be* is simply a verbal expletive while *have* is an ASP element, i.e. a verbal element base-generated under the ASP node.
11. In Ouhalla (1991), some example sentences in Chichewa and Kinyarwanda on the one hand and Swahili and Welsh on the other are cited from Baker (1988), Kinyalolo and Carstons (1989) and Sadler (1988), which illustrate that in Chichewa and Kinyarwanda, in which the ASP elements are verbal, the verb can undergo a cyclic movement from V to ASP, to TNS and then to AGR, and thus all the three inflectional elements appear attached to the main verb while in Swahili and Welsh, in which the ASP elements are nominal, the verb can move only as far as to ASP and the movement of the [V+ASP] complex to TNS would result in a violation of the m-selectional properties of TNS because TNS only selects the verbal element.
12. As for the question of why *be*, instead of *do*, should be used to support the TNS element, see Note 11, Chapter 2 in Ouhalla (1991).
13. Ouhalla provides some examples, where *be* cannot reasonably be assumed to be inserted to support a TNS element, as in (i) and (ii) (see Note 13, Chapter 2 in Ouhalla 1991):
- (i) The envoy must have been kidnapped.
(ii) Mary wants to be happy.

However, Ouhalla argues that the presence of *be* in (i) can plausibly be attributed to the affixal nature of the participial affix *-en*, in the sense that *be* is inserted to support the participial affix. The presence of *be* in (ii) is also argued to be justified; as the English infinitival marker *to* c-selects a VP and since no verb is available, *be* is used to license the VP projection.

14. This is similar to Chomsky's (1982) Extended Projection Principle (EPP), which requires that all sentences have subjects (see 2.3.7).
15. Here, an empty topic is assumed. Recall that Huang assumes that the null subject and null topic in

Chinese are properly governed by INFL because INFL in Chinese is lexical; therefore, there is no violation of the Empty Category Principle.

16. See Note 15.
17. However, this seems quite circular. As pointed out in Rhys (1990), on the basis of Huang's analysis, cases of movement are those where coindexing by the GCR produces the wrong interpretation and cases consistent with GCR are those where movement violates the Subjacency Principle.
18. However, we cannot agree with Xu's (1986) claim that ECs in Chinese are Free Empty Category (FEC). He claims that ECs in Chinese do not correspond to any of the four empty categories identified in GB theory. He defines ECs in Chinese as FECs 'characterized by their complete freedom of referentiality' (1986:90). They are 'simply nothing. They are not only phonetically unrealized, but totally blank in the sense that they represent no category at all in syntax. The standard EC theory explains nothing for the simple reason that there is really nothing to explain' (1986:91). If Xu's claim were correct, there would be chaos in Chinese: any EC could occur anywhere with any possible interpretation. This is obviously not true. It is wrong to reject the application of the standard EC theory in Chinese just because of some exceptional cases, for which explanations have not been found for the time being.
19. According to Tsao (1977), a topic chain is a discourse unit, in which a topic extends its domain to a sequence of several sentences. Each sentence in this sequence functions as an independent comment of the topic. The topic and all the comment sentences under its domain form an autonomous unit with its own properties. The following sequence of sentences is a typical topic chain in Chinese (cf. Tsao 1977:92):
- (i) Nei ke shu_i, e_i hua xiao, e_i yezi da, e_i
 that CL tree flower small leaves big
- hen nakan, (suoyi) wo mei mai e_i.
 very ugly so I not buy
 "The tree, (its) flowers are small; (its) leaves are big; (it) is very ugly: so I did not buy (it)."
20. Shi (1989) notices that in a topic chain an NP in certain positions of the first sentence of a topic chain, such as the subject, the object or the specifier of a subject NP, can perform the function

of a chain topic while staying in situ. The NP in situ in the first sentence can license a gap in the following sentence, even though it has not been overtly topicalized. That is, when a null element occurs in the following sequence of sentences, it can take an NP in the first sentence as the antecedent. This can be shown in the following sentences ((i) and (ii) = Shi's (4a) and (5a)):

- (i) Wo kanshang le zhei ge guniang_i, ta ye
 I fall-in-love PFV this CL girl he also
 kanshang le e_i, e_i zuihou bei ta qiangzou
 fall-in-love PFV at last BEI him take-away
 le.
 PFV
 "I fell in love with that girl; he also fell in love with (her); at last (she) was taken away by him."

- (ii) Women mai le yi zhi mao_i, e_i hen hui zhao
 we buy PFV one CL cat very can catch
 laoshu, dajia dou xihuan e_i.
 mouse everyone all like
 "We bought a cat; (it) can catch mice; everyone likes (it)."

The two null elements in (i) are in object and subject positions of the sentences following the first one, which have the object of the first sentence, *zhei ge guniang* (=the girl), as the antecedent. The same phenomenon can be observed in (ii), where the null subject in the second sentence and the null object in the third have the object of the first sentence, *mao* (=cat), as the antecedent. Notice that the objects functioning as a chain topic in both (i) and (ii) are not in the sentence initial position but this does not prevent the NPs from functioning as the antecedents. The sentences in (82) and (83) are of the same type.

21. Chinese has three different characters for *him*, *her* and *it*. As the three pronouns in Chinese are the same phonemically, no difference can be indicated in *pinyin*.
22. However, by expanding the notion of governing category to include the matrix sentence as a default governing category, Wang and Stillings fail to account for the blocking effects, which will be discussed below. Yang (1983) adopts an approach similar to Wang and Stillings' here.

23. In Battistella's framework, movement of *ziji* to INFL is head-to-head. This is required by the theory of movement developed in Travis (1984) and the choice of INFL as the landing-site follows from a version of the structure-preserving hypothesis (Emonds 1976); as *ziji* is N° and the features of INFL (which include the AGR features) are nominal, the structure-preserving requirement is satisfied.
24. Battistella argues that as agreement between AGR and its subject is part of UG, 'agreement checking will be present in the grammar of Chinese at no cost even though there are no overt reflexives of agreement in the language' (1989:998).
25. Cole, Hermon and Sung (1990), following Huang (1982, 1984a,b), assumed that INFL was lexical in Chinese (but not in English) and properly governed the subject of its clause. To them, there were two conditions for long-distance reflexives; the first was non-phrasal reflexives and the second lexical INFL. In Sung and Cole (1991), the first condition is still held but the second is given up. The study of the acquisition of reflexives in this work is mainly based on the revised analysis in Sung and Cole (1991).
26. Remember that *ziji* can be preceded by a pronoun, forming an NP.
27. This is similar to the case of V-raising when V moves to I, forming the inflected verb V_I, which properly governs the trace left by V. (cf. Chomsky 1986b)
28. Following Aoun and Sportiche (1983), Chomsky proposes a notion of m-commanding (1986b:8) (see 2.3.2). It is the m-commanding that is used in the illustration in (97).
29. *ziji* in (86) can also be interpreted as an anaphoric reflexive. Here, we would like to put aside the anaphoric use of reflexives in preverbal position. For the difference between the anaphoric reflexive and the emphatic reflexive in Chinese, see Battistella (1989) and Wilcoxon (1989).
30. Here we are concerned about the subject in finite clauses.

CHAPTER 4

SECOND LANGUAGE ACQUISITION AND UNIVERSAL GRAMMAR

4.0 INTRODUCTION

One of the most interesting aspects of the research work in SLA is the common recognition that what has come to be known as the 'logical problem' of language acquisition (Hornstein and Lightfoot 1981) applies not only to L1 acquisition but to L2 as well. The 'problem' is to explain how knowledge of the target grammar is acquired given its severe underdetermination in the learner's available evidence, or how the learner can 'project' from the primary data to their corresponding underlying structural properties.

In order to deal with the 'logical problem', a number of SLA researchers have been trying to show that the principles and parameters of UG constrain the range of the hypotheses L2 learners apply to the learning of the L2 (Flynn 1987, 1988, 1989; Liceras, 1988, 1989; Phinney 1987; Hilles 1986; White 1988a, 1989). However, in spite of the great effort made by L2 researchers to study SLA within a UG framework, there are still many more questions than answers in the field. Is UG still available to adult L2 learners after they have mastered their mother tongue? What is the role of L1 in SLA? How does the L2 learner manage to progress from one stage to

another during the process of SLA? What is the relationship between language processing and language acquisition? In this chapter, we will first look at the Interlanguage Hypothesis, proposed by Selinker (1972), and then discuss the questions above and try to have a better understanding of these issues.

4.1 INTERLANGUAGE HYPOTHESIS

The term *interlanguage* (IL) was first introduced by Selinker (1972)¹ to refer to the structured system which the L2 learner constructs at any stage during the acquisition of the target language. This structured system is independent of both the learner's L1 and the target language. Originally, ILs are conceived to be the products of interaction between two linguistic systems, that is, those of L1 and L2. However, more and more SLA researchers have realized that more is involved in order to best characterize the nature of ILs. As Robertson (1991) points out, ILs should be understood as the result of the interaction of highly differentiated modular cognitive faculties. These faculties include UG, a general learning module, language processor.

Adjemian (1976) further develops the IL hypothesis and singles out a number of essential characteristics of ILs. The first is systematicity. This is based on the assumption that ILs are natural languages and that internalized rules in the learners' IL grammars are systematic in a way similar to grammars of natural human languages. The second characteristic of ILs suggested by Adjemian is permeability. Rules and forms that constitute the L2 learners' IL grammars at any stage are susceptible to infiltration by both L1 and L2 rules and forms. This

accounts for the variability and instability of the learners' ILs; the rules and forms in the target language are partially acquired or improperly used and the rules and forms from the L1s permeate the emerging IL grammars at various levels. This is in contrast with the stable final state of adult languages which are generally impervious to other linguistic systems. In Chapters 6, 7, 8, we will see some examples of permeability in CFL learners' IL grammars of Chinese and EFL learners' IL grammars of English. Adjemian claims that once permeability is lost, fossilization occurs, which prevents the L2 learners from achieving native-speaker competence. In general terms, fossilization refers to a situation when the learners stop learning when their ILs still contain some rules different from those of the target language system. In this case, the fossilized adult rule manifests itself as an error. There has been clear evidence that L2 learners generally fail to reach target language competence. However, children do not fossilize before they reach the full L1 competence. This difference is one of the most striking features that distinguish L2 acquisition from L1 acquisition. Obviously, one of the tasks facing the SLA researchers is to determine what kind of language features are likely to be candidates for fossilization and to explain why fossilization occurs in SLA. As we will see in later chapters, certain language features manifest themselves as candidates for fossilization in both EFL learners' IL grammars of English and in CFL learners' IL grammars of Chinese. We will offer explanations as to why these language features are susceptible to fossilization in the light of learnability and parsability principles.

4.2 THE AVAILABILITY OF UG IN SLA

SLA research has been greatly influenced by L1 acquisition research. But obviously, conditions for L1 acquisition differ from those for L2 acquisition in some respects. Internally, L2 learners differ from L1 learners in having the knowledge of another language available to them, although how much this affects them is much debated. Adult L2 learners also differ in that they have passed the so-called 'critical period' for language acquisition (Lenneberg 1967). Externally, many L2 learners, unlike L1 learners, may be exposed to negative evidence although, again, whether this negative evidence affects the L2 acquisition process or not is still controversial (White 1991, 1992; Schwartz and Gubala-Ryzak 1992).

In explaining the differences between L1 acquisition and L2 acquisition, Clahsen and Muysken (1986), and Clahsen (1988) claim that UG disappears in the process of maturation, that the principles of UG are only available to L1 acquisition, and that subsequent languages learned by adult learners are acquired in a different fashion. L2 acquisition by adult learners is said to be mediated by various general learning strategies that lead them to come up with grammars that do not fall within the range permitted by UG.

In a recent paper, Clahsen and Muysken (1989) have made a slight concession; they claim that in L2 acquisition, a set of stable principles in UG which hold for every language, such as structure-dependence, locality, etc. are available indirectly, that is, through the mediation of their mature L1 grammar. But a set of options, i.e. parameters in UG, which have to be filled in by experience have been lost. According to Clahsen and

Muysken, the crucial difference between L1 and L2 acquisition is that adults no longer have open parameters. 'This means that adult L2 acquisition is neither parameter fixing (as in L1 development) nor parameter resetting (as perhaps in early child L2 acquisition). It is rather language acquisition without access to parameter setting' (1989:23). They argue that L2 learners may develop alternative hypotheses as their knowledge of the target language increases: but instead of having deductive consequences and restructuring the entire system, these alternative hypotheses are merely the addition of new rules or patterns.

The evidence Clahsen (1988) Clahsen and Muysken (1986, 1989) use to support their arguments concerns differing developmental sequences and rules that they have observed in L1 and L2 acquisition of German word order. However, the validity of ruling out the availability of UG in SLA by matching the developmental patterns between L1 acquisition and L2 acquisition has been questioned by Flynn and O'Neil, who suggest that 'in order to develop an explanatory theory of L2 acquisition, we must account for both the learner's L1 knowledge and principles independent of this knowledge' (1988a:10).

In a reply to Clahsen and Muysken, duPlessis et al. (1987) argue that because of misleading properties in the L2 input or because of L1 transfer, L2 learners do not necessarily set all of the proposed parameters correctly at the same time; there are intermediate stages in L2 acquisition when the L2 learner shows evidence of having set only some of these parameters appropriately.²

A slightly different view from Clahsen and Muysken's is taken by Bley-Vroman (1989) and Schachter (1988, 1989), who argue that what is at issue is not whether UG is 'on' or 'off' in SLA, but rather the extent to which UG

operates in SLA. According to these researchers, UG in its entirety is available only to L1 learners; what is available to L2 learners are the principles of UG instantiated in their L1. Uninstantiated principles are no longer available to L2 learners, nor are the other possible parameter settings not instantiated in the L1. It is pointed out by these researchers that there are some striking characteristics in adult L2 acquisition, which include lack of uniform and complete mastery of L2, wide variation in terms of ultimate achievement, fossilization, etc.

Following recent developments in UG theory, Tsimpli and Smith (1991), and Tsimpli and Roussou (1991) believe that parameters are not associated with UG principles but with lexical items and in particular, functional categories. They argue that in L2 acquisition, there can be no parameter-resetting. According to these researchers, functional categories and their properties constitute an independent component of UG (Tsimpli and Ouhalla 1990), the UG lexicon. In L1 acquisition, the 'UG lexicon' is assumed to become available to the child as a result of maturation and be subject to the effect of the Critical Period. In L2 acquisition, on the other hand, the 'UG lexicon' is argued to be inaccessible to the adult L2 learners, because it is believed that language learning after the Critical Period cannot make use of the mechanisms available to children. Based on these assumptions, UG principles are still operative in L2 acquisition; however, parameter-resetting is excluded in L2 acquisition.

While there are indeed fundamental differences between L1 acquisition and L2 acquisition, it seems somewhat rash to claim that none of the parameters uninstantiated in the L1 can be reset for the L2. Experimental evidence and intuitive observation seem to suggest that although

success in resetting all the parameters for the target language is extremely rare in SLA, L2 learners are able to reset some parameters for the target language. The problem that faces SLA researchers, therefore, is to pinpoint the parameters that can be reset in SLA and those that cannot, and to provide explanations for them.

Felix (1985, 1987) believes that UG is still available to L2 learners and he explains the difference between L1 and L2 acquisition in terms of what he calls competing cognitive systems; the same position is taken by Obler (1988). In this approach, it is assumed that principles of UG are available to adults as well as to children. The observed differences in acquisition are said to reside in the separate faculties that the two groups bring to bear upon the learning experience. For children, it is UG; for adults, it is UG in competition with late-acquired general principles of a problem-solving nature. Felix argues that the availability of Piagetian cognitive learning strategies (i.e. Formal Operations) in adults, but not in children, blocks or hampers the functions of UG as a learning device with adults, which leads to the almost inevitable 'partial outcome' (Davies 1984) in adult SLA. Felix is the first to recognize the need to specify what other mental resources are uniquely at the disposal of adult learners. As we will see in Chapter 8, Felix's approach, together with some parsability principle, provides an insight for the explanation of fossilization in the acquisition of the long-distance reflexive in Chinese by CFL learners.

4.3 THE ROLE OF L1 IN SLA

According to Selinker's (1972) interlanguage hypothesis,

one of the principal processes operating in ILs is language transfer. Although not all the features of L1 are equally susceptible to transfer or exert a visible influence on ILs, experimental evidence has repeatedly indicated that knowledge of L1 plays an important role in the construction of IL grammars (cf. Gass and Selinker 1983). It is logical to assume that to a certain extent, prior knowledge and experience of one language can shape our expectations of the experience of learning a new language. And this is particularly true at the early stages of acquisition. The knowledge and experience of the acquired knowledge can inform the learner of a great deal about language in general, providing a rich repertoire of hypotheses for the learner to draw on in the construction of an L2 grammar.

However, incorrect hypotheses based on L1 features result in structures that deviate from target forms and manifest themselves as errors. Therefore, a characterization of the role played by L1 in SLA is indispensable to our understanding of IL development.

Traditionally, the study of L1 transfer was dominated by two major theories: Contrastive Analysis (CA) (Fries 1945, Lado 1957) and Creative Construction (CC) (Dulay and Burt 1974; Dulay, Burt and Krashen 1982). Each of these theories provides a distinct perspective on the role of L1 in SLA; CA emphasizes forms that can be attributed to the L1, which are known as transfer or interference errors, while CC concentrates on developmental errors, namely those which are common to learners of different mother tongues and which are also found in L1 acquisition.

During the period when the CC theory was in vogue, the role of L1 transfer was substantially deemphasized; and because of its association with the behaviourist models

of language learning, the notion of transfer was considered an embarrassment to claims about language acquisition. With the advent of cognitive psychology and UG in SLA, the nature of L1 is reappraised; language is no longer viewed as 'stimulus-response' verbal behaviour and language learning as habit formation. What is included in transfer phenomena is knowledge and mental representation; transfer involves the knowledge of L1 rather than the old habits of L1. Within the framework of UG, language is viewed as a system of interrelated abstract principles and constraints. Therefore, any transfer phenomenon cannot be adequately viewed as a single, independent feature that corresponds to a similar feature in L1; it should be regarded as a certain manifestation of an underlying principle, or interactions of principles. Research in parameter-resetting has provided an enlightened view of the nature of L1 transfer in SLA (White 1985, 1986b, 1988b).

L2 learners have already had the parameters of UG fixed during the acquisition of their L1. In SLA, many learners are faced with situations where the values of the parameters in L1 differ from those in L2, or some principles are inactive in L1 but active in L2. During the early stages of L2 acquisition, the L2 learners' IL grammars are characterized by some settings which correspond to the settings in their L1 but are not compatible with the L2 parameter settings (White 1986b). Thus, what faces the L2 learners is to 'unlearn' the L1 values of the parameters during the process of L2 acquisition and reset the parameters to the values appropriate to the L2 settings. The success in unlearning and resetting the values of parameters in the process of L2 acquisition depends on the L2 data the learners are exposed to, and more importantly, depends on whether the L2 learners are able to process the data to figure out their linguistic significance.

It must be pointed out that there is still a lack of consensus among SLA researchers as to exactly what role L2 learners' mother tongues play in their L2 acquisition. Some researchers make an implicit or explicit assumption that UG can start from scratch in L2 acquisition without any effects from the L1 (Mazurkewich 1984, 1985, 1988). Flynn (1985, 1987, 1988) holds a different view. According to Flynn, L1 does play a role in SLA, but all L2 learners are sensitive to the match or mismatch of the settings of parameters between the L1 and L2 from early stages of acquisition. It is assumed that all L2 learners, regardless of match or mismatch in parametric values between the L1 and the L2, use the same principles of syntactic organization isolated in L1 acquisition in the construction of the L2. In the case in which values do not match, L2 learners assign a new value to cohere with the L2. Since the principles determine fundamental properties of grammatical organization for the language to be learned, L2 learners in this case must establish this basic grammatical organization for the L2 they are learning. In the case in which values match, there is no need to re-establish the basic grammatical structures, as they match those of the L1. Flynn bases her arguments on the studies of acquisition of the head-direction parameter by Spanish learners of English, and Japanese and Chinese learners of English.

Two different patterns emerge in Flynn's studies; the Japanese and Chinese subjects work out the fundamental properties of the head-direction parameter for the L2 in much the same way that early L1 learners do; the Spanish subjects do not need to assign a new value to this parameter; they already have the correct value set for their L1, and as a result, these speakers can construct the structure established by this value in working out the properties of the parameter. Flynn argues that both

of these developmental patterns, in some sense, match L1 patterns of acquisition for English; however, each corresponds to a distinct stage in L1 acquisition in this developmental sequence.

Flynn's arguments are mainly based on SLA data about the setting of the head-direction parameter. However, data about the settings of other parameters, reported in the SLA literature, suggest that parameter setting or resetting is not as straightforward as Flynn claims and the learners' L1 has a more important role to play in the parameter resetting in SLA. The differences between Flynn's studies and others may reflect differences in the experimental methodologies employed in obtaining data from various language learners tested³. In fact, differences in the test requirements often result in differences in the manner in which linguistic competence is accessed and in what aspects of linguistic competence are tapped. In addition, different linguistic features that different experiments are based on may also give rise to different interpretations of the role of L1 in SLA; some linguistic features may be more transferable than others (cf. Rutherford 1983, Zobl 1986).

A more convincing interpretation of the role of L1 in L2 acquisition seems to be that given by White (1985, 1986a,b, 1988a,b). According to White, when the L1 and L2 have different settings for a particular parameter, L2 learners will be affected by the parameter already instantiated in their L1, so that, at least initially, they carry over the setting already established for the mother tongue. The fact that positive evidence in L1 has caused a parameter to be set in a particular way may obscure the fact that positive evidence in L2 motivates a different setting. In situations where it is really necessary to reset parameters, the learner may have

particular difficulties, reflected in the transfer of the L1 value, and hence in the incidence of interference errors. To White, L2 learners always assume at the initial stage of the acquisition that L1 and L2 match; in order to 'reset' or 'reassign' a new value to the L2 parameter where the L1 differs from the L2, L2 learners have to 'lose' or 'unlearn' the L1 value of the parameter in SLA.

Transfer can also result from the interaction between L1 features and developmental influences of the target language. Zobl (1980) argues that if a language feature in the L2 learner's mother tongue corresponds to a language structure that occurs inherently in a certain developmental stage of the L2 (acquired as a mother tongue by children), this correspondence may trigger transfer from the L1 and result in transfer error; this structural correspondence is believed to have a retarding effect, prolonging the restructuring process of the feature on which the error is based. According to Zobl, if there is no such correspondence, the error may still occur, but it is purely a developmental error and will be less long-lasting than if there is a correspondence. Zobl uses the data of Spanish speakers' simple preverbal negation in English to support his argument, such as *This no is chicken, I no like the book*, etc. Children acquiring English as L1 are also found to go through a stage where they produce utterances, such as *I not go*. As the simple preverbal negation occurs in both the L2 learner's mother tongue and L2 as a developmental stage, the learners' IL grammars are susceptible to the L1 influence; and in certain cases, such transfer error 'are more recalcitrant to restructuring and may show a tendency toward fossilization' (Zobl 1980:477).

4.4 LEARNABILITY AND SLA

Almost all learnability theories that have been developed so far address learnability issues in L1 acquisition. In recent years, some SLA researchers have tried to adapt the learnability theories developed in L1 acquisition to illuminate some learnability problems in SLA (cf. Pankhurst, Sharwood Smith and Van Buren 1988; Yip 1989). However the learnability issues that SLA researchers try to account for are not the same as those in the field of L1 acquisition. In L1 acquisition, learnability theories have to provide explanations of why children acquire their mother tongues uniformly and effortlessly in spite of the fact that linguistic knowledge is extremely intricate and complex. Given the characteristics of lack of success, general failure, fossilization in SLA (Bley-Vroman 1989), SLA researchers have to account for unlearnability or 'partial outcome' (Davies 1984), as much as learnability in the SLA context.

Learnability theories are usually constructed with respect to language input available to the language learner. According to the literature of learnability, the language input can be divided into two main types: positive evidence consisting of grammatical and well-formed structures, and negative evidence which inform the learner that a given structure is not well-formed. These two main types of evidence can be further divided into direct and indirect, resulting in the following four subtypes.

(A) Direct positive evidence

Direct positive evidence, also known as primary data, refers to the language data consisting exclusively of grammatical structures of the target language. If the target language grammar has a feature F, the examples of

F in the input data are the positive evidence available to the learner. Positive evidence is generally assumed to be the basic type of evidence the learner uses to construct the grammar and revise his or her hypothesis (cf. Yip 1989).

(B) Indirect positive evidence

Indirect positive evidence is proposed by Randall (1987) as a solution to the problem of overgeneralization of dative structures in L1 acquisition. Her proposal of indirect positive evidence is based on a principle of the form in (1), which means that if structure P occurs in the language, structure Q cannot occur. In other words, positive evidence of a structure can serve as indirect evidence for the non-occurrence of a related structure. Thus, the learner can get information of nonoccurrence of Q indirectly through the presence of P in the input.

(1) [IF P THEN NOT Q]

By the principle in (1), Randall claims that one form in a language may have implications about other forms. This is a very attractive option. Within the framework of UG, knowledge of language is regarded as a systematically interrelated set of subtheories consisting of principles and parameters. A change in one place may have chains of reactions in other places in an implicational way.

Randall's proposal of indirect positive evidence is not without problems (cf. Gropen, et al. 1989; Pinker 1989)⁴; however, as we will see in Chapter 6, the approach that Randall takes provides a solution to the learnability problems in the acquisition and unlearning of the null/non-null subject and the acquisition and unlearning of base-generated/non-base-generated topics by CFL and EFL learners.

(C) Direct negative evidence

Direct negative evidence, also called explicit negative evidence, is defined by Berwick (1985) as 'the (perhaps methodical) pairing of positive (syntactically well-formed) and negative (syntactically ill-formed) sentences with the appropriate labels *well-formed* and *ill-formed*. It could also include correction of ill-formed utterances (alternatively, parses) via (a) explicit negative reinforcement (e.g. *That's wrong*) or (b) tacit negative reinforcement (e.g. responding with the correct pattern, or not responding)'. (p.41, fn. 26)

In L1 acquisition research, both conceptual work and empirical work have indicated that young children learning their mother tongues usually do not have direct negative evidence available to them (Bowerman 1983; Pinker 1984; Gropen et al. 1989) and that even if direct negative evidence is available, they either would not or could not make use of it. (McNeil 1966; Braine 1971, Maratsos 1986)

However, the situation in SLA is different in that direct negative evidence is normally available to L2 learners and this is true both in L2 classrooms and naturalistic settings. In L2 classrooms, the learner is provided with descriptive information about the target language and can get explicit corrections from the teacher if his or her use of the target language is wrong. In naturalistic settings, the L2 learners can get direct negative evidence in the form of confirmation check, clarification, request, etc. (Schachter 1986).

Although there is a general consensus about the fact that L2 learners have access to direct negative evidence, the role of direct negative evidence in adult SLA is quite controversial. Recently, there has been a heated debate among some SLA researchers over the issue of how

effective formal instruction is in parameter-resetting in SLA (White 1991, 1992; Schwartz and Gubala-Ryzak 1992). White (1991, 1992) conducted a study about the resetting of the 'Verb Movement' Parameter by French speakers acquiring English. It is reported that formal instruction on the 'Verb Movement' Parameter helps the learners to exclude the incorrect order of *S V Adv O* in English. However, Schwartz and Gubala-Ryzak (1992) argue that the change in the French learners' behaviour only represents certain surface patterns and that the underlying English competence of these French learners is not affected.

In spite of controversy on the role of direct negative evidence in SLA, we will, following Yip (1989), adopt Williams' (1987) position of taking the 'no negative evidence' as an idealization which serves as a constraint on theory building, rather than as a factual claim. 'It may well be that the [no negative evidence] hypothesis is a complicated half-truth, as much a part of the idealization of the problem as a part of the answer to the problem. At the present, when we have no idea where the truth lies, this hypothesis serves the useful function of ... evaluating the consequences of proposals about the nature of grammar for the study of acquisition' (Williams 1987:ix). As noted by Yip (1989), this idealization sets up a challenge for learnability theories to account for the fact that learners are able to learn even without negative evidence.

(D) Indirect negative evidence

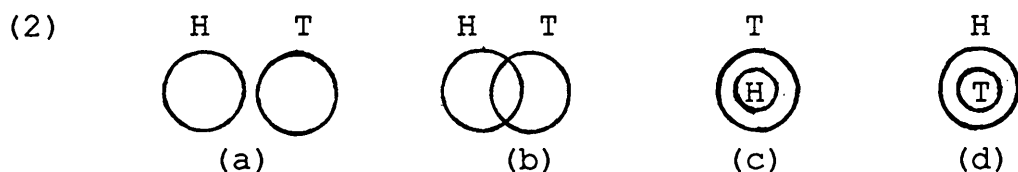
Indirect negative evidence refers to the non-occurrence of some linguistic structures expected to occur by the learner; the non-occurrence of certain linguistic forms could inform the learner whether his hypothesis about these linguistic forms are correct or not. Berwick defines indirect negative evidence as follows: 'Indirect

negative evidence, the inference that if a linguistic construction *P* can appear in simple sentences and is not observed to appear, then *P* does not occur in any sentence, no matter how complex' (1985:41, fn. 26). The effect of indirect negative evidence has been questioned by quite a few language acquisition researchers. Valian (1990a) points out that it is impossible to set an appropriate time limit for a language learner to wait for the 'expected' language form to arrive and to set a time when the language learner can decide that the 'expected' language form is never going to arrive. Braine (1971) dismisses the effect of indirect negative evidence on the ground of the overwhelming computational burden on the learner. He argues that given the complexity and irregularity of language, it is far too much for the learner to keep track of a great range of construction types together with their ratio of occurrence and non-occurrence. Pinker (1989) also rejects the idea, arguing that as there is always an infinity of sentences that the learner has not heard that are grammatical, it cannot be true that the learner literally rules out any sentences he or she has not heard. We will further discuss the effect of indirect negative evidence in Chapters 6 and 7 with respect to the data collected from our EFL learners.

In L1 acquisition, one of the concerns of learnability theories is overgeneralization in the learners' grammars. Then we may ask why learners generalize. The answers to this question are related to both external and internal factors of the learner. Externally, language requires generalizations. As language is infinite, learning a language requires the learner to make correct generalizations on the basis of the finite data he or she is exposed to. As Pinker points out, 'a language is an open-ended set, not a fixed list, so the child must generalize from these inputs to an infinite set of sentences that includes the input sample but goes beyond

it' (1989:5). Internally, it is characteristic of human minds to generalize; and this is the case in both adults and children. Fodor and Crain (1987) explain this characteristic of human minds in language learning on the basis of two assumptions. The first is the least effort principle; that is, a language learner always likes the rule that is simple to formulate and sufficient to maximally accommodate his data. The second assumption is that people 'favour general rules because they are easier than restricted rules' (Fodor and Crain 1987:35).

However, the hypothesis made by the learner may deviate from the actual target language. Pinker (1989) illustrates four ways in which the child's hypothesis can be incorrect, as shown in (2), (H stands for the set of sentences generated by the child's incorrect hypothesis and T refers to the set of sentences generated by the actual target language).



(Pinker 1989:6)

The child's hypothesis can be disjoint from the target language, as in (2a). In this case, any sentence in the input (i.e. positive evidence) is sufficient to inform the child of his incorrect hypothesis. If the language generated by the child's hypothesis grammar and the target language are intersecting, as in (2b), or if the hypothesis language is less inclusive than the target language, that is, the target language is the superset and the hypothesis language the subset, as in (2c), positive evidence consisting of input data in the non-overlapping region of the target language suffices to impel the child to reject the hypothesis. However, if the

hypothesis language is more inclusive than the target language, i.e. the hypothesis language forms a superset and the target language the subset, as in (2d), there will be no positive evidence available to the learner to falsify their incorrect hypothesis. Then the problem facing the learner is to disconfirm an overgeneralized hypothesis in the absence of negative evidence.

Examples of potential overgeneralizations are ample in both L1 acquisition and L2 acquisition. The following examples illustrate how overgeneralizations may occur (from Pinker 1989:7).

- (3) a. John gave a dish to Sam.
 b. John gave Sam a dish.
- (4) a. John passed the salami to Fred.
 b. John passed Fred the salami.
- (5) a. John donated a painting to the museum.
 *b. John donated the museum a painting.

On the basis of (3) and (4), it would seem to be a reasonable generalization that any verb with NP_1 ___ NP_2 to- NP_3 argument structure (preposition dative) could also have a NP_1 ___ NP_3 NP_2 argument structure (double-object dative). The problem is that not all the verbs with the prepositional argument structure are allowed to have a double-object dative, as can be seen in (5). In addition, the learner has no way of knowing this, given the non-availability of negative evidence. Baker (1979) makes an elaborate study on these phenomena and Pinker calls these phenomena 'Baker's paradox'.

Similar phenomena also occur in SLA. Let us take the acquisition of the English non-null subject and non-null object by Chinese speakers for an example. As we have seen in Chapter 3, in Chinese, both the subject position

in infinite clauses and the object position can be empty; but they can also be lexically filled, as in (6) and (7).

(6) a. women zuotian kanjian-le Li Ming de nu-pengyou,
we yesterday see PFV Li Ming DE girl-friend

e zhangde hen piaoliang.
look very beautiful

*'Yesterday we met Li Ming's girl-friend. e Looked very beautiful.'

b. women zuotian kanjian-le Li Ming de nu-pengyou,
we yesterday see PFV Li Ming DE girl-friend

ta zhangde hen piaoliang.
she look very beautiful

(7) a. wo wen Li Ming jian mei jian-guo Nuwang, ta shuo
I ask Li Ming see not see EXP Queen he say

ta zai dianshi shang jian-guo e .
he at TV on see EXP

*'I asked Li Ming whether he had seen the Queen. He said he had seen e on TV .'

b. wo wen Li Ming jian mei jian-guo Nuwang, ta shuo
I ask Li Ming see not see EXP Queen he say

ta zai dianshi shang jian-guo ta .
he at TV on see EXP her

'I asked Li Ming whether he had seen the Queen. He said he had seen her on TV .'

As we can see from the English translations of (6a,b) and (7a,b), English does not allow either the empty subject or the empty object. With respect to these two language features, Chinese is more inclusive than English. If we assume that there is no effect of negative evidence in SLA, Chinese learners of English will have no positive evidence in the input which can indicate to them that unlike their L1, Chinese, the target language, English, does not allow the empty subject and empty object.

White (1986a) predicts that as positive evidence in the L1 has caused the parameter to be set in a particular way, this can obscure the fact that the L2 requires a different setting; she also predicts that in parameter-resetting in SLA, if the setting for the parameter in the learner's L1 is more inclusive than that in the L2, it will be difficult or impossible for the L2 learner to 'unset' the L1 setting in the absence of necessary evidence⁵. Following White, we can predict that to unlearn the empty subject and empty object during the acquisition of English can be a problem for the Chinese learners and that the empty subject and empty object are likely to persist and become potential candidates for fossilization. However, we will see in Chapters 6 and 7 that this prediction is only partially confirmed.

To solve the learnability problem in L1 acquisition, Berwick (1985) proposes a learning principle called the 'Subset Principle'. The principle deals with the learning situation where language data are compatible with two or more grammars that generate languages in a subset/superset relation to each other, that is, one of the languages is properly contained within the other with respect to a certain language feature. If the learner mistakenly picks the more general grammar, the incorrect guess will result in overgeneralizations that cannot be refuted on the basis of positive evidence. The Subset Principle states that when the learner is faced with input that could be accommodated by more than one grammar, the learner must start off with the narrowest possible hypothesis compatible with the available data. The more general superset options are chosen only when there is specific positive evidence to support these options. The Subset Principle is motivated by the assumption that negative evidence is not reliably available to L1 learners and it is a principle of conservative acquisition: 'the learner should

hypothesize languages in such a way that positive evidence can refute an incorrect guess' (Berwick 1985:37). The Subset Principle has been further developed by Wexler and Manzini (1987) in relation to binding domains.

Obviously, if learners' hypotheses followed the ordering dictated by the Subset Principle, there would be no problem of overgeneralization. However, L2 acquisition is different from L1 acquisition. L2 learners' initial hypotheses for the target language are often shaped by the knowledge of their L1, and this gives rise to learnability problems not seen in L1 acquisition. If the learner's L1 is a subset of the target language, the learner's initial hypothesis for the target language can be narrower than the target grammar. In this case, positive evidence in the input can motivate the learner to expand his IL grammar to a more general hypothesis compatible with the target grammar. The problem arises when the learner's L1 makes the learner's initial hypothesis for the target language too general. In this case, recovery from a more general hypothesis to a less general one is difficult or even impossible in the absence of negative evidence. It has been shown in quite a few SLA studies that the Subset Principle is not applicable in SLA and that L2 learners do not start with the narrowest hypothesis in SLA (White 1989; Hirakawa 1990; Sorace and Yuan 1991). Furthermore, although it is predicted to be unproblematic by the Subset Principle if the learners start off with a less inclusive grammar (i.e. a subset) and move towards a more general grammar (i.e. a superset), L2 learners may still have problems in mastering the more general grammar in SLA; for one reason or another, L2 learners may not necessarily notice the linguistic significance of the positive evidence in the input for the construction of the target language grammar even if the positive evidence is available to them. As we

will see in Chapter 8, the CFL learners, in acquiring the long-distance reflexive in Chinese, fail to extend a less inclusive grammar to a more inclusive grammar in spite of the presence of positive evidence in the input. This suggests that in SLA, expanding a subset grammar to a superset grammar may not be as straightforward as the Subset Principle predicts. This also suggests that the directionality of difficulty in SLA cannot be decided solely by the availability of positive evidence to the L2 learner.

Some researchers have explicitly or implicitly indicated that in L1 acquisition change takes place in the learner's grammar only when his current grammar fails to match the incoming string. This is what Bowerman (1987) calls a 'failure-driven' approach to language acquisition. 'For example, change takes place when the child reaches an impasse in comprehending or producing a sentence, or when the child's monitoring system detects a discrepancy between the way the child would express a given message and the way it is expressed in an incoming string' (Bowerman 1987:458). On the other hand, if the string can be successfully comprehended or produced, the grammar remains as it was. If the failure-driven mechanism does indeed have an active role to play in accounting for the L1 learner's progression to a full adult grammar, it is very likely that it is because the failure-driven mechanism is inactive in adult SLA that positive evidence in SLA fails to bring about the necessary change in the L2 learners' IL grammars.

Unlike children, adult L2 learners have, at their disposal, some problem-solving mechanisms, such as inferring, reasoning, etc; and they rely heavily on these mechanisms in processing the input data, thus reducing the power of the failure-driven mechanism in SLA. We will discuss this issue further in Chapter 8 with the data

about the acquisition of the long-distance reflexive in Chinese by CFL learners.

In the above we have rejected the idea that the Subset Principle is available to L2 learners. However, we do not mean that this principle is of no interest to SLA researchers. We believe that we can still use the Subset Principle to characterize some potential learning difficulties in SLA.

4.5 PARSABILITY AND GRAMMAR

Most current theories of language acquisition assume explicitly or implicitly that new language input has the power to drive the language acquisition process. If the incoming novel input is not consistent with the learner's current grammar, then the learner presumably must assign the incoming input some analysis which is incompatible with his current grammar. The learner can then alter his current grammar on the basis of the incoming input. However, there is a precondition for this acquisition progression. That is, it is essential for the crucial input to be processed correctly. The acquisition progress depends on how a description is assigned by the learner's parser to the 'informative input', i.e. one serving as evidence for grammar alternation.

In recent years, the relationship between grammar and parser has become an interesting topic to many researchers. It is uncontroversial that the grammar and the parser are related in some fairly direct way. However, there is still a lack of general consensus among researchers as to how the grammar and the parser are related. One approach to the characterization of this

relationship is the assumption that grammatical constraints should result automatically from a correctly designed parser. According to this approach, grammar should be taken as a derivative construct from the parser. Examples of this approach can be seen in the attempts made by Marcus (1980), Berwick and Weinberg (1984) to derive grammatical notions of subadjacency and c-command from parsing principles. This approach has been challenged by Pritchett (1988), who argues that if the parser wholly determined, or indeed was, the grammar, this would prevent one from explaining language variation. 'If there is any content to the notion that parsing strategies reflect fundamental and automatic human cognitive processes, then we do not expect them to vary radically across the species' (Pritchett 1988:540).

Frazier and Fodor (1978), and Pritchett (1988) believe that the grammar and the parser are separate and distinct entities and they are independent of each other. As there are certain grammatical constraints that cannot be reduced to parsing principles, there are parsing effects that cannot be reduced to grammatical principles. This has been shown to be the case in a study conducted by Schachter and Yip (1990).

In Schachter and Yip's study, sentences like those in (7) were used in a judgement test for both native speakers of English and L2 learners of English with different L1 backgrounds, such as Chinese and Korean.

- (7) a. Who do you think John told Mary he fell in love with?
- b. Who do you think John told Mary fell in love with Sue?

Although (7a) and (7b) are equally grammatical, they were judged differently; both native speakers of English and

the L2 learners showed preference for sentences like (7a) over sentences like (7b), that is, object position was preferred over subject position as the extraction site for the *wh*-word. Schachter and Yip argue that since no theories of grammar provide an account for this contrast, this difference in the judgements between the two types of sentences is attributed to factors involved in processing the sentences.

In fact, in natural languages, it is not uncommon to have sentences which are grammatical but are either impossible or difficult to process. The sentence in (8) (due to Bever (1970), cited in Pritchett (1988)) is an example of the well-known garden path phenomenon⁶.

(8) The boat floated down the river sank.

Before the verb, *sank*, is encountered in (8), the string, *the boat floated down the river*, is ambiguous between a main clause, as in (9) and a complex NP interpretation, as in (10).

(9) [IP[NPThe boat][VPfloated [PPdown the river]]]

(10) [NP[NPThe boat][CP[VPfloated e [PPdown the river]]]

This indicates that in processing sentences like (8), a certain parsing decision which is locally tenable leads to ungrammaticality.

It is true that in practice, to separate processing factors from grammatical factors is often difficult; but we believe, following Schachter and Yip (1990), that in principle, different effects exerted by the grammar and the parser should be separable. 'When the parser suffers an initial breakdown in processing, the grammar may be blocked from assigning a grammatical analysis' (Schachter and Yip 1990:390). Therefore, if we do not consider

processing factors, we are likely to have misinterpretations of learners' linguistic behaviours. This is believed to be the case in both L1 acquisition and L2 acquisition. In Chapter 6, we will attempt to tease the grammatical and processing effects apart, and try to account, on the basis of processing factors, for the difficulty CFL learners have in acquiring base-generated topics in Chinese.

4.6 CONCLUSION

In this chapter, we have discussed the interlanguage hypothesis in SLA. During its development, IL is permeable to the rules and forms of both the learners' L1 and the target language. The role of previous linguistic knowledge and transfer is seen as a pervasive force in shaping IL grammars. IL is also prone to fossilization. However, this depends on the permeability of IL; only after permeability is lost does fossilization occur. It is this fossilization that has made SLA researchers' work more challenging; they have to account for unlearnability as well as learnability in SLA. There are many factors which decide whether a feature in the target language is learnable or partially learnable. They include the types of evidence available to the learner, processing factors, etc.

As for the issue of the availability of UG in SLA, the position we take is that adult L2 learners do not have as direct access to UG as children do. This is based on the general lack of success in SLA. However, it is believed that L2 learners still have a degree of access to UG and they are able to reset some parameters for the target language. What remains unclear is to what extent L2

learners have access to UG and what parameters are and are not resettable in SLA.

Notes to Chapter 4

1. Various alternative terms are used by different researchers to refer to the same phenomenon, such as, *approximative systems* (Nemser 1971), *idiosyncratic dialects* and *transitional competence* (Corder 1981).
2. duPlessis et al. (1987) also point out that Clahsen and Muysken's claims are based heavily on a particular type of linguistic analysis of German; reformulating assumptions about the structure of German may lead to very different conclusions and suggest that adult L2 acquisition like L1 acquisition might be guided by a common set of principles.
3. Flynn's model and methodology are questioned by Eubank (1989).
4. Randall (1987) uses indirect positive evidence to solve the problem of overgeneralization of dative structures. She suggests that dativizable verbs specify both their objects as obligatory arguments, whereas non-dativizable verbs specify only the theme as an obligatory argument. Since predicates and their obligatory arguments are adjacent within a phrase but optional arguments are generally outside the phrase (Jackendoff 1977), two obligatory arguments can switch places in linear order as in (i), whereas such switching of places between an obligatory argument and an optional argument is impossible, as in (ii).

(i) a. give NP₁ to NP₂
 b. give NP₂ NP₁

(ii) a. deliver NP₁to NP₂
 *d. deliver NP₂ NP₁

Randall predicts that only non-dativizable verbs can appear in simple transitive structures with theme objects, as in (iii). Hearing such structures (i.e. P in (1)), the learner can deduce that the verb is non-dativizable (i.e. non-occurrence of Q). For example, the learner, upon hearing, *Connie reported the news*, would know that the goal argument of *report* is optional, hence that *report* cannot have a goal argument between itself and its (obligatory) theme argument, hence that *report* cannot be dativized. Randall argues that positive evidence about the simple transitive structure would suffice to avoid or unlearn double-object phrases with

report. Randall supports her predictions with the data in (iii) and (iv).

(iii) Agamemnon reported the news.
 Pablo explained his painting
 Gertrude recited the recipe.
 Romeo delivered the posies.
 Cressida dictated the letter.
 Joan contributed six warriors.

(iv) *Agamemnon told the news.
 *Pablo gave his painting.
 *Gertrude showed the recipe.
 *Romeo brought the posies.
 *Cressida sent the book.
 *Joan lent six warriors.

(Randall 1987:10-11)

Pinker (1989), by giving the example sentences in (v), questions the validity of Randall's indirect evidence.

(v) Bill told a story.
 Sam asked a question.
 She entrusted her child to the daycare center.
 *She entrusted her child.
 *She entrusted the daycare center her child.

5. White (1986a) discusses this issue in terms of markedness. As different researchers give different definitions to the terms of *marked* and *unmarked*, and they use them to mean different things, these two terms have become very confusing. Therefore, markedness is not invoked here to avoid causing confusion to the reader.
6. The garden path phenomenon refers to the processing problems involved when a listener or a reader is led to an initial misparse due to the ambiguous structure of the utterances or sentences presented. One of the famous examples of garden path is *The horse raced past the barn fell*. Initially, one tends to assign an active rather than passive reading to *The horse raced past the barn*. Only after one tries to figure out what to do with the leftover word, *fell*, does one become aware of the reading in which *raced past the barn* is interpreted as a reduced relative clause containing a passive verb (cf. Schachter and Yip 1990).

CHAPTER 5

THE EMPIRICAL STUDY

5.0 INTRODUCTION

In this chapter, we describe the empirical study on which this work is based. We will first present a very brief description of the pilot study which we conducted before the main empirical study. We will then provide details of the main empirical study. We will present our empirical hypotheses, give the information about the subjects involved in the empirical study and describe the research instruments, the administration of the tests and the procedures followed in analyzing and presenting the data collected from the experiment.

5.1 THE PILOT STUDY

5.1.1 The Subjects

The purpose of conducting a pilot study was to test and validate the instruments which were to be used in the empirical study. Fifty-four subjects were used in the pilot study, twenty-seven in the study of learning Chinese as a foreign language (CFL Group) and twenty-seven in the study of learning English as a foreign language (EFL Group). The CFL Group consisted of twenty

adult native speakers of English learning or teaching Chinese as a foreign language in the Department of East Asian Studies at the University of Edinburgh and seven adult native speakers of Chinese to serve as controls. The controls in the CFL Group were Chinese students doing research at the University of Edinburgh.

The EFL Group was made up of twenty adult native speakers of Chinese, eleven were research students at the University of Edinburgh or Heriot Watt University and nine were wives whose husbands were doing research in Edinburgh. The seven native English speakers in the EFL Group as controls were residents in Edinburgh. None of them had any knowledge of Chinese.

5.1.2 The Tasks

The subjects in both the CFL Group and the EFL Group were asked to perform three tasks. The first two tasks were a cloze test and an acceptability judgement test. For the CFL Group, the third task was a gap-filling task and for the EFL Group, the third task was a sentence-rewriting task.

The cloze tests were used to test the subjects' levels of target language proficiency. And based on the results of the cloze tests, the subjects were divided into different proficiency groups. The cloze test for the CFL Group consisted of three Chinese passages with every fifth word omitted (see Appendix 1). The first passage in the cloze test for the CFL Group, which has eighteen deletions, was constructed by Jonathan (1976) to test the proficiency of Chinese as a foreign language. The other two passages were extracted from *Modern Chinese Readers (Book One)* by Chu (1964) and adapted by the researcher to convert them into two cloze tests. Like the first passage, random

deletion of every fifth word was conducted in these two passages, making twenty-six deletions in one passage and forty-six in the other. The first sentences were left intact to give the subjects some idea of the context. Altogether, there were ninety gaps in the cloze test for the CFL subjects. As most beginning learners of Chinese are more used to Chinese *pinyin*, the Chinese phonemic alphabet, than Chinese character, two versions of the cloze tests were given, one in Chinese character and the other in *pinyin*. The subjects were required to do whichever version they preferred.

The cloze test for the EFL subjects (see 1. in Appendix 17), which consisted of two short passages, was a long-established test constructed by Davies (1966). There were fifty deletions altogether. The deleted words were shown only by their initial letters and a row of dots.

The acceptability judgement tests formed the main part of the whole experiment. It was in this part that manipulations were made to test the directionality of difficulty in the second language acquisition of Chinese and English with respect to the language features concerned. In the acceptability judgement tests, the CFL subjects and the EFL subjects were asked to judge 121 Chinese and English sentences respectively.

As the experimental procedures used in the pilot study were the same as those used in the main empirical study, we will leave the description of the experimental procedures aside until the next section, where detailed descriptions of the main empirical study will be provided.

It must be pointed out at this stage that the experimental designs for both the pilot study and the main empirical study were exclusively based on Huang's

(1982, 1984a,b, 1989) theory, so were the analyses of the results of the pilot study. As many of Huang's views were later found to be incorrect and were rejected as theoretically and empirically unsound (see Chapter 3), here we will not present the analyses of the results of the acceptability judgement tests in the pilot study. Our main purpose of conducting a pilot study was to test and validate the instruments to be used in the main empirical study. As we will see in the next section, the overall experimental design can still serve the purpose of the present research, although some tasks or sentences became redundant.

The tasks that became redundant include the gap-filling task for the CFL subjects and the sentence-rewriting task for the EFL subjects (see 2 and 3 in Appendix 17). The gap-filling task was used to test whether in the subjects' IL grammars of Chinese, words used as aspect markers could be used as lexical words as well. This was to find out whether these words had lexical status in the subjects' IL grammars of Chinese. According to Huang, as aspect markers in Chinese can also be used as lexical words, INFL in Chinese is a proper governor.

The sentence-rewriting task for the EFL subjects was to investigate the status of aspect markers in the Chinese learners' IL grammars of English, that is, to test whether the EFL subjects still believed that as in their L1, Chinese, the aspect markers in English could be used as free morphemes like lexical words.

We argued in Chapter 3 that the aspect, whether it has a lexical status or not, does not make INFL a governor, to say nothing of a proper governor. As a result, the assumptions underlying the gap-filling task and the sentence-rewriting task are no longer part of the framework of the present study.

5.1.3 The Implications of the Pilot Study

The internal consistency of the Chinese cloze test was measured by KR(20) (cf. Hatch and Farhady 1982) to test the reliability of the test for both the exact-word scoring method and the acceptable-word scoring method. The coefficients are 0.95 for the former method and 0.96 for the latter method. The high reliability coefficients obtained suggest that the Chinese cloze test can be regarded as reliable.

- (1) The reliability correlation of the three passages in the Chinese cloze test.

	Passage 1	Passage 2
Passage 2	0.736	
Passage 3	0.837	0.921

The reliability of correlation of parallel tests were also calculated between the three passages. These results once again show that the Chinese cloze test can be regarded as reliable, as shown in (1).

The results for the English cloze test suggested that the test was too difficult for the learners at the early stage of learning English; for the elementary group in the pilot study, the range=2-9, mean=5 (maximum=56), standard deviation=2.637. As some more elementary EFL learners, i.e. junior middle school students, would be involved in the main empirical study, it was realized that the English cloze test was not suitable for the main empirical study.

In the acceptability judgement tests for both the CFL subjects and the EFL subjects, the judgements by the native controls suggested that necessary changes be made to some of the test sentences in the test. It was also found that the structure of the topic chain (see 4 and 5 in Appendix 17) was not testable with the method adopted in the experiment. It was then decided to delete the sentences which could not be tested appropriately with the technique used in the study.

5.2 THE EXPERIMENTAL HYPOTHESES

In Chapter 3, we made a contrastive survey of English and Chinese with respect to the language features involved in this study. A summary of the contrasts was presented in (102) in Chapter 3, which is repeated in (2) here.

(2)

	TOPIC		SUBJECT		OBJECT		REFLEXIVE	
	Base-generated	Non-base-generated	Null (PRO)	Non-null	Null (<i>pro</i>)	Non-null	LDR	SDR
CHINESE	+	+	+	+	+	+	+	+
ENGLISH	-	+	-	+	-	+	-	+

From (2), we can see that Chinese is more inclusive than English in terms of the language features involved in the investigation; the grammar of Chinese allows all the sentence structures that are allowed by the grammar of English. It also allows sentence structures which are not instantiated in English. However, the reverse is not the case. From the learnability point of view, we

hypothesized that directionality of difficulty in SLA depends on the availability of direct positive evidence to the L2 learner. If the language feature in L2 is more inclusive than that in the learner's L1, the direct positive evidence in the L2 input can indicate to the L2 learner that his L1 grammar is incompatible with the grammar of the L2 with respect to the language feature concerned and the change is motivated. In this case learning is easier. Where the L1 is more inclusive than the L2 in terms of a language feature, the L2 learner will not have direct positive evidence in the L2 input to help him to unlearn the structure instantiated in the L1, and in this case, learning difficulty will occur.

The following are the specific hypotheses we made concerning the language features involved in this study.

- (A) With respect to the base-generated topic, it would be easier for CFL learners to learn Chinese than for EFL learners to learn English, because CFL learners have direct positive evidence in the input to indicate that the base-generated topic is possible in the target language, Chinese, while no direct positive evidence is available to EFL learners that unlike their L1, Chinese, English does not allow the base-generated topic. In this respect, the direction of difficulty would be from Chinese to English.

- (B) With respect to subject PRO in finite sentences, it would be easier for CFL learners to acquire the null subject in Chinese than for EFL learners to unlearn the null subject in the acquisition process of English, because CFL learners are exposed to the high frequency and productivity of the null subject in the L2 input while in the input available to EFL learners, there is no direct positive evidence which can inform the learner that the null subject is not

possible in English. In this respect, the direction of difficulty would be also from Chinese to English.

- (C) With respect to object *pro*, the acquisition of this feature would be easier for CFL learners than the unlearning of it for EFL learners, because only CFL learners but not EFL learners have direct positive evidence in the input. In this respect, the direction of difficulty, again, would be from Chinese to English.
- (D) With respect to long-distance or short-distance reflexives, it would be easier for CFL learners to acquire the Chinese long-distance reflexive than for EFL learners to unlearn the long-distance reflexive in their acquisition of English; this is because in the acquisition of Chinese, CFL learners have direct positive evidence of the long-distance reflexive in their input data which could help to 'stretch' the binding scope of the reflexives in the learners' IL grammars from the local (as in their L1, English) to the long-distance (as in the target language, Chinese), that is, from the embedded sentence to the root sentence, whereas, EFL learners would have no positive evidence in their input data which could indicate that the long-distance binding of the reflexive (as in their L1, Chinese) is not possible in the target language, English. In this respect, the direction of difficulty is once again from Chinese to English.

Altogether 64 sentence types were used to test the above hypotheses in the acceptability judgement tests for both CFL learners and EFL learners. To avoid the possible confusion that might be caused by presenting examples of all the 64 sentence types here, we leave the sentence types aside until the following three chapters, where

they will be presented respectively in the relevant chapters.

5.3 THE SUBJECTS IN THE MAIN EMPIRICAL STUDY

5.3.0 Introduction

To investigate the directionality of difficulty in the second language acquisition of Chinese and English, it was decided that the most suitable method of investigation was a cross-sectional study. To conduct a cross-sectional study, we needed subjects studying the target languages at various developmental stages. This is particularly important in view of the fact that the purpose of the study was to compare developmental patterns in the second language acquisition of Chinese and English.

More than 300 people served as subjects in the main empirical study. They formed two large groups, the EFL Group and the CFL Group. In the following subsection, we will first provide a description of the subjects in the EFL Group.

5.3.1 The EFL Subjects

The EFL Group consisted of 159 Chinese-speaking learners of English as a foreign language and 16 native speakers of English to serve as controls. The EFL subjects include 75 middle school students studying in No.39 Middle School, Qingdao, China, 65 university students majoring in English in Qingdao Ocean University, Qingdao, China and 21 teachers of English at the same university. More information about the EFL subjects is given in (3).

(3) Information About the EFL Subjects

	Age (mean)	No.of Years of Studying English (mean)	No.of Subjects
Junior 3	14.88	3.7	26
Senior 2	16.92	4.36	25
Senior 3	17.90	5.91	22
University 1	18.52	6.64	21
University 2	19.29	7.19	21
University 3	20.13	9.17	23
Teachers	31.19	14.62	21
Controls	30.94		16

In China, children go to middle schools at the age of around 13 after six years' primary school education. They spend three years in junior middle schools to complete the nine-year compulsory education. Then some go to vocational schools, some get jobs and others, mostly those who intend to take the national entrance examinations to go to universities, spend another three years studying in senior middle schools. About twenty percent of those who take the national entrance examinations can succeed in gaining admission. As part of the national entrance examinations, there is an English examination specially designed for those who intend to major in English. Students intending to major in English also have to have English oral interviews. University education in China is generally for four years. Unlike foreign language students in the U.K., who normally spend a year studying in the target language speaking countries during their study in university, very few Chinese students of English have had any opportunity of studying, travelling or working in English speaking countries before they leave university.

English is taught as a compulsory course in both junior middle schools and senior middle schools in China. English is generally taught two to three hours a week in junior middle schools and three to four hours in senior middle schools. There are two terms every year, with about twenty weeks in each term. Some students also have private tuition in English outside schools.

The researcher was allowed to observe some classroom teaching of English while carrying out the empirical study in No.39 Middle School, Qingdao, China. The teaching methods used were rather traditional and the classroom teaching was almost entirely teacher-centred; the students had little chance to participate in pair-work or group work. As the students in Junior 1 and Junior 2 spent most of the time in their English classes working on the English alphabet, pronunciation, and very simple English sentences, it was realized that these students were not suitable subjects for the study because the tests used in the empirical study cannot be used with these beginning learners. When the empirical study was being conducted in the No.39 Middle School, the students in Senior 1 were involved in some activities outside the city. Therefore, the experimental tests were administered only to students from Junior 3, Senior 2 and Senior 3 respectively.

The students of English from Qingdao Ocean University were highly motivated in learning English. They had better facilities and a better language environment. They had easy access to language laboratories and they had two native speakers of English teaching in their department. English was used as the medium of instruction in the classroom teaching. The experimental tests were administered to students from the First Year through to the Fourth Year. However, as the researcher was not

allowed to administer the tests to the fourth-year students himself, it was decided afterwards that the data from the fourth-year students should be excluded from the data analysis.

The sixteen native speakers of English serving as controls in the EFL Group were residents studying or working in Edinburgh. None of them had any knowledge of Chinese.

5.3.2 The CFL Subjects

The CFL Group consisted of 102 learners of Chinese as a foreign language and 24 native speakers of Chinese serving as controls. All these CFL learners were native speakers of English, except for two French, two German and one Swedish. However, these five non-native speakers of English included in the CFL Group had lived in English-speaking countries for many years and their English was regarded as native-like by native speakers of English.

(4) Information about the CFL Subjects

	Age (means)	No.of Years of Studying Chinese (means)	No.of Subjects
1st Year	20.83	0.71	24
3rd Year	20.94	3.00	18
4th Year	22.57	3.82	47
Teachers	41.23	19.65	13
Controls	22.12		24

The 102 CFL subjects included students and teachers studying or teaching Chinese at the University of Durham, the University of Leeds, the University of York and the University of Edinburgh. More detailed information about the CFL subjects is given in (4).

Most students of Chinese in universities in the U.K. start to learn Chinese after they have entered the university. The students in the above-mentioned universities spend their second year studying Chinese in China or Taiwan. That means that the third-year and the fourth-year students involved in this study had already experienced the 'immersion programme' in China or Taiwan. Traditional teaching methods were still dominant in most classroom teaching in the universities. Apart from the non-native teachers of Chinese, the students also have native-speaking teachers of Chinese. The students have free access to video tapes and audio tapes made in Chinese. During their first-year study of Chinese, most of the input the students are exposed to is in *pinyin*, the Chinese phonemic system.

When the empirical study was conducted in the U.K., all the second-year students were in China or Taiwan. Therefore, the tests could only be administered to the first-year, third-year, fourth-year students and the teaching staff. As we can see from (4), the fourth-year students outnumber the students from other years. This is because in one of the above-mentioned universities, only the fourth-year students were willing to participate in the experiment.

Some of the students who were involved in the pilot study were also included as subjects in the main empirical study. However, as the interval between the pilot study and the main empirical study was about a year, we believe

that the learning effect of the pilot study on the subjects, if any, would be too little to be significant.

The 24 native speakers of Chinese serving as controls in the CFL Groups were students of economics at Qingdao Ocean University, Qingdao, China. They were studying Japanese as a foreign language and had little knowledge of English.

5.4 THE INSTRUMENTS

5.4.1 The Cloze Tests

To compare the developmental patterns in second language acquisition between CFL learners and EFL learners, it is necessary to collect data from learners at different developmental stages in learning the target languages. A criterion for deciding the different interlanguage development stages is the number of years that the learners have studied the target languages at school or university. This way of determining the developmental stages is easy and practical; students studying in a particular grade can be regarded as being in the same developmental stage. However, this criterion is not always reliable. In our case, for example, the target language input the students are exposed to varies widely among the students in both quality and quantity. Some of the EFL learners had private tuition in English outside the institutional setting while others did not. Some CFL learners spent vacations 'immersing' in China or Taiwan whereas other did not. Moreover, in the U.K., the number of teaching hours for modern Chinese language varies considerably among universities; universities in England

offer more teaching hours of modern Chinese language than universities in Scotland.

Considering the above factors, it was decided to use an alternative criterion for determining the interlanguage developmental stages, that is, to use the learners' scores in a proficiency test of the target language. For the purpose of our empirical study, we needed a proficiency test which had to be less time-consuming and easy to administer. In this sense, the cloze procedure, which is considered to be an at-a-stroke measure of overall proficiency by Oller (1973), was adopted. The Chinese cloze test which was used in the pilot study had proved to be a reliable test (see 5.1.3) and it was decided to use it again in the main empirical study. As the English cloze test used in the pilot study was found too difficult and not suitable for beginning learners of English, another cloze test was selected and used in the main empirical study (see Appendix 1). This is also a well-established English proficiency test constructed by Hill and Fenn (1989). The test consists of three passages. The first passage has twelve words deleted and the second eleven words deleted. The length of each deleted word is indicated by a line. The third passage has twenty-two words deleted. The deleted words are shown only by the initial letters.

5.4.2 The Acceptability Judgement Tests

Researchers in SLA have frequently used the technique of acceptability judgement to gain access to the workings of learners' underlying linguistic systems; that is, they ask subjects to make acceptability judgements on carefully selected sentences, hoping to obtain the actual states of learners' interlanguage grammars. This kind of acceptability judgement test, if not carefully designed,

can have many potential sources of errors, which include extralinguistic factors, perceptual strategies, pragmatic considerations, linguistic learning, etc. (cf. Sorace 1990)

One procedure in acceptability judgements is that subjects are required to make absolute judgements, i.e. to rate the sentence as either correct or incorrect. This procedure has some advantages; for example, the elicitation instruments are easy to design and administer. However, the procedure also forces the subjects to make either/or decisions, even if their interlanguage grammars are indeterminate on a particular issue. The major problem with this practice is that it overlooks the fact that interlanguage development is characterized by different kinds of indeterminacy (cf. Sorace 1990). Furthermore, there is no space for the related, but separate, notion of degree of acceptability. A structure may be perfectly determinate but not so acceptable when compared to another structure. 'Judgements in isolation are very different from judgements by contrast' (Sorace 1990:5). And in fact, people are better at making relative judgements than they are at making absolute judgements.

One proposed solution to this problem is the inclusion of a third 'not sure' or 'don't know' category, which would allow subjects to express their indeterminacy with respect to certain test sentences. However, the studies conducted by White (1986b) and Bley-Vroman et al. (1988) reveal that the 'not sure' option was hardly used by the subjects. It is likely that psychological, not linguistic, factors underpin this fact. The design of this type of experiment may lead subjects to consider that a 'yes' or 'no' decision is preferred by the experimenter. The 'don't know' or 'not sure' category may leave the impression of being present merely as a last

resort in case of great difficulty. Therefore, it results in reluctance to use this category. This suggests that the 'don't know' or 'not sure' category may be a source of psychological rather than linguistic information.

To solve the problem, we need to find some ways of obtaining relative judgements. Three such techniques are discussed in Sorace (1990) and all of them rely on the subject creating his or her own continuum of acceptability, with as many levels as are required. One of these three techniques, called magnitude estimation, which was adapted and used in this study, requires subjects to assign any number that seems to them appropriate to the first sentence that is projected on the screen and then assign successive numbers proportionally to the following sentences. In this way, we can have the subject's subjective impression of sentence acceptability and we can be more confident of accessing the subject's own intuitions, rather than some undefined norm. Degrees of indeterminacy can also be expressed by the subject. This technique has another advantage in that it elicits immediate reactions and does not leave time for the subject to consult his metalinguistic knowledge, which may not necessarily represent the actual state of the subject's underlying linguistic knowledge.

In our study, the acceptability judgement tests for the CFL subjects and for the EFL subjects each included ninety-eight test sentences, which were randomized on the basis of a randomization table. In order to avoid the effect of sentence sequence, two sets of randomized sentences were arranged, Randomization Set A and Randomization Set B. These randomized sentences were typed, each on a separate slip of paper. At the end of each sentence, a small box was provided for the subject to put the number in. In the test for the CFL subjects,

the Chinese sentences were presented in both Chinese characters and *pinyin*.

The slips of paper were divided into two equal sets, with forty-nine test sentences in each set, and stitched into two small pamphlets. The instructions were provided on a separate piece of paper to instruct the subjects how to do the acceptability judgement test. The subjects were instructed to judge the acceptability of the sentence on each slip by assigning any number they wished to the first sentence and then assigning to successive sentences numbers that were proportional to the first. That is, if the second sentence was more acceptable, a number higher than that assigned to the first sentence should be assigned to the second; if it was less acceptable, a number lower than that assigned to the first should be assigned to the second sentence. All the instructions in the tests were in the subjects' mother tongue. The Chinese version and the English version of the instruction for the acceptability judgement tests can be seen in Appendix 2. In the instructions, it was emphasized that the subjects should not use any negative numbers or zero. This is because we believe that negative numbers are psychologically different from positive numbers in that the former may have the implication of 'incorrect' to the subjects and the latter 'correct'.

Notes were provided on the last page of the first pamphlet and the first page of the second pamphlet to remind the subjects that they should keep using the same criterion they had been using in judging the sentences (see Appendix 3).

Five practice examples were given at the beginning of the first pamphlet to give the subjects some experience of how the tests should be done. The practice examples included well-formed sentences, ill-formed sentences and

sentences on the acceptability of which even native speakers do not agree, or do not have determinate intuitions, as in (5).

(5) I think that everyone likes their mother.

The purpose of including this type of indeterminate sentence was to indicate to the subjects that they should feel free to express any indeterminacy in judging the sentences in the tests.

The formats of the acceptability judgement tests for both the CFL subjects and the EFL subjects can be seen in Appendixes 4 and 5. They are the formats before the individual sentences were cut into separate slips and they represent one of the two randomization sets for the CFL subjects and the EFL subjects respectively.

The vocabulary in the test sentences was deliberately kept to a simple level, in order to reduce the chance of lexis, rather than syntax, determining performance. To this end, Chinese-English and English-Chinese vocabulary lists were prepared respectively for the CFL subjects and the EFL subjects to memorize the unfamiliar words before the judgement tests (see Appendix 6). It was believed that by providing the vocabulary lists, we could also give the subjects, particularly those at elementary and early intermediate levels, some confidence in doing the tasks. The subjects were not expected to consult the vocabulary lists during the judgement tests.

Apart from the sentences typed on the separate slips of paper, all the test sentences were recorded on a tape. The test was designed so that when the subjects were judging the sentence typed on the slip of paper, they also listened to the same sentence read aloud by a native speaker of Chinese or English; and the subjects had to

turn to the next page when they heard next number spoken on the tape. There were seven seconds between each sentence. The purpose of playing the tape during the testing was to make sure that the subjects followed the pace at which the test sentences were read aloud without turning back to the previous sentences or spending too much time on one sentence and too little on another. In this way, we can elicit the subjects' immediate reactions to the sentences, leaving no time for them to consult their metalinguistic knowledge.

This method helped us to overcome some of the difficulties which would arise with the alternative method of using an overhead projector, such as the effect that might be caused by the difference that the subjects sat at different distances from the screen on which the sentence was projected, and lack of guarantee that the time that the sentence remained on the screen was the same in all occasions and for all sentences. This also solved the practical problem that the experimenter often experienced in finding a proper projector and a suitable place in which the projector and the screen could be set.

The test sentences were designed in sets to test the acquisition of various sentence structures concerned in this study. One set of sentences corresponded to a particular sentence structure and in most cases, one set of sentences consisted of three control sentences and three experimental sentences, that is, three tokens of a single test type were designed (see Appendices 8, 9, 12 and 13). It must be noted here that the control sentences and the experimental sentences within the same set are not necessarily mutually exclusive. The test sentences were manipulated in such a way that pairs of the control sentences and the experimental sentences were formed which were identical in every way except the aspect to be tested. In this way we could be confident that any

difference in the subject's judgements on the control sentences and the experimental sentences was due to the difference in the aspect being tested.

Detailed descriptions of the sentence structures tested in this study will be provided in the following three chapters, i.e. Chapters 6, 7, 8, where we will report the studies of the directionality of difficulty in the acquisition of Chinese and English by CFL learners and EFL learners with respect to these sentence structures.

5.5 THE ADMINISTRATION OF THE TESTS

The tests administered to the Chinese university students of English studying at Qingdao Ocean University, Qingdao, China, and the students of Chinese studying at the University of Durham and the University of Leeds took place during normal teaching hours and the others were administered outside normal hours. Before the experiment started, the experimenter explained to the subjects very clearly that this was an experiment, no personal results were to be recorded officially and whatever response they made would be useful and interesting to the researcher. All the explanations and instructions during the tests were in the subjects' mother tongue.

The students studying in the same class (i.e. First Year, Second Year, or Senior Two, Senior Three) were taken as a testing group. There were two separate testing sessions for each testing group. Each of the testing groups was divided into two halves; one half of the students from each testing group attended one testing session and the other half the other testing session. The two randomization sets of the acceptability judgement tests were administered respectively in the two separate

testing sessions, which, in most cases, were temporally adjacent to each other, that is, one followed the other.

The Chinese and English cloze tests were administered to all of the CFL subjects and the EFL subjects respectively, including the native controls in the two language groups. Most of the subjects finished the cloze tests in about ten minutes.

One day before the experiment, each subject was given a copy of the Chinese-English or English-Chinese vocabulary list (see Appendix 6) and was requested to memorize the unfamiliar words in advance. The subjects were told that they would not be allowed to consult the vocabulary lists while doing the tests.

Before the acceptability judgement tests started, the instructions for the tests were provided to each of the subjects on a separate piece of paper (see Appendix 2); they were also read aloud on the tape by a native speaker of the subjects' mother tongue. The subjects were then asked to do the five practice examples at the beginning of the first test pamphlet, which were also read aloud on the tape. This was to give the subjects some experience of the conditions under which the test was to be administered. After the five practice examples had been completed, the experimenter spent some time discussing with the subjects the responses they had made to the five practice examples. The subjects were also given the opportunity to ask questions.

It took about sixteen minutes to complete the first half of the acceptability judgement test, which included the instructions, the five practice examples, the following discussion and the first test pamphlet; the second half (i.e. the second test pamphlet) took about thirteen

minutes to complete and there was a ten-minute break in between.

In the informal interviews at the end of the tests, most of the subjects, including the native controls in the two language groups, complained that they could not remember the number they assigned to the first sentence and were unable to assign successive sentences numbers in proportion to the first. The researcher learned that most of them created an acceptability scale of, say, one to ten or one to twenty and tried to match the acceptability of each sentence in the test against the scale they had created. It was also found that quite a number of subjects wrote the acceptability scales they would use in the test on the first page of the pamphlet even before they began doing the test.

5.6 THE PROCEDURES FOR THE DATA ANALYSIS

5.6.1 The Data from the Cloze Tests and the Grouping of the Subjects

In both the EFL Group and the CFL Group, there was a fairly large amount of variation in target language proficiency not only between groups of subjects who had different numbers of years of studying the target languages but also within the group of subjects who had the same number of years of formal instruction in the target languages. As we saw in 5.4.1, the target language input the subjects were exposed to varies rather widely both qualitatively and quantitatively among the subjects with the same number of years of studying the target language. Considering these factors, we realized that the number of years of studying the target language was not a

reliable measure of the level of the target language proficiency. It was then decided to use the scores the subjects obtained from the cloze tests in dividing the subjects into different proficiency groups.

Instead of dividing the subjects into different proficiency groups of equal numbers, the subjects were divided on the basis of some clusters of scores being close together. It was hoped that in this way, extreme scores in a group could be avoided, which might otherwise have distorted the real picture of the group's performance.

The acceptable-word scoring method was adopted in marking the cloze tests for both the CFL subjects and the EFL subjects. The EFL subjects (excluding the native controls) were divided into seven different proficiency groups and the CFL subjects (also excluding the native controls) into five different proficiency groups. For the EFL Group, Group 1 = most elementary, Group 7 = most advanced and Group 8 = the Control Group; for the CFL Group, Group 1 = most elementary, Group 5 = most advanced and Group 6 = the Control Group. The composition of the EFL groups and the CFL groups and the number of subjects in each group can be seen in (6) and (7).

A one-way ANOVA was conducted with the cloze test scores as a dependent variable for both the EFL groups and the CFL groups. Significant differences were found in the cloze tests between the mean scores of the eight EFL groups ($F=1848.67$, $p<0.0000$) and between the mean scores of the six CFL groups ($F=960.33$, $p<0.0000$). In the Tukey Tests, the results of the pair-wise comparisons show that there are significant differences between the mean scores of all the EFL groups except between Group 7 and Group 8 (see Table 5-1 in Appendix 7), which indicates that the

most advanced EFL learners' performance was not significantly different from the native speakers'.

(6) The composition of the EFL Proficiency Groups and the Number of Subjects in Each Group.

	J3	S2	S3	U1	U2	U3	TS	NS	T
G1	19	2							21
G2	6	15	1	1					23
G3	1	7	15	2	1	1			27
G4		1	6	9	3	6	1		26
G5				9	3	5	3		20
G6					6	7	7		20
G7					8	4	10		22
G8								16	16

(G=Group, J=Junior, S=Senior, U=University, TS=Teachers. NS=Native Speakers, T=Total)

(6) The composition of the CFL Proficiency Groups and the Number of Subjects in Each Group.

	Y1	Y3	Y4	TS	NS	T
G1	17	1	1			19
G2	3	4	15			22
G3	3	9	8			20
G4	1	3	19	2		25
G5		1	4	11		16
G6					24	24

(G=Group, Y1=1st Year, Y3=3rd Year, Y4=4th Year, TS=Teachers, NS=Native Speakers, T=Total)

Similar results were obtained in the Tukey Tests for the CFL groups; all the six CFL groups are significantly different from each other in their mean scores in the Chinese cloze test (see Table 5-2 in Appendix 7).

5.6.2 The Data Analysis for the Acceptability Judgement Tests

In analyzing the data collected from the acceptability judgement tests, the first thing we did was put the randomized sentences back in sets which correspond to the sentence structures under investigation. Remember that each set consists of three control sentences and three experimental sentences. We then merged the scores of those who did Randomization Set A with the scores of those who did Randomization Set B. Afterwards, we arranged the scores into eight groups for the EFL Group and six groups for the CFL Group on the basis of the grouping in the cloze tests (see 5.6.1).

As the subjects used different ranges of numbers in judging the acceptability of the sentences in the tests, which are not comparable to each other, all the raw numbers assigned by the subjects in judging the sentences were converted to a range of 0 to 10 by means of the formula in (8).

$$(8) \quad \text{Converted score} = 10 \times ((\text{individual raw number} - \text{Minimum}) / (\text{Maximum} - \text{Minimum}))$$

In (8), the individual raw number is any number a subject used in the acceptability judgement test and the Maximum and the Minimum refer to the highest and the lowest numbers he or she used in the judgements. If the highest number and the lowest number used by a particular subject in the acceptability judgement test are 8 and 3, they are

converted into 10 and 0 with the formula in (8). In this way, the numbers used by different subjects are made comparable to each other.

Once all the raw numbers were converted into comparable scores, mean scores were calculated for the (converted) scores that each subject assigned to the three tokens corresponding to the same test type. As previously stated in 5.4.2, the technique we used in the acceptability judgement tests was adapted from the technique of magnitude estimation developed by Sorace (1990, 1993). In Sorace's study, geometric means were used. However, in our study, it was decided to calculate arithmetic means of the tokens for each test type in the test, because in the judgement tests the subjects, instead of assigning successive sentences numbers that were proportional to the first number they had chosen, created a scale of acceptability and matched the acceptability of each sentence against the scale they had created (see 5.5).

After the arithmetic means for each test type had been calculated, they were averaged within each of the proficiency groups. Thus, we obtained the group means for the test types. The procedures described above applied to both the CFL groups and the EFL groups.

In order to test whether different proficiency groups judged the sentences differently, whether the non-native groups made different judgements from the native groups and whether the control sentences were judged differently from the experimental sentences, a two-way Analysis of Variance was applied to the scores of the acceptability judgements by both the EFL and the CFL subjects on most of the sentence structures under investigation in this study; the two independent variables are the test type and the target language proficiency with the former having two levels (the control sentences and the

experimental sentences) and the latter eight (in the EFL Group)/six (in the CFL Group) levels. The dependent variables are the scores assigned by the subjects to the sentences being tested.

Detailed descriptions of the sentence structures tested in our study will be provided in the following three chapters, where we will report and discuss the results of the CFL and EFL subjects' judgements in the acceptability judgement tests and provide explanations for the results.

CHAPTER 6

THE ACQUISITION AND THE UNLEARNING OF THE NULL SUBJECT AND THE BASE-GENERATED TOPICS

6.0 INTRODUCTION

This chapter is about the investigation of the directionality of difficulty in the acquisition process and the unlearning process of the null subject by CFL learners and EFL learners. We will also devote some space to the directionality of difficulty in the acquisition process of the base-generated topic by CFL learners and the unlearning process of base-generated topics by EFL learners because these two processes are believed to be subject to the same syntactic constraint as the acquisition and the unlearning processes of the null subject.

Since Perlmutter's (1971) pioneer work on null subjects in finite sentences, great attention has been paid to the contrast between languages that allow subjects of finite sentences to be null (like Portuguese, Spanish and Italian) and those that do not (like English) (cf. Chomsky 1981, 1982; Jaeggli and Safir 1989a, among others). One of the reasons that the null subject data is so interesting is that the null subject is phonetically null but syntactically present and linguists and psycholinguists are fascinated by the question of how the

language learner can come to have information about null subjects if they are phonetically absent.

We have already seen (in 3.1) that while null subjects in finite sentences are not allowed in English, they occur rather freely in Chinese. This is illustrated in (1) and (2) below.

- (1) wo mai-le yi tai xinde jisuanji_i, e_i shi Riben zao
I buy PFV one CL new computer be Japan make

de.

PART

*'I have bought a new computer, e is made in Japan.'

- (2) wo wen ta Li Ming_i jintian lai bu lai, ta shuo e_i
I ask him Li Ming today come not come he say

yiding hui lai.

certainly will come

*'I ask him whether Li Ming will come or not today, he says e will certainly come.'

We have also seen (in 3.1) that Chinese allows base-generated topics, that is, topics not created through movement, as in (3) and (4). However, base-generated topics are not possible in English.

- (3) Zhongguo de da chengshi, wo zhi qu-guo Beijing.
China DE big city I only go EXP Peking

*'Big cities in China, I have only been to Peking.'

- (4) zhe wei xiansheng wo bu jide yiqian wo zai
this CL gentleman I not remember before I in

nar jian-guo e .

where meet EXP

*'This gentleman, I cannot remember where I have met e before'.

The questions we may ask are how CFL learners, whose L1, English, does not allow the null subject and the base-generated topic, have the information that the null subject and the base-generated topic are possible in the

target language, Chinese, and how EFL learners have the information of the converse phenomenon.

Based on the assumption that language acquisition is contingent on the availability of positive evidence to the learner, it could be hypothesized that it would be easier for CFL learners to acquire the null subject and the base-generated topic in Chinese than for EFL learners to unlearn the null subject and the base-generated topic in the acquisition process of English, because CFL learners are exposed to the high frequency and productivity of the null subject and the base-generated topic in the input data while in the input data available to EFL learners, there is no direct positive evidence which can inform the learner that the null subject and the base-generated topic are not possible in English. However, as we will see in this chapter, although only CFL learners have direct positive evidence in acquiring the null subject and the base-generated topic, both CFL learners and EFL learners have indirect positive evidence reflected by the properties of the functional categories of AGR, TNS and NEG, which enable the learners to acquire (in the case of CFL) or unlearn (in the case of EFL) the null subject and the base-generated topic in the second language acquisition of Chinese and English.

6.1 SENTENCE STRUCTURES USED IN THE TESTS

The sentences involving the null/non-null subjects and base-generated/non-base-generated topics in the acceptability judgement test for the EFL subjects were designed to find out whether they were aware that, unlike

their L1, Chinese, English does not allow PRO to occur in the subject position of the finite clause (as in (5b) and (6b)) and that without the use of the expletive, *it*, in the subject position, sentences with weather predicates (as in (7b)) or sentences with *seem* or *appear* as the predicate, in which no NP raising takes place (as in (8b)), are ungrammatical in English. As Chinese allows *pro* in object position as well as PRO in subject position of the finite clauses, English sentences with both the null subject and null object were included in the test (see (9b)) to see if the EFL learners were able to reject the sentences and whether their judgements on these sentences were more similar to their judgements on sentences with the null subject than to sentences with object *pro* or not (for their judgements on the object *pro*, see Chapter 7). Sentences with base-generated topics (as in (10b)¹ and (11b)) and non-gap topics (as in (12b)) were also included to see whether the EFL learners were aware that topics cannot be base-generated in English.

As was mentioned in 5.3.2, for each experimental sentence, there was a corresponding control sentence (see (5a), (6a), (7a), (8a), (9a), (10a), (11a) and (12a)), 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.

- (5) Sentence with Subject PRO in Matrix Sentence (PRO/M)
 a. I once met John's girl-friend. She was very beautiful.
 *b. I once met John's girl-friend. Was very beautiful.
- (6) Sentence with Subject PRO in Embedded Sentence (PRO/E)
 a. The experiment has been started. I hope it will be successful.
 *b. The experiment has been started. I hope will be

successful.

- (7) Absence of the Expletive in Weather-Predicate Sentences (EXP/W)
- a. It has been very cold here recently.
 - *b. Has been very cold here recently.
- (8) Absence of Expletives in Raising-Predicate Sentences (EXP/R)
- a. It seems that Peter is ill.
 - *b. Seems that Peter is ill.
- (9) Sentence with Both Subject PRO and Object *pro* (PRO/*pro*)
- a. He has promised to give me a new desk, but so far he hasn't given me one yet.
 - *b. He has promised to give me a new desk, but so far hasn't given.
- (10) Base-Generated Topics in Sentences with Extraposed Clause (BTEX)
- a. It is very likely that you won't be able to use that computer now.
 - *b. That computer it is very likely that you won't be able to use now.
- (11) Base-Generated Topics in Sentences with Wh-islands (BTWh)
- a. I don't know when he is going to repair this car.
 - *b. This car I don't know when he is going to repair.
- (12) Non-Gap Topics (NGT)
- a. As regards the members of her family, I have only met her mother.
 - *b. The members of her family, I have only met her mother.

The sentences containing the null/non-null subjects and base-generated/non-base-generated topics in the acceptability judgement test for the CFL subjects are designed to see whether they accept subject PRO in Chinese finite clauses, as in (13b) and (14b), and whether they judge sentences with both subject PRO and object *pro* (as in (15b)) as acceptable. As Chinese is different from English in that it does not allow the

insertion of nominal expletives, sentences both with and without the nominal expletive are included in the tasks (see (16a,b) and (17a,b)) to see if the subjects judge them differently. As in English, the subjects' L1, topics are normally created through movement, grammatical Chinese sentences like (18b), (19b) and (20b) are included in the tasks to see whether the CFL subjects accept Chinese sentences with base-generated topics.

Like the tasks for the EFL subjects, the tasks for the CFL subjects also include control sentences corresponding to the experimental sentences, as in (13a), (14a), (15a), (16a), (17a), (18a), (19a) and (20a). However, unlike the control sentences in the tasks for the EFL subjects, not all control sentences in the tasks for the CFL subjects are grammatical in Chinese. Sentences like (16a) and (17a), for example, are ungrammatical because the insertion of the nominal expletive leads to ungrammaticality in Chinese (see 3.1).

(13) Sentences with Subject PRO in Matrix Sentence
(PRO/M)

- a. women zuotian kanjian-le Li Ming de nu-pengyou,
we yesterday meet PFV Li Ming DE girl-friend

ta zhangde hen piaoliang.
she look very beautiful
'We met Li Ming's girl-friend yesterday. She looked very beautiful.'

- b. women zuotian kanjian-le Li Ming de nu-pengyou,
we yesterday meet PFV Li Ming DE girl-friend

zhangde hen piaoliang.
look very beautiful.
*'We met Li Ming's girl-friend yesterday. Looked very beautiful.'

(14) Sentences with Subject PRO in Embedded Sentence
(PRO/E)

- a. zhe ge shiyan yijing kaishi, wo xiangxin ta
this CL experiment already start I believe it

hui chenggong.
will succeed
'This experiment has been started. I am sure it
will be successful.'

b. zhe ge shiyan yijing kaishi, wo xiangxin
this CL experiment already start I believe

hui chenggong.
will succeed
*'This experiment has been started. I am sure will
be successful.'

(15) Sentences with both Subject PRO and Object *pro*.
(PRO/*pro*)

a. shang xingqi ta daying gei wo yi ge xinde
last week he promise give me one CL new

xiezitai, danshi zhidao xianzai ta ye mei gei
desk but until now he still not give

wo xinde xiezitai.
me new desk

'Last week he promised to give me a new desk, but
so far he hasn't' given me one yet.'

b. shang xingqi ta daying gei wo yi ge xinde
last week he promise give me one CL new

xiezitai, danshi zhidao xianzai ye mei gei.
desk but until now still not give

*'Last week he promised to give me a new desk, but
so far hasn't given yet.'

(16) Absence of Expletive in weather-predicate sentences
(EXP/W)

a.*waimian ta hen leng.
outside it very cold
'It is very cold outside.'

b. waimian hen leng.
outside very cold

(17) Absence of Expletive in raising-predicate sentences
(EXP/R)

a.*ta haoxiang Li Ming bing le
it seem Li Ming ill PART

'It seems that Li Ming is ill.'

- b. haoxiang Li Ming bing le
 seem Li Ming ill PART

(18) Base-Generated Topics in Sentences with Sentential Subject (BTS)

- a. ni xiang xianzai yong na tai jisuanji shi bu
 you want now use that CL computer be not
 keneng de.
 possible PART
 ?'That you want to use that computer now is not possible.'

- b. na tai jisuanji ni xiang xianzai yong shi bu
 that CL computer you want now use be not
 keneng de.
 possible PART
 *'That computer that you want to use now is impossible.'

(19) Base-Generated Topics in Sentences with Wh-islands (BTWh)

- a. wo bu zhidao ta dasuan shenmo shihou mai zhe zuo
 I not know he intend what time sell this CL
 fangzi.
 house
 'I don't know when he is going to sell this house.'
- b. zhe zuo fangzi wo bu zhidao ta dasuan shenmo
 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.'

(20) Sentence with Non-Gap Topic (NGT)

- a. zhiyu ta jia li de ren, wo zhi jian-guo ta
 as for her family in DE people I only meet EXP her
 mama.
 mother
 'As for people in her family, I've only met her mother.'

- b. ta jia li de ren, wo zhi jian-guo ta
 her family in DE people I only meet EXP her
 mama.
 mother
 *'People in her family, I've only met her mother.'

All the sentences with the null/non-null subjects and base-generated/non-base-generated topics in the acceptability judgement tests for the EFL learners and the CFL learners can be seen in Appendices 8 and 9 respectively.

6.2 THE CFL AND EFL SUBJECTS' JUDGEMENTS

6.2.1 The CFL Subjects' Judgements

6.2.1.1 Judgements on the PRO/M and PRO/E Sentences by the CFL Groups

The CFL subjects' judgements on the control sentences of both PRO/M and PRO/E are represented by the solid lines with circles in Figures 6-1 and 6-2. As we can see, the two lines are quite flat, (and this is particularly true in Figure 6-2), which indicates that the CFL subjects, like the native speakers, have mastered the sentence structures used in the test. The lines of dashes with triangles in Figures 6-1 and 6-2, which represent the CFL subjects' judgements on the experimental sentences, are also rather flat, except Group 1's judgements on the experimental sentences of PRO/M, which is at a chance level. This suggests that CFL learners do not have much difficulty in acquiring the Chinese sentences, where PRO appears in the subject position of the finite clause.

This is confirmed by the results of Tukey Tests, which show that, except between Group 1 and Group 6 in judging the experimental sentences of PRO/M, no significant difference is found between any of the learner groups and Group 6, the native group (see Tables 6-3 and 6-6 in Appendix 10).

Figure 6-1: Mean scores of judgements on the PRO/M sentences by the CFL groups

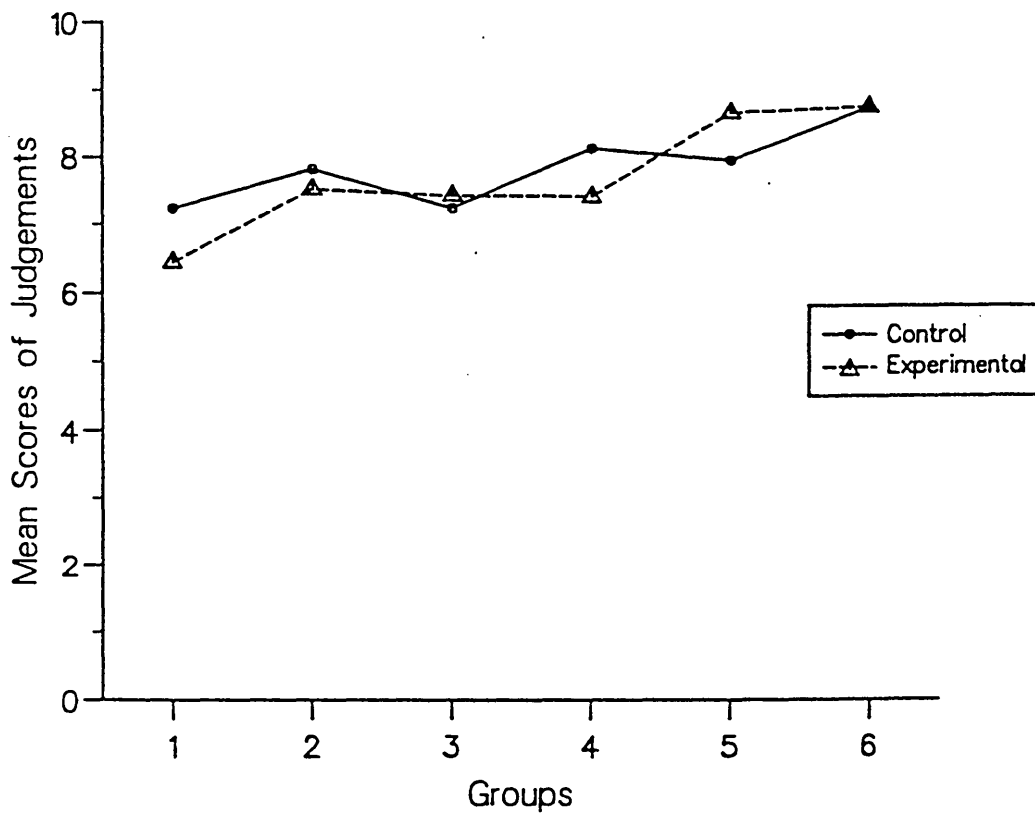
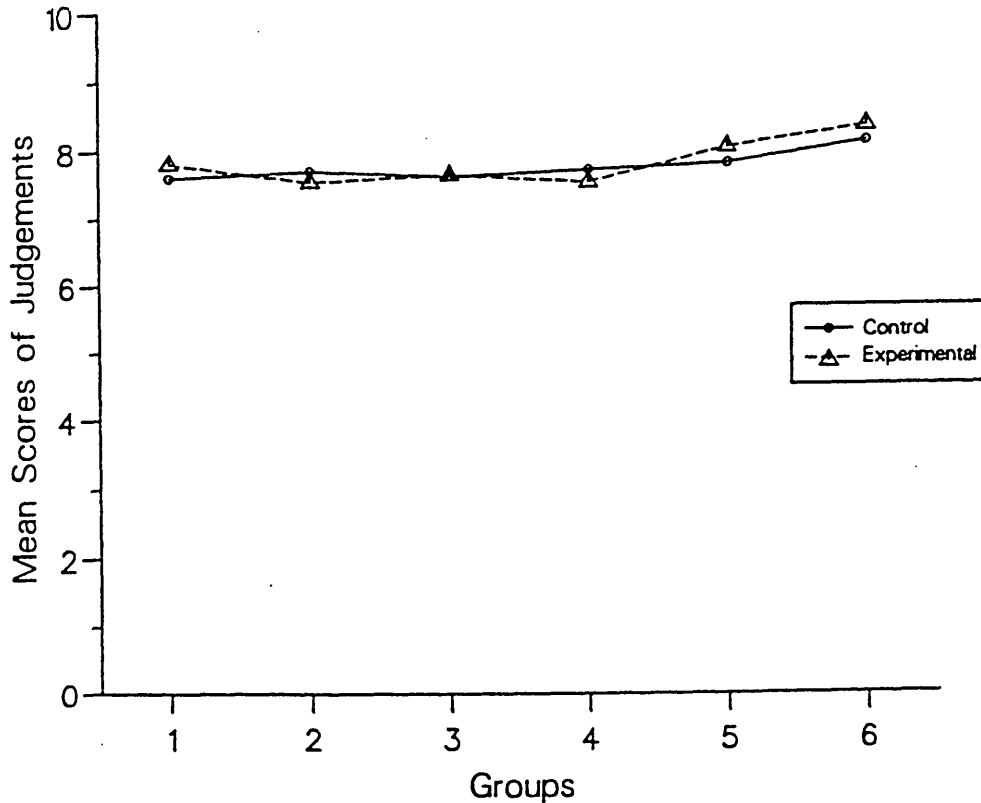


Figure 6-2: Mean scores of judgements on the PRO/E sentences by the CFL groups



6.2.1.2 Judgements on the PRO/*pro* Sentences by the CFL Groups

Chinese allows object *pro* (see 3.2) as well as subject PRO in finite clauses. And Figure 6-3 illustrates the CFL groups' judgements on Chinese sentences with both subject PRO and object *pro*. The solid line with circles represents the subjects' judgements on the control sentences where both the subject and the objects (direct and indirect) are lexically realized. The line of dashes with triangles represents the judgements on the experimental sentences, that is, sentences with both the subject PRO and object *pro*. From Figure 6-3, we can see that, except Group 1, there appears an overall preference of the experimental sentences over the control sentences.

However, we cannot be sure that the results of Groups 1, 2 and 3 reflect their genuine preference because the judgements by Groups 1, 2 and 3 on both the control sentences and the experimental sentences are at a chance level. Unlike Groups 1-3, the judgements by Groups 4 and 5 on the experimental sentences are more determinate and there is no significant difference between their judgements and the judgements by Group 6, the native group (see Table 6-9 in Appendix 10). This suggests that the subjects in Groups 4 and 5 have not only registered the PRO/*pro* sentence as acceptable in their IL grammars of Chinese, but also realized the stylistic heaviness of the control sentences.

Figure 6-3: Mean scores of judgements on the PRO/*pro* sentences by the CFL groups

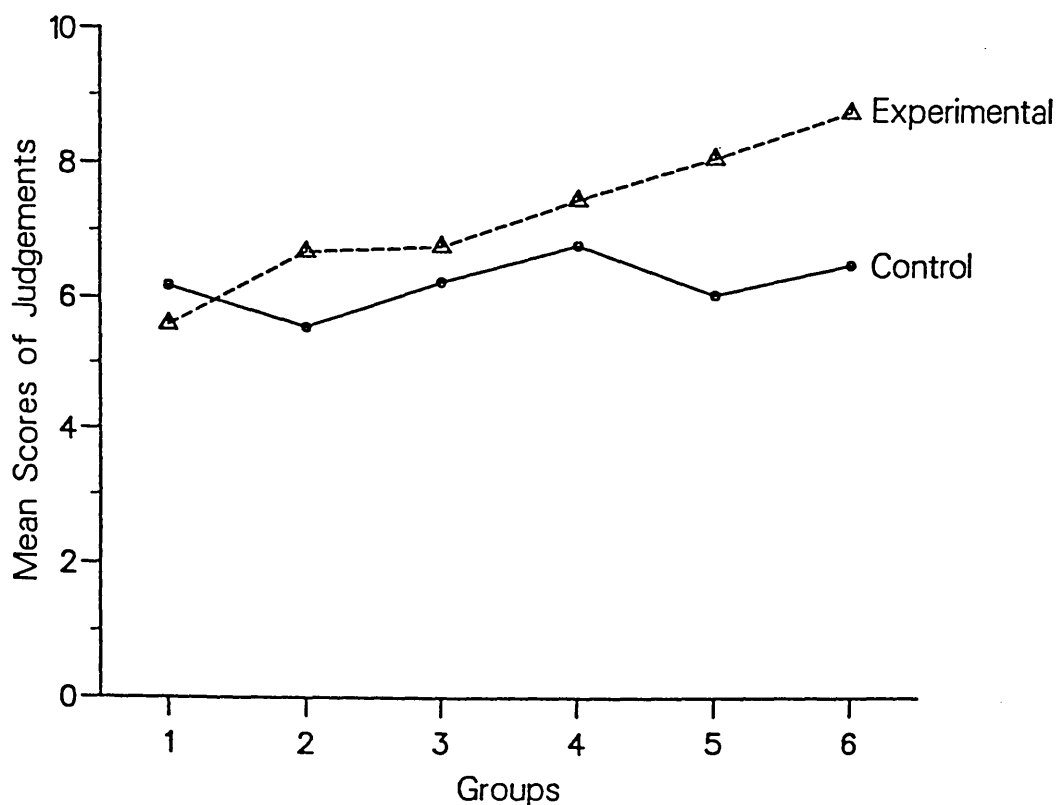


Figure 6-4: Mean scores of judgements on the EXP/W sentences by the CFL groups

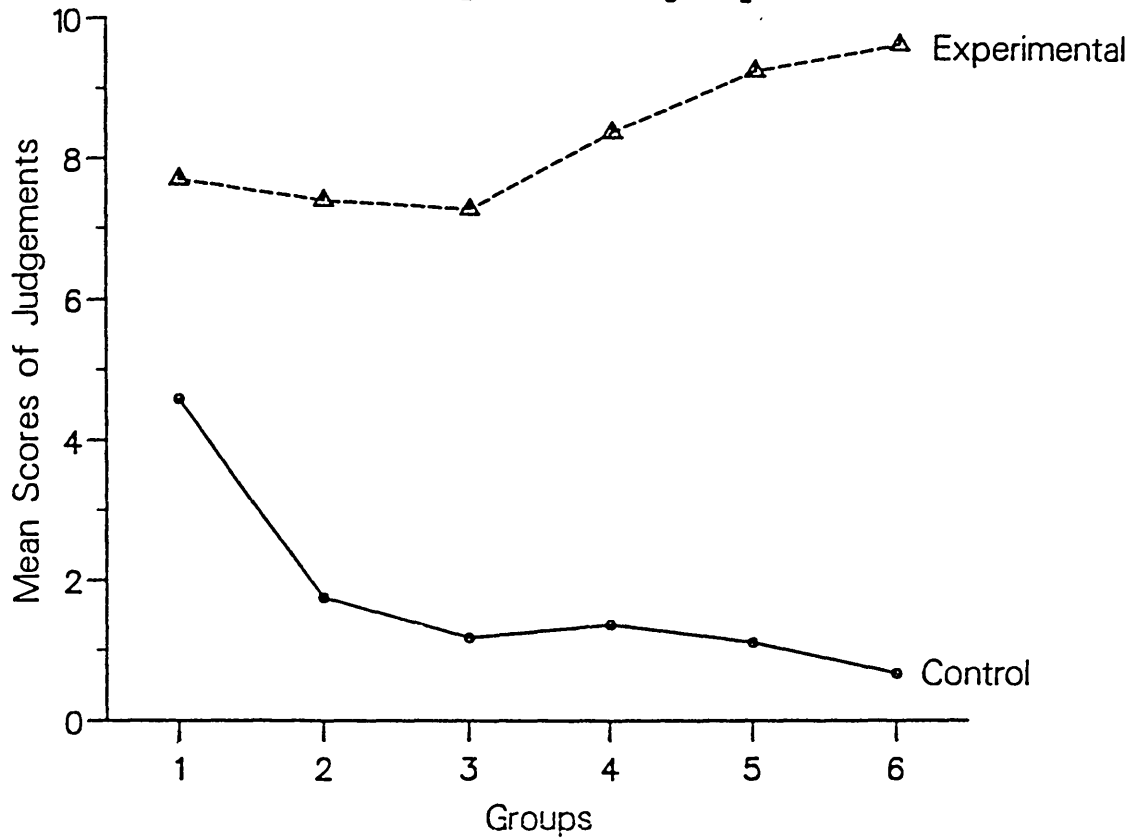
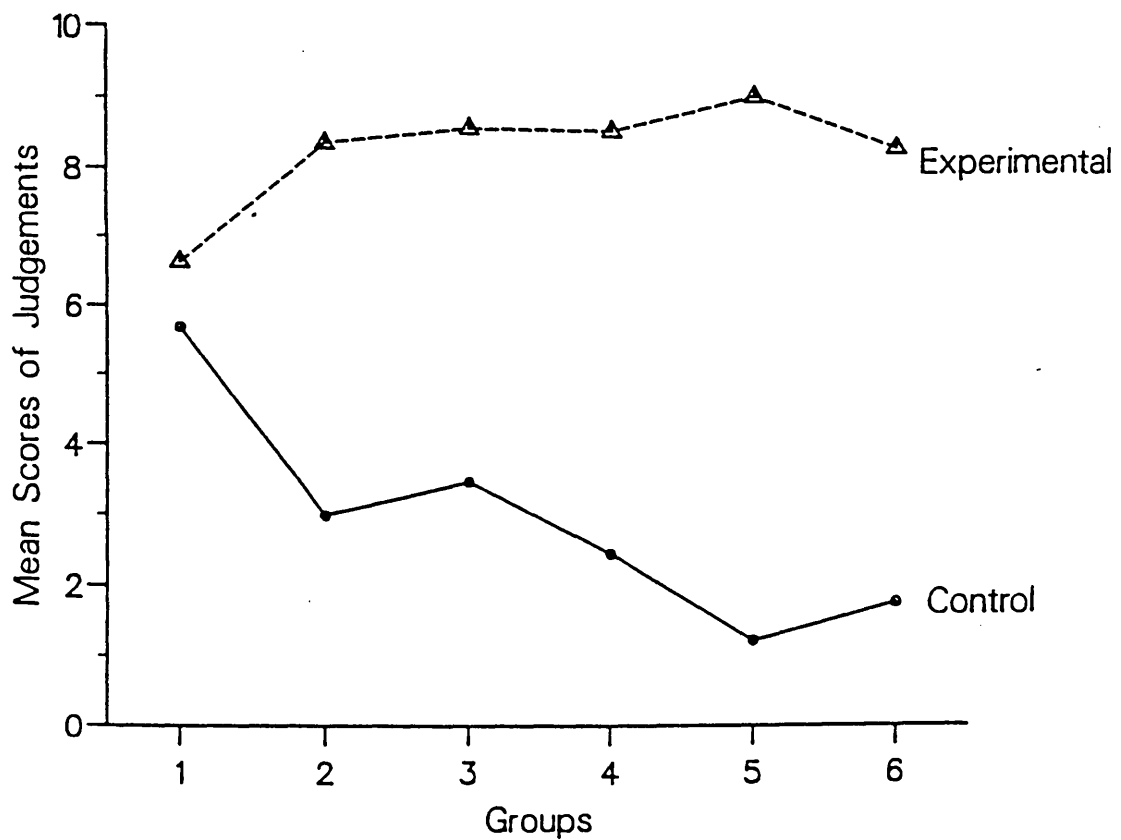


Figure 6-5: Mean scores of judgements on the EXP/R sentences by the CFL groups



6.2.1.3 Judgements on the EXP/W Sentences and the EXP/R Sentences by the CFL Groups

In Figures 6-4 and 6-5, the solid lines with circles represent some ungrammatical sentences, that is, sentences with the use of a nominal expletive in subject position. Recall that the insertion of an expletive leads to ungrammaticality in Chinese. And it seems that all the CFL subjects, except those in Group 1, are quite aware of this fact. It can be seen in Figures 6-4 and 6-5 that subjects in Groups 2-5, like the native speakers in Group 6, readily reject the use of the nominal expletive in subject position in Chinese, regarding only the experimental sentences as acceptable, that is, sentences without the use of a nominal expletive in subject position. No significant difference is found between Groups 2-5 on the one hand and Group 6 on the other, in rejecting the control sentences of EXP/W and EXP/R (see Tables 6-11 and 6-14 in Appendix 10). The judgements by subjects in Group 1 seem to be quite indeterminate; this is the case in their judgements on the control sentences of EXP/W and the control and experimental sentences of EXP/R.

6.2.1.4 Judgements on the BTS Sentences and the BTWh Sentences by the CFL Groups

In Figures 6-6 and 6-7, the solid lines represent the judgements on the control sentences of BTS and BTWh. In these control sentences, no topic is base-generated and every argument position is lexically filled (see (18a) and (19a)). The lines of dashes represent the judgements on the experimental sentences, in which there is a base-generated topic coindexed with a variable in a sentential subject or in a wh-island (see (18b) and (19b)). Remember that both the control sentences and the experimental

Figure 6-6: Mean scores of judgements on the BTS sentences by the CFL groups

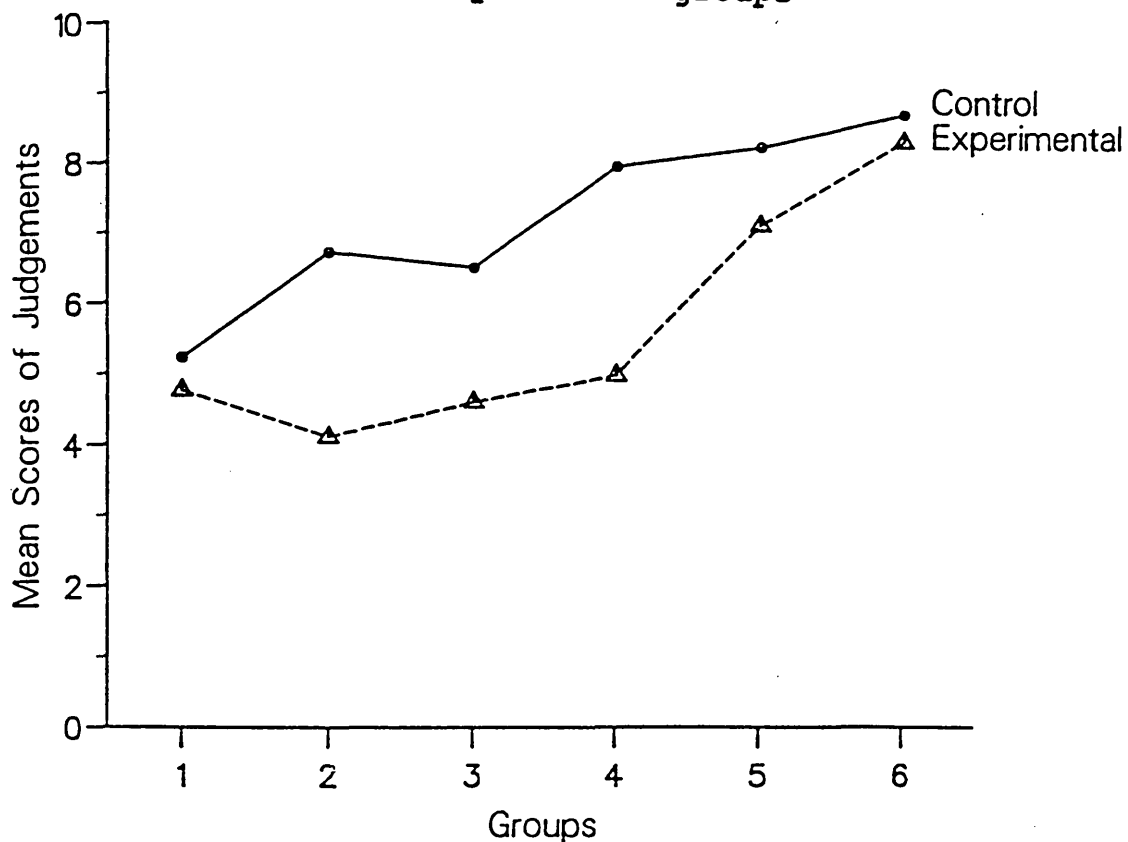
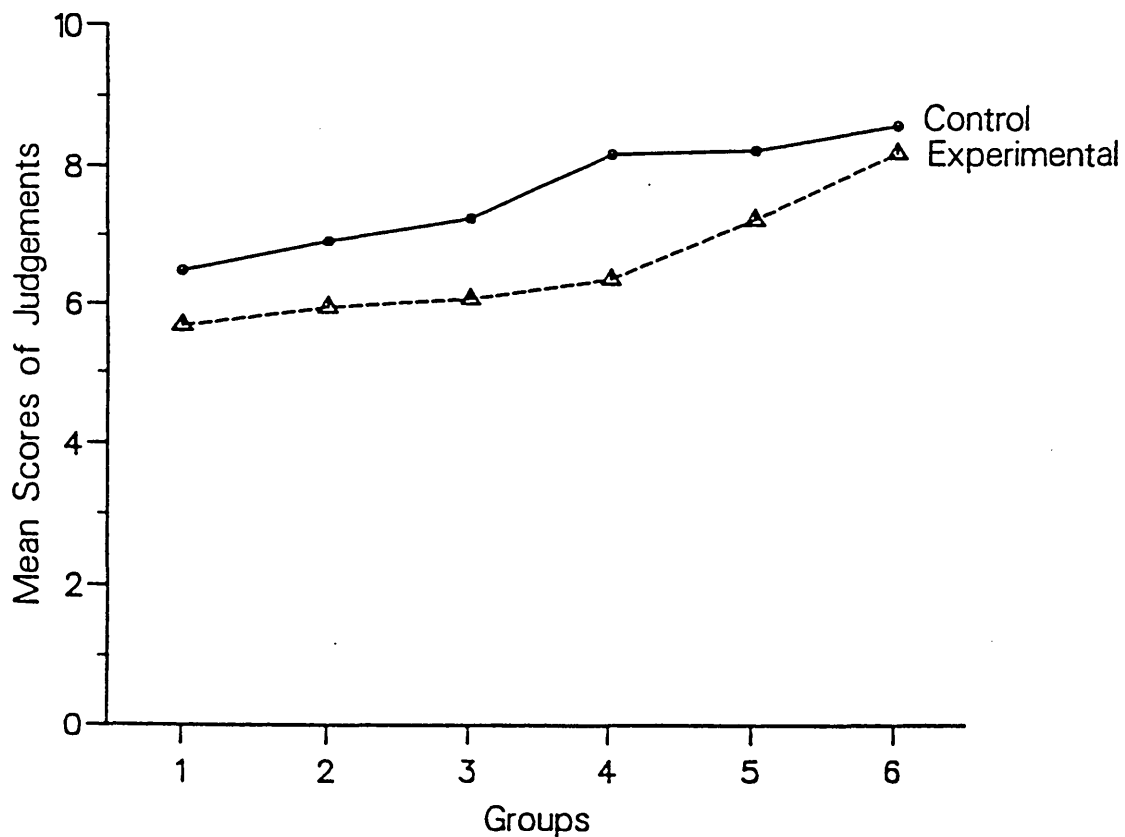


Figure 6-7: Mean scores of judgements on the BTWh sentences by the CFL groups

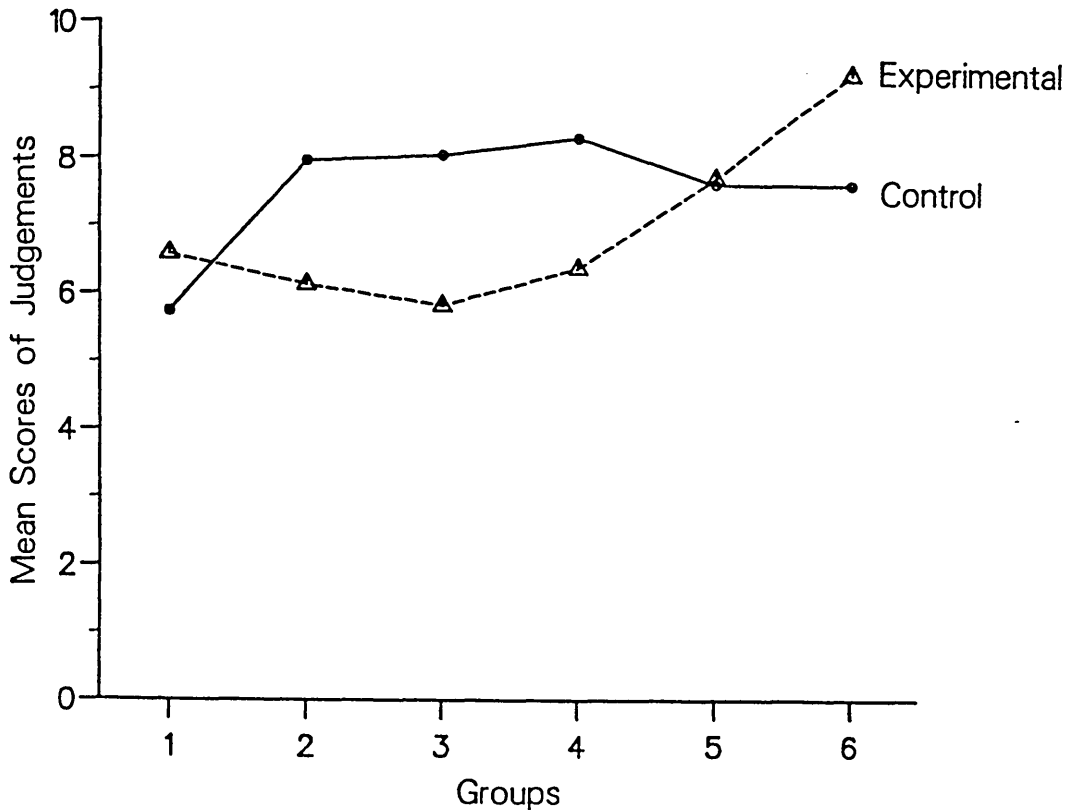


sentences represented in Figures 6-6 and 6-7 are grammatical in Chinese. It is interesting to see in Figures 6-6 and 6-7 that as the subjects' proficiency in Chinese increases, very little improvement in accuracy is found in the judgements of the experimental sentences by the subjects in Groups 1-4. What is more, the subjects in Groups 2 and 3 judge the experimental sentences of BTS (see Figure 6-6), which are correct in Chinese, less accurately than the subjects in Group 1 do. And there seems to be no sharp increase in the acceptability of the sentences with the base-generated topic in the subjects' IL grammars of Chinese until they have reached the stage of Group 5. This is confirmed by the results of pair-wise comparisons in Tukey Tests, which indicate that subjects in Groups 1-4, but not those in Group 5, judge the experimental sentences of BTS and BTWh significantly differently from the native speakers in Group 6 (see Tables 6-18 and 6-21 in Appendix 10). No significant difference is found between Group 5 and Group 6 in judging these sentences. These results suggest that elementary, intermediate and even higher-intermediate subjects have difficulty in accepting the correct Chinese sentences with a base-generated topic. This can be clearly seen in the judgements by subjects in Group 4 on the BTS sentences and the BTWh sentences, in which they judge the control sentences as acceptable (mean=7.932 in BTS; and mean=8.172 in BTWh) while they judge the correct experimental sentences of BTS and BTWh as marginal (mean=4.970 in BTS; and mean=6.359 in BTWh).

6.2.1.5 Judgements on the NGT Sentences by the CFL Groups

In Figure 6-8, the solid line represents the control sentences of NGT, in which all the non-gap topics are preceded by a preposition *zhiyu* (=as for), as in (20a). And all the experimental sentences, represented by the

Figure 6-8: Mean scores of judgements on the NGT sentences by the CFL groups



line of dashes, have non-gap topics in the initial position of the sentence, which are not preceded by anything, as in (20b). Remember that both the control sentences and the experimental sentences of NGT are grammatical in Chinese although the use of *zhiyu* (=as for) in the former may sound redundant to the native speakers of Chinese. From Figure 6-8, we can see that all the learner groups, like the native group, Group 6, judge the control sentences as acceptable, except Group 1, whose judgements indicate a high degree of indeterminacy of the sentence structure in their IL grammars of Chinese. However, as is shown in Figure 6-8, there is a clear decline in the acceptability of the control sentences reflected in the judgements by Groups 5 and 6. This is believed to be due to the fact that subjects in Group 5 and the native speakers of Chinese in Group 6 are

aware of the redundancy of *zhiyu* (=as for), which makes the control sentences stylistically heavy.

It is interesting to see in Figure 6-8 that the judgements by the CFL groups on the experimental sentences of NGT present a pattern similar to their judgements on the experimental sentences of BTS and BTWh (see Figures 6-6 and 6-7); up to Group 4, there is little increase in accuracy in the subjects' judgements on the experimental sentences and there is even a decline of accuracy in the subjects' judgements from Group 1 to Group 2 and to Group 3. Only after the stage of Group 4 is there a sharp increase in accuracy in accepting the experimental sentences. The fact that similar patterns are found in the subjects' judgements on the experimental sentences of NGT, BTS and BTWh should not be considered as accidental, because, like in the BTS sentences and the BTWh sentences, the topic in the NGT sentence is also base-generated.

In the NGT sentence, there is no gap in the sentence and the topic cannot be derived from some non-topic constituent of the sentence. If the CFL subject accepts the sentence with a non-gap topic, he or she is forced to accept that the topic in Chinese can be base-generated. The acceptance of the non-gap topic in the CFL subjects' IL grammars of Chinese should have a direct effect on their judgements on sentences with base-generated topics coindexed with a variable in a sentential subject or in a wh-island. That is, the topics in these sentences should no longer be regarded as a result of movement in violation of the subjacency principle and the subjects should be able to identify them as base-generated topics.

To test the existence of the topic position in the subjects' IL grammars of Chinese and to use the NGT sentences to predict the acceptability of the BTS and

BTWh sentences in the subjects' IL grammars of Chinese, two simple linear regressions are carried out with the NGT sentence as an independent variable and the BTS and the BTWh sentences as dependent variables respectively. (Only the data from subjects in Groups 1-5 are used for the linear regressions.) The underlying hypothesis of this analysis is that the (re)setting of the base-generated topic position in the IL grammars of Chinese is a condition on the acceptance of the BTS and the BTWh sentences. If the CFL subjects accept the NGT sentences, we should expect them to accept the BTS and BTWh sentences as well. As the results of the linear regressions show, this hypothesis is confirmed (see Tables 6-25 and 6-26 in Appendix 10); the *t*-values in both predictions are significant. The results suggest that the judgements by the CFL subjects on the NGT sentences can be a useful predictor for the status of sentences like BTS and BTWh in their IL grammars of Chinese.

6.2.1.6. Summary of the Judgements by the CFL Groups

The acquisition of subject PRO in finite clauses does not seem to be problematic to the CFL learners. Except for some elementary learners, the CFL learners readily judge the sentence with the subject PRO as acceptable. This is also true in the CFL learners' judgements on the PRO/*pro* sentences. The CFL learners' judgements on the EXP/W and the EXP/R sentences indicate that once they have passed the elementary stage, they are quite aware of the fact that insertion of the nominal expletive is not allowed in Chinese. However, the acquisition of the base-generated topic in Chinese is not so straightforward for the CFL learners. It seems to require long time before the learners can acquire this feature in Chinese. This is reflected in the judgements by the CFL learners on the BTS and BTWh sentences as well as the NGT sentences. It

is also discovered that the NGT sentences can be used to predict the status of sentences like the BTS and BTWh in the learners' IL grammars of Chinese.

6.2.2 The EFL Subjects' Judgements

6.2.2.1. Judgements on the PRO/M and PRO/E Sentences by the EFL Groups

In Figures 6-9 and 6-10, the solid lines, which represent the judgements on the control sentences, i.e. sentences with subject position lexically filled, suggest that most subjects, except those in Groups 1 and 3 in judging the PRO/E control sentences, have mastered the sentence structures used to test the null subject in finite clauses. From the lines of dashes, we can see that the EFL subjects do not have much difficulty in rejecting the experimental sentences, that is, the ungrammatical English sentence with a null subject in the finite clause.

Elementary and early-intermediate EFL subjects, like those in Groups 1, 2 and perhaps also 3, do not seem to be able to reject the ungrammatical experimental sentences. This can be due to the influence of their L1, Chinese, in which PRO may occur in subject position of a finite clause. As the subjects' English proficiency improves, as in Groups 4, 5 and 7, they become more determinate in rejecting the ungrammatical experimental sentences. However, the behaviour of the subjects in Group 6 in judging the experimental sentences of both PRO/M and PRO/E is rather unexpected; the lines of dashes rise sharply from Group 5 to Group 6. This indicates that they judge the sentences even less accurately than those in Groups 4 and 5. This is believed to be an example of

Figure 6-9: Mean scores of judgements on the PRO/M sentences by the EFL groups

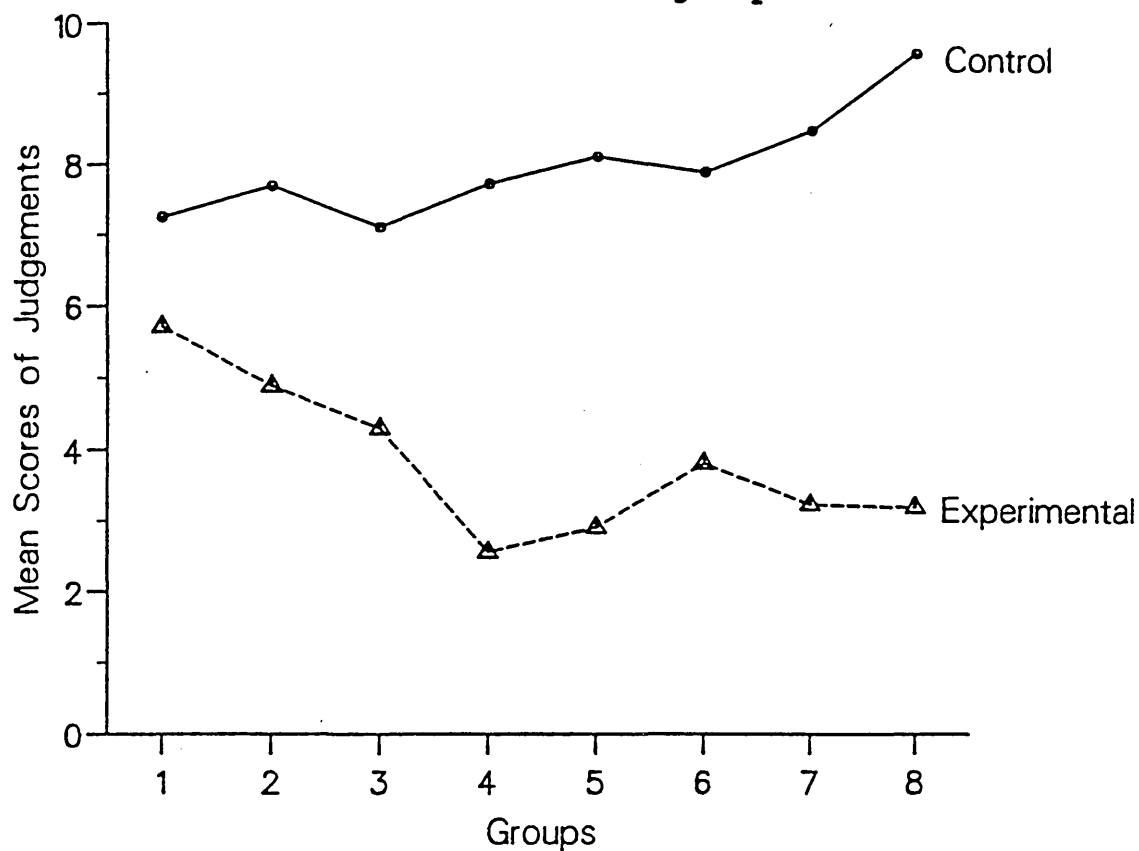
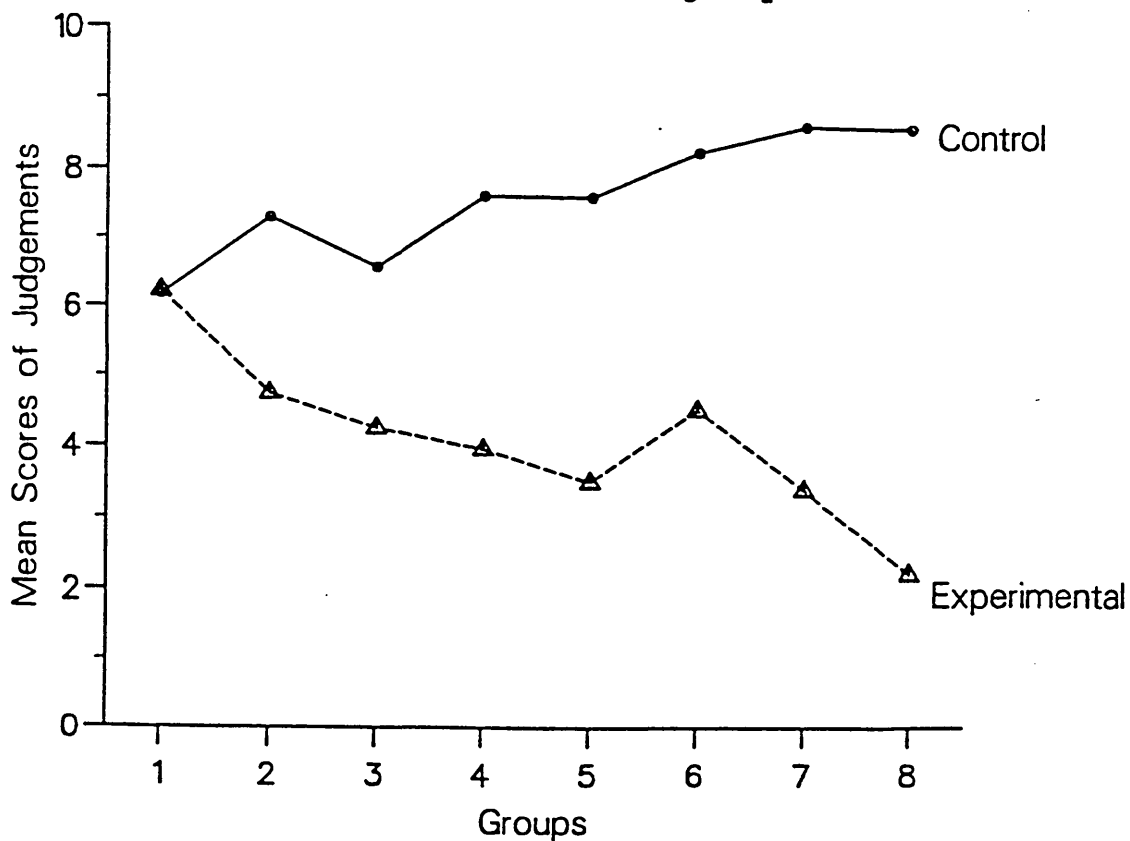


Figure 6-10: Mean scores of judgements on the PRO/E sentences by the EFL groups



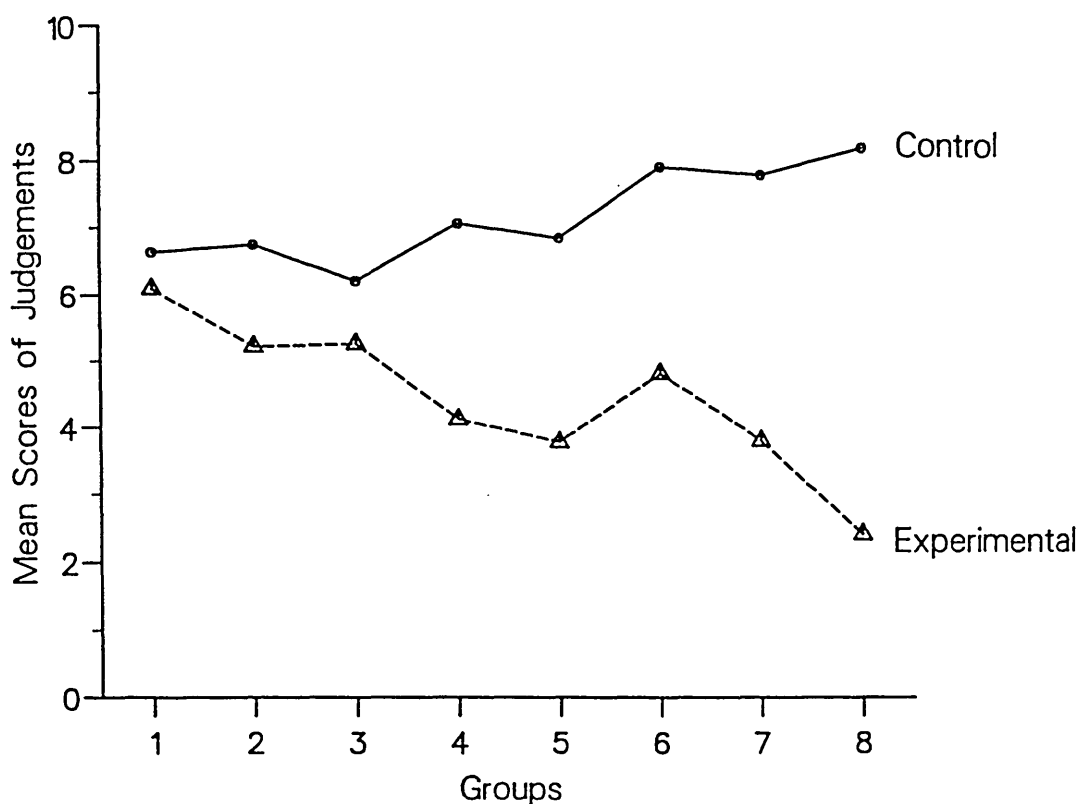
the phenomenon of *U*-shaped development in language acquisition (cf. Strauss 1982, Bowerman 1982, Kellerman 1985); some restructuring is going on at this stage in the subjects' IL grammars of English. This phenomenon confirms the claim that IL development is not in a linear mode of development and change in interlanguage grammars should not be taken as uniform in direction (Robertson 1991).

6.2.2.2. Judgements on the PRO/pro Sentences by the EFL Groups

In judging the ungrammatical experimental sentences of PRO/*pro* (see the line of dashes in Figure 6-11), the subjects in Groups 1-3 are quite indeterminate, which is believed to be due to their poor mastery of the sentence structures in these sentences, because their judgements on the control sentences are also at a chance level (see the solid line in Figure 6-11). As the subjects become more proficient in English, they are more determinate in rejecting the experimental sentences. In fact, there is no significant difference between Groups 4, 5 and 7 on the one hand and Group 8 (the native group) on the other in rejecting the experimental sentences of PRO/*pro* (see Table 6-35 in Appendix 11).

The judgements by the subjects in Group 6 on the experimental sentences again indicate a *U*-shaped development, which suggests that some restructuring is going on at this stage in the subjects' IL grammars of English. And after this restructuring stage, the subjects are still able to reject the ungrammatical experimental sentences (see the judgements by Group 7 on the experimental sentences). Remember that English allows neither subject PRO in the finite clause nor object *pro*,

Figure 6-11: Mean scores of judgements on the PRO/*pro* sentences by the EFL groups



but Chinese allows both. It is assumed that the subjects' rejection of the sentences with both the null subject and object *pro* is the result of their awareness of the ungrammaticality of the null subject in English only, but not the object *pro*. This assumption is based on the fact that the pattern of the line representing the EFL subjects' judgements on the experimental sentences of PRO/*pro* is similar to the patterns of the lines representing their judgements on the experimental sentences of PRO/M and PRO/E. It can also be based on the fact that the EFL subjects have difficulty in rejecting the ungrammatical object *pro* in English (see Chapter 7).

Figure 6-12: Mean scores of judgements on the EXP/W sentences by the EFL groups

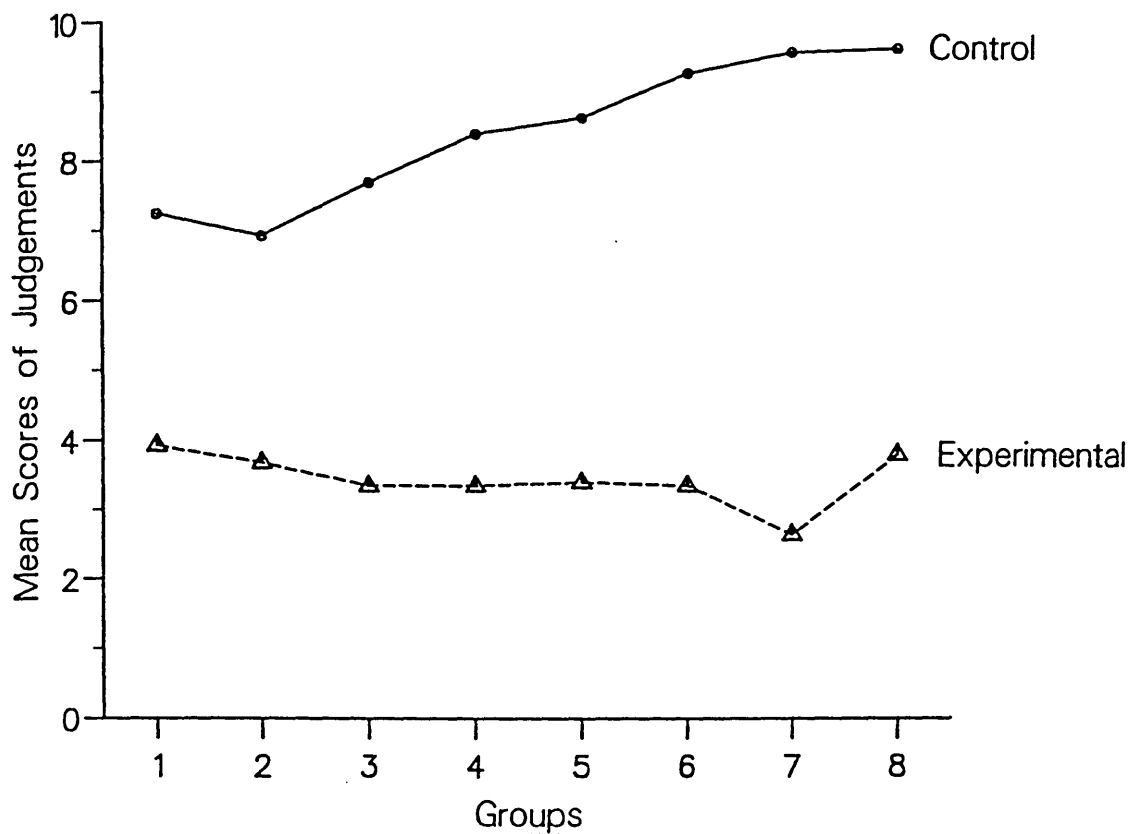
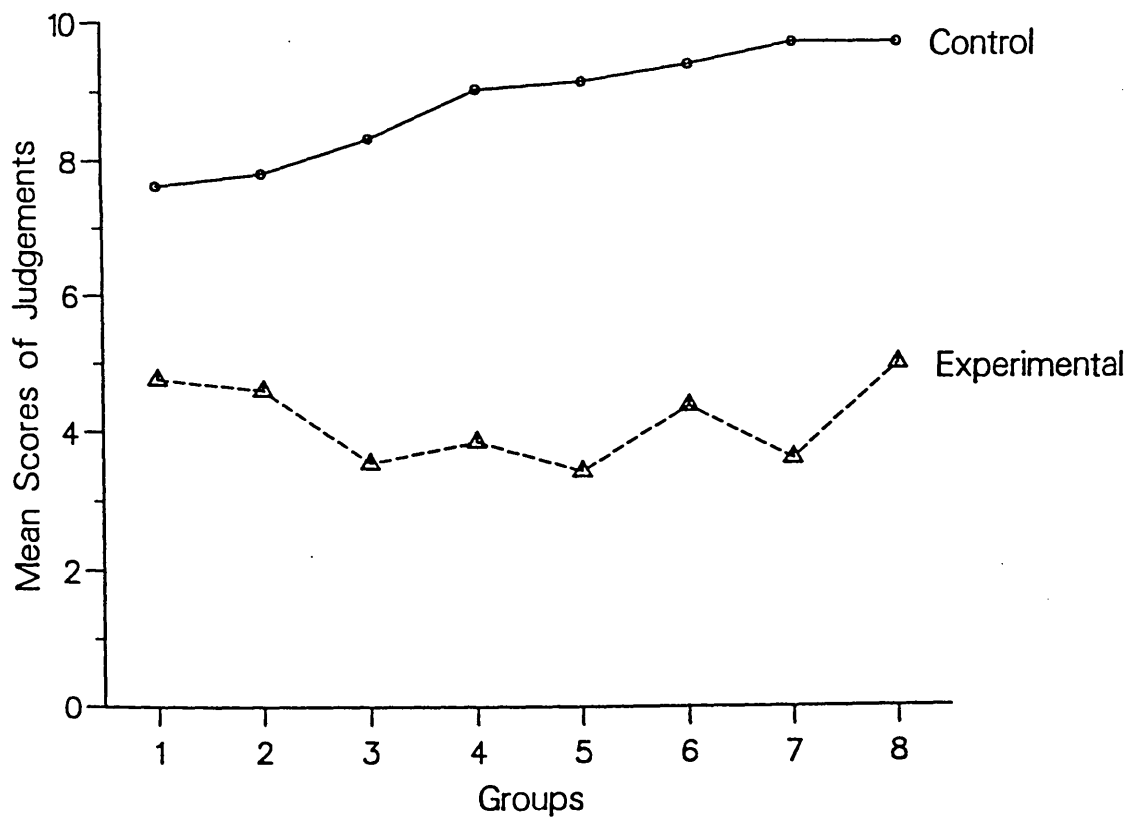


Figure 6-13: Mean scores of judgements on the EXP/R sentences by the EFL groups



6.2.2.3. Judgements on the EXP/W Sentences and EXP/R Sentences by the EFL Groups

In Figures 6-12 and 6-13, we can see that the EFL subjects have an overall preference for the control sentences, that is, sentences with the insertion of the nominal expletive, *it*, in the subject position, over the experimental sentences, that is, sentences without the use of the expletive, *it*. This is the case in the subjects' judgements on both the EXP/W sentences and the EXP/R sentences. This suggests that the EFL subjects are aware that unlike their L1, Chinese, English requires the use of the expletive, *it*, in the types of sentences being tested.

Notice that the mean scores of the native speakers' judgements (i.e. those in Group 8) on the ungrammatical experimental sentences of both EXP/W and EXP/R are higher than those of the non-native groups. This is believed to be due to the fact that some of the experimental sentences, such as, *Seems Mary is very tired*, are acceptable in colloquial English although they are ungrammatical.

6.2.2.4. Judgements on the BTE_x sentences and the BTW_h sentences by the EFL Groups

From Figures 6-14 and 6-15, we can see that the judgements by Groups 1-3 on the control sentences of both the BTE_x and the BTW_h are quite indeterminate. This indicates that they may not have mastered sentences with right extraposition and wh-islands. Significant differences are found in Tukey Tests between Groups 1-3 on the one hand and Group 8 on the other in judging the control sentences of BTE_x and BTW_h (see Tables 6-43 and 6-46 in Appendix 11). In judging the experimental

sentences of BTE_x (see Figure 6-14), there appears to be a steady improvement in accuracy in judging the incorrect sentences; the more proficient the subjects, the more determinate they are in rejecting the experimental sentences.

In judging the experimental sentences of BTW_h (see Figure 6-15), there appears some restructuring going on at the stage of Groups 4 and 5; the line of dashes rises at Group 4 and continues to rise at Group 5. However, the results of pair-wise comparisons in Tukey Tests indicate that, except for Group 1, all the learner groups, i.e. Groups 2-7, show no significant differences from the native group, i.e. Group 8, in rejecting the experimental sentences (see Table 6-47 in Appendix 11).

Figure 6-14: Mean scores of judgements on the BTE_x sentences by the EFL groups

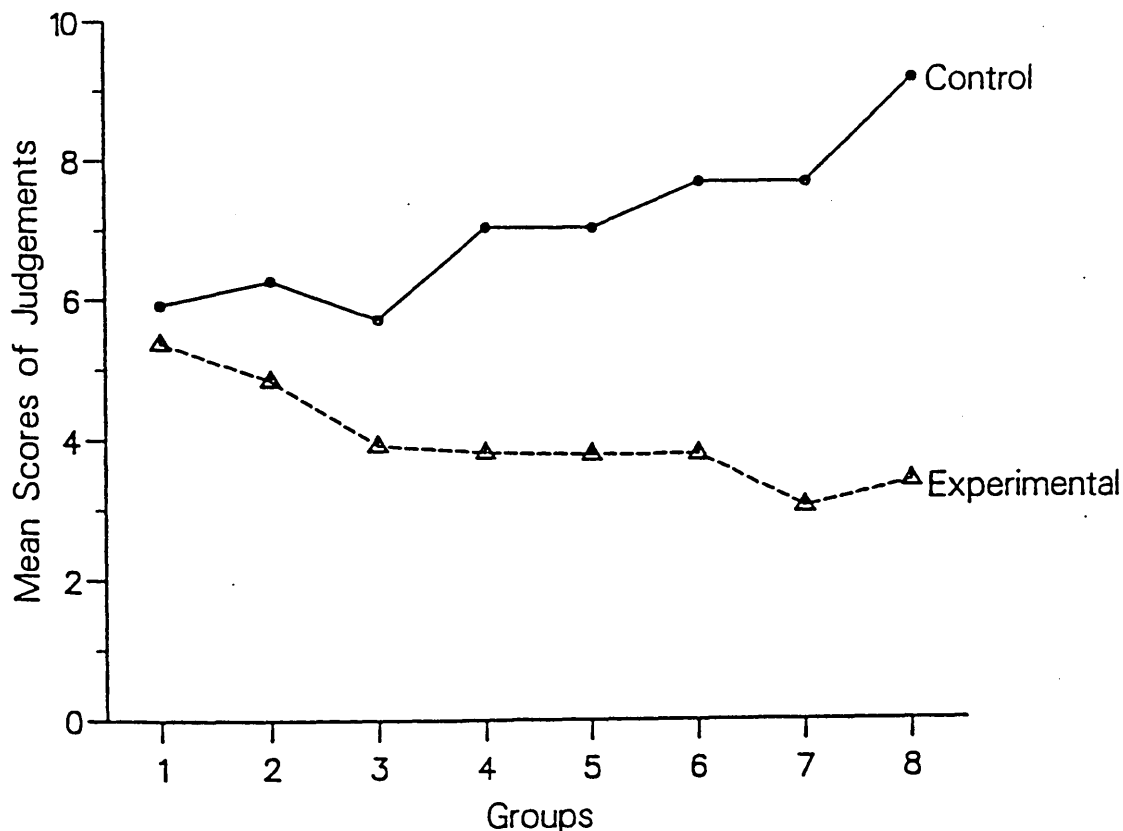
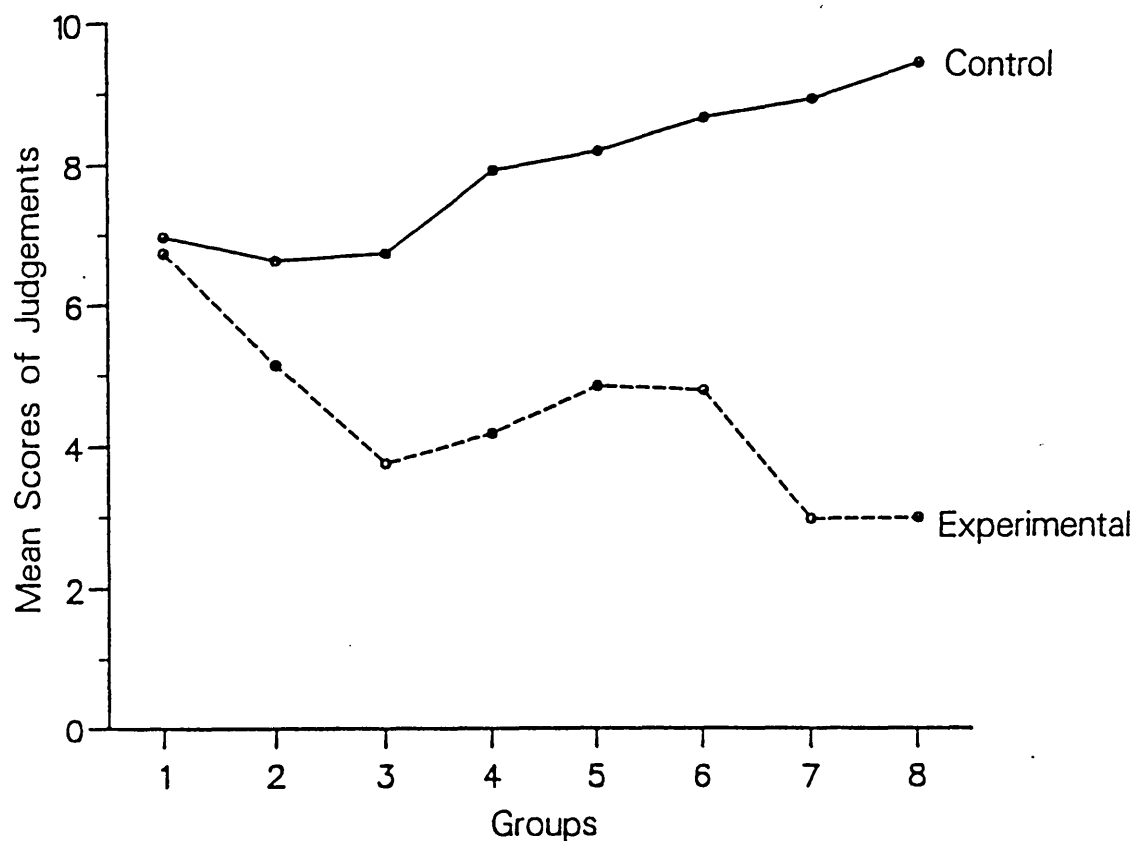


Figure 6-15: Mean scores of judgements on the BTWh sentences by the EFL groups



From the judgements on the BTE_x sentences and the BTWh sentences, we can see that the EFL subjects do not have much difficulty in discovering the ungrammaticality of the base-generated topic in English.

6.2.2.5. Judgements on the NGT Sentences by the EFL Groups

In judging the control sentences of NGT, which is represented by the solid line in Figure 6-16, no significant difference is found between any of the learner groups, i.e. Groups 1-7, and the native group, i.e. Group 8 (see Table 6-49 in Appendix 11). In judging the experimental sentences (see the line of dashes in

Figure 6-16: Mean scores of judgements on the NGT sentences by the EFL groups

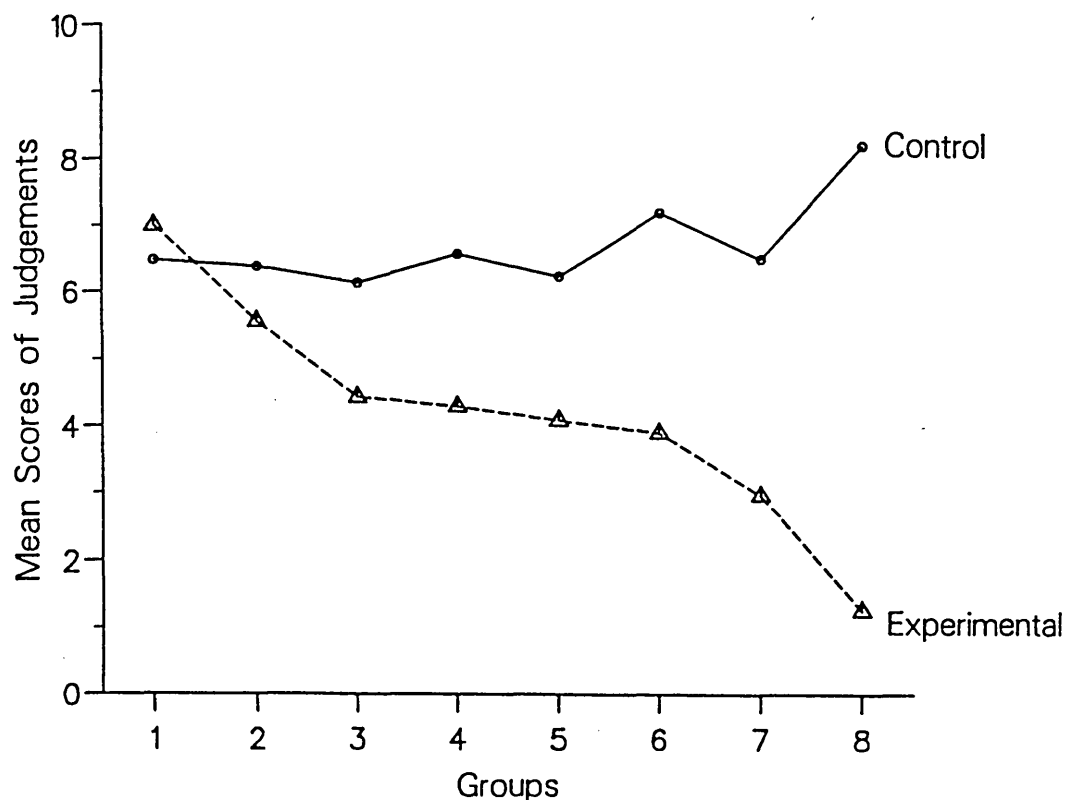


Figure 6-16), significant differences are found between Groups 1-6 on the one hand and Group 8 on the other (see Table 50 in Appendix 11). As the subjects become more proficient in English, they are more accurate in judging the experimental sentences, and as is shown by the line of dashes, there is a steady improvement of accuracy in rejecting the experimental sentences by the EFL groups.

The results reported here suggest that like native speakers of English, the EFL learners accept English sentences with topics preceded by prepositions, such as , *as regards*, *out of*, etc. and as their proficiency in English improves, they come to be aware that unlike their L1, Chinese, base-generated topics are not possible in English, thus enabling them to reject the incorrect English sentences with non-gap topics.

It is hypothesized that the non-gap topic can be used to test the possible existence of base-generated topic position in the EFL subjects' IL grammars of English. The rejection of the non-gap topic by the subjects can reflect the non-existence of the base-generated topic position in the EFL subjects' IL grammars of English. If the subjects are able to reset the base-generated topic position to a negative value, we should expect them to be able to reject the BTE_x and BTW_h sentences, because in that case, the only way to create a topic is through movement and the movement of an constituent out of an extraposed sentence or a wh-island violates the subjacency principle. To test the above hypothesis, two simple linear regressions were carried out with the NGT sentence as an independent variable and the BTE_x and BTW_h sentences as dependent variables respectively. As the results of the linear regressions show, the *t*-values in both predictions are significant (see Tables 6-51 and 6-52 in Appendix 11). This suggests that the above hypothesis is correct and the NGT sentences can be used as a predictor of the acceptability of sentences like the BTE_x and BTW_h in the EFL subjects' IL grammars of English. These results also support the findings in the pilot study we conducted, where similar regressions were performed to find out the predictability of the non-gap topic sentence for the acceptability of sentences with base-generated topics in the EFL learners' IL grammars (cf. Yuan 1992).

6.2.2.6. Summary of the Judgements by the EFL Groups

From the results of the EFL subjects' judgements, we can see that they do not have much difficulty in rejecting the incorrect English sentences with the null subject in the finite clause. This is also true in the EFL subjects'

judgements on the incorrect English sentences with both the null subject and object *pro*.

In judging the use of the nominal expletive, *it*, the subjects show an overwhelming preference for sentences with the expletive, *it*, rating the sentence without the expletive, *it*, either as less acceptable or unacceptable. It seems that the acquisition of the nominal expletive by the EFL learners takes place some time before they are able to reject the null subject in a finite clause.

As the sentences used to test the non-existence of the base-generated topic are quite complicated, subjects in Groups 1 and 2 seem to be unable to handle the sentence structures used, such as extraposition, embedded wh-islands, etc. However, as the subjects become more proficient, they become aware of the ungrammaticality of the base-generated topic in English and are able to reject it.

Two simple linear regressions were conducted, using the non-gap topic sentence to predict the acceptability of sentences with base-generated topics in the subjects' IL grammars of English. The results indicate that the non-gap topic sentence can serve as a reliable predictor; the rejection of the non-gap topic is a sign of the non-existence of the base-generated topic position in the subjects' IL grammars.

6.3 THE ACQUISITION AND REJECTION OF THE SUBJECT PRO BY CFL AND EFL LEARNERS

In our hypothesis for the directionality of difficulty in the acquisition and unlearning of the subject PRO by CFL learners and EFL learners, we predicted that it would be more difficult for EFL learners to unlearn the subject PRO in the acquisition of English than for CFL learners to acquire the subject PRO in the acquisition of Chinese. This hypothesis was based on the fact that CFL learners have direct positive evidence available to them; CFL learners are exposed to full productivity and high frequency of the null subject in their input data. In contrast, EFL learners do not have direct positive evidence in their input to indicate that the null subject in the finite clause is not possible in English. However, as we saw in 6.2, CFL learners do not have much difficulty in acquiring subject PRO in the finite clause in Chinese, nor do EFL learners have many problems in discovering the ungrammaticality of the subject PRO in English. This suggests that there exists no directionality of difficulty in the acquisition and unlearning of the subject PRO by CFL learners and EFL learners. But how can this happen?

If we assume that language acquisition relies on the availability of direct positive evidence in the input and that L1 knowledge is involved in the acquisition of an L2, we may predict that CFL learners may bring the values of language properties in their L1 grammar to their learning of Chinese and that they have to assign new values to those corresponding properties for the L2, Chinese, according to the direct positive evidence they encounter. In the acquisition of the subject PRO in Chinese by CFL learners, the negative value for the subject PRO in the learners' L1, English, is inconsistent

with the input data from the target language, Chinese; as a result, the contradictory input data from Chinese triggers the restructuring in the learners' IL grammars of Chinese. As more contradictory input data come in, the restructuring would enable the subject PRO to acquire a positive value in the learners' IL grammars of Chinese.

However, there are some problems with this assumption. Firstly, as PRO is different from *pro* in UG and they each function differently, how can learners know that what they are acquiring is PRO, rather than *pro* as in pro-drop languages if they rely only on direct positive evidence in their acquisition? Secondly, recall that Chinese allows lexically realized pronouns as well as PRO in subject position of finite clauses and that unlike the subject pronoun in English, which has structural Case, the pronoun in subject position in Chinese has inherent Case. The direct positive evidence in the input can only inform CFL learners of the fact that a 'gap' is allowed in subject position in a finite clause in Chinese, but it says nothing about the type of that 'gap' and the status of the lexically realized subject NP. In other words, if our CFL learners acquired the subject PRO on the basis of direct positive evidence only, then their underlying competence would still be divergent from the native speaker's grammar and the acquisition would be merely an apparent completion at the surface level. All by itself, therefore, direct positive evidence is not sufficiently informative to trigger the necessary change in CFL learners' IL grammars of Chinese.

We believe that in the process of acquiring subject PRO in finite clauses in Chinese, what triggers a substantial change in CFL learners' IL grammars of Chinese is what Randall (1987) calls 'indirect positive evidence'. In 4.4, we saw that Randall's suggestion of 'indirect positive evidence' is based on a principle of the form in

(21), which means that if construction P occurs in the language, construction Q cannot occur. Thus, the learner can get information of nonoccurrence of Q indirectly through the presence of P in the input.

(21) [IF P THEN NOT Q]

Here, we can assume a contraposition of Randall's form in (21) to have the form in (22).

(22) [IF NOT P THEN Q]

(22) means that if construction P does not occur in the language, Q may occur. Thus the learners can be informed indirectly of the possible occurrence of construction Q by the absence of construction P.

In the acquisition of the subject PRO in Chinese by CFL learners, we believe that the evidence of NOT P is [-AGR] and [-TNS], and Q represents the realization of [+the subject PRO]; it is the nonoccurrence of the features of AGR and TNS in Chinese that triggers the acquisition of the subject PRO by CFL learners. As we saw in 3.1.2, AGR and TNS are absent in Chinese. Language data representing the values of [-AGR] and [-TNS] can inform CFL learners that PRO may occur in subject position of the finite clause in Chinese. In CFL learners' L1, English, AGR and TNS are available, resulting in the nonoccurrence of subject PRO in the finite clause. In order for CFL learners to acquire the subject PRO, they have to notice the indirect positive evidence in the input data which represent the values of [-AGR] and [-TNS]. During the acquisition of Chinese, CFL learners can easily notice the complete absence of agreement markers and tense markers in the input data. What is more, unlike CFL learners' L1, English, in which do-support, be-insertion and copula are frequently used to 'bear' TNS and AGR,

Chinese does not use do-support, be-insertion and copula (see 3.1.2), because there is neither TNS nor AGR for them to bear². This indirect positive evidence is a clear indication to CFL learners that the subject position in the finite clause in Chinese is ungoverned and PRO is allowed there. CFL learners can also be informed by this indirect positive data that the lexically realized NPs or pronominals in subject position in Chinese have inherent Case, rather than structural Case.

From the above discussion, we can see that the indirect positive evidence is more informative to CFL learners in their acquisition of the subject PRO than direct positive evidence; it is CFL learners' awareness of some deep and abstract properties of some functional categories that enables them to acquire the subject PRO in Chinese. Having said that, we do not mean that the direct positive evidence is useless. We believe that it can function as a reinforcement in CFL learners' acquisition of the subject PRO; once they discover that AGR and TNS are absent in Chinese, they are able to assume that the subject position of the finite clause in Chinese is ungoverned and PRO is allowed there. And this assumption can be further reinforced by the direct positive evidence of null subjects in finite clauses in the input.

Next, let us turn to EFL learners and discuss why EFL learners are able to reject the incorrect English sentences with null subjects in finite clauses. Our initial hypothesis was that it would be very difficult for EFL learners to unlearn subject PRO in the finite clause during their acquisition of English, because there is no direct positive evidence which can indicate to the learner that subject PRO in the finite clause is impossible in the target language, English. As we saw in 6.2, this hypothesis is not confirmed by the results of

the study; EFL learners do not have much difficulty in unlearning the subject PRO.

Then a question arises as to what triggers the change in EFL learners' IL grammars of English which enables them to reject ungrammatical English sentences with the subject PRO. It could be argued that in spite of the lack of direct positive evidence in the input, EFL learners have indirect negative evidence available to them, which could help to trigger the change in their IL grammars. We saw in 4.4 that indirect negative evidence refers to the non-occurrence of some linguistic structures expected to occur by the learner; the non-occurrence of certain linguistic forms could inform the learner whether his or her hypothesis about these linguistic forms is correct or not. In our case, EFL learners could notice that the subject PRO, which they expect to appear in English as in their L1, Chinese, does not show up in the input. Based on the observation of the non-occurrence of null subjects in the finite clause in English, EFL learners might be able to infer that subject PRO in the finite clause is not allowed in English. However, since language is infinite and the language data the learner is exposed to are finite, the non-occurrence of a construction in the finite input data cannot be reliable evidence for its ungrammaticality. 'Non-occurrence is thus a dangerous form of evidence, since it could easily lead to rejection of well-formed sentences' (Yip 1989:84).

In fact, even if non-occurrence is argued to be a useful form of evidence to language learners (cf. Chomsky 1981, Bowerman 1985), it is simply not available in EFL learners' input data, because some data in the English input that the EFL learners are exposed to can be quite misleading and can lead the learner to think that subjects in finite clauses are optional in English. The misleading input data include both grammatical sentences

and ungrammatical sentences. An example of misleading grammatical input is the class of conditional sentences exemplified by *Try again and you may succeed*. The ungrammatical misleading input can be sentences like those in (23). These sentences are not fully grammatical, because they lack a subject. They are, however, acceptable in certain contexts. In fact, to native speakers of English, an acceptable sentence does not have to be grammatical (though it often is); but it does have to be comprehensible or appropriate (cf. Valian 1990b).

- (23) a. Seems you can't do that in Texas.
 b. Guess I should be going.
 c. Ever been to Chicago?

(From Schmerling 1973:582)

Sentences similar to those in (23) are not uncommon among English speakers. When EFL learners encounter this type of sentences without subjects, they could easily be misled in thinking that English, like their L1, Chinese, allows null subjects in finite clauses. It could be argued that sentences like those in (23) are perceived by native speakers of English as 'substandard'. But since these sentences are standard in EFL learners' L1, Chinese, how can the learners know that they are not standard in the target language, English?

One possible solution could be that EFL learners learn that the null subject is ungrammatical in English from the fact that it is both ungrammatical and unacceptable if the null subject occurs in an embedded clause. For example, (23b) is acceptable in a certain context; but the sentence, *I guess should be going*, is not acceptable in any context. In the study of L1 acquisition, it has been suggested that children are sensitive to structures in the subordinate clause (Emonds 1970; Roeper 1972) and that subordinate clauses can provide the locus for unique triggers for the pro-drop parameter (Roeper and Weissenborn 1990). However, if the English subordinate

clause can serve as the triggering domain for the non-null subject setting, it is not clear what motivates the learner to generalize what he has found in the subordinate clause to the root sentence, nor what prohibits the learner from assuming that in English the subject is compulsory in the subordinate clause and is optional in the root sentence.

We have suggested that in the acquisition of English, EFL learners have no direct positive evidence in their input data which can help them to unlearn the subject PRO in their IL grammars of English. We have also discussed some problems with the hypothesis of indirect negative evidence. Here we argue that it is indirect positive evidence that plays a crucial role in helping EFL learners to be aware that the subject PRO is not possible in English and that the subject position in the English finite clause must be lexically realized. If we adopt Randall's (1987) form for the indirect positive evidence in (21) and assume that P represents the data which imply the non-occurrence of Q, i.e. the subject PRO in English, we can see that there is sufficient evidence of P in EFL learners' input data from the very early stages, which can inform the learners indirectly that unlike their L1, Chinese, the subject in the finite clause must be lexically realized. The evidence of P here refers to data representing the presence of AGR and TNS in English. These data include tense and agreement markers, such as the third person singular, *-s*, copulas, *do*-support, the auxiliary, *be*, in progressive aspect. At early stages, EFL learners may not be able to use these features of agreement and tense properly, but the encounter of these data by EFL learners in the input is sufficient to make them aware of the presence of AGR and TNS in English. From this, they can infer that unlike their L1, Chinese, PRO is impossible in subject position of a finite clause in English and that as AGR assigns nominative Case to the

subject, the subject position in English must be lexically filled to receive the nominative Case assigned by AGR.

Let us take 'do-support' as an example to see how EFL learners can be made aware of the presence of AGR and TNS. As we saw in 3.1.2, the verbal expletive, *do*, in do-support, like the auxiliary in progressive aspect and copulas, is semantically empty and there is no such use of the verbal expletive in EFL learners' L1, Chinese. Following the notion of language as a system of mappings between form and function, which is the basic insight underlying the linguistics of de Saussure, Bates and MacWhinney (1987) point out that the relation between the sign and the signified is the central structure controlling language processing. When EFL learners are faced with data including do-support, they are forced by the processing mechanism to find something onto which they can map the form of *do*. In other words, they need a reason for the use of the verbal expletive, *do*. In negative sentences in English, where the presence of NEG prevents the verb from moving to TNS and AGR (see 3.1.2), the verbal expletive *do* is inserted to rescue the 'stranded' AGR and TNS elements. The insertion of *do* can be a clear indication to EFL learners that AGR and TNS are present in English. As a result, EFL learners can map the form of *do* onto the function of bearing AGR and TNS. By this mapping, the learner can be informed indirectly that the subject position in English is structurally Case-marked and PRO in subject position in the finite clause is not allowed.

In the above, we have seen that CFL learners do not have much difficulty in acquiring the subject PRO in Chinese, nor do EFL learners have much difficulty in unlearning the null subject in the acquisition of English. It is interesting to see that the results of the EFL learners'

judgements in our study are not consistent with the data reported in the SLA literature concerning the acquisition of English by learners of other null-subject languages. White (1985, 1986b), Hilles (1986) and Phinney (1987) have investigated the resetting of the pro-drop option to non-pro-drop in the case when subjects are speakers of Spanish learning English. All these three researchers find missing subject pronouns in the early stages of the acquisition process. This has been regarded as the result of learners' L1 transfer in the literature (Adjemian and Liceras 1984; Liceras 1985; White 1985, 1986b; Phinney 1987). Then the question arises as to why L1 transfer occurs only in the acquisition of English by Spanish learners but not by Chinese learners although Chinese also allows the null subject. A possible answer to this question lies in the nature of the difference in AGR between the learner's L1 and English. Languages like Spanish have a rich enough subject-verb agreement system, which makes it possible for the null subject to occur. English also has a subject-verb agreement system although it is rather meagre. In Chinese, there is no subject-verb agreement at all. In this case, we can say that the difference between Spanish and English with respect to AGR is relative while the difference between Chinese and English with respect to AGR is absolute. So the Spanish learner of English has to judge how rich or how meagre the English AGR is before he can decide whether English allows the null subject. In other words, he has to check the degree of richness, which is obviously a rather difficult task. However, what the Chinese learner of English has to do is find out whether AGR in English is absent (as in his L1, Chinese) or present. This is a very straightforward task; a brief encounter with the agreement marker, -s, do-support, etc. is sufficient to inform the learner that AGR elements are present in English. And on this basis, he can infer that the subject PRO is not allowed in English.

6.4 THE ACQUISITION AND REJECTION OF THE NOMINAL EXPLETIVE *it* BY THE EFL AND CFL LEARNERS

We have seen in the above that CFL learners are aware of the non-occurrence of AGR elements in Chinese. This awareness should also enable CFL learners to discover that Chinese does not require nominal expletives; since no nominative Case is assigned, nothing is needed to receive it in sentences with *weather* predicates or *raising* predicates. This is what the results in our study indicate; CFL learners (except those beginning learners, whose knowledge of Chinese is too little to make determinate judgements) accept the null subject in sentences with *weather* predicates and *raising* predicates (see 6.2). However, it is not clear why the beginning learners in Group 1, who correctly accept the null subject in the sentences with *weather* predicates, incorrectly judge the use of the nominal expletive as marginal (see Figure 6-4). It is possible that these beginning learners treat the nominal expletive as a referential pronoun because *weather* predicates in Chinese can optionally have thematic subjects and CFL learners may have encountered sentences like those in (24) in their input.

(24) a. Wo dao Beijing de shihou, (tian) zheng xia
I arrive Beijing DE time sky PRG descend

-zhe da yu.
PRG big rain

*'When I arrived in Beijing, the sky was raining heavily.'

b. zuotian (tianqi) hen leng.
yesterday weather very cold

*'Yesterday the weather was very cold.'

In a study of L1 acquisition, Hyams (1986) has proposed that the English child's initial value for the *pro*-drop parameter is set for Spanish and is reset for English on the basis of the information provided by expletives in English. If that is correct, one could argue that nominal expletives in English might also be informative to EFL learners in that the null subject is not allowed in the English finite clause. However, we would like to argue that the use of the nominal expletive in English does not have the triggering effect for the unlearning of the null subject by EFL learners as one might think. In order for the nominal expletive to have the expected triggering effect, EFL learners need a reason to take it as an important cue. However, they simply do not have that reason. Firstly, they often encounter ungrammatical but acceptable strings in the input (as in (23a)), which do not have the required expletive in the subject position. This is clearly reflected in the English speakers' (in the control group) judgements on the sentences with the raising predicate in our study, in which the English speakers judge the raising-predicate sentences without the expletive *it* as marginal (see Figure 6-13). Secondly, unlike in English, weather predicates in Chinese can optionally have thematic subjects, as in (24), and during the acquisition of English, EFL learners have reasons to treat the nominal expletive *it* as a referential pronoun³.

We believe that it is once more the indirect positive evidence reflecting the presence of AGR and TNS in English that triggers the acceptance of the expletive, *it*, as well as the rejection of the null subject in EFL learners' IL grammars of English. The awareness of the presence of AGR and TNS forces EFL learners to find something to fill in the subject position of sentences with weather predicates and raising predicates so as to satisfy the functional requirement for the nominative

Case assigned to the subject of a finite clause. As the learners encounter the use of *it* in this type of sentences in the input, the expletive *it* becomes a legitimate recipient for the nominative Case in this type of sentences in the learners' IL grammars. In our study, the sentences with weather predicates and raising predicates are simple in structure and therefore the acceptance of the use of the expletive *it* is manifested earlier than the rejection of the null subject in EFL learners' judgements.

6.5 THE ACQUISITION AND REJECTION OF THE BASE-GENERATED TOPIC BY THE CFL AND EFL LEARNERS

In 6.2.1 and 6.2.2, we saw that the acquisition or rejection of the base-generated topic is closely related to the status of the non-gap topic in the learners' IL grammars. We have also seen from the results of the simple linear regressions that the non-gap topic can be used as a predictor for the status of the base-generated topic in the learners' IL grammars for both EFL learners and CFL learners. That is, if CFL learners accept the non-gap topic in Chinese, they are then able to recognize the topic coindexed with a variable in a wh-island or in a sentential subject as a base-generated topic, rather than a violation of the subjacency principle, and similarly if EFL learners reject the non-gap topic, then we may expect them to judge the topic coindexed with a variable in a wh-island or in an extraposed sentence as a violation of the subjacency principle. This can be an indication of the awareness by EFL learners that the base-generated topic is impossible in English.

The results in our study have shown that EFL learners do not have much difficulty in unlearning the base-generated topic in the acquisition of English. Beginning learners and some early intermediate learners are unable to reject the base-generated topic because their knowledge of English is not sophisticated enough to deal with the English sentences used in the experiment. As learners' proficiency in English increases, they become more and more accurate in rejecting the base-generated topic in English. Since the base-generated topic is possible in EFL learners' L1, Chinese, then one may ask what triggers the change in the learners' IL grammars which makes the base-generated topic illegitimate? We argue again that it is the indirect positive evidence, i.e. the presence of AGR and TNS in English, that informs EFL learners that the base-generated topic is not possible in English. During the acquisition of English, beginning EFL learners may initially regard sentences with a non-gap topic or with a topic coindexed with a variable in a wh-island or in an extraposed clause as possible in English, assuming that like their L1, Chinese, both the topic and the object variable in English can be base-generated; movement does not have to be involved and no violation of the subjacency principle occurs. This probably explains why the beginning EFL learners in Group 1 tend to accept the English sentences with the non-gap topic and with the topic coindexed with a variable in a wh-island (see Figures 6-15 and 6-16). However, this does not last long. As there is sufficient evidence in EFL learners' input indicating the presence of AGR in English, the learners can learn that in contrast to their L1, Chinese, the subject position in English is assigned nominative Case, rather than inherent Case. This indirectly informs the learners that like the subject, the topic in English has to be Case-marked structurally as well; and for the topic to have structural Case, the topic can have a preceding preposition to assign oblique Case to it (as in the case

of the non-gap topic) or movement has to be involved so that the topic can bring with it the objective Case assigned by V. With this information, the learners are able to accept only the non-gap topic with a preceding preposition and reject English sentences with the object variable coindexed with a topic blocked in a non-subjacent environment, such as a wh-island or an extraposed clause.

While EFL learners do not have much difficulty in unlearning the base-generated topic, the acquisition of the base-generated topic by CFL learners does not seem to be very straightforward. As their Chinese proficiency increases, there seems to be little increase in the acceptability of the base-generated topic and the non-gap topic in the elementary, intermediate and even high-intermediate CFL learners' IL grammars of Chinese (see Figures 6-6, 6-7 and 6-8). It is not until CFL learners have reached the stage of Group 5, the advanced level, that they appear to be able to accept the base-generated topic and the non-gap topic in Chinese. These results are quite unexpected. CFL learners have direct positive evidence in the input from early stages, such as the non-gap topic sentence, which indicates very clearly that the topic in Chinese does not have to be derived from some non-topic constituent in the sentence and it can be base-generated. The learner can also infer from indirect positive evidence, such as the absence of agreement markers, copula, do-support, etc. that the topic NP, like the subject NP, can have inherent Case, rather than structural Case and it does not always have the objective Case assigned by V. In interpreting these results, we believe that it is necessary to separate processing factors from grammatical factors. We assume that the direct and indirect positive evidence have indeed triggered the change in the learners' IL grammars, which makes the base-generated topic acceptable to the

learners. This is not very different from the way that EFL learners learn to reject the base-generated topic in English. What makes elementary and intermediate CFL learners fail to accept the sentences with the non-gap topic and the base-generated topic is, we believe, the difficulty that CFL learners have in processing these sentences.

English is known to be a subject-prominent language, although topicalization is possible. The use of topic in English is far lower in frequency and productivity than in Chinese, a topic-prominent language (Li and Thompson 1976). In most cases, the initial position of a sentence in English is occupied by a subject, a *wh*-word or a complementizer. When an English-speaking learner of Chinese comes to process a Chinese sentence with the base-generated topic like (25), the first constituent of the sentence he processes is the topic NP, as in (25a). However, nothing in this topic NP tells the learner that it is a topic NP. Then he labels it as the subject and attaches it to SPEC of AGRP because this is the usual parsing strategy he uses in processing the initial NP in his L1, English, and this parsing strategy also works well in processing some Chinese sentences without the topic NP in the initial position of the sentence. When the learner comes to process the subject of the sentence, *ni* (=you), as in (25b), his parser may have two alternatives to process the word, *ni* (=you). It may use the backtracking strategy to reanalyze the topic, *na tai jisuanji* (=that computer), which has previously been processed as a subject NP, and label it as the topic. Once the subject position is emptied, the subject NP, *ni* (=you), is able to be attached to SPEC of AGRP, which is correct. Alternatively, the parser may label the second NP it processes as the subject of a relative clause (as in (25c)) if the learner has not reset the head-direction parameter from head initial (English) to head final

(Chinese). After it has processed the word, *shi* (=be), what the parser expects to follow *shi* may be some Chinese words which have the meanings of something like *made in Japan*, or *the best in our school*. In this situation, only after the learner has processed the last words, *bu keneng de* (=not possible) in (25), can he realize that his previous analysis is wrong.

(25) na tai jisuanji ni xiang xianzai yong shi bu
 that CL computer you want now use be not
 keneng de.
 possible PART
 *'That computer that you want to use e now is not possible.'

a. na tai jisuanji
 that CL computer

b. na tai jisuanji ni
 that CL computer you

c. na tai jisuanji [ni xiang xianzai yong] shi.....
 that CL computer you want now use be

In Chinese, the head of a phrase generally comes at its end. For example, in a complex NP, a relative clause precedes its head noun. In addition, in complex sentences, a subordinate clause precedes a main clause. As Chinese is different from English in that Chinese is a head-final language and English a head-initial language, native speakers of these two languages should demonstrate certain differences in their organization of parsing procedures in accord with the differences in these two grammars. It has been reported that in the L1 acquisition of Japanese, another head-final language, young Japanese children find left branching structures significantly more accessible than right branching structures (Lust and

Mazuka 1986). However, English children demonstrate the reverse (Lust 1981; Lust et al. 1986).

Let us look at the example in (26) and analyze the difference between the native speaker of Chinese and the CFL learner in processing a sentence of this kind.

(26) [NP[CP_{zuotian lai de}] na ge guniang] hui shuo
 yesterday come DE that CL girl can speak

Zhongwen.

Chinese

'The girl who came yesterday can speak Chinese.'

Chinese does not have overt relative pronouns. When the first two items in (26), that is, *zuotian lai* (=yesterday come), are parsed by a Chinese speaker, the parsings of these items are indeterminate; that is, it is impossible to determinate the grammatical functions of these items at this stage. As a result, these items must be kept in a buffer and the parsing decisions must be delayed until some relevant data are processed, like the head NP, *na ge guniang*, in (26). As we can see from the English translation of (26), no delaying of parsing decision is necessary; the head NP is in the initial position, and is immediately followed by the relative clause. The relative pronoun is a clear indicator to the parser of what is following. So when an English speaker comes to process some Chinese sentences like (26), he may not be able to tolerate the indeterminate parsing strategy required. This may explain why some elementary and intermediate CFL learners fail to accept sentences with the base-generated topic. Here, we do not mean that CFL learners cannot process the structures which are different from those in their L1, English. What we mean is that processing some alternative structures may not be initially maximized by the CFL learner's parser which has been derived for his L1, English.

6.6 CONCLUSION

Although EFL learners have no direct positive evidence in the input which can indicate to them that in contrast to their L1, Chinese, English does not allow the null subject in the finite clause, there is sufficient indirect positive evidence in the input, such as, do-support, copula, the auxiliary, be, etc., which can trigger the necessary change in the learners' IL grammars towards the norm of the target language.

During the processes of acquiring and unlearning the subject PRO by CFL learners and EFL learners, it is the indirect positive evidence reflecting the presence or absence of AGR elements that enables both CFL learners and EFL learners to acquire and unlearn the subject PRO. This is because the data in the indirect positive evidence are more informative about the deep and abstract properties of the subject in the target languages than those in the direct positive evidence. This explains the non-existence of directionality of difficulty in the acquisition and unlearning of the subject PRO by CFL learners and EFL learners; both CFL learners and EFL learners have informative data available to them (i.e. the indirect positive evidence) although only the former have direct positive evidence. The direct positive evidence is assumed to play a role of reinforcement in the acquisition of the subject PRO by CFL learners.

The acquisition and the rejection of the nominal expletive by EFL learners and CFL learners should also be regarded as the effect of the indirect positive evidence in the learners' input, which reflects the presence or

absence of the AGR elements in the target languages. For example, the absence of the AGR elements in Chinese has the implication to CFL learners that no nominative Case is assigned to the subject position and therefore nothing is needed in the subject position of the weather- or raising-predicate sentences to receive it.

It has been discovered in this study that sentences with a non-gap topic can be used as a predictor for the existence or non-existence of the base-generated topic position in the learners' IL grammars. If an EFL learner rejects the non-gap topic, we can expect him or her to be able to reject a sentence with a topic coindexed with a variable in a wh-island or in an extraposed clause as a violation of the subjacency principle. It has also been discovered that the acquisition of the base-generated topic by CFL learners is not as straightforward as the unlearning of the base-generated topic by EFL learners. The difficulty that CFL learners have with the base-generated topic is assumed to be due to their intolerance of the indeterminate parsing strategy required in processing some Chinese data. Chinese is a head-final language, which frequently requires the indeterminate parsing strategy. It is believed that English-speaking learners of Chinese, with the parsing procedures cultivated for their L1, English, find it very hard to delay the parsing decision in processing the Chinese data, such as sentences with a base-generated topic or a non-gap topic, particularly at early stages of their acquisition of Chinese.

Notes to Chapter 6

1. Chinese allows sentences with a sentential subject, as in (18a). However, the English counterpart of (18a), as in (i) below is not acceptable, which proved true in our pilot study. Therefore, sentences with extraposed clauses are used in the judgement test for the EFL subjects, as in (10).

(i) ?That you want to use that computer now is impossible.

2. According to observations made by the researcher during his teaching of Chinese as a foreign language, some beginning CFL learners do occasionally use a copula in sentences like (i) below.

(i) * ta shi ershi -wu sui, wo shi bi ta da
he be twenty five age I be than he big

san sui.

three age

'He is twenty-five years old; I am three years older than him.'

However, it is not very long before this type of sentence disappears. Possibly, the CFL learners discover that Chinese has nothing for the copula to bear.

3. In a number of English textbooks and English grammar books for the Chinese learners of English in China, the nominal expletive, *it*, preceding the weather predicate, is explained as referring to the weather.

CHAPTER 7

THE ACQUISITION AND UNLEARNING OF OBJECT *pro*

7.0 INTRODUCTION

This chapter is about the investigation of the directionality of difficulty in acquiring and unlearning of object *pro* by CFL learners and EFL learners. Our initial hypothesis was that because of the influences of the first language settings in the learners' IL grammars, English-speaking learners of Chinese would initially reject a large proportion of correct Chinese sentences with null objects and Chinese-speaking learners of English would initially accept a large proportion of erroneous English sentences with null objects. However, this hypothesis is only partially confirmed by the results of our study: there is a direction of difficulty in acquiring and unlearning object *pro* by CFL learners and EFL learners. The acquisition of object *pro* seems much easier for CFL learners than is the unlearning of object *pro* for EFL learners. We will argue that this direction of difficulty results from the amount of direct positive evidence available to the learners.

7.1 SENTENCE STRUCTURES USED IN THE TESTS

The sentences concerning the acquisition and unlearning of object *pro* were designed to find out whether the EFL subjects were aware that, unlike their L1, Chinese, English sentences with object *pro* are unacceptable in the target language, English, and whether the CFL subjects would accept grammatical Chinese sentences with object *pro* in spite of the fact that these types of sentences would not be grammatical in their L1, English.

As in Chinese the third person pronoun in object position referring to an inanimate entity is obligatorily absent (see 3.2.3), a distinction was made in the experimental design between an inanimate object *pro* and an animate object *pro*, in order to see whether such a distinction would be reflected in the subjects' judgements.

In the test for the EFL learners, each experimental sentence ((1b), (2b), (3b), (4b), (5b), (6b) and (7b)) has a corresponding control sentence, as in (1a), (2a), (3a), (4a), (5a), (6a), (7a).

(1) Object *pro* in Extraposed Clause (*pro/Ex*)

a. It is very likely that you won't be able to use that computer now.

*b. Perhaps that computer has gone wrong. It is very likely that you won't be able to use now.

(2) Object *pro* in Wh-island (*pro/wh*)

a. I don't know when he is going to repair this car.

*b. He wants to repair this car, but I don't know when he is going to repair.

(3) Inanimate Object *pro* in Main Sentence (*I/pro/M*)

a. Mary's bike has gone wrong. Tomorrow I am going to repair it for her.

*b. Mary's bike has gone wrong. Tomorrow I am going to repair for her.

(4) Inanimate Object *pro* in Subordinate Sentence
(I/*pro*/S)

a. Mary lost her bike last week, but John says the police have found it for her.

*b. Mary lost her bike last week, but John says the police have found for her.

(5) Inanimate Object *pro* Coindexed with an Argument in an Adjunct (I/*pro*/A-adjunct)

a. When you finish using the computer, please let me use it for a while.

*b. When you finish using the computer, please let me use for a while.

(6) Animate *pro* in Main sentence (A/*pro*/M)

a. I immediately recognized the students, and later Mary also recognized them.

*b. I immediately recognized the students, and later Mary also recognized.

(7) Animate *pro* in Subordinate Sentence (A/*pro*/S)

a. John said those students were in the library, but I told him I didn't find them there.

*b. John said those students were in the library, but I told him I didn't find there.

Like the sentences for the EFL learners, the sentences in the judgement test for the CFL learners also include control sentences, as in (8a), (9a), (10a), (11a), (12a),

(13a) (14a), as well as the corresponding experimental sentences, as in (8b), (9b), (10b), (11b), (12b), (13b), (14b).

(8) Object *pro* in Sentential Subject (*pro/SS*)

a. ni xiang xianzai yong na tai jisuanji shi bu
 you want now use that CL computer be not
 keneng de.
 possible PART
 ?'That you want to use that computer now is not possible.'

b. ta zhengzai yong nai tai jisuanji, ni xiang
 he PRG use that CL computer you want
 xianzai yong shi bu keneng de.
 now use be not possible PART
 *'He is using that computer. That you want to use now is not possible.'

(9) Object *pro* in Wh-island (*pro/wh*)

a. wo bu zhidao weishenmo ta bu xihuan zhe ben shu.
 I not know why he not like this CL book

b. wo hen xihuan zhe ben shu, keshi wo bu zhidao
 I very like this CL book but I not know

weishenmo ta bu xihuan.
 why he not like
 *'I like this book very much, but I don't know why he doesn't like.'

(10) Inanimate Object *pro* in Main Sentence (*I/pro/M*)

a. *tade zixingche huai le, wo dasuan mingtian bang
 her bike bad PFV I plan tomorrow help

ta xiuli ta.
 her repair it
 'Her bike has gone wrong. Tomorrow I am going to repair it for her.'

b. tade zixingche huai le, wo dasuan mingtian bang
 her bike bad PFV I plan tomorrow help
 ta xiuli.

her repair
 *'Her bike has gone wrong. Tomorrow I am going to repair for her.'

(11) Inanimate Object *pro* in Subordinate Sentence
 (I/*pro*/S)

- a. *zuotian Zhang Huan diu le zixingche, danshi
 yesterday Zhang Huan lose PFV bike but

Li Ming shuo jingcha yijing bang ta zhaodao le
 Li Ming say police already help her find PFV

ta.
 it

'Zhang Huan lost her bike yesterday, but Li Ming says the police have found it for her.'

- b. zuotian Zhang Hua diu le zixingche, danshi
 yesterday Zhang Huan lose PFV bike but

Li Ming shuo jingcha yijing bang ta zhaodao le.
 Li Ming say police already help her find PFV

*'Zhang Huan lost her bike yesterday, but Li Ming says the police have found for her.'

(12) Inanimate Object *pro* Coindexed with an Argument in an Adjunct (I/*pro*/adjunct-A)

- a. *yinwei zhe ge wenti bu zhongyao, suoyi women bu
 because this CL matter not important so we not

zhunbei zai hui shang taolun ta.
 prepare at meeting on discuss it

'As the matter is not important, we are not going to discuss it at the meeting'.

- b. yinwei zhe ge wenti bu zhongyao, suoyi women bu
 because this CL matter not important so we not

zhunbei zai hui shang taolun.
 prepare at meeting on discuss

*'As the matter is not important, we are not going to discuss at the meeting.'

(13) Animate *pro* in Main Sentence (A/*pro*/M)

- a. wo like jiu renchulai le zhexie xuesheng,
 I at-once then recognize PFV these students

houlai Zhang Hua ye renchulai le tamen.

later Zhang Hua also recognize PFV them
'I immediately recognize these students, and later
Zhang Huan also recognized them.'

- b. wo like jiu renchulai le zhexie xuesheng,
I at-once then recognize PFV these students

houlai Zhang Hua ye renchulai le.
later Zhang Hua also recognize PFV
*'I immediately recognize these students, and later
Zhang Hua also recognized.'

(14) Animate *pro* in Subordinate Sentence (A/*pro*/S)

- a. Li Ming shuo naxie xuesheng zai tushuguan li, keshi
Li Ming say those students at library in but

wo gaosu ta wo zai nar mei zhaodao tamen.
I tell him I at there not find them
'Li Ming said those students were in the library,
but I told him I didn't find them there.'

- b. Li Ming shuo naxie xuesheng zai tushuguan li, keshi
Li Ming say those students at library in but

wo gaosu ta wo zai nar mei zhaodao.
I tell him I at there not find
*'Li Ming said those students were in the library,
but I told him I didn't find there.'

Note here that unlike the control sentences in the test for the EFL learners, not all control sentences in the test for the CFL learners are grammatical in Chinese. As the third person pronoun referring to an inanimate entity is not allowed if it occurs in object position, the control sentences in (10a), (11a), (12a) are ungrammatical in Chinese. All the sentences concerning the acceptability of object *pro* in the acceptability judgement tests for the EFL learners and the CFL learners can be seen in Appendices 12 and 13 respectively.

7.2 THE EFL AND CFL SUBJECTS' JUDGEMENTS

7.2.1 The EFL Subjects' Judgements

7.2.1.1 Judgements on the *pro/Ex* and *pro/wh* Sentences by the EFL Groups

In Figure 7-1, the solid line with circles represents the EFL subjects' judgements on the control sentences of *pro/Ex*. As we can see, the judgements by Groups 1, 2 and 3 are at a marginal level, which suggests that the structure of sentences with an extraposed clause was quite indeterminate in these subjects' IL grammars of English. The results of pair-wise comparisons in Tukey Tests indicate that there is a significant difference between Groups 1-3 on the one hand, and Group 8 on the other (see Table 7-2 in Appendix 14). No significant difference is found between Groups 4-7 on the one hand, and Group 8 on the other. This suggests that subjects in these four learner groups, like the native speakers in Group 8, had mastered the sentence structure with an extraposed clause. In the following, we will ignore the results of judgements on the experimental sentences by Groups 1-3, and concentrate on the results by Groups 4-8 only.

The EFL groups' judgements on the experimental sentences of *pro/Ex* are represented by the line of dashes with asterisks in Figure 7-1. While the subjects in Groups 4-7 correctly accepted the control sentences of *pro/Ex*, they were very inaccurate in rejecting the incorrect experimental sentences of *pro/Ex*; and significant differences are found between the judgements by Groups 4-6 and by the native speakers in Group 8 (see Table 7-3 in

Figure 7-1: Mean scores of judgements on the pro/Ex sentences by the EFL groups

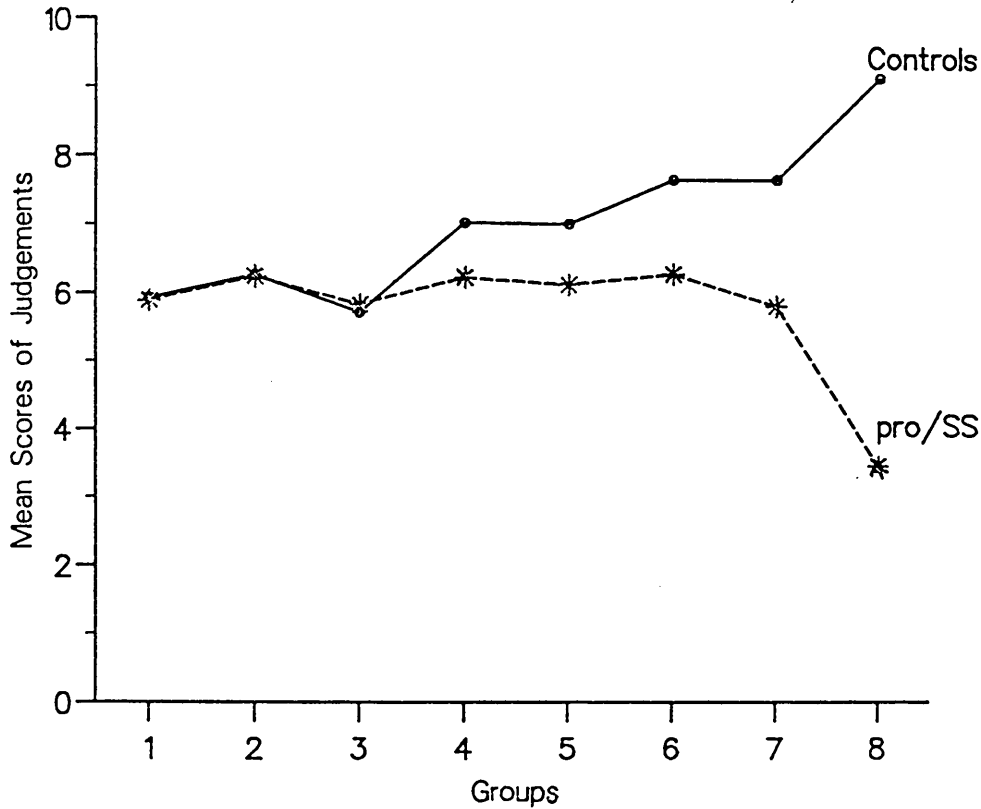
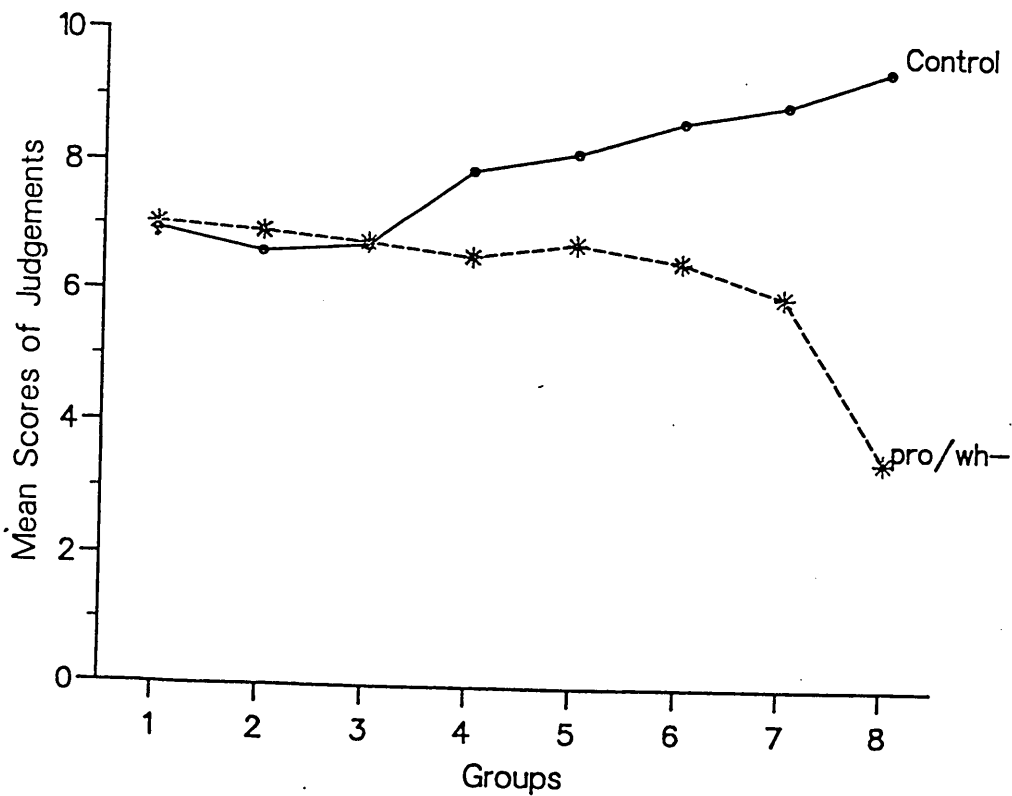


Figure 7-2: Mean scores of judgements on the pro/wh sentences by the EFL groups



Appendix 14). This suggests that the EFL subjects have difficulty in rejecting sentences with object *pro* in an extraposed clause.

Similar results are found in the judgements on sentences of *pro/wh* (see Figure 7-2). Significant differences are found only between Groups 2 and 3 on the one hand, and Group 8 on the other, in judging the control sentences (see Table 7-5 in Appendix 14). Although no significant difference is found between Group 1 and Group 8 in the judgements on the control sentences of *pro/wh*, considering Group 1's performance in the English proficiency test and their mean score in judging the control sentences of *pro/wh* (mean=6.962), we assume that, as in the case of Groups 2 and 3, the sentence with a *wh*-island had only an indeterminate status in these subjects' IL grammars of English.

No significant differences are found between Groups 4-7 and Group 8 in judging the control sentences of *pro/wh*, an indication that the subjects in Groups 4-7, like the native speakers in Group 8, had mastered the sentence structure under investigation. However, in the judgements on the ungrammatical experimental sentences of *pro/wh*, which are represented by the line of dashes with asterisks in Figure 7-2, the subjects in Groups 4-7, as their English proficiency improves, show little increase in accuracy in rejecting the ungrammatical experimental sentences of *pro/wh*. Significant differences are found between Groups 4-6 and Group 8 in judging the experimental sentences of *pro/wh* (see Table 7-6 in Appendix 14). This once again indicates that as in the case of the experimental sentences of *pro/Ex*, the EFL subjects had difficulty in rejecting the incorrect English sentences with object *pro* in a *wh*-island.

7.2.1.2 Judgements on the I/*pro*/M and I/*pro*/S Sentences by the EFL Groups

Figures 7-3 and 7-4 illustrate the EFL groups' judgements on sentences with inanimate object *pro* in main sentences and subordinate sentences. The solid lines with circles represent their judgements on the control sentences of I/*pro*/M and I/*pro*/S; and the lines of dashes with asterisks represent their judgements on the experimental sentences. As Figure 7-3 indicates, the subjects in Groups 4-7, like the native speakers in Group 8, readily accepted the control sentences, which are correct in English. No significant difference is found between Groups 2-7 and Group 8 in judging the control sentences of I/*pro*/M (see Table 7-8 in Appendix 14). In the judgements on the control sentences of I/*pro*/S, no significant differences are found between Groups 5-7 and Group 8 (see Table 7-11 in Appendix 14).

In contrast to their judgements on the control sentences of I/*pro*/M and I/*pro*/S, all the learner groups, without any exception, failed to reject the ungrammatical experimental sentences with inanimate object *pro* in the main sentence or in the subordinate sentence. There are significant differences between Group 8 and all the learner groups, i.e. Groups 1-7, in their judgements on the experimental sentences of both I/*pro*/M and I/*pro*/S (see Tables 7-9 and 7-12 in Appendix 14). These results are consistent with the findings reported in 7.2.1.1; the EFL subjects were unable to detect the ungrammaticality of the English sentences with object *pro*.

Figure 7-3: Mean scores of judgements on the I/pro/M sentences by the EFL groups

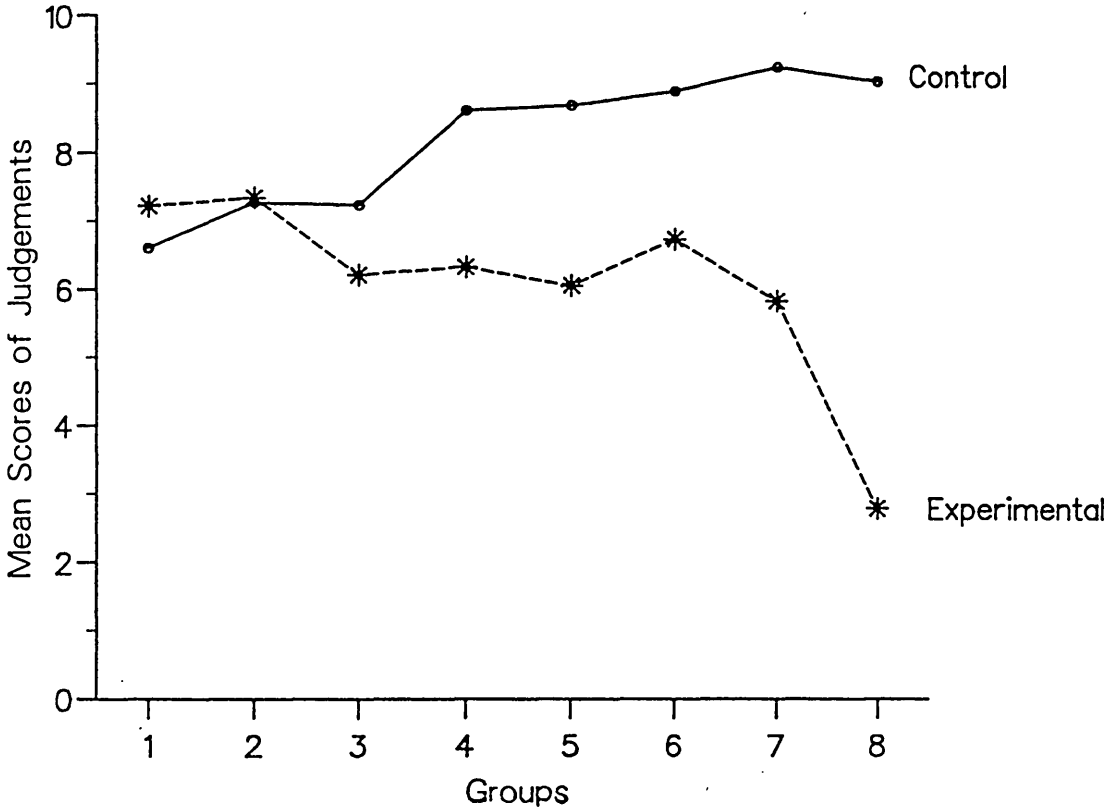
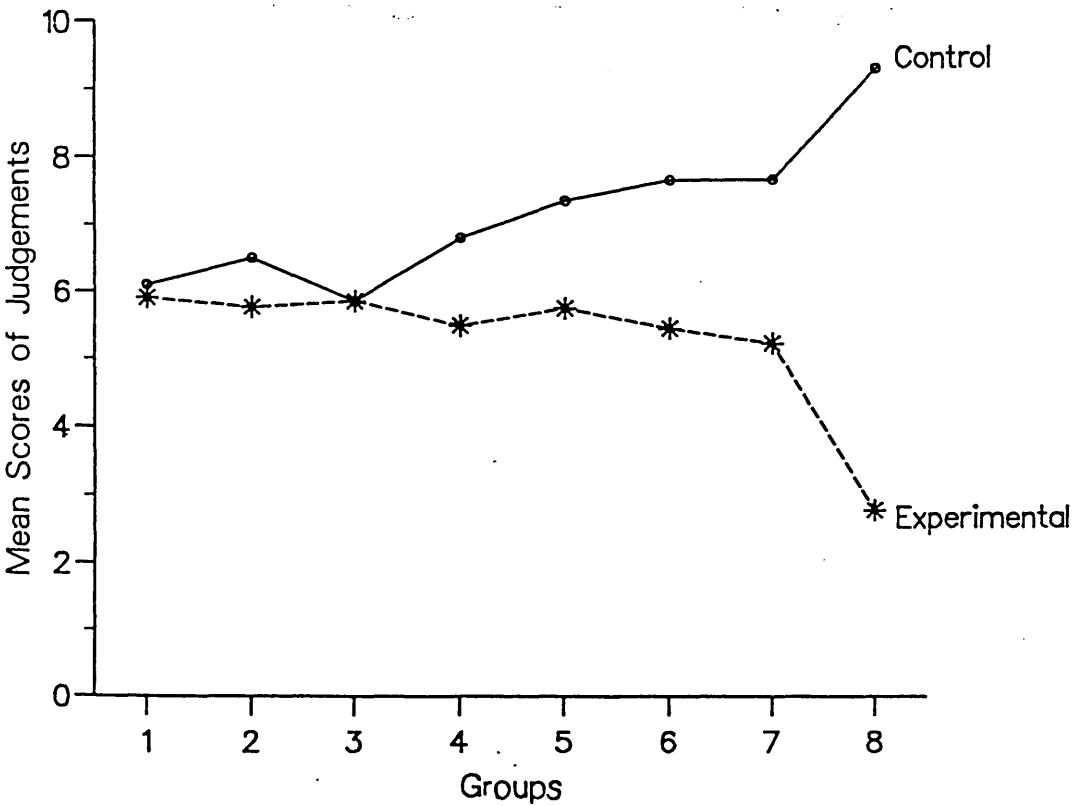


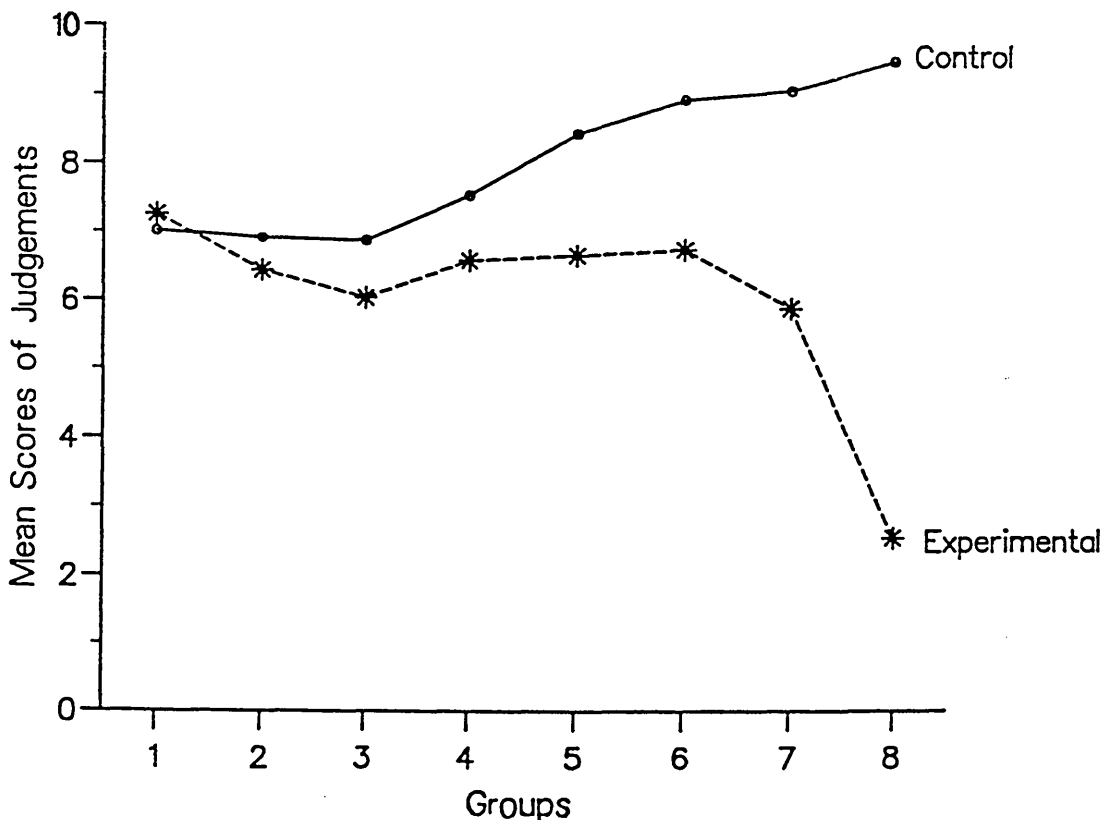
Figure 7-4: Mean scores of judgements on the I/pro/S sentences by the EFL groups



7.2.1.3 Judgements on the Sentences of I/pro/A-adjunct by the EFL Groups

In Figure 7-5, the solid line with circles represents the 8 EFL groups' judgements on the control sentences of I/pro/A-adjunct, that is, sentences with an inanimate pronoun, *it*, coindexed with an argument in an adjunct (see (5a)). The line of dashes with asterisks represents the EFL groups' judgements on the experimental sentences, that is, sentences with an inanimate object *pro*, coindexed with an argument in an adjunct (see (5b)). From the solid line in Figure 7-5, we can see that as their English proficiency improves, there is a steady increase of accuracy in the EFL subjects' judgements on the control sentences. Except between Groups 1-3 and Group 8, there is no significant difference between Group 4-7 and Group 8 (see Table 7-14 in Appendix 14).

Figure 7-5: Mean scores of judgements on the I/pro/A-adjunct sentences by the EFL groups



However, no clear increase in accuracy is found in the learner groups' judgements on the experimental sentences of I/*pro*/A-adjunct. The steep plunge of the line of dashes from Group 7 to Group 8 indicates that the IL grammars of the subjects in Groups 1-7 are still quite distant from the norm of the target language, English. And this is confirmed by the results of Tukey Tests; all the learner groups are significantly different from Group 8 in judging the experimental sentences of I/*pro*/A-adjunct. These results provide further evidence that EFL learners have difficulty in discovering the ungrammaticality of the English sentence with object *pro*.

7.2.1.4 Judgements on the A/*pro*/M and the A/*pro*/S Sentences by the EFL Groups

The distinction between the animate object pronoun and the inanimate object pronoun in Chinese does not seem to affect the EFL learners' judgements. This can be seen in their judgements on the control sentences of both A/*pro*/M and A/*pro*/S, which are represented by the solid lines in Figures 7-6 and 7-7. The EFL subjects' judgements on the control sentences of A/*pro*/M and A/*pro*/S, that is, sentences with the animate object pronoun, are not unlike their judgements on the control sentences of the types reported above, where the object pronouns are third person singular referring to inanimate entities. No significant differences are found between Groups 4-7 and Group 8 in judging the control sentences of A/*pro*/M, and between Group 1-7 and Group 8 in judging the control sentences of A/*pro*/S (see Tables 7-17 and 7-20 in Appendix 14).

Figure 7-6: Mean scores of judgements on the A/pro/M sentences by the EFL groups

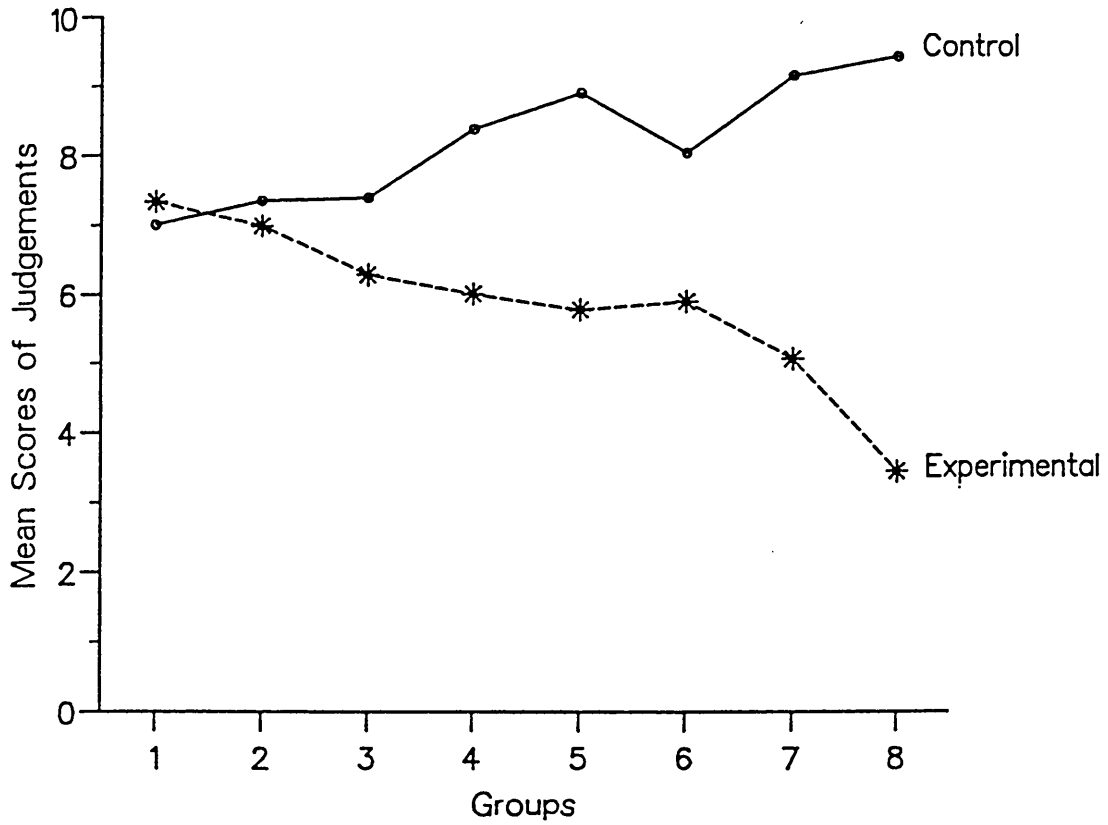
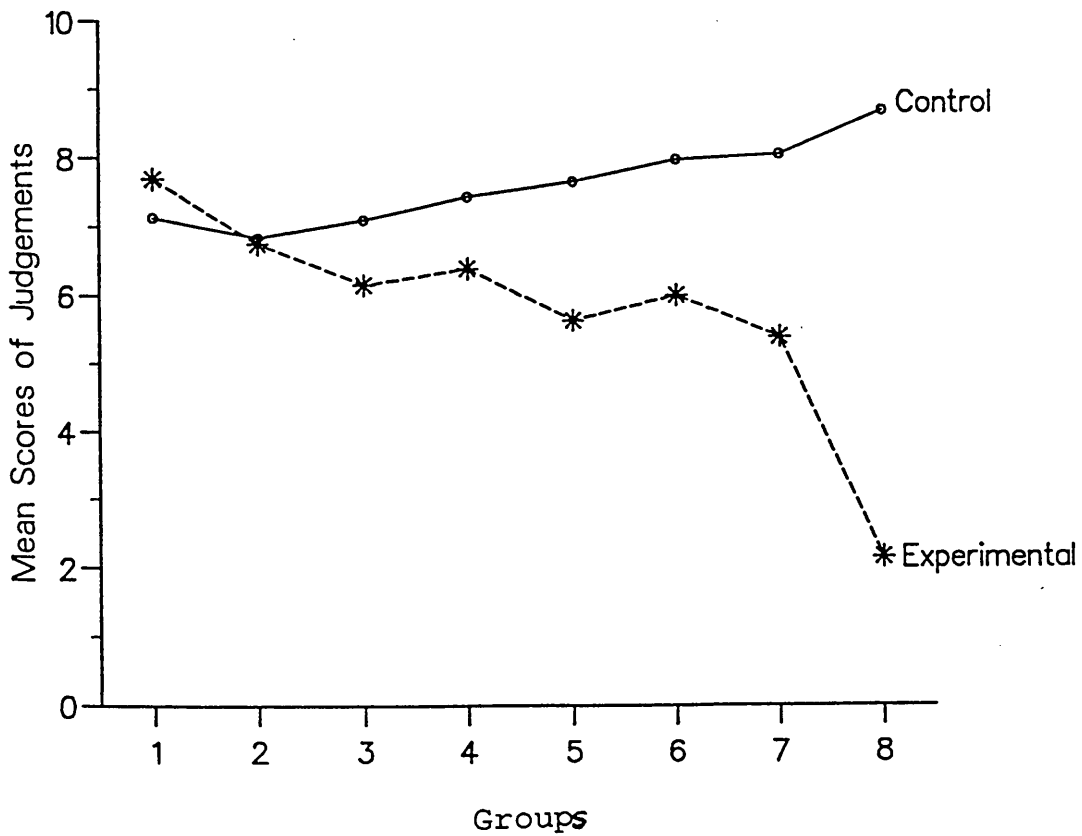


Figure 7-7: Mean scores of judgements on the A/pro/S sentences by the EFL groups



However, as is shown by the line of dashes in Figures 7-6 and 7-7, almost all the learner groups failed to reject the ungrammatical experimental sentences of both A/*pro*/M and A/*pro*/S. There are significant differences between the learner groups (except Group 7 in A/*pro*/M) and Group 8 in rejecting the ungrammatical experimental sentences of both A/*pro*/M and A/*pro*/S (see Tables 7-18 and 7-21 in Appendix 14). These results suggest that EFL learners, including some advanced learners, are unable to reject the ungrammatical English sentences with object *pro*.

7.2.1.5 Summary

The results presented above indicate that it is difficult for EFL learners to discover the ungrammaticality of English sentences with object *pro*. Even more advanced learners like those in Groups 5-7, who showed a clear mastery of the sentence structures being tested, were unable to reject the ungrammatical object *pro* in English. The status of object *pro* seems quite indeterminate in their IL grammars of English and there is no clear tendency to reject the ungrammatical object *pro* in English as their English language proficiency improves.

7.2.2 The CFL Subjects' Judgements

7.2.2.1 Judgements on the *pro*/SS and *pro*/wh Sentences by the CFL Groups

Figures 7-8 and 7-9 illustrate the 6 CFL groups' judgements on Chinese sentences with object *pro* in a sentential subject (see sentences in (8)) and on Chinese

Figure 7-8: Mean scores of judgements on the *pro/SS* sentences by the CFL groups

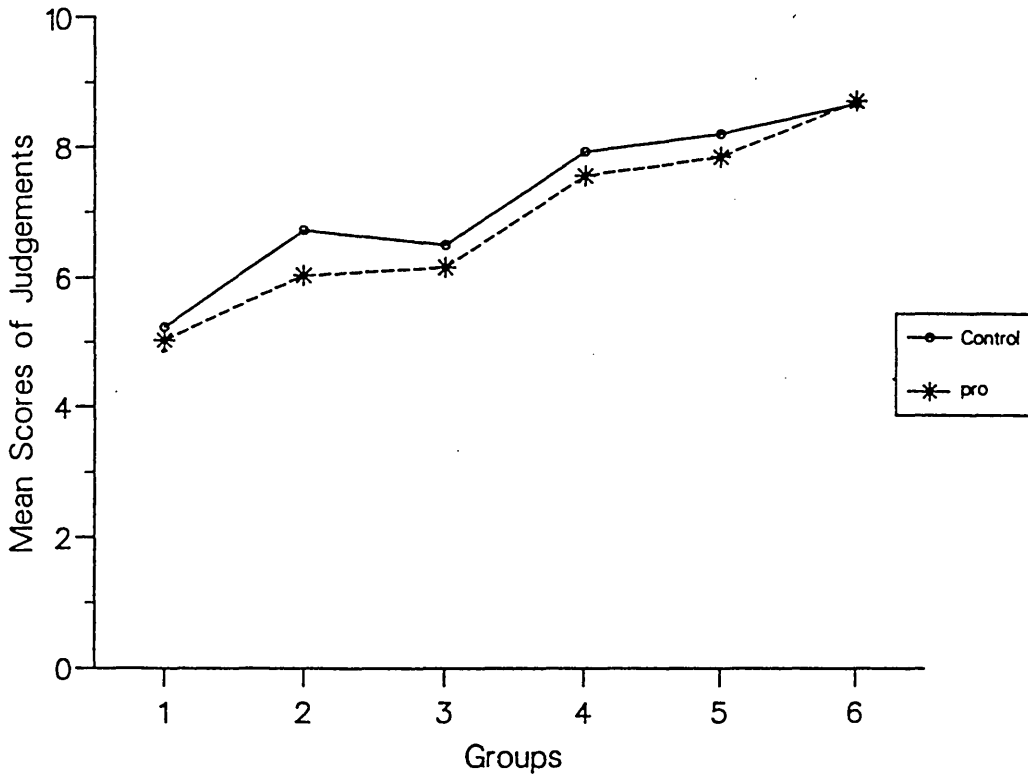
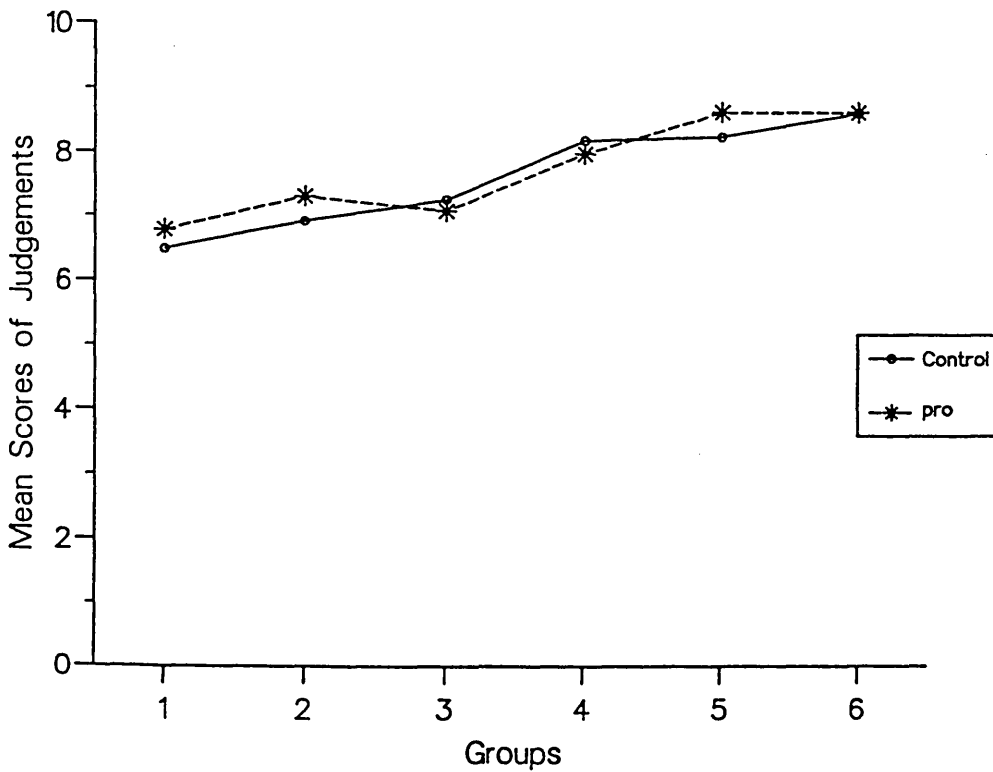


Figure 7-9: Mean scores of judgements on the *pro/wh* sentences by the CFL groups



sentences with object *pro* in a wh-island (see sentences in (9)). The solid lines with circles represent the judgements on the control sentences of *pro/SS* and *pro/wh* respectively and the lines of dashes with asterisks represent the judgements on the experimental sentences of *pro/SS* and *pro/wh*. From Figures 7-8 and 7-9, we see that the CFL subjects do not seem to have much difficulty in accepting the grammatical Chinese sentences with object *pro* in a sentential subject or in a wh-island. The increase in accuracy in accepting the experimental sentences of *pro/SS* and *pro/wh* seems to depend on the degree of their mastery of the sentence structures; the better they have mastered the sentence structures, the more accurate the CFL subjects become in accepting the experimental sentences. In other words, the increase in accuracy in accepting the Chinese sentences with object *pro* in a sentential subject or in a wh-island seems to go with the improvement of CFL learners' Chinese language proficiency. Groups 1-3 are found to be significantly different from Group 6 in their judgements on both the control sentences and the experimental sentences of *pro/SS* (see Tables 7-23 and 7-24). Except for the difference between Group 1 and Group 6 in judging the control sentences of *pro/wh*, no significant difference is found between any of the 6 CFL groups in judging either the control sentences or the experimental sentences of *pro/wh* (see Tables 7-26 and 7-27 in Appendix 14).

7.2.2.2 Judgements on the I/*pro*/M and I/*pro*/S Sentences by the CFL Groups

In Figures 7-10 and 7-11, the solid lines with circles represent the 6 CFL groups' judgements on the control sentences of I/*pro*/M and I/*pro*/S, that is, sentences with an overt third person singular pronoun *ta* (=it) in object

Figure 7-10: Mean scores of judgements on the I/pro/M sentences by the CFL groups

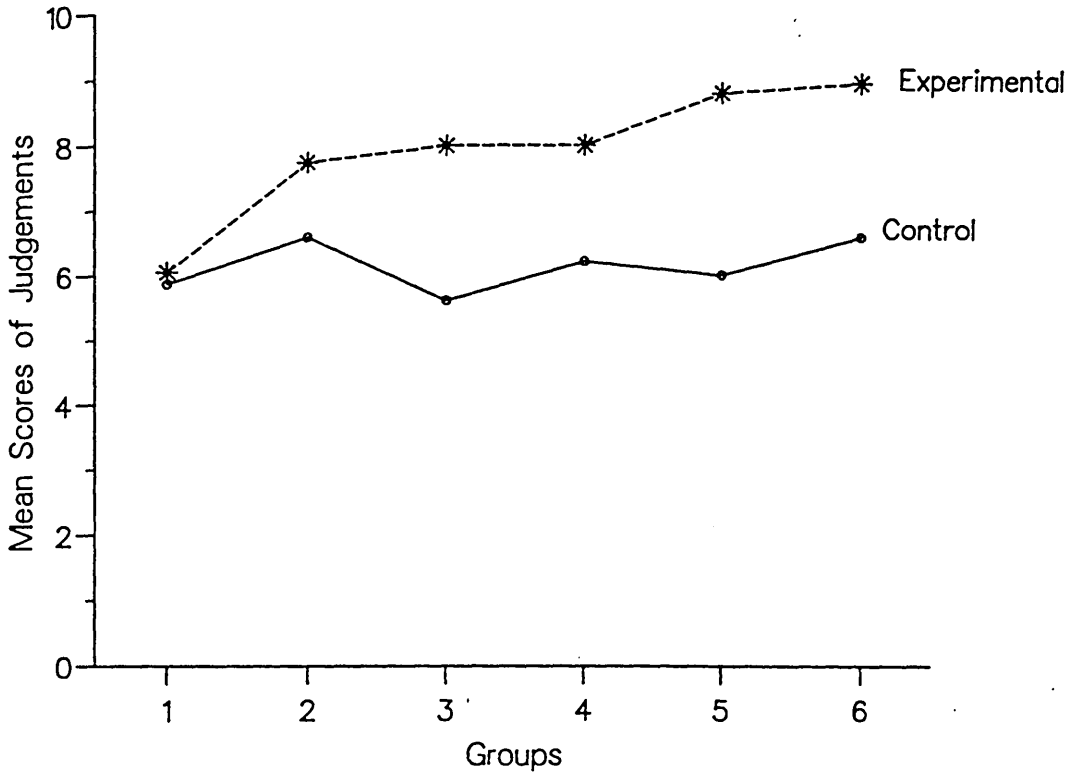
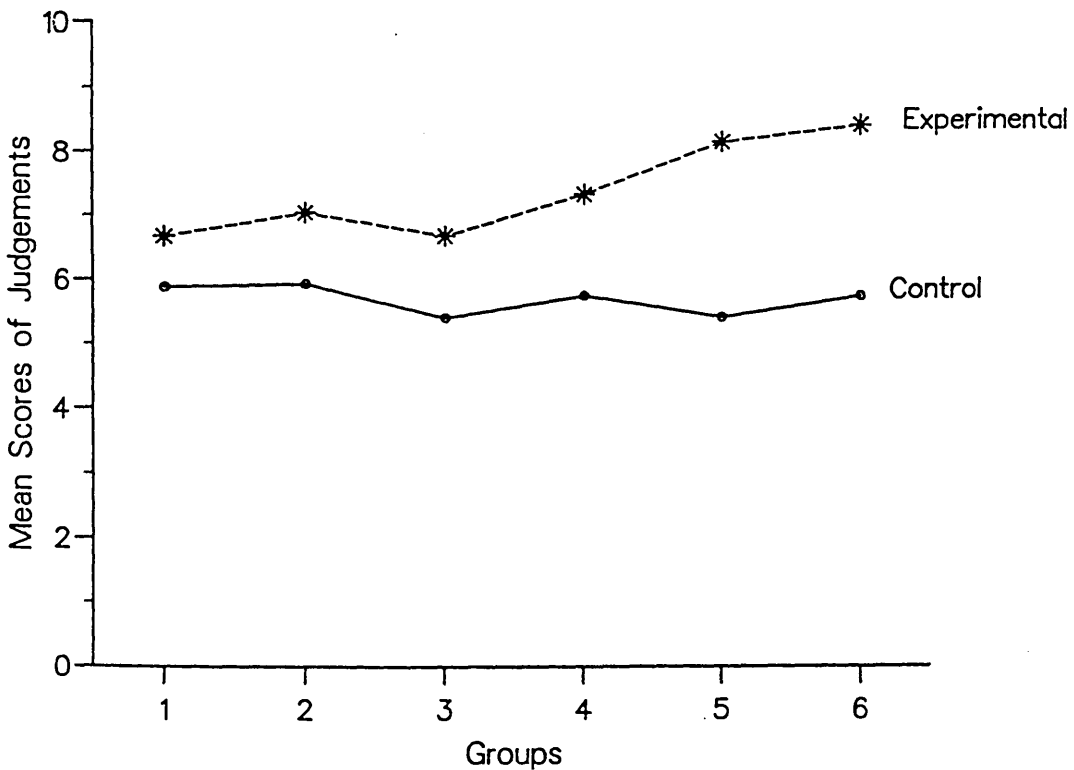


Figure 7-11: Mean scores of judgements on the I/pro/S sentences by the CFL groups



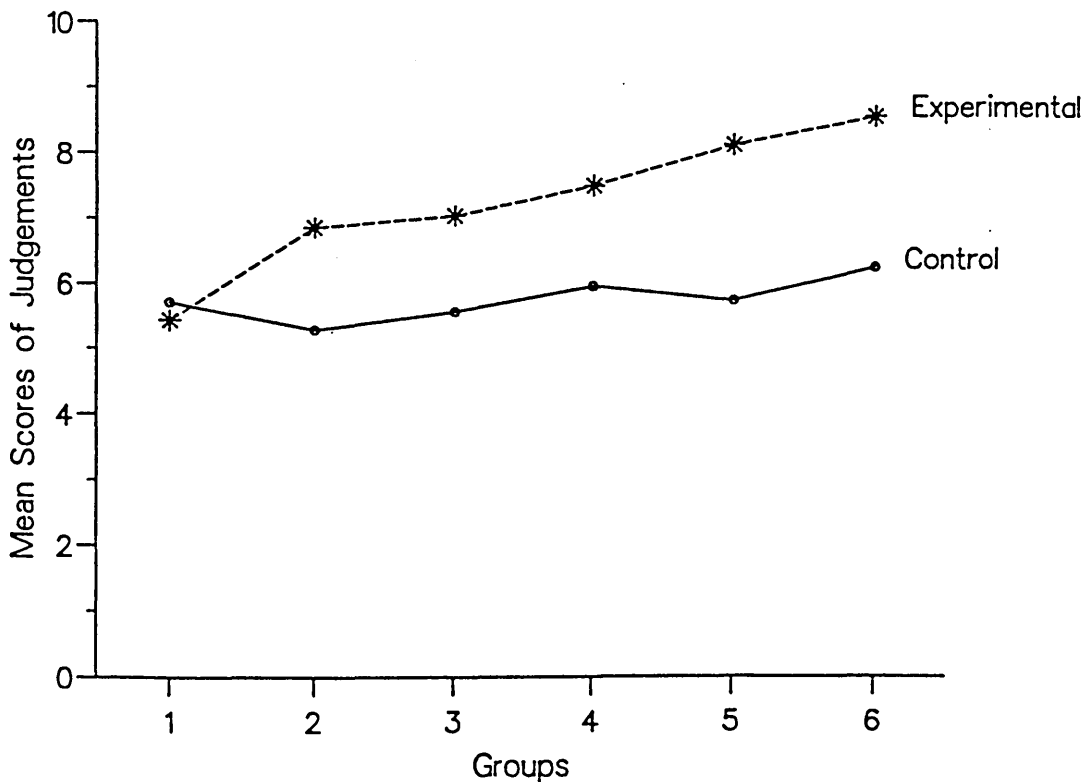
position referring to an inanimate entity. Recall that Chinese does not allow an overt third person singular pronoun to occur in object position if it refers to an inanimate entity; in this case it is obligatory to have *pro* in object position. With respect to this language feature in Chinese, the control sentences of I/*pro*//M and I/*pro*/S, unlike the control sentences of other sentence structures, are ungrammatical in Chinese and only the experimental sentences should be possible, that is, sentences with object *pro* referring to an inanimate entity.

From Figures 7-10 and 7-11, we can see that the CFL subjects in Groups 1-6 did not have much difficulty in accepting the grammatical experimental sentences with inanimate object *pro* in either the main sentence (I/*pro*/M) or the subordinate sentence (I/*pro*/S). Except for Group 1 in judging the experimental sentences of I/*pro*/M, none of the learner groups, that is, Groups 1-5, showed any significant difference from the native speakers in Group 6 in judging the experimental sentences of both I/*pro*/M and I/*pro*/S (see Tables 7-30 and 7-33 in Appendix 14). Similarly, in judging the control sentences of both I/*pro*/M and I/*pro*/S, that is, the ungrammatical sentences with the overt inanimate object pronoun, no significant difference is found between Group 6 and any of the learner groups (see Tables 7-29 and 7-32). This suggests that the subjects in Groups 1-5, like the native speakers in Group 6, were aware of the distinction between the acceptable sentence with inanimate object *pro* and the less acceptable sentence with the overt inanimate object pronoun. The fact that the judgements by both the learner groups and Group 6 on the control sentences of I/*pro*/M and I/*pro*/S are at a marginal level may be due to the possible use of the overt inanimate object pronoun in Chinese for strong emphasis.

7.2.2.3 Judgements on the I/pro/A-adjunct Sentences by the CFL Groups

The 6 CFL groups' judgements on the sentences of I/pro/A-adjunct are illustrated in Figure 7-12, where the judgements on the control sentences are represented by the solid line and those on the experimental sentences by the line of dashes with asterisks. Similar to the control sentences of I/pro/M and I/pro/S in 7.2.2.1, the control sentences of I/pro/A-adjunct are ungrammatical in that they contain the inanimate pronoun *ta* (=it) in object position coindexed with an argument in an adjunct.

Figure 7-12: Mean scores of judgements on the I/pro/A-adjunct sentences by the CFL groups



From Figure 7-12, we can see that except for those in Group 1, the subjects in Groups 2-5, like the native speakers in Group 6, showed a clear preference for the grammatical experimental sentences over the ungrammatical control sentences. No significant differences are found between Groups 1-5 and Group 6 in judging the control sentences of I/*pro*/A-adjunct (see Table 7-35 in Appendix 14). Except Groups 1 and 2, the other learner groups showed no significant differences from the native speakers in Group 6 in judging the experimental sentences (see Table 7-36 in Appendix 14).

7.2.2.4 Judgements on the A/*pro*/M and A/*pro*/S sentences by the CFL Groups

Figures 7-13 and 7-14 illustrate the 6 CFL groups' judgements on sentences with animate object *pro* in main sentences (A/*pro*/M) and in subordinate sentences (A/*pro*/S). The solid lines represent the judgements on the control sentences, that is, sentences with animate pronouns in object position; the lines of dashes represent the judgements on the experimental sentences, that is, sentences with animate *pro* in object position. Recall that unlike the inanimate pronoun *ta* (=it), both object animate *pro* and object animate pronouns are possible in Chinese, although the latter may make the sentence sound stylistically 'heavy'. From Figures 7-13 and 7-14, we can see that, as in their judgements on sentences with inanimate *pro*, most CFL subjects accepted the experimental sentences of both A/*pro*/M and A/*pro*/S. No significant difference is found between Groups 2-5 and Group 6 in judging the experimental sentences of either A/*pro*/M or A/*pro*/S (see Tables 7-39 and 7-42). However,

Figure 7-13: Mean scores of judgements on the A/pro/M sentences by the CFL groups

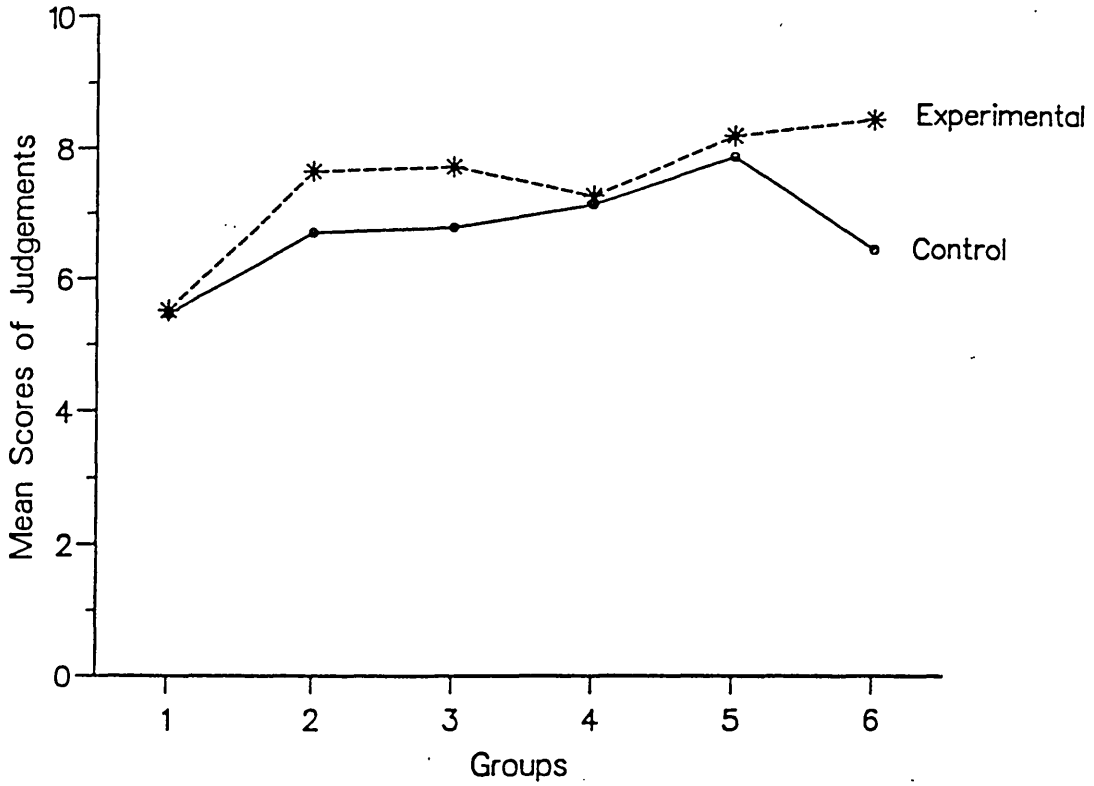
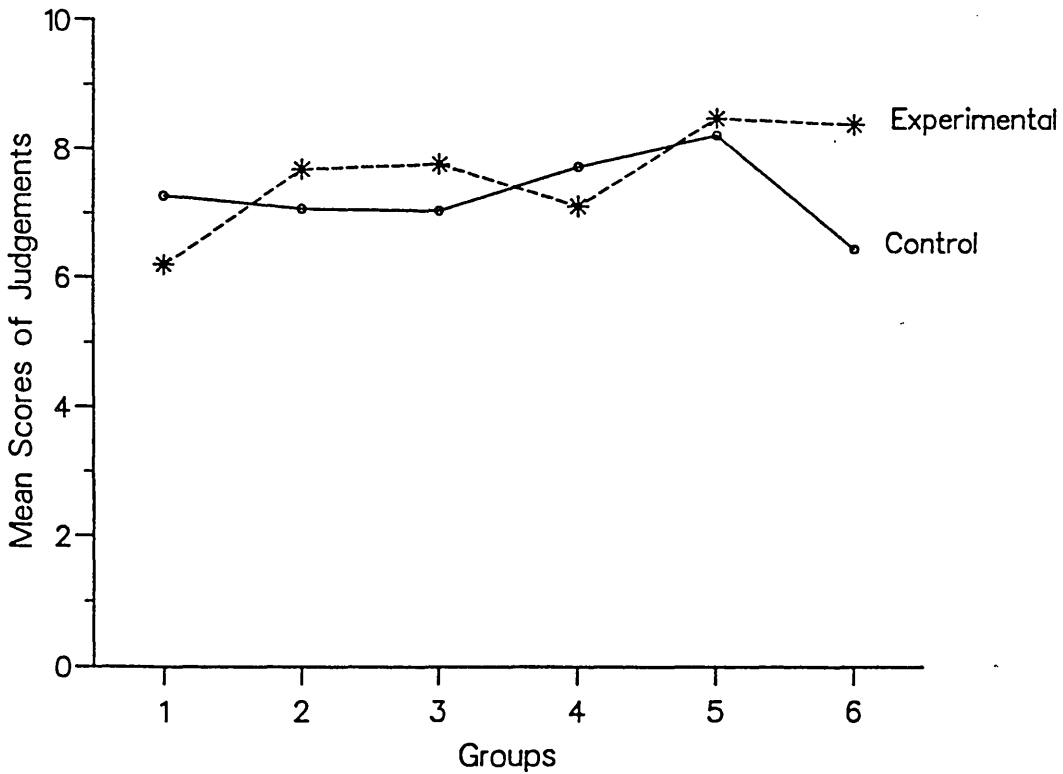


Figure 7-14: Mean scores of judgements on the A/pro/S sentences by the CFL groups



unlike their judgements reported in 7.2.2.2 and 7.2.2.3, where the subjects in Groups 4-5 made a clear distinction between the control sentences (with the overt inanimate object pronoun, *ta* (=it)) and the experimental sentences (with inanimate object *pro*), in judging the control sentences of A/*pro*/M and A/*pro*/S, that is, sentences with overt animate pronouns in object position, these advanced CFL subjects tended to accept the use of overt animate pronouns in object position. As Figures 7-13 and 7-14 show, the more proficient the subjects were, the more acceptable the control sentences became to them. This suggests that, unlike the native speakers in Group 6, the subjects in the learner groups were not aware of the stylistic difference between the use of overt animate object pronouns and the use of animate object *pro*. The advanced CFL subjects in Group 5 seem to treat both the experimental sentences and the control sentences as equally acceptable.

7.2.2.5 Summary

Unlike the EFL subjects, who have difficulty in rejecting the ungrammatical English sentences with object *pro* (see 7.2.1), the CFL subjects do not seem to have much difficulty in accepting the grammatical Chinese sentences with object *pro*. Interestingly, the CFL subjects, like the native speakers of Chinese in Group 6, seem to be sensitive to the grammatical constraint over the use of the overt inanimate pronoun, *ta* (=it), in object position, but they showed little awareness of the stylistic heaviness which results from using overt animate pronouns in object position. They simply treated sentences with animate object *pro* and sentences with overt animate object pronouns as equally acceptable.

7.3 WHY THERE IS SUCH A DIRECTION OF DIFFICULTY

In 7.2.1, we saw that the unlearning of object *pro*, which is grammatical in Chinese but ungrammatical in English, by Chinese-speaking learners of English seems much more difficult than the acquisition of object *pro* by English-speaking learners of Chinese. Even some very advanced EFL learners (eg. those in Group 7) failed to detect the ungrammaticality of English sentences with *pro* in object position. The difficulty that EFL learners have in unlearning object *pro* is believed to be related to the setting of *pro*-drop in object position, [+ obj-*pro*-drop], in EFL learners' L1, Chinese. In their IL grammars of English, V in English, like V in Chinese, is assumed to be a licenser for object *pro*, saturating the content of object *pro* and making it possible for object *pro* to function as a definite pronoun. But why do CFL learners not have much difficulty in acquiring object *pro* in the acquisition of Chinese in spite of the fact that their L1, English, has the setting of [- obj-*pro*-drop]? In other words, why is the direction of difficulty not from English to Chinese with respect to the acquisition and unlearning of object *pro* by CFL learners and EFL learners? We believe that this is because CFL learners have sufficient direct positive evidence to indicate to them that object *pro* is possible in their target language, Chinese.

As UG allows the possibility that the head of VP is a licenser for object *pro* (cf. Rizzi, 1986), the language learners can assume that V in the target language is a

licensor for object *pro* when there is sufficient justifying evidence available to them. In the acquisition process of Chinese, CFL learners are confronted with the full productivity and frequency of Chinese sentences with null but understood objects. This salient input is believed to be sufficiently informative to CFL learner that Chinese allows *pro* to occur in object position and can serve as a trigger for the change in CFL learners' IL grammars of Chinese; hence V becomes a licensor for object *pro* in their IL grammars of Chinese. As the θ -role assigned to the object position is saturated by the verb, the CFL learner has to find out what θ -role a particular object *pro* has. This, in fact, is quite straightforward; as the θ -role projected to the object position by the verb is always part of the lexical meaning of the verb, the CFL learner can easily discover the thematic content of the object *pro* with the help of the verb. What is more, as in Chinese a topic chain (TC) is the largest syntactic unit (=CP) (cf. Shi 1989) and as it frequently occurs as sentential subject, verbal complement, noun modifier, etc. in Chinese (see 3.2.4), recalculation of the range of syntactic units can be triggered in CFL learners' IL grammars of Chinese, so that the largest syntactic unit in his IL grammars can cover a wider range than that in his L1, English. Once the recalculation is done, the CFL learner can easily locate the antecedent of the object *pro* and coindex it with the object *pro* within the same TC (=CP).

The results of judgements by the EFL learners suggest that EFL learners are not aware of the fact that unlike in their mother tongue, Chinese, object *pro* is impossible in English and V in English does not belong to a class of licensing heads for *pro*. Even the very advanced EFL learners failed to unset the setting of [+obj-*pro*-drop] in their acquisition of English. To them, the θ -role projected by the verb to the object position can still be

saturated by the verb, as is the case in their L1, Chinese, and several semantically closely-related individual sentences in English can probably be regarded as a topic chain, forming a CP. Then the question arises as to why it is much more difficult for EFL learners to unlearn object *pro* than for CFL learners to acquire object *pro*, that is, why the direction of difficulty is from Chinese to English in terms of the unlearning and acquisition of object *pro* by EFL learners and CFL learners. The answer is believed to be that, unlike the case of CFL learners, there is no positive evidence, direct or indirect, available to EFL learners to inform them that object *pro* is not allowed in English. Generally speaking, both overt object pronouns and object *pro* are possible in Chinese, but in English, only the former but not the latter, is possible.

From the learnability point of view, Chinese is more inclusive than English with respect to the [obj-pro-drop] parameter; Chinese allows all the sentence structures that English does, while English does not allow sentence structures that are possible in Chinese. In fact, what we have found here is in support of White's (1985, 1986a, 1987) argument about learnability problems in SLA. White argues that because positive evidence in the L1 has caused a parameter to be set in a particular way, this can obscure the fact that the L2 requires a different setting; and in the case where the more inclusive setting of a certain parameter has already been established for the L1 but is inappropriate for the L2, it may be difficult or impossible for the L2 learner to 'unset' this more inclusive setting in the absence of necessary positive evidence. In our case, Chinese learners of English have positive evidence in their L1 for the setting [+obj-pro-drop], that is, they have sentences with, as well as without, overt object pronouns; and they have to 'unlearn' this more inclusive setting without any

positive evidence in the target language, English; that is, they have to learn that overt object pronouns are obligatory in English. However, nothing in the language input that EFL learners face can tell them that this is the case. This leads to the possibility that the presence of the more inclusive setting in the learners' L1, Chinese, can be a persistent source of interference in the acquisition of English. What is more, in contrast to English, where the largest syntactic unit is CP, the largest syntactic unit in Chinese is TC (=Topic Chain), which may consist of more than one CP. With respect to this fact, Chinese is again more inclusive than English. In the acquisition of English, EFL learners may incorrectly take some semantically closely-related sentences as a TC and coindex object *pro* with some NP within this assumed topic chain. However, nothing in the input data can indicate to the learner that this is not the case.

In Chapter 6, we argue that in unlearning and acquiring the subject PRO in the acquisition of English and Chinese, both EFL learners and CFL learners rely on indirect positive evidence, that is, the realizations of the presence or absence of AGR in the target languages. However, as there is no verb-object agreement in either English or Chinese, the type of indirect positive evidence EFL learners and CFL learners have in unlearning and acquiring the subject PRO is not available to them in their unlearning and acquiring object *pro*.

Although EFL learners do not have positive evidence, direct or indirect, in unlearning object *pro* in the acquisition of English, it can be argued that they have indirect negative evidence. Chomsky (1981) suggests that a reasonable acquisition system can be indirect negative evidence, which 'can be devised with the operative principle that if certain structures or rules fail to be

exemplified in relatively simple expressions, where they would be expected to be found, then a (possibly marked) option is selected excluding them in the grammar' (p. 9). Based on Chomsky's suggestion, one could argue that in our case, EFL learners with a Chinese grammar and an English target would expect to encounter English sentences with object *pro*; when they failed to find any sentences of this kind, they would discover that unlike their L1, the target language, English, did not allow *pro* in the object position. In 4.4, we discussed the problems of the validity of indirect negative evidence. As a language includes infinite sentences and as the data the learner of that language is exposed to are finite, there are always sentences which are grammatical in the language but which the learner of that language has never encountered. Therefore, indirect negative evidence is not reliable in language acquisition. In addition, the notion of indirect negative evidence has the implication that it is possible to fix the time for the learner to wait for the 'expected' structures to come. However, as Valian (1990a) points out, logically, the language learner cannot validly infer, no matter how long the empty time period, that a given structure is not represented in the language. In fact, there is no logical solution to the problem that will cut across all structure types. Furthermore, there is a problem with the argument for the effect of indirect negative evidence in our study here; we may overlook the variations across Chinese speech communities if we assume that indirect negative evidence can trigger the change in EFL learners' IL grammars of English. Chinese speech communities can be different from each other in how often they create sentences with object *pro* or object pronoun. It is possible that a stylistically 'heavy' Chinese speaker learning English as a foreign language simply takes the object pronoun in English for granted without expecting object *pro* to arrive at all.

We have argued that there is no positive evidence, direct or indirect, in English which can indicate to EFL learners that object *pro* is impossible. We have also dismissed the effect of indirect negative evidence in the acquisition of English by Chinese speaking learners. We may then ask whether EFL learners have what is called triggering evidence, similar to the expletives in Hyams' (1986, 1987) study of the (subject) *pro*-drop parameter. Hyams argues that children learning English start with the assumption that it is a *pro*-drop language. She seems to assume that the children choose the more inclusive setting first since lexical subjects are optional, not forbidden, in *pro*-drop languages. Hyams argues that children can learn that English is not a *pro*-drop language on the basis of their exposure to some triggering evidence, such as non-referential 'it' or existential 'there', which serve as triggers and 'demonstrate' to the children that their current grammar, i.e. the *pro*-drop grammar, is not consistent with the target language. In our study, possible candidates for the triggering evidence available to EFL learners are the English third person pronouns 'it' and 'them' in object position referring to inanimate entities. It is not unreasonable to imagine that, since in Chinese the third person pronouns 'ta' (=it) and 'tamen' (=them) referring to inanimate entities are obligatorily absent in object position, the extensive use of inanimate third person pronouns 'it' and 'them' in object position in English can disconfirm the obligatory rule in EFL learners' IL grammars, helping to trigger the [-obj-*pro*-drop] setting of the object *pro*-drop parameter for the target language, English. However, we have to bear in mind that the grammar of Chinese allows animate third person pronouns to occur overtly in object position although they often make the sentences in which they appear sound stylistically heavy. What the extensive use of inanimate

third person pronouns in object position in English triggers and 'demonstrates' to EFL learners may be merely that in English, inanimate third person pronouns in object position are not obligatorily absent; they are possible just like animate third person pronouns in object position in their L1, Chinese. Again, there is nothing to indicate to the learners that the grammar of English does not allow object *pro* and that V in English cannot saturate the θ -role it assigns to the object position.

In the above, we have stated that the direction of difficulty from Chinese to English with respect to the acquisition and unlearning of object *pro* is due to the fact that EFL learners do not have informative evidence which can indicate that object *pro* is not allowed in English. We have also claimed that because of the lack of the informative evidence, the [+ obj-*pro*-drop] setting may be persistent in EFL learners' IL grammars of English. Here we argue that the task of unlearning object *pro* by EFL learners is made more difficult by another factor, that is, the interaction between the [+ obj-*pro*-drop] setting in EFL learners' L1, Chinese and the developmental influence of EFL learners' target language, English. In a study of the acquisition of English by Spanish-speaking learners of English, Zobl (1980) finds that if there is an inherent developmental stage in the target language (acquired as a native language by children) that corresponds to a structure in the learners' L1, then the learner will persist in using the structure longer in his IL than if there exists no such correspondence between the L1 and the target language (see 3.3 in Chapter 3). This structural correspondence can have a retarding effect, making the L1 structure more recalcitrant to restructuring in the second language acquisition.

In his arguments against a functional account of the syntax of 'missing arguments' in early child English by Hyams (1986, 1987), Radford (1990) suggests that the early English grammars developed by young children are lexical in nature. Hyams analyzes 'missing subjects' in early child English as the null pronominal *pro*, which is subject to much the same functional constraints as the subject *pro* in adult Italian. Hyams argues that the use of *pro* in early child English is subject to functional licensing conditions. According to Hyams, *pro* is licensed to occur in nominative positions only and never in object position; nominative positions are functionally governed and Case-marked by INFL while object positions are lexically governed and Case-marked by V. However, Radford argues against Hyams' position with some data indicating that in early child English, the INFL system has not been developed yet. Radford also uses some data presented in Bloom (1970, 1973) and Bloom et al. (1975) to show that in early child English, *pro* is also used in non-nominative positions, particularly as the object of a transitive verb. The data in (15) are examples of object *pro* in early child English, which are cited by Radford (1990:214).

- (15) a. Mommy, you wiping (Allison, 20 months old, wanting her mother to wipe a doll)
- b. Mommy open (Allison, 22 months old, wanting her mother to open a box)
- c. Do again (Gia, 22 months old, stacking blocks again after she made a tower and knocked it over)
- d. Gia push (Gia, 23 months old, pushing a cart)

According to Radford (1990), in the early English grammars developed by young children, V can saturate arguments in object position and this forms a developmental stage in the child's acquisition of his L1, English.

Let us return to our discussion of EFL learners' difficulty in unlearning object *pro* in the acquisition of English. Since the θ -role projected by the verb to the object position can be saturated in both EFL learners' L1, Chinese, and L2, English, as a developmental stage, EFL learners' IL grammars of English are more susceptible to the L1 influence. In the case of lack of informative evidence, it is difficult for EFL learners to unlearn object *pro* in their acquisition of English. In addition, the unlearning task is made more difficult by the correspondence between the [+ obj-*pro*-drop] setting in EFL learners' L1, Chinese, and the [+ obj-*pro*-drop] setting as a developmental stage of EFL learners' target language, English. This interaction between the L1 setting and the developmental stage of the target language further prolongs the unlearning process, making object *pro* a potential candidate for fossilization in EFL learners' IL grammars of English.

It is assumed here that learners whose L1 does not allow object *pro* may also manifest the [+ obj-*pro*-drop] setting in their IL grammars of English. However, it will not last long and will not cause so much difficulty as it does to the EFL learners in our study. This, of course, needs to be proved in further empirical studies.

In 7.2.2, we saw that the CFL learners were sensitive to the obligatory absence of inanimate third person pronouns in object position in Chinese and that the advanced CFL learners ruled out as unacceptable sentences with overt inanimate object pronouns as accurately as the native speakers. However, they were not so sensitive to the stylistic difference between the overt animate pronoun and the animate *pro* in object position; and unlike the native speakers, they failed to make a distinction between the acceptable sentences with animate object *pro*

and the less acceptable sentences with an animate object pronoun.

It is very interesting to imagine how CFL learners manage to discover that inanimate third person pronoun cannot overtly occur in object position in Chinese. To make such a discovery, mere observation of the input that CFL learners are exposed to would not seem to be sufficient because, as the problem with the effect of indirect negative evidence, the non-occurrence of a certain language form in the input the learners are exposed to cannot be a guarantee to the learners that the language form will never occur. It seems that CFL learners also have to make experiments, though subconsciously, to test whether inanimate third person pronouns in object position are not allowed in Chinese. It is very likely that the CFL learner may have to conduct an experiment with a native speaker of Chinese (NS) as in the following:

(16) CFL:Wo mai le yi tai jisuanji, keshi wo bu zhidao
 I buy PFV one CL computer but I not know
 zenmo yong ta.
 how use it
 'I have bought a computer, but I don't know how to use it.'

NS:Shi ma? Wo hui yong, mingtian wo jiao
 is Q I be-able-to use tomorrow I teach
 ni zenmo yong.
 you how use
 'Is that so? I am able to use (it). Tomorrow I'll teach you how to use (it).'

In this experiment, the CFL learner makes an utterance including an inanimate third person pronoun in object position (because this is the correct form in their L1, English) to elicit a reply from the native speaker of Chinese. By comparison he can get the relevant

information he needs. If after a number of experiments similar to (33) with different native speakers of Chinese, and if in all these experiments, the language form he uses in his utterance always mismatches the one in the native speakers' reply, that is, he always uses the inanimate third person pronoun in object position but the native speaker never does, then he is on quite safe ground in assuming that the Chinese grammar does not allow the inanimate third person pronoun in object position. Meanwhile, the CFL learner may conduct similar experiments using in his utterance the inanimate third person *pro*, rather than overt pronoun, in object position. If the form he uses in his utterance always matches the one in the native speaker's reply, he can conclude that the inanimate third person pronoun in object position is impossible in Chinese.

This is believed to be a plausible account of the procedure that CFL learners use in acquiring the language feature in Chinese discussed here. Valian, in studying L1 acquisition, argues that "Adult speakers, by themselves producing a form, do increase the probability that a listener will reply with the form" (1990a:134). Her argument is based on the indirect evidence from Levelt and Kelter's (1982) studies on the 'correspondence effect'. Levelt and Kelter find that listeners tend to respond to a speaker by using a similar structure or vocabulary. They were able to alter the probability that a listener would use a preposition by having the speaker's utterance include or omit a preposition.

Let us consider a possible experiment that CFL learners might make to test the animate third person pronouns in object position in Chinese. In Chinese, both animate third person pronoun and animate third person *pro* are possible in object position although the former can make the sentence sound stylistically heavy. In the

conversation in (17), no matter what utterance the CFL learner uses, with the object pronoun or with the object *pro*, to elicit a reply from a native speaker, whether the native speaker's reply includes the animate third person pronoun in object position or not depends on which speech community the native speaker belongs to.

(17) CFL: Women xuexiao lai le ge xin xiaozhang. Ni
 our school come PFV CL new principal you
 jian guo (ta) ma?
 meet EXP (him) Q
 'Our school has got a new principal. Have you met him?'

NS: Shide, wo yijing jian guo (ta) haoji ci
 yes I already meet EXP (him) several time
 le.
 Part.
 'Yes, I have met him several times.'

What is more, native speakers, when communicating with foreign learners learning their mother tongue, often sacrifice stylistic conciseness to make their utterances over-explicit. As a result, the indication CFL learners get from native speakers' responses can be that in Chinese, both animate third person pronouns and animate third person *pro* are equally acceptable in object position. This is, in fact, what the results in our study have suggested (see 7.2.2).

7.4 CONCLUSION

The results presented in this chapter indicate that it is more difficult for EFL learners to unlearn object *pro* in

the acquisition of English than for CFL learners to acquire object *pro* in the acquisition of Chinese. In this sense, the direction of difficulty is from Chinese to English. The ease that CFL learners have in acquiring object *pro* in Chinese is believed to be due to the sufficient direct positive evidence available to CFL learners in their acquisition of Chinese. The fact that object *pro* seems unlearnable in EFL learners' IL grammars of English is believed to result mainly from lack of informative evidence; in the acquisition of English, there is no evidence which can inform EFL learners that object *pro* is not allowed in English. It is assumed that the unlearning process of object *pro* is further prolonged in EFL learners' IL grammars of English by the interaction of the [+ obj-*pro*-drop] in EFL learners' L1, Chinese, and a developmental stage inherently existing in the acquisition of the target language, English, where the [+ obj-*pro*-drop] is manifested.

These results provide evidence for the more inclusive status of the [+ obj-*pro*-drop] setting in Chinese and the less inclusive status of the [- obj-*pro*-drop] setting in English; and it is very difficult for the learner to switch the setting from a more inclusive grammar to a less inclusive grammar if there is no informative evidence available to him to trigger the switching. The absence of inanimate third person pronouns in object position in Chinese does not seem to be very problematic to CFL learners and they can acquire this feature probably with a method of comparison. CFL learners are not aware of the less acceptable status of animate third person pronouns in object position in Chinese because they seem to be less sensitive to stylistic features.

CHAPTER 8

LONG-DISTANCE AND SHORT-DISTANCE REFLEXIVES

8.0 INTRODUCTION

In 3.3, we saw that reflexives in English can take only a local antecedent, whereas in Chinese reflexives can have a long-distance antecedent as well. This is illustrated by examples (1) and (2).

(1) Wang Ping_i renwei Zhang Bo_j xiangxin ziji_{i/j}.
 Wang Ping think Zhang Bo trust self

(2) John_i thinks Bill_j trusts himself_{*i/j}.

Unlike English, which has only one type of reflexive, that is, the phrasal reflexive, there are two types of reflexives in Chinese, the bare reflexive, *ziji*, as well as the phrasal reflexive, pronoun+*ziji*. The phrasal reflexives in both English and Chinese are maximal projections (X^{\max}) and cannot move out of their own clauses to undergo successive movements because they are blocked by some barriers from moving up the tree. Therefore, the phrasal reflexives in both Chinese and English have to take a strictly local antecedent. Thus, they are short-distance reflexives (SDR). However, the bare reflexive, *ziji*, in Chinese, being a head noun (X^0), can undergo a successive cyclic head movement up the tree. As a result, it is a long-distance reflexive (LDR)

and can take long-distance antecedents as well as the local antecedent.

Chinese also allows *ziji* as an emphatic reflexive to occur in preverbal position without being preceded by a lexically realized subject. This can be seen in examples (3) and (4). However, from the translations of the sentences in (3) and (4), we can see that the English counterparts are ungrammatical in English. This contrast is due to the fact that unlike English, Chinese allows PRO in subject position of the finite clause and the preverbal reflexive (PR), *ziji*, is bound by the PRO in subject position, which satisfies the binding theory (see 3.3).

- (3) Zhang Bo_i renwei PRO_i ziji_i neng dedao jiangxuejin.
 Zhang Bo think self can get scholarship
 *'Zhang Bo thinks that himself can get a scholarship.'
- (4) tade nuer_i cai san sui, danshi PRO_i ziji_i yijing
 his daughter only three age but self already
 hui chuan yifu le.
 can put-on clothes PART
 *'His daughter is only three years old, but herself is
 able to put on her clothes.'

In this chapter, we are concerned with the investigation of the acquisition of Chinese LDR, *ziji*, by CFL learners and the unlearning of LDR by EFL learners. We will make a comparison between the two language groups to discover the direction of difficulty in acquiring and unlearning the LDR by CFL learners and EFL learners.

In Chapters 6 and 7, we argued that positive evidence in the learners' input, direct or indirect, can trigger the change in the learners' IL language grammars towards the norm of the target language. This is also a generally held assumption. Based on this assumption, it was hypothesized that it would be easier for CFL learners to acquire the Chinese LDR than for EFL learners to unlearn the LDR in

their acquisition of English; this is because, in the acquisition of Chinese, CFL learners have direct positive evidence of the LDR in their input data which could help to "stretch" the binding scope of the reflexives in the learners' IL grammars from the local (as in their L1, English) to the long-distance (as in the target language, Chinese), that is, from the embedded sentence to the root sentence. Since during the acquisition of English EFL learners have no positive evidence in their input data which could indicate that the LDR (as in their L1, Chinese) is not possible in the target language, English, transfer would occur. As we will see, this hypothesis is not confirmed by the results of the study; CFL learners seem to have a lot of difficulty in acquiring the LDR and there is a sign of fossilization in this aspect of the learners' IL grammars of Chinese; in contrast, EFL learners seem to have no difficulty in unlearning the LDR in the acquisition of English and they seem to be aware that English reflexives can only take a local antecedent. There is no sign of transfer of the LDR from their L1, Chinese, in the acquisition of English. Thus, contrary to our hypothesis, the direction of difficulty in terms of acquiring and unlearning of the LDR by CFL and EFL learners is from English to Chinese.

8.1. PREVIOUS STUDIES OF REFLEXIVES IN SLA

In 2.3.4, we saw that while Principle A of the binding theory is a principle of UG, the notion of governing category is a parameter of the theory. Obviously, the governing category for the Chinese reflexive *ziji* is broader than that for the English reflexives. Wexler and Manzini propose that UG provides the settings in (5 a-e) for the governing category parameter (1987:53).

- (5) γ is a governing category for α iff
 γ is the minimal category which contains α and
- has a subject, or
 - has an INFL, or
 - has a TNS, or
 - has an indicative TNS, or
 - has a root TNS.¹

According to the definition of governing category proposed by Wexler and Manzini, languages differ with respect to how far away the antecedent can be from the reflexive.

Evidently, English reflexives are subject to setting (5a) of the governing category parameter, since they must be bound locally, that is, within the minimal category which contains the reflexive, a c-commanding antecedent and a subject. In (6), only *John* can bind the reflexive *himself*.

- (6) Peter_i thinks that John_j doesn't have confidence in himself_{*i/j}.

- (7) Zhang Bo_i renwei Li Ming_j dui ziji_{i/j} mei you
 Zhang Bo think Li Ming to self not have
 xinxin.
 confidence

The Chinese reflexive *ziji* is associated with parameter setting (5e), taking the root sentence as its governing category. As can be seen in (7), a Chinese version of (6), *ziji* can be bound by *Zhang Bo* as well as *Li Ming*.

With regard to the possible antecedents of the reflexive, the five types of languages represented in (5) form an inclusion hierarchy, with a language like English forming the least inclusive language and a language like Chinese the most inclusive language.²

Regarding L1 acquisition, Wexler and Manzini (1987) propose that the child first chooses the unmarked setting, (5a), which defines the most restrictive domain within which reflexives find their antecedents. A child learning English

keeps the governing category parameter set at (5a) because there is no evidence that reflexives can be bound outside the domain of a subject. Children learning languages with a setting of (5b) or (5c) abandon (5a) for more inclusive settings when they encounter reflexives bound within larger domains. According to Wexler and Manzini (1987), as children always make conservative hypotheses of what can serve as the antecedent of a reflexive, overgeneralization does not arise in L1 acquisition.

Based on the account of crosslinguistic variation in (5), we would predict that in L2 acquisition, a learner with his L1 at a more inclusive setting in (5) would have difficulty in switching the governing category parameter to a less inclusive setting because there is no positive evidence indicating to the learner that the target language ONLY allows the less inclusive setting.³ In our study, it would be more difficult for EFL learners with the more inclusive setting in their L1, Chinese, to unlearn the LDR than CFL learners with the least inclusive setting in their L1, English, to acquire the LDR. However, the SLA literatures on reflexives indicate that this is not necessarily the case. In a small pilot study, Finer and Broselow (1986) investigate the interpretation of English pronouns and reflexives by six adult native speakers of Korean. As Korean is like Chinese in that the reflexive *casin* can be bound in the root sentence, it has the setting of (5e). Finer and Broselow are interested in whether Korean-speaking learners transfer their L1 setting, i.e. (5e), to the acquisition of the L2, English, and whether the learners can reset the parameter to the setting of (5a). In a picture identification task, Finer and Broselow find their subjects bind 91.7% of reflexives to local antecedents in sentences like (8a) when the reflexive is inside a tensed embedded sentence. Only 8.3% of the reflexives in a tensed embedded sentence were bound to long-distance antecedents. However, in infinitive sentences as in (8b), 37.5% of the reflexives

were bound long-distance, and only 58.3% of the reflexives were bound locally.

- (8) a. Mr. Fat thinks that Mr. Thin will paint himself.
 b. Mr. Fat told Mr. Thin to paint himself.

Finer and Broselow interpret the result as indicating that their subjects may have set the governing category parameter to an intermediate value, i.e. (5c) or (5d), which require that the reflexive be bound in a tensed sentence.

To make a further study of the acquisition of reflexives in L2, Finer (1991) conducted another experiment with 20 Japanese-⁴ and 30 Korean-speaking learners of English. Finer found that in tensed embedded sentences only 2% of the reflexives in the judgements for the Japanese speakers and 5% for the Korean speakers were bound long-distance although in infinitive sentences the long-distance binding increases to 7% and 12% respectively (cf. Thomas 1991).

In an experiment using a variety of stimuli, Hirakawa (1990) tested the acquisition of English reflexives by 65 Japanese speakers. The subjects indicated an overall preference of local antecedents for English reflexives in tensed embedded clauses although they behaved differently in infinitive clauses.

Thomas (1989) investigates the acquisition of English reflexives by native speakers of Chinese and Spanish. Her hypothesis was that since reflexives in Spanish, like in English but unlike in Chinese, require local antecedents, more Spanish speakers than Chinese speakers would bind English reflexives locally. However, the result shows no significant difference between the Spanish speakers and the Chinese speakers in the judgements (local binding for the

reflexives: 69.04% for Chinese speakers, 59.48% for Spanish speakers).

In a more recent study of the acquisition of English reflexives with native speakers of Japanese and Spanish, Thomas (1991) obtains a similar results; 70% to 91% of the subjects in each group of both Japanese and Spanish, across all levels of proficiency, consistently identify reflexives only with local antecedents. No significant difference is found between the Japanese speakers and Spanish speakers.

Based on the results of her experiments and the data of the acquisition of English reflexives in the SLA literature, Thomas (1991) suggests that UG is still available in SLA and that L2 learners have direct access to UG. She argues that L2 learners can reset parameters for the target language in spite of the lack of positive evidence in the input data. However, as can be seen in 8.3, we will argue that the results in Thomas (1989, 1991) and the relevant data in the SLA literature are not legitimate for the claim that UG is still available in SLA. We will show that English reflexives cannot be used to test the resetting of the governing category parameter by native speakers of Chinese, Japanese and Korean.

To the best of our knowledge, no work has been done on the acquisition of Chinese reflexives by non-native speakers of Chinese. However, Thomas (1991) reports some results of her study on the acquisition of the Japanese reflexive *zibun* by 33 native speakers of English and 8 native speakers of Chinese. In her study, most native speakers of English consistently coindex the Japanese reflexive *zibun* locally and by contrast, the Chinese speakers learning Japanese consistently prefer long-distance antecedents for *zibun*; and a significant difference is found between the English-speaking learners and the Chinese-speaking learners in taking long-distance antecedents for *zibun*. As will be seen

in the next subsection, these results in Thomas' study are, to a certain extent, parallel to the results in our study - namely, they suggest that English-speaking learners have difficulty in acquiring the long-distance reflexive.

8.2 THE JUDGEMENTS ON THE PR, SDR AND LDR BY THE EFL AND CFL SUBJECTS

8.2.0 Introduction

The test sentences for the EFL subjects were designed to find out whether they were aware that, unlike in their L1, Chinese, sentences with a preverbal reflexive (PR) without a preceding subject are ungrammatical in English, as in (9), and reflexives in object position have to be bound locally, that is, they can only have short-distance binding (SDB), as in (10). In the test sentences for the CFL subjects, the subjects were tested to see if, in spite of a different setting in their L1, English, they would accept the sentence with a preverbal reflexive *ziji* (PR) without a preceding subject, (see (11), which is the Chinese version of (9)) and if they would allow *ziji* to have long-distance binding (LDB), that is, to have an antecedent outside the embedded clause in which it occurs, (see (12), which is the Chinese version of (10)).

- (9) *His daughter is only three years old, but herself is able to put on her clothes now.
- (10) Peter_i thinks John_j doesn't have confidence in himself_{*i/j}.
- (11) tade nuer cai san sui, danshi ziji yijing hui
his daughter only three age but self already will

chuan yifu le.
put on clothes PART

- (12) Zhang Bo_i renwei Li Ming_j dui ziji_{i/j} mei you
Zhang Bo think Li Ming to self no have

xinxin.
confidence

The complete set of test sentences concerning preverbal reflexives, short-distance reflexives and the long-distance reflexive for both the EFL learners and the CFL learners can be seen in Appendix 15.

For the judgements on the sentences with reflexives in object position, special instructions were given, as follows:

In the following sentences, you have to assign both of the interpretations of *ziji* (in the CFL tasks)/*himself* (in the EFL tasks) appropriate numbers according to the acceptability criterion you have been using. If both of the interpretations, 1) and 2) (see Appendix 15), are unacceptable, assign both low numbers; if both are acceptable, assign high numbers to both. If one is acceptable and the other is not, assign one a high number and the other a low number.

Twelve seconds were allowed for judging each of the sentences with reflexives in object position.

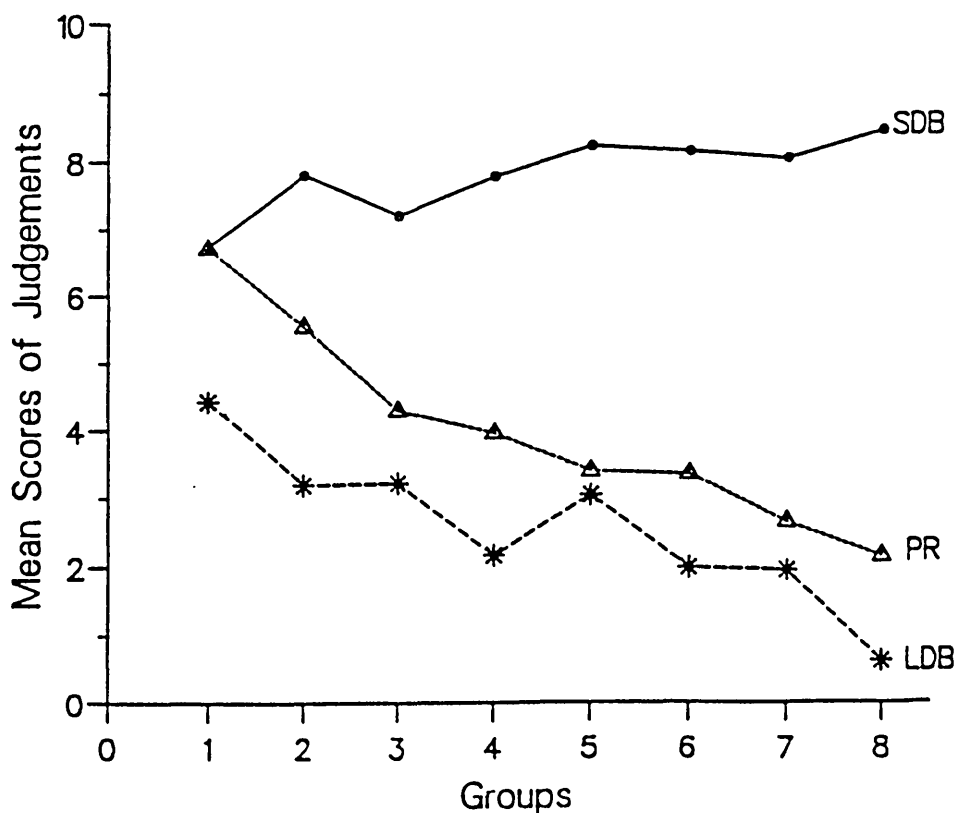
Unlike the sentence structures of other types, there are no distinctions between the control sentences and the experimental sentences in the investigation of the preverbal reflexive, the short-distance reflexive and the long-distance reflexive. To test the status of the preverbal reflexive in the EFL and CFL learners' IL grammars of English and Chinese respectively, the English and Chinese sentences with preverbal reflexives not preceded by subjects (i.e. PR sentences) were presented respectively for the EFL and CFL subjects to judge. A one-way ANOVA was applied to

the acceptability judgements by the EFL and CFL subjects on the English/Chinese PR sentences respectively. The target language proficiency was an independent variable, with the eight (in the EFL Group) / six (in the CFL Group) proficiency groups forming eight (in the EFL Group) / six (in the CFL Group) levels within the independent variable. The dependent variables were the scores assigned by the subjects in judging the PR sentences. As for the sentences with reflexives in object position, a two-way ANOVA was performed respectively for the judgements by the EFL and CFL subjects; the short-distance-binding (SDB), that is, the coindexation of the reflexive with an antecedent within the embedded clause, and the long-distance binding (LDB), that is, the coindexation of the reflexive with an antecedent outside the embedded clause, are two levels of one independent variable, i.e. the test type; the other independent variable is the target language proficiency with the eight (in the EFL Group)/six (in the CFL Group) proficiency groups forming eight (in the EFL Group)/six (in the CFL Group) levels. The dependent variables are the scores assigned by the subjects to the SDB and LDB.

8.2.1 Judgements on the PR sentences by the EFL groups

The one-way ANOVA indicates that there are significant differences between the means in the judgements by the 8 EFL groups on the PR sentences. The results of the following Tukey Tests reveal that the subjects in Groups 1-4 made significantly different judgements from those in Group 8, the native group (see Table 8-2 in Appendix 16). However, as is illustrated by the line of shorter dashes with triangles in Figure 8-1, there is a clear tendency to reject the ungrammatical PR sentences in English as the subjects become more proficient in English, that is, the more proficient the

Figure 8-1: Mean scores of judgements on the PR, SDB and LDB sentences by the 8 EFL groups



subjects are, the lower the scores they assign to the PR sentences. And there is no significant difference between Groups 5-7 and Group 8, the native group, in rejecting the ungrammatical PR sentences in English. This suggests that a sentence with a preverbal reflexive not preceded by a subject is not represented as grammatical in the IL grammars of the high-intermediate and advanced EFL subjects.

8.2.2 Judgements on the SDB and LDB by the EFL groups

The EFL subjects' judgements on SDB are represented by the line with circles in Figure 8-1. As we can see, the line is rather flat, which indicates that the EFL subjects, like the native speakers, correctly judged the SDB as acceptable. This proves true in Tukey Tests, in which no significant difference is found between Groups 1-7, the learner groups, and Group 8, the native group (see Table 8-4 in Appendix 16).

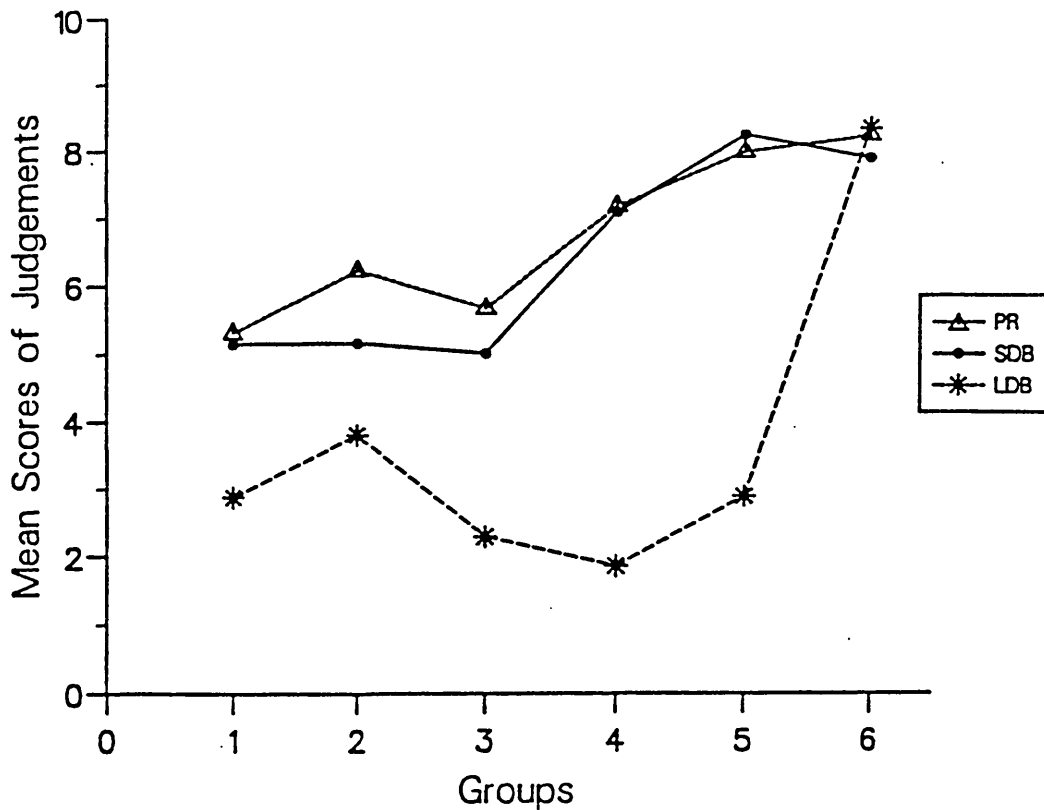
In judging the LDB, which is illustrated by the line of longer dashes with asterisks in Figure 8-1, subjects in Group 1 did not show steady behaviours in rejecting the ungrammatical LDB for reflexives in English; their judgements are quite indeterminate. However, as is shown by the line, more proficient subjects in Groups 2-7 tend to reject the LDB of reflexives. This is confirmed by the results of Tukey Tests, which indicate that there is no significant difference between Group 8, the native group, and any of the non-native groups, except Group 1, in rejecting the LDB sentences. (see Table 8-5 in Appendix 16)

From the results of judgements on the SDB and LDB, we can see that the EFL subjects have a clear and overall preference for local binding for reflexives in English and there is no sign of influence from the long-distance binding of the reflexive *ziji* in the subjects' L1, Chinese.

8.2.3 Judgements on the PR sentences by the CFL groups

In Figure 8-2, the line of shorter dashes with triangles indicates that the CFL subjects in Groups 1-3 were quite indeterminate in judging the correct Chinese sentences with

Figure 8-2: Mean scores of judgements on the PR, SDB and LDB sentences by the 6 CFL groups



the reflexive *ziji* in a preverbal position not preceded by a subject. Their mean scores are: Group 1 = 5.309, Group 2 = 6.230, Group 3 = 5.674. This suggests that the sentence structure being tested had a quite indeterminate representation in these subjects' IL grammars. From the line of shorter dashes in Figure 8-2, we can also see that as the subjects became more proficient in Chinese, for example, those in Groups 4 and 5, they were quite confident in accepting the PR sentences as grammatical. And subjects in Group 5 showed native-like behaviour in judging the PR sentences in Chinese. This is reflected in the results of Tukey Tests (see Table 8-7 in Appendix 16), which indicate

that there is no significant difference between Groups 4-5 and Group 6 in judging the PR sentences.

8.2.4 Judgements on the SDB and LDB by the CFL groups

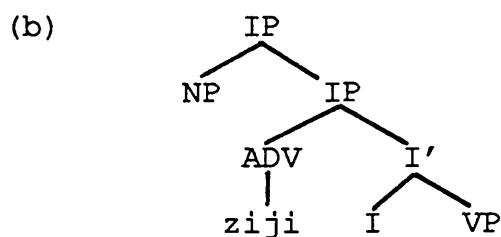
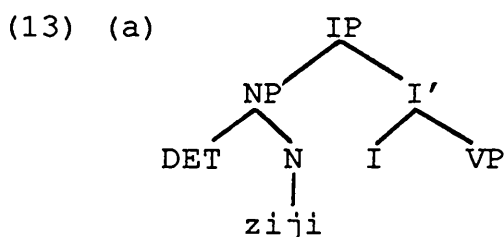
In 3.3 and 8.0, we saw that for the Chinese reflexive *ziji* in object position, both the SDB and the LDB are possible, whereas for English reflexives, only the SDB is possible. In Figure 8-2, the solid line with circles illustrates the CFL subjects' judgements on the SDB of *ziji* and the line of longer dashes with asterisks illustrates their judgements on the LDB of *ziji*. It is interesting to see from these two lines that subjects in Groups 1-3 showed clear indeterminacy in judging the SDB but they seem to have been quite determinate in ruling out the correct LDB. This suggests that even though the subjects in these three groups were not sure whether the SDB for *ziji* was grammatical or not, they (particularly those in Groups 1 and 3) rejected the correct LDB for *ziji* as unacceptable in Chinese. More interestingly, as the subjects' proficiency increased, as in the case of Groups 4 and 5, only in judging the SDB did they become more accurate and more native-like; and in striking contrast, this is not the case in their judgements on the LDB for *ziji*. Instead of moving towards the norm of the target language grammar, more proficient subjects, including the advanced subjects in Group 5, incorrectly rejected the LDB for *ziji* and showed little sign of restructuring their IL grammars to make the LDB for *ziji* acceptable. The results of Tukey Tests indicate that in judging the SDB, Group 6, the native group, is significantly different from only Groups 1-3, while in judging the LDB, Group 6 is significantly different from every non-native group (see Tables 8-9 and 8-10 in Appendix 16).

8.3 COMPARISONS OF THE JUDGEMENTS BY THE EFL AND CFL LEARNERS

8.3.1 Judgements on the PR sentences by the EFL and CFL learners

It was seen in 8.2.1 and 8.2.3 that EFL learners do not have much difficulty in rejecting the incorrect PR sentences in English, nor do CFL learners have much difficulty in acquiring the correct PR sentences in Chinese.

The acquisition of the structure of the Chinese PR sentences being tested here is contingent mainly on two factors. The first factor involves CFL learners' knowledge that rather than an anaphoric reflexive occupying an argument position, the reflexive here is emphatic, adjoining to IP like a preverbal adjunct. In other words, the learners must know that the reflexive is not an integral part of the subject NP, that is, it is not (13a), but (13b). This can be made clear to CFL learners by both positive evidence in the language input and the constraints of UG.



During the process of learning Chinese, CFL learners are exposed to a large number of sentences like (14). In these sentences, the subject NP is separated from the emphatic reflexive by a spatial or temporal adjunct,

which can serve as a clear indication that the reflexive is not an integral part of the subject NP.

(14) Zhang Bo zai jia / mei tian ziji zuo fan.
 Zhang Bo at home/ every day self cook food
 "Zhang Bo himself cooks at home / every day."

(11) tade nuer cai san sui, danshi ziji yijing
 his daughter only three age but self already

hui chuan yifu le.
 can put on clothes PART

*'His daughter is only three years old, but herself is able to put on her clothes now.'

In a coordinate structure, the reflexive *ziji* often appears in a sentence initial position, as in (11), repeated here. This might lead the learner to assume that *ziji* is in a subject position. However, the constraints in UG will prevent the learner from making such an interpretation. If the reflexive *ziji* in (11) were in subject position, it would be an anaphoric reflexive requiring an antecedent in an argument position to bind it. In (11), *ziji* can be coreferential with the subject, *tade nuer* (=his daughter), of the first sentence in the coordinate structure. However, the subject of the first sentence, *tade nuer*, is not a c-commanding NP for *ziji* and it cannot bind *ziji*. Therefore, the interpretation of *ziji* as an anaphor in sentences like (11) is ruled out. It could be argued that UG in its original form may not be available to adult L2 learners any more, as suggested by Bley-Vroman (1989) and Schachter (1988). However, if we adopt the view that the UG knowledge instantiated in the learner's L1 is still available to the learner when he comes to learn an L2 (cf. Schachter 1989, Clahsen and Muysken 1989), our analysis of *ziji* on the constraints of UG still holds because Principle A of the binding theory is in full operation in our CFL learners' L1, English.

The second factor affecting the acquisition of the Chinese PR sentences being tested is the CFL learners' knowledge that Chinese allows PRO to occur in subject position of finite clauses (see 3.1 and Chapter 6). Once the emphatic status of *ziji* in the PR sentences is established in the learners' IL grammars of Chinese, the acquisition of PRO in subject position of finite clauses should be quite straightforward. We saw in Chapter 6 that this is indeed the case; there is sufficient positive evidence (direct or indirect) in the learners' input data that Chinese allows null subjects in finite clauses; this includes the absence of agreement markers, tense markers, the non-existence of do-support, copula, the auxiliary *be* in progressive aspect, etc. On the basis of this informative evidence, the learners can figure out that AGR and TNS are absent in Chinese and therefore the subject position must be ungoverned in Chinese. By deductive inference, PRO is recognized by the learners for the null subjects in finite clauses and also for the empty category that *ziji* follows in our PR sentences here.

In 8.2.4 and Figure 8-2, we saw that unlike the judgements by Groups 4 and 5, the judgements on the Chinese PR sentences by the CFL subject in Groups 1-3 were quite indeterminate. This can result from two possibilities. The first is that the subjects' IL grammars of Chinese may not be sophisticated enough to deal with the sentences being tested, (which is very likely in the case of Group 1) and therefore their judgements are at a chance level. The second possibility, (which we think very likely, particular in the case of Groups 2 and 3), is that the indeterminacy is the result of competition of (a) and (b) in (13) (cf. MacWhinney 1987). It is well known that English does not allow null subjects in finite clauses; when the CFL learner first encounters sentences like (11), he takes *ziji* as the

subject of the second finite clause in the coordinate structure, assuming *ziji* here has the structure of (13a). As he also encounters sentences like (14) and sentences with null subjects in the input data, the two structures of (a) and (b) in (13) enter into competition. As (b), unlike (a), is reinforced by the evidence in the input, the latter gradually loses the battle and the former wins out.⁵

Let us now discuss the EFL learners' judgements on the incorrect PR sentences in English. If we adopt the view that L1 knowledge is involved in the acquisition of an L2 and may obscure the correct analysis of the L2 data (cf. White 1986a,b, 1987), we predict that beginning EFL learners' judgements on the PR sentences can be influenced by their L1, Chinese. However, as preverbal emphatic reflexives in English are the same as their Chinese counterpart *ziji* in that they adjoin to IP rather than occupying an argument position, the acquisition of their status as an adjunct does not pose any problems. What might be problematic to EFL learners is the awareness that English does not allow preverbal reflexives in finite clauses to occur without being preceded by an argument NP, that is, they have to know that English does not allow null subjects in finite clauses. Unlike CFL learners, who have sufficient direct positive evidence in the input data to indicate that the PR sentence is allowed and null subjects in the finite clauses are possible, EFL learners do not have direct positive evidence in the input data to indicate to them that null subjects in finite clauses are not possible in English. However, as we saw in Chapter 6, EFL learners are exposed to sufficient indirect positive evidence in the input, which includes the agreement markers, the use of *do*-support, the use of the copula, the use of auxiliary *be* in progressive aspect etc. This indirect positive evidence can inform EFL learners indirectly that

subject PRO in finite clauses is not allowed in English. Some EFL learners may not be able to use the agreement markers and tense markers correctly in their production of English, but the awareness of the existence of AGR and TNS in English is sufficient to enable the learners to reject sentences with null subjects in finite clauses. This explains why the EFL learners did not have much difficulty in rejecting the incorrect PR sentences in English in our study; as is shown in Figure 8-1, the accuracy of the learners' judgements on the incorrect PR sentences goes with the improvement in their proficiency in English.

8.3.2 Judgements on the SDB and LDB by the EFL and CFL Learners

We saw in 8.2.2 and Figure 8-1 that EFL learners have a clear and overall preference for short-distance binding over long-distance binding for reflexives in English. This is consistent with the results of previous experiments reported in the SLA literature (cf. Finer and Broselow 1986, Finer 1991, Hirakawa 1990, Thomas 1989, 1991). The results of the previous experiments indicate that learners of English as a foreign language or a second language consistently identify reflexives in English finite sentences with local antecedents whether only the SDB or both the SDB and LDB are manifested in the learners' L1s. Based on her own findings and on reports in the SLA literature about the acquisition of English reflexives, Thomas (1991) claims that L2 learners are able to reset parameters for the target language in spite of the lack of positive evidence in the input data (but Thomas does not mention how this resetting takes place). It may appear that Thomas is right in making such a claim because according to the settings of the

governing category parameter (see (5 a-e)) proposed by Wexler and Manzini (1987), English reflexives are subject to setting (5a) of the parameter, the most restrictive domain in which they find their antecedents, and L2 learners of English, whose L1 has a setting of (5e) and allows the LDB for the reflexives, as in the case of Chinese, Japanese and Korean, do not have positive evidence in the input data to indicate that the LDB for reflexives is impossible in English. However, in her argument, Thomas overlooks the crucial fact that in languages like Chinese, Japanese and Korean, there are two types of reflexives, one is the bare reflexive like *ziji* in Chinese and the other the phrasal reflexive like *pronoun+ziji* in Chinese.^{6,7} Assuming the settings of the governing category parameter in (5), we can say that the bare reflexives in Chinese, Japanese and Korean are subject to the setting of (5e) and the phrasal reflexives correspond to (5a). According to Sung and Cole's (1991) theory of successive cyclic head movement, which is adopted in our study here, the binding of phrasal reflexives has to be strictly local and the bare reflexives can be bound both locally and long-distance. In other words, the behaviour of phrasal reflexives is different from that of bare reflexives. We saw in 3.3 that reflexives in English are phrasal reflexives. As a phrasal reflexive is an NP, i.e. a maximal projection, it must adjoin to X^{\max} rather than to INFL, and therefore it cannot undergo the successive cyclic head movement (see (98) in 3.3), which is possible only for the bare reflexive. When Chinese, Japanese and Korean learners of English encounter English reflexives in the input data of English, they can easily recognize them as phrasal reflexives through the form of *pronoun+self*. As a result, they assume that English reflexives have the same behaviour as the phrasal reflexives in their L1s, which is a correct assumption. On the basis of this assumption, the learners bind English reflexives to local antecedents

only and reject sentences which allow long-distance binding for English reflexives. This is exactly what the results in this study and studies reported in the SLA literature have suggested.

Since there are two types of reflexives in Chinese, Japanese and Korean, bare and phrasal, it could be asked why EFL learners from these language backgrounds do not assume the behaviour of bare reflexives for English reflexives. In these learners' L1s, the bare reflexives and phrasal reflexives contrast in surface forms. As the two surface forms have different expressions at D-structure, X^0 for the bare reflexives and X^{\max} for the phrasal reflexives, each of them has a distinct mental representation in the learners' L1s. In learning English, these L2 learners recognize English reflexives as phrasal reflexives by the surface form. As a result, the behaviour of the phrasal reflexives in the learners' L1s is generalized to reflexives in English. As there is no evidence in the input data which prevents such a generalization, the SDB becomes a default for reflexives in English. As no bare reflexive occurs as an independent word in EFL learners' input data, the successive cyclic head movement for bare reflexives is inactive in the learners' IL grammars of English. This explains why the EFL learners correctly rejected the LDB for English reflexives in our study.

As we saw in 8.1, a number of SLA researchers have used English reflexives to test the resetting of the governing category parameter by native speakers of Chinese, Japanese and Korean. Based on the results of these tests, Thomas (1991) argues that L2 learners still have direct access to UG and that they can reset parameters for the target language in spite of the lack of positive evidence in the input data. It is clear from the above discussion that reflexives in English are not valid for such tests;

any claims for the availability of UG and parameter resetting in SLA on the basis of results obtained from these tests cannot provide the whole truth because, obviously, reflexives in English share the same setting as phrasal reflexives in Chinese, Japanese and Korean, and no parameter resetting is involved at all.

In contrast with the judgements on the SDB for English reflexives by the EFL learners, the judgements on the LDB for the Chinese reflexive *ziji* by the CFL learners is far from accurate (see 8.2.4 and Figure 8-2). There is an overall rejection of the correct LDB for *ziji* by the CFL learners. Even the advanced CFL learners, i.e. those in Group 5, showed little improvement in accuracy in their judgements, which suggests a persistent lack of the LDB for *ziji* in the CFL learners' IL grammars of Chinese. Interestingly, beginning and lower-intermediate CFL learners, i.e. those in Groups 1-3, who showed clear indeterminacy in judging the SDB for *ziji*, seemed quite confident in rejecting the correct LDB for *ziji*. All this indicates that the LDB for *ziji* has almost no mental representation in CFL learners' IL grammars of Chinese and it is a possible candidate for fossilization.

During their learning of Chinese, CFL learners have positive evidence in their input data, like sentences in (15) - (20), to indicate to them that the LDB (as in (15) - (18) as well as the SDB (as in (19) and (20)) for *ziji* are possible in Chinese.⁸

- (15) [_{TC}[_{CP}Zhangsan_i zhidao Lisi_j dui ziji_{i/+j} mei
 Zhangsan know Lisi to self not

you xinxin] [_{CP}PRO_i jiu na chu tade zhengshu
have confidence then take out his certificate

lai gei Lisi_j kan.]]
to to Lisi see
*'Zhangsan_i knew Lisi_j had no confidence in self_i,

PRO_i then took out his certificate to show (it) to Lisi_j.'

"Zhangsan knew that Lisi had no confidence in him. He then took out his certificate and showed it to Lisi."

- (16) [TC[CPZhangsan_i renwei Lisi_j dui ziji_{i/+j} yidianr
Zhangsan think Lisi to self a bit
ye bu guanxin,] [CPPRO_i bing le, Lisi_j ye
at all not care about ill PFV Lisi at all
bu lai kan-kan.]]
not come see see
*'Zhangsan_i thinks Lisi_j does not care about self_i
at all; PRO_i is ill and Lisi_j does not come to see
(him_i) at all.'
"Zhangsan thinks that Lisi does not care about him
at all; even when he is ill, Lisi does not come to
see him."

- (17) [TC[CPZhangsan_i gen Lisi_j shi duo nian de lao
Zhangsan with Lisi be many year DE old
pengyou le,] [CP(ta)_i xiangxin Lisi_j hui lijie
friend PART he believe Lisi FUT understand
ziji_{i/+j}.]]
self
*'Zhangsan_i has been a good friend with Lisi_j for
many years, (he)_i believes Lisi_j will understand
self_i.'
"Zhangsan has been a good friend with Lisi for many
years. He believes that Lisi will understand him."

- (18) [TC[CPZhangsan_i jueding qu zhao Lisi_j,] [CP(ta)_i
Zhangsan decide go look-for Lisi he
xiangxin Lisi_j hui bangzhu ziji_{i/+j}.]]
believe Lisi FUT help self
*'Zhangsan_i decides to go to Lisi_j, (he)_i believes
Lisi_j will help self_i.'
"Zhangsan decides to go to Lisi. He believes that
Lisi will help him."

- (19) [TC[CPZhangsan_i zhidao Lisi_j dui ziji_{+i/j} mei you
Zhangsan know Lisi to self not have
xinxin] [CPPRO_i jiu guli ta_j shuo: "bie haipa,
confidence then encourage him say not afraid
ni yiding hui chenggong.]]
you certainly will succeed

*'Zhangsan_i knew Lisi_j had no confidence in self_j,
 PRO_i then encouraged him_j by saying "Don't be
 afraid. You'll certainly succeed."
 "Zhangsan knew that Lisi had no confidence in
 himself. He then encouraged him by saying: 'Don't be
 afraid. You'll certainly succeed.'"

- (20) [TC[CP Lisi_i zuo-le cuo shi,][CP ke Zhangsan_j faxian
 Lisi do PFV wrong thing but Zhangsan find
 ta_i meiyou piping ziji_{i/+j}][CP PRO_i que zai
 he not criticize self yet PRG
 zhize bieren.]]
 censure others
 *'Lisi_i did something wrong, but Zhangsan_j found he_i
 didn't criticize self_i, yet PRO_i was censuring
 others.'
 "Lisi did something wrong, but Zhangsan found that
 he didn't criticize himself but was criticizing
 others instead."

In (15), in which the LDB is involved, the learner can easily figure out that *ziji* refers to *Zhangsan*, because it is Lisi's lack of confidence in Zhangsan, rather than himself, that made Zhangsan show his certificate to Lisi. Similarly, in (16), it is clear to the learner that *ziji* is bound by *Zhangsan*, because it is the fact that Lisi does not come to see Zhangsan even when Zhangsan is ill that indicates to the learner that Lisi does not care about Zhangsan rather than himself. In (17), the fact that *ziji* is a LDR and coreferential with *Zhangsan* rather than *Lisi* can be seen from the first sentence, in which a mutual relationship is implied. In a similar way, the learner can work out that *Lisi will help self* in (18) means *Lisi will help Zhangsan*. Obviously, this is the purpose of Zhangsan deciding to go to Lisi. (19) and (20) are two examples of the SDB for *ziji*. In the former, it is the encouragement Zhangsan gave to Lisi that indicates to the learner that Lisi had no confidence in himself. In the latter, the learner can understand that *ziji* is coreferential to *ta* (he, =Lisi) by looking at the first and the last sentences.

At this stage, given that CFL learners have positive evidence in their input data that the LDB as well as the SDB for *ziji* are possible in Chinese, one may ask why they only accept the SDB and reject the LDB for *ziji*; in other words, we may wonder why *ziji* only moves to local INFL and takes the embedded subject as its antecedent and why there seems to be no motivation for it to move further up to pick the matrix subject as its antecedent (see 3.3 for the behaviour of the bare reflexive, *ziji*, in movement). A possible answer to this question is that there does exist positive evidence in the input data, but for some reason, CFL learners fail to notice it. By *notice it*, we do not mean to notice the physical existence of the relevant language data. What we mean is to notice or realize the grammatical significance of the relevant language data for restructuring the learners' IL grammars. In 8.2.2 and Figure 8-1, we saw that while rejecting the LDB, more proficient CFL learners accept the SDB for *ziji*. This behaviour is considered to be guided by the learners' L1, English, rather than influenced by the positive evidence in the input data. L1 transfer in SLA has been observed by several SLA researchers (see Gass and Selinker 1983, White 1987, 1988b, Gass and Lakshmanan 1991, Gass and Schachter 1989, among others). In our case, when CFL learners encounter input data like (19) and (20), they simply take it for granted, because of the influence of their L1, that the reflexive *ziji* is bound by the local antecedent even before processing the relevant data confirming that this is the case.

When the CFL learner is faced with input data like (15)-(18), he may well be able to give appropriate interpretations for the sentences without noticing the mismatch between the evidence in the input data and his IL grammar of Chinese. And the learner may persist in

keeping an incorrect structure in his IL grammar while being successful in understanding the sentences concerned. This is a possible situation in adult SLA if we assume that available to adult L2 learners, there is a mechanism consisting of inferring, reasoning, etc. responsible for interpreting the input data which the learners' IL grammars are unable to handle. In his discussion of the 'many minds' that human beings possess, Sharwood Smith argues convincingly that 'our mental make-up is not singular or global in character; it is modular. This means we can notice some linguistic form and not notice it.' (1991:122) This suggests that some linguistic forms may indeed be noticed by the learner but with no effect on learning.

In order for the learning to take place, the language data in the input have to be salient enough to arouse the learners' (subconscious) awareness of the significance of the data for the restructuring of their IL grammars. As Gass points out, 'a first step in grammar change is the learner's noticing (at some level) a mismatch between the ambient speech and his or her own organization of the target language.' (1988:212) Then the question arises as to why some language data in the input are not salient enough to bring about changes in learners' IL grammars. In our case, it is assumed that certain linguistic properties in the learner's IL grammar of Chinese have reduced the degree of salience of the relevant language data and have made them less noticeable to the learner. The relevant evidence in the input remains opaque to the learner until some prerequisite developmental stage has been attained in his IL grammar.

It is well known that the largest syntactic unit in English is CP. If we also treated CP in Chinese as the largest syntactic unit, we could see that in (15) - (20), in every CP where *ziji* occurs, there is hardly any

evidence indicating whether *ziji* in that particular CP is long-distance bound or locally bound. It is ambiguous if we isolate the CP where *ziji* occurs. All the relevant evidence for the appropriate interpretation of *ziji* lies outside that CP. To those who take CP in Chinese as the largest syntactic unit, the correct interpretation of *ziji* depends on the language data in the discourse. However, to those, and particularly to native speakers of Chinese, to whom the largest syntactic unit is the Topic Chain (TC) (see 3.2), the relevant data for *ziji* lying outside CP are still syntactic in nature. (15)-(20) can be regarded as six topic chains. It is assumed in this study that it is the difference in the syntactic domain in CFL learners' IL grammars of Chinese that affects the salience of the relevant evidence for *ziji* in the input data. It is believed that syntactic data are more salient than inter-sentential data and have more direct effects on the restructuring in the learners' IL grammars. As CP is the largest syntactic unit in English and since CFL learners may assume that this is also the case in their target language, Chinese, when they come to analyze the Chinese input data containing the reflexive *ziji*, they often fail to find relevant data in the syntactic domain which can help to interpret *ziji*, because the relevant data are outside what they assume to be the largest syntactic unit. In this situation, they simply use what is known to them, i.e. their L1 knowledge, to analyze the data. As a result, *ziji* is bound to a local antecedent. When they discover some contradicting evidence in what they regard as the discourse, they use the mechanism consisting of inferring, reasoning, etc. to interpret the data without trying to work out the significance of the data for the realignment of their IL grammars of Chinese. This mechanism is believed to be what Felix (1985, 1987) calls 'general principles of a problem-solving nature', which are available to adult learners only. This mechanism blocks or hampers the learning device from

functioning appropriately, making some L2 features, such as the LDB for the Chinese bare reflexive *ziji*, unlearnable to L2 learners.

It is believed that in processing sentences like (15)-(20), CFL learners use different parsing strategies from native speakers of Chinese. The native speaker of Chinese keeps the index of *ziji* 'floating' between the two alternatives (i.e. *i* or *j*) when he reaches *ziji* in processing the sentence, and goes back to assign an appropriate index to *ziji* only when he has processed some relevant data in parsing the rest of the sentence. However, the CFL learner is believed to use a different strategy in parsing the sentence; as soon as he has processed *ziji*, he assigns to it the same index as the subject of the clause it is in. This assignment is believed to be influenced by his L1, English. In other words, the CFL learner has only SDB available for the reflexives in his IL grammars of Chinese. If the data he processes afterwards support the assignment of the index he has given to *ziji*, the parsing is successful. But this is only by chance. If in processing the rest of the sentence, he discovers some data contradictory to his previous assignment of the index to *ziji*, instead of going back to assign a new index to *ziji* accordingly, he simply uses his ability for inferring and reasoning to give an appropriate interpretation to the sentence. Thus, no language learning takes place.

Let us take (15) as an example to see how the native speaker of Chinese and the CFL learner process this type of sentence. On processing the reflexive *ziji* in (15), neither the Chinese speaker nor the CFL learner has processed any relevant data about the index of the reflexive *ziji*; however, while the Chinese speaker keeps the index of *ziji* in a kind of buffer and delays the parsing decision of the index of *ziji* until some relevant

data has been processed, the CFL learner immediately coindexes the reflexive *ziji* with the subject of the embedded clause, *Lisi*, because this is the strategy that he uses in processing language data in his L1, English. When the rest of the sentence, which is processed afterwards, indicates that the reflexive *ziji* is coreferential to the matrix subject, *Zhangsan*, the CFL learner, unlike the Chinese speaker, who goes back to assign an appropriate index to *ziji* accordingly, relies on the problem-solving mechanism to give an appropriate interpretation to the sentence without going back to assign a new index to *ziji* accordingly. In this case, the CFL learner's language learning device is not in operation in assigning the appropriate index to *ziji*.

In Chapter 7, we reported that CFL learners seem to be able to recalculate the range of syntactic units so that the largest syntactic unit in their IL grammars of Chinese is expanded from CP to TC, in which CFL learners can easily locate the antecedent of object *pro* and coindex it with the object *pro*. However, it is not clear why in the study reported here, the CFL learners seem to still treat CP as the largest syntactic unit and fail to make use of positive evidence in the input data for the legitimate status of the LDB for *ziji* in their IL grammars of Chinese. A possible explanation for this discrepancy may be that in the L2 acquisition of Chinese, the setting of TC is associated differently with individual lexical items; in other words, the setting of TC can easily be activated for the acquisition of object *pro* but remains inactive for the acquisition of the LDB for *ziji*. In fact, some researchers have already suggested that parameters be associated with individual lexical items rather than the principles of UG (cf. Borer 1983, Wexler and Manzini 1987, Cook 1990, Ouhalla 1991).

There is another factor which makes the acquisition of the LDB for the Chinese reflexive *ziji* more difficult to CFL learners.⁹ Recall that there is a 'blocking effect' on the binding of the bare reflexive *ziji* in Chinese (see 3.3); the long-distance binding of the bare reflexive, *ziji*, to the subject of the matrix subject is blocked when the subjects of the clauses between *ziji* and the matrix subject do not agree in person features. In the language data CFL learners are exposed to, there is plenty of positive evidence like the sentences in (21) and (22), which forces the SDB for *ziji*.

(21) ta_i $juede$ wo_j dui $ziji_{*i/j}$ mei $xinxin$.
 he think I to self no confidence
 'He thought that I had no confidence in myself'

(22) wo_i $zhidao$ ni_j $changchang$ $piping$ $ziji_{*i/j}$.
 I know you often criticize self
 'I know that you often criticize yourself.'

However, there is no data in CFL learners' input that forces the LDB reading for *ziji*. This unbalance of the SDB and LDB for *ziji* in the input data makes the LDB for *ziji* more unlearnable to CFL learners and makes it more likely to be a candidate for fossilization.

8.4 CONCLUSION

The findings we have discussed above suggest that CFL learners do not have much difficulty in accepting the PR sentences in Chinese because they have sufficient positive evidence (both direct and indirect) in the input data to tell them that Chinese allows sentences with a preverbal reflexive not preceded by a subject. Although no direct positive evidence in the input data is

available to EFL learners to indicate that PR sentences are not acceptable in English, some indirect positive evidence in the input enables EFL learners to realize that PRO is not allowed in English and therefore PR sentences should be ruled out in English. Thus, neither CFL learners nor EFL learners have difficulty in accepting and rejecting PR sentences in the acquisition of the target languages; and there is no direction of difficulty in the acquisition of Chinese and English with respect to the acquiring and rejecting of the preverbal reflexive.

Our findings also suggest that in the acquisition of English reflexives, EFL learners are not influenced by the LDB in their L1, Chinese. This is not because UG is still available to these L2 learners, as suggested in the SLA literature, but because there are two types of reflexives, bare and phrasal, in the learners' L1, Chinese, and EFL learners are able to make a correct match between English reflexives and the phrasal reflexive in their L1, Chinese, on the basis of surface form and D-structure of these reflexives.

Contrary to what was hypothesized, CFL learners have difficulty in acquiring the LDB for *ziji* even though there is relevant positive evidence in the input. The results in our study suggest that the lack of LDB for *ziji* is very likely to be fossilized in CFL learners' IL grammars of Chinese. This provides us with evidence that mere existence of relevant positive evidence in the input is not a guarantee for change in the learners' IL grammars. What is important is that the learner has to notice the relevant language data and their linguistic significance. And they must be able to use the relevant language data for the restructuring of their IL grammars.

The difficulty that CFL learners have in acquiring the LDB of the Chinese reflexive, *ziji*, is believed to be due to the problem-solving mechanism and the different strategy that CFL learners use in processing the data. The task of acquiring the LDB of *ziji* by CFL learners is made more difficult by the data manifesting the 'blocking effect' on the long-distance binding of the Chinese bare reflexive *ziji*.

Notes to Chapter 8

1. According to Manzini and Wexler (1987:417-419), 'INFL' is an inflectional element lacking in nominals and small clauses; an 'indicative TNS' here is in contrast with a subjunctive TNS; and a 'root TNS' is the tense of the matrix clause.
2. Manzini and Wexler (1987) suggest that Italian *sè* is subject to parameter setting (5b), and Icelandic *sig* to (5d). Finer and Broselow (1986) cite Russian as a language of (5c).
3. No formal teaching is believed to play a role in the acquisition of reflexives in L2. The researcher has inspected the textbooks used by both the CFL learners and EFL learners involved in this study; little evidence is found that the learners are instructed in the relevant constraints on the LDR or SDR.
4. In Japanese, the reflexive *zibun* is a LDR like the Chinese reflexive *ziji*.
5. An important reinforcement for (13b) can be the contrast of (i) and (ii) in (A):

- A. (i) Zhang Bo_i yao (*ta_i) zuo fan.
 Zhang bo want (him) cook food
 "Zhang Bo_i wants (*him_i) to cook food."
- (ii) Zhang Bo_i yao PRO_i ziji zuo fan.
 Zhang Bo want self cook food
 "Zhang Bo wants to cook food himself."

In (A), both (i) and (ii) have an embedded non-finite clause. In (i), (*ta*) is not allowed, but *ziji* in (ii) is allowed. This can be a clear indication that *ziji* here is not in subject position of the embedded clause.

6. In Korean, the bare reflexive is *casin* (=self). The form of phrasal reflexives is pronoun+*casin*; for example, *na-casin* (myself), *ne-casin* (yourself), *ku-casin* (himself, herself), etc. (cf. J.-M. Yoon 1988, J. Yoon 1988).

7. In Japanese, the bare reflexive is *zibun* (=self). The form of phrasal reflexives is *pronoun+zibun*.
8. As both LDB and SDB for the bare reflexive, *ziji*, are possible in Chinese, the sign '+' is used in (15)-(20) to indicate that the binding is only available syntactically but unacceptable for the interpretation of the whole sentence.
9. I am indebted to Elisabet Engdahl for this insight.

CHAPTER 9

SUMMARY AND CONCLUSION

Our study reported in this work has suggested that there is no single direction of difficulty in second language acquisition of Chinese and English; any claim that Chinese is more difficult for English speakers to learn than English is for Chinese speakers, or visa versa, cannot provide the whole truth. The directionality of difficulty in second language acquisition can only be studied with respect to individual language features. In second language acquisition, one structure may be more learnable than others and some structures may turn out to be unlearnable while others cause little difficulty to acquire. It seems that there are many factors involved in deciding the direction of difficulty in second language acquisition of Chinese and English. These factors include the availability of informative evidence in the learners' input data, the possibility that the learner makes use of the evidence available for the restructuring of his IL grammar of the target language, the learner's ability to process the relevant data in the input, and the interaction between the structure in the learner's L1 and the inherent developmental stage of the target language.

In terms of *pro* in object position, which is possible in Chinese but not in English, CFL learners have little difficulty in acquiring it while EFL learners are generally unable to unlearn it in their acquisition of

English. This direction of difficulty is believed to be the result of the difference in the availability of direct positive evidence to the learners. In this aspect of grammar, Chinese is more inclusive than English. Thus, CFL learners are exposed to input data which exemplify the possible occurrence of *pro* in object position in the target language, Chinese. Apart from the direct positive evidence of the occurrence of object *pro* in Chinese, CFL learners are also exposed to the data indicating that the largest syntactic unit in Chinese is TC rather than CP, which enables CFL learners to expand their syntactic unit from CP, the setting in their L1, English, to TC for the target language, Chinese, which may include several CPs. This expansion of the range of the largest syntactic unit in CFL learners' IL grammars of Chinese makes it possible for CFL learners to locate the antecedent of the object *pro* and coindex it with the object *pro* within the same syntactic unit, i.e. TC. Unlike CFL learners, EFL learners do not have any informative evidence available to them; nothing in their input can inform them that object *pro* is not allowed in English and that the largest syntactic unit in English is CP, rather than TC, as in their L1, Chinese. This is attributable to the fact that Chinese is more inclusive than English with respect to [+/- obj-*pro*-drop] and the largest syntactic unit. As a result, object *pro* remains possible in EFL learners' IL grammars of English. Moreover, the task of unlearning object *pro* by EFL learners is made more difficult by the correspondence of the [+ obj-*pro*-drop] setting in EFL learners' L1, Chinese, to the [+ obj-*pro*-drop] developmental stage in the process of acquiring English as a mother tongue. This correspondence brings about a retarding effect, further prolonging the unlearning process of object *pro* in the acquisition of English by EFL learners.

The processes of acquiring and unlearning subject PRO in finite clauses by CFL and EFL learners are similar to those of acquiring and unlearning object *pro* by these two groups of learners in that only CFL learners have direct positive evidence while EFL learners do not. This is because Chinese again is more inclusive than English in this aspect of grammar. However, CFL learners rely on indirect positive evidence in unlearning the subject PRO and there does not seem to exist any direction of difficulty in acquiring and unlearning the subject PRO by CFL and EFL learners. It is believed that in both acquiring and unlearning the subject PRO, the indirect positive evidence is more informative to CFL and EFL learners than direct positive evidence because the indirect positive evidence provides the learners with more information about the interrelationship between the underlying structures concerned. The indirect positive evidence available to EFL learners includes agreement markers, the use of *do*-support, copula, and the auxiliary *be* in progressive aspect. This indirect positive evidence indicates to EFL learners that, unlike in their L1, Chinese, AGR is present in English and the subject position of finite clauses in English is governed, and therefore, PRO is not possible in subject position in finite clauses in English. Thus, on the basis of this indirect positive evidence, EFL learners are able to unlearn the subject PRO in the acquisition of English.

Although CFL learners are exposed to sufficient direct positive evidence exemplifying the occurrence of null subjects in finite clauses in Chinese, we believe that it is the indirect positive evidence which triggers the necessary change in CFL learners' IL grammars of Chinese, so that the subject PRO is represented in CFL learners' IL grammars of Chinese. The indirect positive evidence CFL learners have for acquiring the subject PRO includes the total absence of agreement markers, the absence of

do-support, copula, and the auxiliary *be* in progressive aspect, which indicate clearly to them that AGR is absent in Chinese and therefore, the subject position of finite clauses in Chinese is ungoverned. This indirect positive evidence enables CFL learners to be aware that the null subject in finite clauses in Chinese is PRO.

We have argued that in acquiring and unlearning the subject PRO by CFL and EFL learners, indirect positive evidence is more informative than direct positive evidence, and it is mainly the indirect positive evidence which triggers the necessary change in the learners' IL grammars. We believe that when learners are exposed to different types of evidence in the input data, the most effective evidence is the type indicating the deep and abstract properties of the underlying structures and the interrelationship of these underlying structures. Since UG is composed of interlocking subsystems, the evidence that reflects these interlocking relations is more informative to language learners than the evidence that merely specifies the surface features. As both CFL and EFL learners have the indirect positive evidence reflecting the underlying structures, CFL learners have no difficulty in acquiring the subject PRO in Chinese, nor do EFL learners in unlearning the subject PRO in English. In other words, there is no direction of difficulty in this aspect of grammar in second language acquisition of Chinese and English.

The ease that EFL and CFL learners have in the acquisition and rejection of the nominal expletive is considered to result from the fact that both groups are exposed to the indirect positive evidence reflecting the presence and absence of AGR elements in English and Chinese respectively. The absence of AGR elements in Chinese has the implication for CFL learners that unlike in their L1, English, no nominative Case is assigned to

the subject position of the finite clause in Chinese and therefore no expletive is needed to receive nominative Case in the subject position of the sentences with the weather- or raising-predicates. Similarly, the presence of AGR elements in English informs EFL learners that the subject position of the finite clause is Case-marked and there must be something there to receive the nominative Case. As there is sufficient direct positive evidence in EFL learners' input data which exemplifies the use of the nominal expletive *it*, EFL learners adopt the expletive *it* as the subject of weather-predicates or raising-predicates in order to receive the nominative Case assigned by AGR.

In our study of the acquisition and unlearning of the base-generated topic by CFL and EFL learners, we have discovered that sentences with non-gap topics can be used as a predictor for the existence or non-existence of the base-generated topic position in the learners' IL grammars. For example, if the learner rejects sentences with non-gap topics, we can expect him or her to reject other sentences with base-generated topics. The rejection of non-gap-topic sentences is a sign that the base-generated topic is not represented any more in the learner's IL grammar.

In the SLA field, most accounts of learning difficulty are grammatically based, and the role that processing factors play in second language acquisition is not emphasized. It is true that it is often difficult to separate the effects exerted by grammatical factors from those by processing factors in SLA, because grammatical factors and processing factors operate simultaneously in SLA. However, the separation is not impossible (cf. Schachter and Yip 1990). And it is often important that we should be aware of the role that processing factors play in causing learning difficulties in SLA, otherwise

possible misinterpretations may result. It has been found that the acquisition of the base-generated topic by CFL learners is more difficult than the unlearning of the base-generated topic by EFL learners. The difficulty that CFL learners have in the acquisition of the base-generated topic is believed to result from their intolerance of the indeterminate parsing strategy required in processing some Chinese data. As the processing of the base-generated topic in Chinese requires an indeterminate parsing strategy, English-speaking learners of Chinese, with the simultaneous parsing procedures cultivated for their L1, English, find it difficult to delay the parsing decision in processing the Chinese data. This is particularly true of EFL learners at early stages of the acquisition of Chinese.

In the acquisition and unlearning of the subject PRO and object *pro* by CFL and EFL learners, we have argued that the direct and indirect positive evidence in the input trigger the necessary change towards the norm of the target languages in the learners' IL grammars. This may lead to an impression that as long as learners have informative evidence in the input data, language acquisition will take place. However, the results concerning the acquisition of the Chinese long-distance reflexive by CFL learners suggest that even if there is informative evidence in the input data, no acquisition will take place if the learner is unable to make use of it. Although there is direct positive evidence in the input data indicating to CFL learners that the Chinese bare reflexive, *ziji*, is a long-distance reflexive and can take an antecedent outside the clause it is in as well as a local antecedent, the long-distance binding of the bare reflexive, *ziji*, fails to have a representation in CFL learners' IL grammars of Chinese and the lack of long-distance binding for *ziji* turns out to be fossilized in CFL learners' IL grammars of Chinese. This

fossilization is possibly due to the following factors. First, all the informative evidence in the input indicating the long-distance binding of *ziji* lies outside what is assumed by CFL learners to be the largest syntactic unit, CP. This reduces the salience and power of the informative evidence in the input in triggering the necessary change in CFL learners' IL grammars, leading to the occurrence of L1 transfer, that is, only short-distance binding for reflexives. This supports Andersen's 'transfer to somewhere' principle: transfer will occur 'if and only if there already exists within the L2 input the potential for (mis)generalization' (1983:178).

The second factor that may account for the fossilization of the lack of long-distance binding for *ziji* in CFL learners' IL grammars of Chinese is that in the acquisition of the long-distance reflexive *ziji*, the largest syntactic unit in CFL learners' IL grammars of Chinese is CP, as in their L1, English, rather than TC, as in the target language, Chinese. In this case, the informative evidence indicating the long-distance binding for *ziji* lies outside what is assumed by CFL learners to be the largest syntactic unit, thus affecting the salience of the informative evidence for the restructuring of CFL learners' IL grammars.

The fossilization of the lack of long-distance binding for *ziji* is probably also attributable to CFL learners' intolerance of the delayed parsing decision in processing Chinese sentences with the long-distance reflexive. CFL learners coindex the reflexive, *ziji*, with the local antecedent as soon as *ziji* is processed while native speakers of Chinese tend to delay the parsing decision about the index of *ziji* until informative evidence is processed.

Another factor that may account for the fossilization of the lack of long-distance binding for *ziji* is the discrepancy in the input concerning the short-distance binding and long-distance binding for the bare reflexive, *ziji*. Because of the 'blocking effect' on the binding of the bare reflexive, *ziji*, in Chinese (see 3.3.1), there is positive evidence in the input which forces the short-distance binding for *ziji*. However, there does not exist any data in the input which syntactically forces the long-distance binding for *ziji*. This unbalance of the SDB and LDB for *ziji* in the input data makes the LDB for *ziji* more unlearnable for CFL learners.

Although we have argued that CFL learners are unable to make use of the informative evidence available to them for the acquisition of the LDB for the bare reflexive, *ziji*, we do not mean that they cannot give an appropriate interpretation to the sentence with the long-distance reflexive, *ziji*. They may well be able to interpret the sentence without trying to work out the linguistic significance of the data for the LDB of *ziji*. What they rely on in interpreting the sentence is assumed to be what Felix (1985, 1987) calls general principles of a problem-solving nature, which are available to adult learners only. It is very likely that adult L2 learners' rich experience and full ability in reasoning and inferring make them less compelled to rely exclusively on linguistic data for the interpretation of the sentence they are exposed to. This can be a possible explanation of why the mismatch between the incorrect representation of the target language structure in the learner's IL grammar and the informative evidence in the input does not result in the expected change towards the norm of the target language.

In this work, we have been mainly concerned with the directionality of difficulty in second language

acquisition of Chinese and English. To complete this final chapter, there is an intra-language phenomenon which requires some comments. In EFL learners' IL grammars of English, we have discovered an asymmetry: while EFL learners are able to readily unlearn the subject PRO in the acquisition of English, they have difficulties in unlearning object *pro*. It seems that there is a distinction between functional government and lexical government in second language acquisition. The subject position in English is functionally governed by AGR and the object position lexically governed by V. Theoretically, functional government and lexical government are two distinct notions which are kept separate from each other. According to Ouhalla (1991), V-government is 'stronger' than AGR-government because the former is theta-government while the latter plain government; the added strength of the V-government concerns the theta relation. Following Ouhalla, we may say that EFL learners tend to drop the object pronoun because the object position is strongly governed while they do not drop the subject pronoun because the subject position is less strongly governed. If this is correct, then it is likely that in second language acquisition, the stronger the government is, the more likely the learners are to drop the pronoun being governed. This, of course, needs further investigation.

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Appendix 1: THE CHINESE AND ENGLISH CLOZE TESTS

1. The Chinese Cloze Test for the CFL Learners

PART I

Instructions:

Following are three separate passages. Please fill in each gap with ONE Chinese character or pinyin forming ONE Chinese character. Each passage is given in both Chinese characters and pinyin. You may choose to do EITHER the passage in characters OR the one in pinyin.

Example:

我們在校內，你幫我，我幫你。

OR: women zai xiao nei, ni bang wo, wo bang ni.

1) _____ 天晚上，有 _____ 性急的女 _____，她有事要 _____ 娘家去，在

_____ 上抱起一 _____ 孩子，看也 _____ 看，就跑出 _____ 去。她走路 _____

小心，一個 _____ 頭，跌到瓜 _____ 裏，立刻爬 _____ 來，抱了孩 _____，看
也不看，_____ 路向前跑。_____ 到了娘家，_____ 見手裏抱 _____ 不是孩
子，_____ 一個瓜。

_____ tiān wǎnshàng, yǒu _____ xìng jí de nǚ _____, tā yǒu shì yào _____
niáng jiā qù, zài _____ shàng bào qiǐ yī _____ hái zi, kàn yě _____ kàn, jiù
pǎo chū _____ qù. tā zǒu lù _____ xiǎoxīn, yī ge _____ tóu, diē dào guā _____
lǐ, lìkè pá _____ lái, bào le hái _____, kàn yě bù kàn, _____ lù xiàng qián
pǎo. _____ dào le niáng jiā, _____ jiàn shǒu li bào _____ bù shì hái zi, _____
yī ge guā.

(2) 有个人在路上遇到了一个神仙，这个神仙 _____ 前是他的 _____ 朋友。他告
_____ 神仙，现在 _____ 的情况越 _____ 越不如以 _____，生活很困 _____。神仙一听，
_____ 把路旁边 _____ 一块小石 _____ 用手一指，_____ 成了金子， _____ 了他。
这个 _____ 得了金子， _____ 不满意。神 _____ 又用手一 _____，把一块大 _____ 头，
变成了 _____ 子，又给了 _____。这个人还 _____ 不满意。神 _____ 问他：“怎么 _____
你才满意 _____？”这个人回 _____ 说：“我想……我 _____ 要你的手 _____。”

yǒu ge rén zài lù shàng yù dào le yī ge shénxian, zhè ge shénxian
 ___ qián shì tāde ___ péngyou. tā gào ___ shénxian, xiànzài ___ de
 qíngkuàng yuè ___ yuè bùrú yǐ ___, shēnghuó hěn kuài ___. shénxian
 yī tīng, ___ bǎ lù pángbiān ___ yī kuài xiǎo shí ___ yòng shǒu yī zhǐ,
 ___ chéng le jīnzi, ___ le tā. zhè ge ___ dé le jīnzi, ___ bù mǎnyì.
 shén ___ yòu yòng shǒu yī ___, bǎ yī kuài dà ___ tou, biàn chéng le
 ___ zi, yòu geǐ le ___. zhè ge rén hái ___ bù mǎnyì. shén ___ wèn
 tā: "zěnme ___ nǐ cái mǎnyì ___?" zhè ge rén huí ___ shuō: "wǒ xiǎng
 wǒ ___ yào nǐde shǒu ___."

(3) 有一天, 四个瞎子坐在树下乘凉。一个人赶 ___ 象走过来, ___ 声喊着:
 “象 ___ 了, 让开点 ___!” 一个瞎子 ___: “象是什么 ___ 儿的? 咱们
 摸一摸吧。” ___ 个瞎子摸 ___ 摸象的身 ___; 就说: “我知 ___ 了, 象原来
 ___ 一堵墙。” ___ 瞎子摸着 ___ 的牙, 就说: “ ___ 跟又圆又 ___ 滑的
 棍子 ___ 样。” 第三个 ___ 子摸着象 ___ 腿, 就反驳 ___ 们, 说: “你们 ___ 说
 的都不 ___, 象跟柱子 ___ 不多。” 第四 ___ 瞎子摸着 ___ 的尾巴, 就 ___ 叫
 起来: “你 ___ 都错了! 象 ___ 粗绳子 ___ 一样。” 四个 ___ 子你争我 ___;
 都认为自 ___ 说的对, 谁 ___ 不服谁。赶 ___ 的人对他 ___ 说: “你们都 ___ 说
 对。一定 ___ 摸遍象的 ___ 身, 才能知 ___ 象是什么 ___ 儿的。你们 ___ 个
 人只摸 ___ 象的一部 ___, 就断定象 ___ 什么样儿 ___, 怎么能说 ___ 对
 呢?”

yǒu yī tiān, sì ge xiāzi zuò zài shù xià chéngliáng. yī ge rén gǎn
 ___ xiàng zǒu guò lái, ___ shēng hǎn zhe: "xiàng ___ le, ràng kāi
 diān ___!" yī ge xiāzi ___: "xiàng shì shénme ___ er de? zánmen ___ mō yī
 mō ba."

___ ge xiāzi mō ___ mō xiàng de shēn ___, jiù shuō: "wǒ zhī ___ le,
 xiàng yuán lái ___ yī dú qiáng." yī ___ xiāzi mō zhe ___ de yá, jiù
 shuō: " ___ gēn yòu yuán yòu ___ huá de gùnzi ___ yàng." dì sān ge ___ zi mō
 zhe xiàng ___ tuǐ, jiù fǎn bó ___ men, shuō: "nǐmen ___ shuō de dōu bù
 ___, xiàng gēn zhù zi ___ bù duō." dì sì ___ xiāzi mō zhe ___ de wěi ba,
 jiù ___ jiào qǐ lái: "nǐ ___ dōu cuò le! xiàng ___ cū shéng zi yī ___ yī
 yàng."

sì ge ___ zi nǐ zhēng wǒ ___, dōu rèn wéi zì ___ shuō de duì, shéi
 ___ bù fú shéi. gǎn ___ de rén duì tā ___ shuō: "nǐmen dōu ___ shuō duì.
 yī dìng ___ mō biàn xiàng de ___ shēn, cái néng zhī ___ xiàng shì shénme
 ___ er de. nǐmen ___ ge rén zhǐ mō ___ xiàng de yī bù ___, jiù duàn dìng
 xiàng ___ shénme yàng er ___, zěnme néng shuō ___ duì ne?"

2. The English Cloze Test for the EFL Learners

INSTRUCTION:

Write the missing word in each space. The size of the space gives indication of how long the missing word is.

(1)

What are our cities going to be like in ten years, or twenty? Are we going to build enormous motorways across them? Or are (1)___ going to leave our cars outside the cities and travel by (2)___ or underground in the cities? With big motorways across them, full (3)___ noisy, dirty cars and lorries, our cities are going to be (4)_____ places! But people want to travel in the cities, and some (5)___ them say: "These buses and underground trains are dirty and slow, (6)___ they cost a lot of money. I want to use my (7)___." This is the problem. How can we solve it? There are (8)_____ good ideas. In 1971, for example, the authorities in Rome began an (9)_____ experiment: passengers on the city buses did not have to pay (10)___ their tickets - and there were no tickets! They travelled on the (11)_____ for nothing. So many people left their cars at home and (12)_____ the buses. This was a very good thing.

(2)

An interesting traffic experiment was tried out in Stockholm. People paid a little money for a season ticket (1)___ travel on any bus, train or tram all over (2)___ city for a month. Many people in Stockholm left (3)_____ cars at home. In many cities now some streets (4)___ closed to vehicles. Cars and buses do not use (5)_____ and pedestrians are safe there. They walk in the (6)_____, drink coffee at the cafes on the pavement and

(7)_____ life. In London there is another experiment:
 part of (8)___ street is only for buses, so the buses
 travel (9)____. There are no cars or taxis in front of
 (10)____. These are some of the ideas for the future
 (11)___ transport in our cities.

(3)

INSTRUCTIONS:

Write in the missing word in each space. The first letter
 of each word is given. Words may be shorter than the
 space indicated.

The emotional development o_____ an infant starts at
 t_____ beginning o_____ his life. I_____ w_____ are
 t_____ judge t_____ way i_____ w_____ a human being
 deals w_____ h_____ fellow creatures, a_____ see
 h_____ h_____ builds up h_____ personality
 a_____ life, w_____ cannot afford t_____ leave out
 what happens i_____ the earliest years, months,
 a_____ even weeks a_____ days o_____ his life.

Appendix 2: INSTRUCTIONS FOR THE ACCEPTABILITY JUDGEMENT TESTS

1. The Chinese Version

说明:

本实验的目的是要检测学英语的中国学生对某些英语句子结构的正确程度所做出的判断。特别是要检测他们按其正确程度对这些句子所进行的排列。在做这些试题的过程中, 请判断一下每一个句子, 看它们与其他句子相比, 其正确程度更高还是更低, 你会立刻意识到有些句子是完全正确的或完全不正确的。而另一些句子则在某种程度上是正确或不正确的。请相信你自己的最初印象, 而不要有意识地用所学的语法规则来判断。

在阅读小册子上的句子的同时(每一页只有一个句子), 你会从录音中听到同样的句子。请对这些句子的正确程度做出判断, 并按其正确程度分出尽可能多的等级来。给第一个句子任何一个分数, 然后按与第一个句子的分数的比例给接下来的句子一些相应的分数。请不要用负数或零。例如, 你给第一个句子的分数是6, 并且你认为第二个句子的正确程度低于第一个句子那么你就应该给第二个句子一个小于6的分数。同样, 如果你认为第二个句子的正确程度高于第一个句子, 那么你就应该给第二个句子一个高于6的分数。请把你给每一个句子的分数写在每一页的方格内。在听到下一个句子的题号之前, 请不要翻到下一页。

在开始测试之前, 我们先做五个例句。每一个句子只念一遍。每句之间大约有九秒钟的间隔时间。请注意, 例句里的句型结构不是本实验所要测试的句型结构。它们只是用来帮助你熟悉做题方式的例句而已。

谢谢您的合作!

2. The English Version

INSTRUCTION:

The aim of this experiment is to see how foreign speakers of Chinese judge the acceptability of some Chinese structures and particularly how they rank order sentences with respect to one another. In answering these tests, ask yourself whether any given sentence "sounds" more or less acceptable than another. You will soon realize that certain sentences are completely acceptable or unacceptable (and you may have an immediate reaction to them), whereas other sentences may be (un)acceptable to a degree. Please trust your first impression, without trying to remember grammatical rules.

Read the sentences in the booklet (there is one on each page) while listening to the sentences on the tape. Please judge the acceptability of these sentences and try to distinguish as many degrees of acceptability as you can. Give the first sentence any number you wish; and then assign successive sentences numbers that are proportional to the first number you chose. Please do not use any negative number or zero. For instance, if you assign the number 6 to the first sentence and you think that the second sentence is less acceptable than the first, assign a number smaller than 6 to it. Similarly, if you think that the second sentence is more acceptable than the first one, choose a number higher than 6. Write the number you assign to the sentence in the box provided and turn to the next page when you hear the next number spoken on the tape.

Every sentence is read aloud only once and there are about seven seconds between each sentence. Before we start the experiment, we will first do five practice sentences. Please note that the sentence structures in the practice sentences are not the sentence structures to be tested in the experiment; they are just example sentences to show how the sentences should be dealt with.

Thank you for your collaboration!

**Appendix 3: REMINDER NOTES FOR THE ACCEPTABILITY
JUDGEMENT TESTS**

**1. The Reminder Note Provided on the Last Page of the
First Pamphlet**

A. The Chinese Version

下面让我们休息一会儿。请记信住你判断以上句子所采用的标准

B. The English Version

Now we will have a break. Please don't forget the
criterion you have used in judging the above sentences.

**2. The Reminder Note Provided on the First Page of the
Second Pamphlet**

A. The Chinese Version

请用同样的标准鉴定下列句子。记住对正确程度较低的句子，应
给一个较低的分數。对正确程度较高的句子，应给 一个较高的
分數。

B. The English Version

Please be sure to continue using your original criterion
to appraise the following sentences. Remember that lower
numbers refer to less acceptable sentences and higher
numbers to more acceptable sentences.

**Appendix 4: THE FORMAT OF THE ACCEPTABILITY JUDGEMENT
TEST FOR THE CFL SUBJECTS:**

(Randomization Set A)

**(This is the format before the individual sentences were
cut into separate slips)**

SEE THE FOLLOWING PAGES

Practice 1: 他要去北京明天。
tā yào qù Běijīng míngtiān.



Practice 2: 我是中国人。
wǒ shì Zhōngguó rén.



Practice 3: 我的爸爸很喜欢看电影, 他经常去。
wǒde bàba hěn xǐhuān kàn diànyǐng. tā jīngcháng qù.



Practice 4: 你别忘了告诉他这件事情当你看见他的时候。
nǐ bié wàng le gào su tā zhè jiàn shì qing dāng nǐ kàn jiàn tā de shí hòu.



Practice 5: 我见过女王。她是很漂亮。
wǒ jiàn guò Nǚwáng. tā shì hěn piào liang.



1. 你不必去关洗衣机, 十五分钟之后, 自己会停的。
nǐ bù bì qù guān xǐ yī jī, shí wǔ fēn zhōng zhī hòu, zì jǐ huì tíng de.



2. 我需要那台计算机, 但是我还没有足够的钱买它。
wǒ xū yào nà tái jì suàn jī, dàn shì wǒ hái méi yǒu zú gòu de qián mǎi tā.



3. 我买了一台新的计算机, 它是日本造的。
wǒ mǎi le yī tái xīn de jì suàn jī, tā shì Rì běn zào de.



4. zhè wèi xiān shēng wǒ bù jì de yǐ qián wǒ zài nǎ jiàn guo.



这位先生我不记得以前我在哪见过。

5. 你当然可以告诉他这个消息, 但是你现在告诉有点太早。
nǐ dāngrán kěyǐ gàosu tā zhè ge xiāoxi, dànshi nǐ xiànzài
gàosu yǒudiǎn tài zǎo.
6. 王平说李明找到了个新的女朋友, 但是我还没有见过。
Wáng Píng shuō Lǐ Míng zhǎodào le ge xīnde nǚ péngyǒu, dànshi wǒ
háí méiyǒu jiàn guò.
7. 这个实验已经开始, 我相信会成功。
zhè ge shíyàn yǐjīng kāishǐ, wǒ xiāngxìn huì chénggōng.
8. 这座房子我知道他打算卖。
zhè zuò fángzi wǒ zhīdào tā dásuàn mài.
9. 如果你写出一本好书, 我一定买。
rúguǒ nǐ xiě chū yī běn hǎo shū, wǒ yídìng mǎi.
10. 至于她家里的人, 我只见过她妈妈。
zhìyú tā jiā lǐ de rén, wǒ zhǐ jiàn guò tā māma.
11. 昨天我问他借那本书, 但是他说他正在看。
zuótiān wǒ wèn tā jiè nà běn shū, dànshi tā shuō tā zhèngzài kàn.
12. 上学期他教我们历史, 但是这学期他不教我们历史了。
shàng xuéqī tā jiāo wǒmen lìshǐ, dànshi zhè xuéqī tā bù jiāo
wǒmen lìshǐ le.
13. tā kàn guò zhè liǎng bù diànyǐng, kěshì wǒ méi kàn guò.
他看过这两部电影, 可是我没看过。

14. 那个孩子没有告诉他爸爸和妈妈, 自己一个人昨天到北京去了。
 nà ge hái zǐ méi yǒu gào sù tā bà ba hé mā ma, zì jǐ yī ge rén zuó tiān
 dào Běi jīng qù le.
15. 上星期他答应给我一个新的写字台, 但是直到现在也没给。
 shàng xīng qī tā dā yìng gei wǒ yī ge xīn de xié zì tái, dàn shì zhí dào
 xiān zài yě méi gei.
16. 他们听了这个消息之后, 他们根本不相信它。
 tā men tīng le zhè ge xiāo xī zhī hòu, tā men gēn běn bù xiāng xìn tā.
17. 图书馆里有一些关于中国的书, 可是李明说他在图书馆里没找到。
 tú shū guǎn lǐ yǒu yī xiē guān yú Zhōng guó de shū, kě shì Lǐ Míng shuō
 tā zài tú shū guǎn lǐ méi zhǎo dào.
18. 那辆自行车他说他已经卖了。
 nà liàng zì xíng chē tā shuō tā yǐ jīng mài le.
19. 这座房子我不知道他打算什么时候卖。
 zhè zuò fáng zi wǒ bù zhī dào tā dǎ suàn shén me shí hòu mài.
20. 她的自行车坏了, 我打算明天帮她修理。
 tā de zì xíng chē huài le, wǒ dǎ suàn míng tiān bāng tā xiū lǐ.
21. 每年圣诞节他都寄给我一张圣诞卡, 可是去年没寄。
 měi nián Shèng dàn jié tā dōu jì gei wǒ yī zhāng Shèng dàn kǎ,
 kě shì qù nián méi jì.
22. zhè ge xiāo xī nǐ xiān zài gào sù tā yǒu diǎn tài zǎo.
 这个消息你现在告诉她有点太早。

他想卖这座房子，但是我不知道他打算什么时候卖。



23. tā xiǎng mài zhè zuò fángzi, dànshì wǒ bù zhīdào tā dǎsuàn shénme shíhòu mài.

24. 上学期他教我们历史，但是这学期不教了。

shàng xuéqī tā jiāo wǒmen lìshǐ, dànshì zhè xuéqī bù jiāo le.



25. 这位先生我记得以前我见过。

zhè wèi xiānsheng wǒ jìde yǐqián wǒ jiàn guò.



26. 这个问题你和他讨论没有用。

zhè ge wèntí nǐ hé tā taōlùn méi yǒuyòng.



27. 我需要那台计算机，但是我还没有足够的钱买。

wǒ xūyào nà tái jìsuànjī, dànshì wǒ hái méi yǒu zúgòude qián mǎi.



28. 我们在花园里种了一些树和花，它们长得很好。

wǒmen zài huāyuán lǐ zhòng le yīxiē shù hé huā, tāmen zhǎng de hěn hǎo.



29. 我想你一定会喜欢这本书。

wǒ xiǎng nǐ yīdìng huì xǐhuān zhè běn shū.



30. 每年圣诞节他都寄给我一张圣诞卡，可是去年他没寄给我圣诞卡。

mei nián Shèngdàn jié tā dōu jì geǐ wǒ yī zhāng Shèngdàn kǎ, kěshì qù nián tā méi jì geǐ wǒ Shèngdàn kǎ.



31. yīnwei zhè ge wèntí bú zhòngyào, suǒyǐ wǒmen bù zhuǎnbèi zài huì shàng taōlùn tā.

因为这个问题不重要，所以我们不准备在会上讨论它。



32. 它好像张华很累。
tā haóxiàng Zháng Huá hěn lei.
33. 我问王平李明今天来不来, 王平说一定会来。
wǒ wèn Wáng Píng Lǐ Míng jīndiān lái bù lái, Wáng Píng shuō yīdìng huì lái.
34. 我不知道为什么他不喜欢这本书。
wǒ bù zhīdào wèishénme tā bù xǐhuān zhè běn shū.
35. 昨天张华丢了自行车, 但是李明说警察已经帮她找到了它。
zuótiān Zhāng Huá diū le zìxíngchē, dànshì Lǐ Míng shuō jǐngchá yǐjīng bāng tā zhǎodào le tā.
36. 它好像他们不懂这个问题。
tā haóxiàng tāmen bù dǒng zhè ge wèntí.
37. 李明很喜欢中国电影, 可是王平说他不喜欢中国电影。
Lǐ Míng hěn xǐhuān Zhōngguó diànyǐng, kěshì Wáng Píng shuō tā bù xǐhuān Zhōngguó diànyǐng.
38. 至于中国的大城市, 我只去过北京。
zhìyú Zhōngguó de dà chéngshì, wǒ zhǐ qù guò Běijīng.
39. 图书馆里有一些关于中国的书, 可是李明说他在图书馆里没找到关于中国的书
túshūguǎn lǐ yǒu yìxiē guānyú Zhōngguó de shū, kěshì Lǐ Míng shuō tā zài túshūguǎn lǐ méi zhǎodào guānyú Zhōngguó de shū.
40. tā shuō tā yǐjīng mài le nà liàng zìxíngchē.
他说他已经卖了那辆自行车。

41. 我们在花园里种了一些树和花，长得很好。
wǒmen zài huāyuán lǐ zhòng le yīxiè shù hé huā, zhǎng de hěn hǎo.

42. 他不知道我已经看过这部电影。
tā bù zhīdào wǒ yǐjīng kàn guò zhè bù diànyǐng.

43. 那台计算机你想现在用是不可能的。
nà tái jìsuànjī nǐ xiǎng xiànzài yòng shì bù kěnéng de.

44. 张波给他女儿买了许多衣服，但是他没给他妻子买任何衣服。
Zhāng Bō gěi tā nǚér mǎi le xǔduō yīfù, dànshì tā méi gěi tā qīzi
mǎi rènhe yīfù.

45. 这本书我想你一定会喜欢。
zhè běn shū wǒ xiǎng nǐ yīdìng huì xǐhuān.

46. 我问王平李明今天来不来，王平说他一定会来。
wǒ wèn Wáng Píng Lǐ Míng jīntiān lái bù lái, Wáng Píng shuō tā
yīdìng huì lái.

47. 他们听了这个消息之后，他们根本不相信。
tāmen tīng le zhè ge xiāoxi zhīhòu, tāmen gēnběn bù xiāngxìn.

48. 好像他们不懂这个问题。
hǎoxiàng tāmen bù dǒng zhè ge wèntí.

49. 这部电影他不知道我已经看过。
zhè bù diànyǐng tā bù zhīdào wǒ yǐjīng kàn guò.

50. 夏天这儿它很热。
xiàtiān zhè er tā hěn rè.
51. 他正在用那台计算机, 你想现在用是不可能的。
tā zhèngzài yòng nà tái jìsuànjī, nǐ xiǎng xiànzài yòng
shì bù kěnéng de.
52. 这学期的课程, 我最喜欢历史。
zhè xuéqī de kèchéng, wǒ zuì xǐhuān lìshǐ.
53. 我想那个姑娘一定是王平的女朋友, 可是李明说她是张波的女朋友。
wǒ xiǎng nà ge gūniang yīdìng shì Wáng Píng de nǚ péngyǒu, kěshì
Lǐ Míng shuō tā shì Zhāng Bō de nǚ péngyǒu.
54. 八点了, 我该上学去了。
bā diǎn le, wǒ gāi shàng xué qù le.
55. 这本书我知道他不喜欢。
zhè běn shū wǒ zhīdào tā bù xǐhuān.
56. 他看过这两部电影, 可是我没看过这两部电影。
tā kàn guò zhè liǎng bù diànyǐng, kěshì wǒ méi kàn guò zhè liǎng
bù diànyǐng.
57. 它八点了, 我该上学去了。
tā bā diǎn le, wǒ gāi shàng xué qù le.
58. wǒ bù zhīdào tā dásuàn shénme shíhòu mǎi zhè zuò fángzi.
我不知道他打算什么时候买这座房子。

59. 他的女儿才三岁, 但是自己已经会穿衣服了。
tāde nǚér cái sān suì, dànshì zìjǐ yǐjīng huì chuān yīfú le.
60. 你现在告诉她这个消息有点太早。
nǐ xiànzài gàosù tā zhè ge xiaōxi yǒudiǎn tài zǎo.
61. 夏天这儿很热。
xiàtiān zhè er hěn rè.
62. 张华买了一台新的计算机, 但是她不知道怎么用。
Zhāng Huá mǎi le yī tái xīnde jìsuànjī, dànshì tā bù zhīdào zěnmeyòng.
63. 你和他讨论这个问题没有用。
nǐ hé tā taōlùn zhè ge wèntí méi yǒuyòng.
64. 昨天我问他借那本书, 但是他说他正在看它。
zuótiān wǒ wèn tā jiè nà běn shū, dànshì tā shuō tā zhèngzài kàntā.
65. 我买了一台新的计算机, 是日本造的。
wǒ mǎi le yī tái xīnde jìsuànjī, shì Rìběn zào de.
66. 我有个问题。王平说李明能帮我解决它。
wǒ yǒu ge wèntí. Wáng Píng shuō Lǐ Míng nǐng bāng wǒ jiějué tā.
67. tā hǎoxiàng Lǐ Míng bìng le.
它好像李明病了。

68. 至于这学期的课程, 我最喜欢历史。
zhìyú zhè xuéqī de kèchéng, wǒ zuì xǐhuān lìshǐ.
69. 李明很喜欢中国电影, 可是王平说他不喜欢。
Lǐ Míng hěn xǐhuān Zhōngguó diànyǐng, kěshì Wáng Píng shuō tā bù xǐhuān.
70. 好像李明病了。
hǎoxiàng Lǐ Míng bìng le.
71. 中国的大城市, 我只去过北京。
Zhōngguó de dà chéngshì, wǒ zhǐ qù guò Běijīng.
72. 这个实验已经开始, 我相信它会成功。
zhè ge shíyàn yǐjīng kāishǐ, wǒ xiāngxìn tā huì chénggōng.
73. 我想那个姑娘一定是王平的女朋友, 可是李明说是张波的女朋友。
wǒ xiǎng nà ge gūniang yīdìng shì Wáng Píng de nǚ péngyǒu, kěshì Lǐ Míng shuō shì Zhāng Bō de nǚ péngyǒu.
74. 我们昨天看见了李明的女朋友, 长得很漂亮。
wǒmen zuótiān kànjiàn le Lǐ Míng de nǚ péngyǒu, zhǎng de hěn piàoliàng.
75. 我不记得以前我在哪见过这位先生。
wǒ bú jìde yǐqián wǒ zài nǎ jiàn guò zhè wèi xiānsheng.
76. nǐ xiǎng xiànzài yòng nà tái jìsuànjī shì bù kěnéng de.
你想现在用那台计算机是不可能的。

77. 他不懂这个问题，你和他讨论没有用。
tā bù dǒng zhè ge wèntí, nǐ hé tā taōlùn méi yǒuyòng.
78. 我很喜欢这本书，可是我不知道为什么他不喜欢。
wǒ hěn xǐhuān zhè běn shū, kěshì wǒ bù zhīdào wèishénme tā bù xǐhuān.
79. 上星期他答应给我一个的新的写字台，但是直到现在他也没给我新的写字台。
shàng xīngqī tā dāyìng geǐ wǒ yī ge xīnde xiězìtái, dànshì zhīdào xiànzài tā yě méi geǐ wǒ xīnde xiězìtái.
80. 好像张华很累。
hǎoxiàng Zhāng Huá hěn lèi.
81. 这位先生很面熟，但是我不记得以前我在哪见过。
zhè wèi xiānsheng hěn miànshóu, dànshì wǒ bú jìde yǐqián wǒ zài nǎ jiàn guò.
82. 这本书我不知道为什么他不喜欢。
zhè běn shū wǒ bù zhīdào wèishénme tā bù xǐhuān.
83. 昨天张华丢了自行车，但是李明说警察已经帮她找到了。
zuótiān Zhāng Huá diū le zìxíngchē, dànshì Lǐ Míng shuō jǐngchá yǐjīng bāng tā zhǎo dào le.
84. 她的自行车坏了，我打算明天帮她修理它。
tāde zìxíngchē huài le, wǒ dǎsuàn míngtiān bāng tā xiūlǐ tā.
85. wàimiàn hěn lěng.
外面很冷。

86. 张波给他女儿买了许多衣服,但是他没给他妻子买。
 Zhāng Bō geǐ tā nǚér mǎi le xǔduō yīfù, dànshì tā méi geǐ tā qīzǐ mǎi.
87. 如果你写出一本好书,我一定买它。
 Rúguǒ nǐ xiě chū yī běn hǎo shū, wǒ yīdìng mǎi tā.
88. 外面它很冷。
 wàimiàn tā hěn lěng.
89. 她家里的人,我只见过她妈妈。
 tā jiā lǐ de rén, wǒ zhǐ jiàn guò tā māma.
90. 王平说李明找到了个新的女朋友,但是我还没有见过她。
 Wáng Píng shuō Lǐ Míng zhǎo dào le ge xīn de nǚ péngyǒu, dànshì wǒ hái méi yǒu jiàn guò tā.
91. 王平问我见没见过女王,我说我在电视上见过。
 Wáng Píng wèn wǒ jiàn méi jiàn guò Nǚwáng. wǒ shuō wǒ zài diànshì shàng jiàn guò.
92. 张华买了一台新的计算机,但是她不知道怎么用它。
 Zhāng Huá mǎi le yī tái xīn de jìsuànjī, dànshì tā bù zhīdào zěnmeyòng tā.
93. 我们昨天看见了李明的女朋友,她长得很漂亮。
 wǒmen zuótiān kànjiàn le Lǐ Míng de nǚ péngyǒu. tā zhǎng de hěn piàoliàng.
94. 我有个问题,王平说李明能帮我解决。
 wǒ yǒu ge wèntí. Wáng Píng shuō Lǐ Míng néng bāng wǒ jiějué.

95. 王平问我见没见过女王, 我说我在电视上见过她。

Wáng Píng wèn wǒ jiàn méi jiàn guò Nǚwáng. wǒ shuō wǒ zài diànshì shàng jiàn guò tā.

96. 因为这个问题不重要, 所以我们不准备在会上讨论。

yīnwèi zhè ge wèntí bú zhòngyào, suǒyǐ wǒmen bù zhuǎnbèi zài huì shàng taōlùn.

97. 王平认为张波相信自己。

Wáng Píng rènwéi Zhāng Bō xiāngxìn zìjǐ.

Here:

zìjǐ = 1) Zhāng Bō
= 2) Wáng Píng

1)
2)

98. 张波知道李明对自己没有信心。

Zhāng Bō zhīdào Lǐ Míng duì zìjǐ méi yǒu xìnxīn.

Here:

zìjǐ = 1) Zhāng Bō
= 2) Lǐ Míng

1)
2)

**Appendix 5: THE FORMAT OF THE ACCEPTABILITY JUDGEMENT TEST
FOR THE EFL SUBJECTS: (Radomization Set B)**

**(This is the format before the individual sentences were cut
into separate slips)**

Practice 1. Although he is Chinese, but he cannot speak
Chinese.

Practice 2. I quite like Beijing. But I like Shanghai better.

Practice 3. I think that everyone likes their own mother.

Practice 4. He has come to this city for two weeks.

Practice 5. When he first arrived, John was quite happy.

1. If you write a good book, I will definitely buy it.

2. I need that computer, but I haven't got enough money to
buy.

3. John has bought a new computer. Is very easy to use.

4. I can't remember where I have met this gentlemen before.
5. This news is indeed unexpected. It is possible that she won't believe at first.
6. John says Bill has got a new girl-friend, but I haven't met her yet.
7. I asked Bill whether John could come next week. Bill said he would certainly come.
8. This car I know he is going to repair.
9. When you finish using this computer, please let me use it for a while.
10. The members of her family, I have only met her mother.
11. I want to borrow that book from her, but she says she is using it at the moment.
12. I want to tell Mary my new address, but forgot to tell when I saw her just now.

13. You can find these books in the University Library. You can also find them in the City Library.
14. John likes Chinese films, but Mary says she doesn't like.
15. Every Christmas she sends me a Christmas card. I wonder why she didn't send me one last year.
16. Although he has seen the film, he wants to see again.
17. There are some books about China in the library, but he said he couldn't find them.
18. He said he wanted to sell this house.
19. I don't know when he is going to repair this car.
20. Mary's bike has gone wrong. Tomorrow I am going to repair it for her.
21. He has promised to give me a new desk, but so far he hasn't given one.

22. It is possible that she won't believe this news at first.
23. He wants to repair this car, but I don't know when he is going to repair.
24. I want to tell Mary my new address, but I forgot to tell her when I saw her just now.
25. This gentleman I remember I have met before.
26. It is quite possible that he will be able to solve this problem.
27. I need that computer, but I haven't got enough money to buy it.
28. We have planted some trees and flowers in the garden. Are growing quite well.
29. This book I am sure he will like.

30. He has promised to give me a new desk, but so far hasn't given.
31. If you write a good book, I will definitely buy.
32. Seems that Mary is very tired.
33. The experiment has been started. I hope it will be successful.
34. This book I don't know why he doesn't like.
35. I have got a problem with my work. Mary said she would help me to solve.
36. Appears that they don't understand the question.
37. I ask John whether he has ever seen the Queen. He says he has seen on TV.
38. Big cities in China, I have only been to Beijing.

39. There are some books about China in the library, but he said he could find.
40. This house he said he wanted to sell.
41. We have planted some trees and flowers in the garden. They are growing quite well.
42. This film he doesn't know I have already seen.
43. It is very likely that you won't be able to use that computer now.
44. Peter bought some clothes for his daughter, but he didn't buy for his wife.
45. I am sure he will like this book.
46. The experiment has been started. I hope will be successful.
47. Although he has seen the film, he wants to see it again.

48. It appears that they don't understand the question.
49. He doesn't know I have already seen the film.
50. Sometimes snows here in May.
51. Perhaps that computer has gone wrong. It is very likely that you won't be able to use now.
52. Out of the courses for this term, she is most interested in English.
53. I thought this lady was John's friend, but John said was Mary's friend.
54. It is eight o'clock. I must go to school now.
55. This book I know he doesn't like.
56. You can find these books in the University Library. You can also find in the City Library.

57. Is eight o'clock. I must go to school now.

58. This car I don't know when he is going to repair.

59. Mary lost her bike last week, but John says the police have found it for her.

60. This news it is possible that she won't believe at first.

61. Sometimes it snows here in May.

62. Mary has just bought a new computer, but she doesn't know how to use it.

63. This problem it is quite possible that he will be able to solve.

64. I want to borrow that book from her, but she says she is using at the moment.

65. John has bought a new computer. It is very easy to use.

66. Mary lost her bike last week, but John says the police have found for her.

67. Seems that Peter is ill.

68. The courses for this term, she is most interested in English.

69. I ask John whether he has ever seen the Queen. He says he has seen her on TV.

70. It seems that Peter is ill.

71. His daughter is only three years old, but herself is able to put on her clothes now.

72. As regards big cities in China, I have only been to Beijing.

73. I asked Bill whether John would come next week. Bill said would certainly come.

74. I thought this lady was John's friend, but John said she was Mary's friend.
75. I once met John's girl-friend. She was very beautiful.
76. This gentleman I can't remember where I have met before.
77. That computer it is very likely that you won't be able to use now.
78. I think this problem won't be very difficult for him. It is very likely that he will be able to solve.
79. I like this book very much, but I don't know why he doesn't like.
80. It seems that Mary is very tired.
81. You don't have to go to turn off the washing-machine; itself will stop in fifteen minutes.
82. Every Christmas she sends me a Christmas card. I wonder why didn't send last year.
83. This gentleman looks very familiar, but I can't remember where I have met before.

84. I don't know why he doesn't like this book.

85. I have got a problem with my work. Mary said she would help me to solve it.

86. Mary's bike has gone wrong. Tomorrow I am going to repair for her.

87. It has been very cold here recently.

88. Peter bought some clothes for his daughter, but he didn't buy any for his wife.

89. When you finish using the computer, please let me use for a while.

90. Has been very cold here recently.

91. That child didn't let his parents know, himself went to London yesterday.

92. As regards the members of her family, I have only met her mother.

93. John says Bill has got a new girl-friend, but I haven't met yet.

94. John likes Chinese films, but Mary says she doesn't like Chinese films.

95. Mary has just bought a new computer, but she doesn't know how to use.

96. I once met John's girl-friend. Was very beautiful.

In sentences 97 and 98, you have to assign both of the interpretations of "himself" appropriate numbers according to the acceptability criterion you have been using. If both of the interpretations, 1) and 2), are unacceptable, assign both low numbers; if both are acceptable, assign high number to both. If one is acceptable and the other is not, assign one a high number and the other a low number.

97. John knows Bill trusts himself.

Here:

himself = 1) Bill
 = 2) John

1)	
2)	

98. Peter thinks John doesn't have confidence in himself.

Here:

himself = 1) Peter
 = 2) John

1)	
2)	

Appendix 6: VOCABULARY LISTS FOR THE ACCEPTABILITY
JUDGEMENT TESTS

1. The Chinese-English Vocabulary List

八	ba	eight	帮	bang	to help
病	bing	sick	部	bu	(classifier)
不必	bubi	do not need			
成功	chenggong	to succeed	穿	chuan	to dress/ put on
城市	chengshi	city			
呆	dai	stay	当然	dangran	certainly
打算	dasuan	intend	答应	daying	to promise
点	dian	o'clock	电视	dianshi	television
电影	dianying	film	懂	dong	understand
丢	diu	lose	地址	dizhi	address (n.)
房子	fangzi	house			
该	gai	should	刚才	gangcai	just now
告诉	gaosu	tell	根本不	genben bu..	not ... at all
关	guan	turn off			
关于	guanyu	about	姑娘	guniang	girl
孩子	haizi	child	好像	haoxiang	seem/appear
花	hua	flower	花园	huayuan	garden
坏了	huai le	go wrong	会	hui	meeting
回	hui	return			
火	huo	fire			
寄	ji	to post	见	jian	see
教	jiao	to teach	记得	jide	remember
借	jie	borrow	解决	jiejue	solve
警察	jingcha	police	计算机	jisuanji	computer
看见	kanjian	see	可能	keneng	possible
课程	kecheng	course/ subject			
来	lai	come	累	lei	tired
冷	leng	cold	两	liang	two
辆	liang	(classifier)	历史	lishi	history
买	mai	buy	卖	mai	sell
马路	malu	road	每	mei	every
面熟	mianshu	look familiar	没有用	mei youyong	of no use/ useless
年	nian	year	女朋友	nupengyou	girl friend
女儿	nuer	daughter	女王	nuwang	the Queen
钱	qian	money	去年	qunian	last year
妻子	qizi	wife			

让	rang	let	热	re	hot
任何	renhe	any	认为	renwei	think
日本	riben	Japan	如果	ruguo	if
三	san	three	上学	shangxue	to go to school
圣诞节	shengdanjie	Christmas Day			
圣诞卡	shengdanka	Christmas card			
什么	shenme	what	时候	shihou	time
实验	shiyan	experiment	事情	shiqing	matter (n.)
树	shu	tree	岁	year old	
虽然	suiran	although	所以	suoyi	so/ therefore
台	tai	(classifier)	太	tai	too
讨论	taolun	discuss	停	ting	stop
听	ting	listen	图书馆	tushuguan	library
外面	waimian	outside	完	wan	finish
忘	wang	forget	位	wei	(classifier)
为什么	weishenme	why	问	wen	ask
问题	wenti	question/ problem			
想	xiang	think	先生	xiansheng	gentleman/Mr.
相信	xiangxin	believe	小心	xiaoxin	careful
消息	xiaoxi	news	写字台	xiezitai	writing desk
夏天	xiatian	summer	新的	xinde	new
喜欢	xihuan	like	信心	xinxin	confidence
新年	xin nian	New Year			
洗衣机	xiyiji	washing machine	学期	xueqi	term
修理	xiuli	repair/ fix			
需要	xuyao	need			
一定	yiding	certainly	衣服	yifu	clothes
应该	yinggai	should	一个人	yigeren	alone
一会儿	yihuir	for a while	已经	yijing	already
音乐	yinyue	music	因为	yinwei	because
用	yong	to use	以前	yiqian	before
			一点	youdian	a bit
再...一遍	zai...yibian	once again	早	zao	early
造	zao	make/ build	怎么	zenme	how
长	zhang	grow	找到	zhaodao	find
正确	zhengque	correct (a.)	只	zhi	only
知道	zhidao	know	直到	zhidao	till
之后	zhihou	after	至于	zhiyu	as for
种	zhong	plant	重要	zhongyao	important
准备	zhunbei	intend	自己	ziji	self
自行车	zixingche	bike	足够的	zugoude	enough
最	zui	most	座	zuo	(classifier)
昨天	zuotian	yesterday			

2. The English-Chinese Vocabulary List

A		R	
address	n. 地址	recently	adv. 最近
appear	v. 好像, 似乎	repair	v. 修理
as regards	至于	S	
B		seem	v. 好像, 似乎
be able to	能够, 能	sell	v. 卖
believe	v. 相信	send	v. 寄
borrow	v. 借		(sent, sent)
buy	v. 买	so far	到目前为止
	(bought, bought)	solve	v. 解决
C		successful	a. 成功
Christmas	n. 圣诞节	T	
Christmas card	圣诞卡	team	n. 队
computer	n. 计算机	term	n. 学期
confidence	n. 信心	trust	
course	n. 课程	v. 信任	
D		U	
definitely	adv. 肯定地, 一定地	unexpected	a. 没有预料到的
E		W	
enough	a. 足够的	wonder	v. 不知道...为什么, 纳闷
experiment	n. 实验		
F			
familiar	a. 熟悉		
for a while	一会儿		
G			
gentleman	n. 先生		
go wrong	坏了		
	(go, went, gone)		
grow	v. 长, 生长		
L			
library	n. 图书馆		
likely	a. 可能		
look familiar	看上去面熟		
lose	v. 丢		
	(lost, lost)		
M			
money	n. 钱		
O			
once	adv. 曾经		
out of	在...中		
P			
police	n. 警察		
problem	n. 问题		
promise	v. 答应		
Q			
Queen	n. 女王		

**Appendix 7: RESULTS OF TUKEY TESTS FOR THE SCORES IN THE
CLOZE TESTS**

Table 5-1:

Tukey Tests: Pair-wise comparisons between the mean scores obtained by the eight EFL groups in the English cloze tests.

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-8.2**						
Group3	-18.8**	-10.6**					
Group4	-26.4**	-18.2**	-7.7**				
Group5	-31.3**	-23.1**	-12.6**	-4.9**			
Group6	-34.4**	-26.2**	-15.6**	-8.0**	-3.1**		
Group7	-37.1**	-28.9**	-18.3**	-10.7**	-3.8**	-2.7**	
Group8	-37.6**	-29.4**	-18.8**	-11.2**	-6.3**	-3.2**	-0.5

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

Table 5-2:

Tukey Tests: Pair-wise comparisons between the mean scores obtained by the six CFL groups in the Chinese cloze tests.

	Group1	Group2	Group3	Group4	Group5
Group2	-24.5**				
Group3	-37.1**	-12.5**			
Group4	-46.8**	-22.3**	-9.8**		
Group5	-57.4**	-32.9**	-20.4**	-10.6**	
Group6	-64.7**	-40.2**	-27.6**	-17.9**	-7.3**

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

Appendix 8: SENTENCES CONCERNING THE NULL/NON-NULL SUBJECTS AND THE BASE-GENERATED/NON-BASE-GENERATED TOPICS IN THE ACCEPTABILITY JUDGEMENT TEST FOR THE EFL LEARNERS

A. Subject PRO in Matrix Sentences (PRO/M)

(a) Control

1. I once met John's girl-friend. She was very beautiful.
2. John has bought a new computer. It is very easy to use.
3. We have planted some trees and flowers in the garden. They are growing quite well.

(b) Experimental

4. I once met John's girl-friend. Was very beautiful.
5. John has bought a new computer. Is very easy to use.
6. We have planted some trees and flowers in the garden. Are growing quite well.

B. Subject PRO in Embedded Sentences (PRO/E)

(a) Control

7. I thought this lady was John's friend, but John said she was Mary's friend.
8. I asked Bill whether John would come next week. Bill said he would certainly come.
9. The experiment has been started. I hope it will be successful.

(b) Experimental

10. I thought this lady was John's friend, but John said was Mary's friend.
11. I asked Bill whether John would come next week. Bill said would certainly come.
12. The experiment has been started. I hope will be successful.

C. Sentences with both Subject PRO and Object *pro* (PRO/*pro*)

(a) Control

13. He has promised to give me a new desk, but so far he hasn't given me one yet.
14. Every Christmas she sends me a Christmas card. I wonder why she didn't send me one last year.
15. I want to tell Mary my new address, but I forgot to tell her when I saw her just now.

(b) Experimental

16. He has promised to give me a new desk, but so far hasn't given yet.
17. Every Christmas she sends me a Christmas card. I wonder why didn't send last year.

18. I want to tell Mary my new address, but forgot to tell when I saw her just now.

D. Absence of Expletives in Weather-Predicate Sentences (EXP/W)

(a) Control

19. It has been very cold here recently.
20. It is eight o'clock. I must go to school now.
21. Sometimes it snows here in May.

(b) Experimental

22. Has been very cold here recently.
23. Is eight o'clock. I must go to school now.
24. Sometimes snows here in May.

E. Absence of Expletives in Raising-Predicate Sentences (EXP/R)

(a) Control

25. It seems that Peter is ill.
26. It appears that they don't understand the question.
27. It seems that Mary is very tired.

(b) Experimental

28. Seems that Peter is ill.
29. Appears that they don't understand the question.
30. Seems that Mary is very tired.

F. Base-Generated Topics in Sentences with Extraposed Clauses (BTE_x)

(a) Control

31. It is very likely that you won't be able to use that computer now.
32. It is quite possible that he will be able to solve this problem.
33. It is possible that she won't believe this news at first.

(b) Experimental

34. That computer it is very likely that you won't be able to use now.
35. This problem it is quite possible that he will be able to solve.
36. This news it is possible that she won't believe at first.

G. Base-Generated Topics in Sentences with Wh-islands (BTWh)

(a) Control

37. I don't know when he is going to repair this car.
38. I don't know why he doesn't like this book.
39. I can't remember where I have met this gentleman before.

(b) Experimental

40. This car I don't know when he is going to repair.
41. This book I don't know why he doesn't like.
42. This gentleman I can't remember where I have met before.

H. Non-Gap Topic (NGT)

(a) Control

43. As regards the members of her family, I have only met her mother.
44. Out of the courses for this term, she is most interested in English.
45. As regards big cities in China, I have only been to Beijing.

(b) Experimental

46. The members of her family, I have only met her mother.
47. The courses for this term, she is most interested in English.
48. Big cities in China, I have only been to Beijing.

Appendix 9: SENTENCES CONCERNING THE NULL/NON-NULL SUBJECTS AND THE BASE-GENERATED/NON-BASE-GENERATED TOPICS IN THE ACCEPTABILITY JUDGEMENT TEST FOR THE CFL LEARNERS

Note: In the experiment, all Chinese sentences were presented in both Chinese character and Chinese *pinyin* alphabet. Here are given only the versions of Chinese *pinyin* alphabet. And in most cases, the Chinese sentences below are the translations of English sentences in Appendix 8.

A. Subject PRO in Matrix Sentences (PRO/M)

(a) Control

1. women zuotian kanjian le Li Ming de nu pengyou, ta zhang de hen piaoliang.
2. wo mai le yi tai xinde jisuanji, ta shi Riben zao de.
3. women zai huayuan li zhong le yixie shu he hua, tamen zhang de hen hao.

(b) Experimental

4. women zuotian kanjian le Li Ming de nu pengyou, zhang de hen piaoliang.
5. wo mai le yi tai xinde jisuanji, shi Riben zao de.
6. women zai huanyuan li zhong le yixie shu he hua, zhang de hen hao.

B. Subject PRO in Embedded Sentences (PRO/E)

(a) Control

7. wo xiang na ge guniang yiding shi Wang Ping de nu pengyou, keshi Li Ming shuo ta shi Zhang Bo de nu pengyou.
8. zhe ge shiyan yijing kaishi, wo xiangxin ta hui chenggong.
9. wo wen Wang Ping Li Ming jintian lai bu lai, Wang Ping shuo ta yiding hui lai.

(b) Experimental

10. wo xiang na ge guniang yiding shi Wang Ping de nu pengyou, keshi Li Ming shuo shi Zhang Bo de nu pengyou.
11. zhe ge shiyan yijing kaishi, wo xiangxin hui chenggong.
12. wo wen Wang Ping Li Ming jintian lai bu lai, Wang Ping shuo yiding hui lai.

C. Sentences with both Subject PRO and Object *pro* (PRO/*pro*)

(a) Control

13. mei nian Shengdan jie ta dou ji gei wo yi zhang Shengdan ka, keshi qunian ta mei ji gei wo Shengdan ka.
14. shang xingqi ta daying gei wo yi ge xinde xiezitai, danshi

zhidao xianzai ta ye mei gei wo xinde xiezitai.

15. shang xueqi ta jiao women lishi, danshi zhe xueqi ta bu jiao women lishi le.

(b) Experimental

16. mei nian Shengdan jie ta dou ji gei wo yi zhang Shengdan ka, keshi qunian mei ji.
 17. shang xingqi ta daying gei wo yi ge xinde xiezitai, danshi zhidao xianzai ye mei gei.
 18. shang xueqi ta jiao women lishi, danshi zhe xueqi bu jiao le.

D. Absence of Expletives in Weather-Predicate Sentences (EXP/W)

(a) Control

19. waimian ta hen leng.
 20. ta ba dian le, wo gai shang xue qu le.
 21. xiatian zher ta hen re.

(b) Experimental

22. waimian hen leng.
 23. ba dian le, wo gai shang xue qu le.
 24. xiatian zher hen re.

E. Absence of Expletives in Raising-Predicate Sentences (EXP/R)

(a) Control

25. ta haoxiang Li Ming bing le.
 26. ta haoxiang tamen bu dong zhe ge wenti.
 27. ta haoxiang Zhang Hua hen lei.

(b) Experimental

28. haoxiang Li Ming bing le.
 29. haoxiang tamen bu dong zhe ge wenti.
 30. haoxiang zhang Hua hen lei.

F. Base-Generated Topics in Sentences with Sentential Subjects (BTS)

(a) Control

31. ni xiang xianzai yong na tai jisuanji shi bu keneng de.
 32. ni he ta taolun zhe ge wenti mei youyong.
 33. ni xianzai gaosu ta zhe ge xiaoxi youdian tai zao.

(b) Experimental

34. na tai jisuanji ni xiang xianzai yong shi bu keneng de.
 35. zhe ge wenti ni he ta taolun mei youyong.
 36. zhe ge xiaoxi ni xianzai gaosu ta youdian tai zao.

G. Base-Generated Topics in Sentences with Wh-islands (BTWh)

(a) Control

37. wo bu zhidao ta dasuan shenmo shihou mai zhe zuo fangzi.
38. wo bu zhidao weishenmo ta bu xihuan zhe ben shu.
39. wo bu jide yiqian wo zai nar jian guo zhe wei xiansheng.

(b) Experimental

40. zhe zuo fangzi wo bu zhidao ta dasuan shenmo shihou mai.
41. zhe ben shu wo bu zhidao weishenmo ta bu xihuan.
42. zhe wei xiansheng wo bu jide yiqian wo zai nar jian guo.

H. Non-Gap Topics (NGT)

(a) Control

43. zhiyu ta jia li de ren, wo zhi jian guo ta mama.
44. zhiyu zhe xueqi de kecheng, wo zui xihuan lishi.
45. zhiyu Zhongguo de da chengshi, wo zhi qu guo Beijing.

(b) Experimental

46. ta jia li de ren, wo zhi jian guo ta mama.
47. zhe xueqi de kecheng, wo zui xihuan lishi.
48. Zhongguo de da chengshi, wo zhi qu guo Beijing.

Appendix 10: TABLES FOR THE CFL GROUPS IN CHAPTER 6

Table 6-1: Mean scores of judgements on sentences with subject PRO in matrix sentences (PRO/M) by the CFL groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	7.230	7.812	7.228	8.115	7.936	8.723
Experi	6.436	7.515	7.414	7.399	8.647	8.735

Table 6-2: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of PRO/M.

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-0.58				
Group 3	0.00	0.58			
Group 4	-0.89	-0.30	-0.89		
Group 5	-0.71	-0.12	-0.71	0.18	
Group 6	-1.49	-0.91	-1.49	-0.61	-0.79

Table 6-3: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of PRO/M

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-1.08				
Group 3	-0.98	0.10			
Group 4	-0.96	0.12	-0.02		
Group 5	-2.21**	-1.13	-1.23	-1.25	
Group 6	-2.30**	-1.22	-1.32	-1.34	-0.09

** $p < 0.01$

Table 6-4: Mean scores of judgements on sentences with subject PRO in embedded sentences (PRO/E) by the CFL groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	7.596	7.695	7.613	7.718	7.826	8.147
Experi	7.800	7.533	7.636	7.536	8.062	8.368

Table 6-5: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of PRO/E.

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-0.10				
Group 3	-0.02	0.08			
Group 4	-0.12	-0.02	-0.10		
Group 5	-0.23	-0.13	-0.21	-0.11	
Group 6	-0.55	-0.45	-0.53	-0.43	-0.32

Table 6-6: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of PRO/E

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	0.27				
Group 3	0.16	-0.10			
Group 4	0.26	0.00	0.10		
Group 5	-0.26	0.53	-0.43	-0.53	
Group 6	-0.57	-0.83	-0.73	-0.83	-0.31

Table 6-7: Mean scores of judgements on sentences with both subject PRO and object *pro* (PRO/*pro*) by the CFL groups.

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	6.170	5.543	6.231	6.784	6.043	6.495
Experi	5.580	6.681	6.764	7.459	8.075	8.757

Table 6-8: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of PRO/*pro*.

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	0.63				
Group 3	-0.06	-0.69			
Group 4	-0.61	-1.24	-0.55		
Group 5	0.13	-0.50	0.19	0.74	
Group 6	-0.32	-0.95	-0.26	0.29	-0.45

Table 6-9: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of PRO/*pro*

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-1.10				
Group 3	-1.18	-0.08			
Group 4	-1.88*	-0.78	-0.70		
Group 5	-2.49**	-1.39	-1.31	-0.62	
Group 6	-3.18**	-2.08**	-1.99*	-1.30	-0.68

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

Table 6-10: Mean score of judgements on the absence of expletive in weather-predicate sentences (EXP/W) by the CFL groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	4.579	1.745	1.170	1.360	1.106	0.669
Experi	7.687	7.388	7.260	8.366	9.250	9.644

Table 6-11: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of EXP/W.

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	2.83**				
Group 3	3.41**	0.58			
Group 4	3.22**	0.38	-0.19		
Group 5	3.47**	0.64	0.06	0.25	
Group 6	3.91**	1.08	0.50	0.69	0.44

** $p < 0.01$

Table 6-12: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of EXP/W

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	0.30				
Group 3	0.43	0.13			
Group 4	-0.68	-0.98	-1.11		
Group 5	-1.56	-1.86*	-1.99*	-0.88	
Group 6	-1.96*	-2.26**	-2.38**	-1.28	-0.39

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

Table 6-13: Mean scores of judgements on the absence of expletive in raising-predicate sentences (EXP/R) by the CFL groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	5.677	2.992	3.461	2.437	1.215	1.753
Experi	6.625	8.357	8.553	8.508	8.977	8.251

Table 6-14: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of EXP/R

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	2.68**				
Group 3	2.22*	-0.47			
Group 4	3.24**	0.56	1.02		
Group 5	4.46**	1.78	2.25*	1.22	
Group 6	3.92**	1.24	1.71	0.68	-0.54

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

Table 6-15: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of EXP/R

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-1.73				
Group 3	-1.93	-0.20			
Group 4	-1.88*	-0.15	0.05		
Group 5	-2.35*	-0.62	-0.42	-0.47	
Group 6	-1.63	0.11	0.30	0.26	0.73

* $p < 0.05$

Table 6-16: Mean scores of judgements on base-generated topics in sentences with sentential subjects (BTS) by the CFL groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	5.225	6.713	6.494	7.932	8.214	8.697
Experi	4.764	4.104	4.598	4.970	7.098	8.297

Table 6-17: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of BTS

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-1.49				
Group 3	-1.27	0.22			
Group 4	-2.71**	-1.22	-1.44		
Group 5	-2.99**	-1.50	-1.72	-0.28	
Group 6	-3.47**	-1.98*	-2.20**	-0.77	-0.48

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

Table 6-18: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of BTS

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	0.66				
Group 3	0.17	-0.49			
Group 4	-0.21	-0.87	-0.37		
Group 5	-2.33*	-2.99**	-2.50**	-2.13*	
Group 6	-3.53**	-4.19**	-3.70**	-3.33**	-1.20

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

Table 6-19: Mean scores of judgements on base-generated topics in sentences with wh-islands (BTWh) by the CFL groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	6.479	6.912	7.246	8.172	8.233	8.594
Experi	5.676	5.946	6.069	6.359	7.237	8.198

Table 6-20: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of BTWh

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-0.43				
Group 3	-0.77	-0.33			
Group 4	-1.69	-1.26	-0.93		
Group 5	-1.75	-1.32	-0.99	-0.06	
Group 6	-2.12**	-1.68	-1.35	-0.42	-0.36

** $p < 0.01$ **Table 6-21:** Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of BTWh

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-0.27				
Group 3	-0.39	-0.12			
Group 4	-0.68	-0.41	-0.29		
Group 5	-1.56	-1.29	-1.17	-0.88	
Group 6	-2.52**	-2.25**	-2.13**	-1.84*	-0.96

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

Table 6-22: Mean scores of judgements on non-gap topics (NGT) by the CFL groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Control	5.740	7.970	8.052	8.309	7.642	7.641
Experi	6.578	6.130	5.829	6.382	7.730	9.264

Table 6-23: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of NGT

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	-2.23**				
Group 3	-2.31**	-0.08			
Group 4	-2.57**	-0.34	-0.26		
Group 5	-1.90	0.33	-0.41	0.67	
Group 6	-1.90*	0.33	-0.41	0.67	0.00

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

Table 6-24: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of NGT

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 2	0.45				
Group 3	0.75	0.30			
Group 4	0.20	-0.25	-0.55		
Group 5	-1.15	-1.60	-1.90	-1.35	
Group 6	-2.69**	-3.13**	-3.43**	-2.88**	-1.53

** $p < 0.01$

Table 6-25: Simple linear regression of BTS using NGT as a predictor in the judgements by the CFL subjects

The regression equation is:	DF	R-sq	t-ratio	p
BTS=2.17+0.438 NGT	101	17.9%	4.67	0.000

Table 6-26: Simple linear regression of BTWh using NGT as a predictor in the judgements by the CFL subjects

The regression equation is:	DF	R-sq	t-ratio	p
BTWh=4.49+0.269 NGT	101	9.5%	3.24	0.002

Appendix 11: TABLES FOR THE EFL GROUPS IN CHAPTER 6

Table 6-27: Mean scores of judgements on sentences with subject PRO in matrix sentences (PRO/M) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	7.242	7.683	7.107	7.713	8.105	7.895	8.492	9.598
Experi	5.698	4.881	4.293	2.551	2.902	3.810	3.236	3.197

Table 6-28: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of PRO/M

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.44						
Group3	0.13	0.58					
Group4	-0.47	-0.03	-0.61				
Group5	-0.86	-0.42	-1.00	-0.39			
Group6	-0.65	-0.21	-0.79	-0.18	0.21		
Group7	-1.25	-0.81	-1.38	-0.78	-0.39	-0.60	
Group8	-2.36*	-1.92	-2.49**	-1.89	-1.49	-1.70	-1.11

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

Table 6-29: Pair-wise comparisons in Tukey-Tests between the 8 EFL groups in judging the experimental sentences of PRO/M

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.82						
Group3	1.14	0.59					
Group4	3.15**	2.33**	1.74				
Group5	2.80**	1.98	1.39	-0.35			
Group6	1.89	1.07	0.48	-1.26	-0.91		
Group7	2.46**	1.65	1.06	-0.69	-0.33	0.57	
Group8	2.50**	1.68	1.10	-0.65	-0.30	0.61	0.04

** $p < 0.01$

Table 6-30: Mean scores of judgements on sentences with subject PRO in embedded sentences (PRO/E) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	6.166	7.288	6.570	7.594	7.578	8.223	8.594	8.556
Experi	6.213	4.747	4.258	3.957	3.498	4.517	3.390	2.202

Table 6-31: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of PRO/E

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-1.12						
Group3	-0.40	0.70					
Group4	-1.43	-0.31	-1.02				
Group5	-1.41	-0.29	-1.01	0.02			
Group6	-2.06*	-0.93	-1.65	-0.63	-0.65		
Group7	-2.43**	-1.31	-2.02*	-1.00	-1.02	-0.37	
Group8	-2.39*	-1.27	-1.99	-0.96	-0.98	-0.33	0.04

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

Table 6-32: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of PRO/E

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	1.47						
Group3	1.95*	0.49					
Group4	2.26**	0.79	0.30				
Group5	2.72**	1.25	0.76	0.46			
Group6	1.70	0.23	-0.26	-0.56	-1.02		
Group7	2.28**	1.36	0.87	0.57	0.11	1.13	
Group8	4.01**	2.54**	2.06	1.76	1.30	2.31*	1.19

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

Table 6-33: Mean scores of judgements on sentences with both subject PRO and object *pro* (PRO/*pro*) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	6.627	6.739	6.204	7.063	6.847	7.919	7.808	8.218
Experi	6.083	5.213	5.255	4.119	3.778	4.819	3.803	2.405

Table 6-34: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of PRO/*pro*

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.11						
Group3	0.42	0.54					
Group4	-0.44	-0.32	-0.86				
Group5	-0.22	-0.11	-0.64	0.22			
Group6	-1.29	-1.18	-1.71	-0.86	-1.07		
Group7	-1.18	-1.07	-1.60	-0.74	-0.96	0.11	
Group8	-1.59	-1.48	-2.01	-1.15	-1.37	-0.30	-0.41

Table 6-35: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of PRO/pro

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.87						
Group3	0.83	-0.04					
Group4	1.96	1.09	1.14				
Group5	2.30*	1.44	1.48	0.34			
Group6	1.26	0.39	0.44	-0.70	-1.04		
Group7	2.28*	1.41	1.45	0.32	-0.03	1.02	
Group8	3.68**	2.81**	2.85**	1.71	1.37	2.41*	1.40

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

Table 6-36: Mean scores of judgements on the absence of expletive in weather-predicate sentences (EXP/W) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	7.236	6.915	7.678	8.384	8.625	9.275	9.584	9.644
Experi	3.916	3.672	3.340	3.340	3.393	3.347	2.641	3.793

Table 6-37: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of EXP/W

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.32						
Group3	-0.44	-0.76					
Group4	-1.15	-1.47	-0.71				
Group5	-1.39	-1.71	-0.95	-0.24			
Group6	-2.04*	-2.36**	-1.60	-0.89	-0.65		
Group7	-2.35**	-2.67**	-1.91*	-1.20	-0.96	-0.31	
Group8	-2.41**	-2.73**	-1.97*	-1.26	-1.02	-0.37	-0.06

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

Table 6-38: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of EXP/W

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.24						
Group3	0.58	0.33					
Group4	0.58	0.33	0.00				
Group5	0.52	0.28	-0.05	-0.05			
Group6	0.57	0.32	-0.01	-0.01	0.05		
Group7	1.28	1.03	0.70	0.70	0.75	0.71	
Group8	0.12	-0.12	-0.45	-0.45	-0.40	-0.45	-1.15

Table 6-39: Mean scores of judgements on the absence of expletives in raising-predicate sentences (EXP/R) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	7.624	7.806	8.323	9.030	9.140	9.387	9.702	9.693
Experi	4.765	4.603	3.553	3.857	3.435	4.375	3.616	4.980

Table 6-40: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of EXP/R

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.18						
Group3	-0.70	-0.52					
Group4	-1.41	-1.22	-0.71				
Group5	-1.52	-1.33	-0.82	-0.11			
Group6	-1.76	-1.58	-1.06	-0.36	-0.25		
Group7	-2.08*	-1.90	-1.38	-0.67	-0.56	-0.32	
Group8	-2.07	-1.89	-1.37	-0.66	-0.55	-0.31	0.01

* $p < 0.05$

Table 6-41: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of EXP/R

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.16						
Group3	1.21	1.05					
Group4	0.91	0.75	-0.30				
Group5	1.33	1.17	0.12	0.42			
Group6	0.39	0.23	-0.82	-0.52	-0.94		
Group7	1.15	0.99	-0.06	0.24	-0.18	0.76	
Group8	-0.21	-0.38	-1.43	-1.12	-1.55	-0.61	-1.36

Table 6-42: Mean scores of judgements on base-generated topics in sentences with extraposed clause (BTEX) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	5.916	6.253	5.704	7.015	7.000	7.647	7.649	9.132
Experi	5.370	4.837	3.915	3.808	3.774	3.778	3.031	3.385

Table 6-43: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of BTEX

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.34						
Group3	0.21	0.55					
Group4	-1.10	-0.76	-1.31				
Group5	-1.08	-0.75	-1.30	0.02			
Group6	-1.73	-1.39	-1.94	-0.63	-0.65		
Group7	-1.73	-1.40	-1.94	-0.63	-0.65	0.00	
Group8	-3.22**	-2.88**	-3.43**	-2.12	-2.13	-1.49	-1.48

**p<0.01

Table 6-44: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of BTE_x

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.53						
Group3	1.46	0.92					
Group4	1.56	1.03	0.11				
Group5	1.60	1.06	0.14	0.03			
Group6	1.59	1.06	0.14	0.03	0.00		
Group7	2.34	1.81	0.88	0.78	0.74	0.75	
Group8	1.98	1.45	0.53	0.42	0.39	0.39	-0.35

Table 6-45: Mean scores of judgements on base-generated topics in sentences with wh-islands (BTWh) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	6.962	6.620	6.730	7.907	8.190	8.673	8.946	9.470
Experi	6.725	5.138	3.761	4.183	4.849	4.799	2.984	3.003

Table 6-46: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of BTWh.

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.34						
Group3	0.23	-0.11					
Group4	-0.95	-1.29	-1.18				
Group5	-1.23	-1.57	-1.46	-0.28			
Group6	-1.71	-2.05	-1.94	-0.77	-0.48		
Group7	-1.98	-2.33	-2.22	-1.04	-0.76	-0.27	
Group8	-2.51*	-2.85**	-2.74*	-1.56	-1.28	-0.80	-0.52

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

Table 6-47: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of BTWh

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	1.59						
Group3	2.96**	1.38					
Group4	2.54*	0.96	0.42				
Group5	1.88	0.29	-1.09	-0.67			
Group6	1.93	0.34	-1.04	-0.62	0.05		
Group7	3.74**	2.15	0.78	1.20	1.87	1.82	
Group8	3.72**	2.13	0.76	1.18	1.85	1.80	-0.02

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

Table 6-48: Mean scores of judgements on non-gap topics (NGT) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Control	6.470	6.370	6.131	6.577	6.247	7.218	6.534	8.255
Experi	6.990	5.546	4.433	4.295	4.093	3.912	2.976	1.262

Table 6-49: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of NGT

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.92						
Group3	0.34	0.24					
Group4	-0.11	-0.21	-0.45				
Group5	0.22	0.12	-0.12	0.33			
Group6	-0.75	-0.85	-1.09	-0.64	-0.97		
Group7	-0.06	-0.16	-0.40	0.04	-0.29	0.68	
Group8	-1.79	-1.89	-2.12	-1.68	-2.01	-1.04	-1.72

Table 6-50: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of NGT

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	1.44						
Group3	2.56**	1.11					
Group4	2.70**	1.25	0.14				
Group5	2.90**	1.45	0.34	0.20			
Group6	3.08**	1.63	0.52	0.38	0.18		
Group7	4.01**	2.57**	1.46	1.32	1.12	0.94	
Group8	5.73**	4.28**	3.17**	3.03**	2.83**	2.65*	1.71

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

Table 6-51: Simple linear regression of BTE_x using NGT as a predictor in the judgements by the EFL subjects

The regression equation is:	DF	R-sq	t-ratio	<i>p</i>
BTE _x =1.79+0.494 NGT	158	23.6%	6.96	0.000

Table 6-52: Simple linear regression of BTW_h using NGT as a predictor in the judgements by the EFL subjects

The regression equation is:	DF	R-sq	t-ratio	<i>p</i>
BTW _h =2.45+0.464 NGT	158	21.8%	6.62	0.000

**Appendix 12: SENTENCES CONCERNING OBJECT *pro* IN THE
TEST FOR THE EFL LEARNERS**

A. Object *pro* in Extraposed Clause (*pro/Ex*)

(a) Experimental

1. Perhaps that computer has gone wrong. It is very likely that you won't be able to use now.
2. I think this problem won't be very difficult for him. It is quite possible that he will be able to solve.
3. This news is indeed unexpected. It is possible that she won't believe at first.

(b) Control

4. It is very likely that you won't be able to use that computer now.
5. It is quite possible that he will be able to solve this problem.
6. It is possible that she won't believe this news at first.

B. Object *pro* in Wh-island (*pro/Wh*)

(a) Experimental

7. He wants to repair this car, but I don't know when he is going to repair.
8. I like this book very much, but I don't know why he doesn't like.
9. This gentleman looks very familiar, but I can't remember where I have met before.

(b) Control

10. I don't know when he is going to repair this car.
11. I don't know why he doesn't like this book.
12. I can't remember where I have met this gentleman before.

C. Inanimate Object *pro* in Main Sentence (*I/pro/M*)

(a) Experimental

13. Mary has bought a new computer, but she doesn't know how to use.
14. I need that computer, but I haven't got enough money to buy.
15. Mary's bike has gone wrong. Tomorrow I am going to repair for her.

(b) Control

16. Mary has just bought a new computer, but she doesn't know how to use it.
17. I need that computer, but I haven't got enough money to buy it.

18. Mary's bike has gone wrong. Tomorrow I am going to repair it for her.

D. Inanimate Object *pro* in Subordinate Sentence (I/*pro*/S)

(a) Experimental

19. I have got a problem with my work. Mary said she would help me to solve.
 20. Mary lost her bike last week, but John says the police have found for her.
 21. I want to borrow that book from her, but she says she is using at the moment.

(b) Control

22. I have got a problem with my work. Mary said she would help me to solve it.
 23. Mary lost her bike last week, but John says the police have found it for her.
 24. I want to borrow that book from her, but she says she is using it at the moment.

E. Inanimate Object *pro* Coindexed with an Argument in an Adjunct (I/*pro*/adjunct-A)

(a) Experimental

25. If you write a good book, I will definitely buy.
 26. When you finish using the computer, please let me use for a while.
 27. Although he has seen the film he wants to see again.

(b) Control

28. If you write a good book, I will definitely buy it.
 29. When you finish using the computer, please let me use it for a while.
 30. Although he has seen the film, he wants to see it again.

F. Animate Object *pro* in Main sentence (A/*pro*/M)

(a) Experimental

31. John says Bill has got a new girlfriend, but I haven't met yet.
 32. Peter's mother has never beaten him, but his father has beaten several times.
 33. I immediately recognized these students, and later Mary also recognized.

(b) Control

34. John says Bill has got a new girlfriend, but I haven't met her yet.
 35. Peter's mother has never beaten him, but his father has beaten him several times.
 36. I immediately recognized the students, and later Mary also recognized them.

G. Animate *pro* in Subordinate Sentence (A/*pro*/S)

(a) Experimental

37. I ask John whether he has ever seen the Queen. He says he has seen on TV.
38. I once helped Peter and Mary remembers she also once helped.
39. John said those students were in the library, but I told him I didn't find there.

(b) Control

40. I ask John whether he has ever seen the Queen. He says he has seen her on TV.
41. I once helped Peter and Mary remembers she also once helped him.
42. John said those students were in the library, but I told him I didn't find them there.

Appendix 13: SENTENCES CONCERNING OBJECT *pro* IN THE TEST FOR THE CFL LEARNERS

A. Object *pro* in Sentential Subject (*pro*/SS)

(a) Experimental

1. Ta zhengzai yong na tai jisuanji, ni xiang xianzai yong shi bu keneng de.
2. Ta bu dong zhe ge wenti, ni he ta taolun mei youyong.
3. Ni dangran keyi gaosu ta zhe ge xiaoxi, danshi ni xianzai gaosu youdian tai zao.

(b) Control

4. Ni xiang xianzai yong na tai jisuanji shi bu keneng de.
5. Ni he ta taolun zhe ge wenti mei youyong.
6. Ni xianzai gaosu ta zhe ge xiaoxi youdian tai zao.

B. Object *pro* in Wh-island (*pro*/wh)

(a) Experimental

7. Ta xiang mai zhe zuo fangzi, danshi wo bu zhidao ta dasuan shenmo shihou mai.
8. Wo hen xihuan zhe ben shu, keshi wo bu zhidao weishenmo ta bu xihuan.
9. Zhe wei xiansheng hen mianshou, danshi wo bu jide yiqian wo zai nar jian guo.

(b) Control

10. Wo bu zhidao ta dasuan shenmo shihou mai zhe zuo fangzi.
11. Wo bu zhidao weishenmo ta bu xihuan zhe ben shu.
12. Wo bu jide yiqian wo zai nar jian guo zhe wei xiansheng.

C. Inanimate Object *pro* in Main Sentence (*I/pro*/M)

(a) Experimental

13. Zhang Hua mai le yi tai xinde jisuanji, danshi ta bu zhidao zenmo yong.
14. Wo xuyao na tai jisuanji, danshi wo hai mei you zugoude qian mai.
15. tade zixingche huai le, wo dasuan mingtian bang ta xiuli.

(b) Control

16. Zhang Hua mai le yi tai xinde jisuanji, danshi ta bu zhidao zenmo yong ta.
17. Wo xuyao na tai jisuanji, danshi wo hai mei you zugoude qian mai ta.
18. Tade zixingche huai le, wo dasuan mingtian bang ta xiuli ta.

D. Inanimate Object *pro* in Subordinate Sentences (I/*pro*/S)

(a) Experimental

19. Zuotian Zhang Hua diu le zixingche, danshi Li Ming shuo jingcha yijing bang ta zhaodao le.
 20. Wo you ge wenti, Wang Ping shuo Li Ming neng bang wo jieju.
 21. Zuotian wo wen ta jie na ben shu, danshi ta shuo ta zhengzai kan.

(b) Control

22. Zuotian Zhang Hua diu le zixingche, danshi Li Ming shuo jingcha yijing bang ta zhaodao le ta.
 23. Wo you ge wenti, Wang Ping shuo Li Ming neng bang wo jieju ta.
 24. Zuotian wo wen ta jie na ben shu, danshi ta shuo ta zhengzai kan ta.

E. Inanimate Object *pro* Coindexed with an Argument in an Adjunct (I/*pro*/adjunct-A)

(a) Experimental

25. Yinwei zhe ge wenti bu zhongyao, suoyi women bu zhunbei zai hui shang taolun.
 26. Ruguo ni xiechu yi ben hao shu, wo yiding mai.
 27. Tamen ting le zhe ge xiaoxi zhihou, tamen genben bu xiangxin.

(b) Control

28. Yinwei zhe ge wenti bu zhongyao, suoyi women bu zhunbei zai hui shang taolun ta.
 29. Ruguo ni xie chu yi ben hao shu, wo yiding mai ta.
 30. Tamen ting le zhe ge xiaoxi zhihou, tamen genben bu xiangxin ta.

F. Animate Object *pro* in Main Sentences (A/*pro*/M)

(a) Experimental

31. Wang Ping shuo Li Ming zhaodao le ge xinde nu pengyou, danshi wo hai meiyou jian guo.
 32. Zhang Bo de mama conglai meiyou da guo Zhang Bo, danshi ta baba da guo haoji ci.
 33. Wo like jiu renchulai le zhexie xuesheng, houlai Zhang Hua ye renchulai le.

(b) Control

34. Wang Ping shuo Li Ming zhaodao le ge xinde nu pengyou, danshi wo hai meiyou jian guo ta.
 35. Zhang Bo de mama conglai meiyou da guo Zhang Bo, danshi ta baba da guo ta haoji ci.
 36. Wo like jiu renchulai le zhexie xuesheng, houlai Zhang Hua ye renchulai le tamen.

G. Animate *pro* in Subordinate Sentences (A/*pro*/S)

(a) Experimental

37. Wo cengjing bang guo Li Ming, Zhang Huan jide ta ye cengjing bang guo.
38. Li Ming shuo naxie xuesheng zai tushuguan li, keshi wo gaosu ta wo zai nar mei zhaodao.
39. Wang Ping wen wo jian mei jian guo Nuwang, wo shuo wo zai dianshi shang jian guo.

(b) Control

40. Wo cengjing bang guo Li Ming, Zhang Hua jide ta ye cengjing bang guo ta.
41. Li Ming shuo naxie xuesheng zai tushuguan li, keshi wo gaosu ta wo zai nar mei zhaodao tamen.
42. Wang Ping wen wo jian mei jian guo Nuwang, wo shuo wo zai dianshi shang jian guo ta.

Appendix 14: TABLES FOR CHAPTER 7

Table 7-1: Mean scores of judgements on sentences with object *pro* in an extraposed clause (*pro/Ex*) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Contro	5.916	6.253	5.704	7.015	7.000	7.647	7.649	9.132
Experi	5.370	4.837	3.915	3.808	3.774	3.778	3.031	3.385

Table 7-2: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of *pro/Ex*

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.34						
Group3	0.21	0.55					
Group4	-1.10	-0.76	-1.31				
Group5	-1.08	-0.75	-1.30	0.02			
Group6	-1.73	-1.39	-1.94	-0.63	-0.65		
Group7	-1.73	-1.40	-1.94	-0.63	-0.65	0.00	
Group8	-3.2**	-2.8**	-3.4**	-2.1	-2.1	-1.5	-1.5

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

Table 7-3: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of *pro/Ex*

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.35						
Group3	0.06	0.40					
Group4	-0.34	0.01	-0.39				
Group5	-0.24	0.11	-0.29	0.10			
Group6	-0.39	-0.04	-0.44	-0.05	-0.15		
Group7	0.07	0.42	0.02	0.41	0.31	0.46	
Group8	2.4	2.8*	2.4	2.8**	2.7*	2.8*	2.35

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

Table 7-4: Mean scores of judgements on the sentence with object *pro* in a wh-island (*pro/wh*) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Contro	6.962	6.620	6.730	7.907	8.190	8.673	8.946	9.470
Experi	7.055	6.934	6.775	6.573	6.786	6.515	5.981	3.487

Table 7-5: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of *pro/wh*

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.34						
Group3	0.23	-0.11					
Group4	-0.95	-1.29	-1.18				
Group5	-1.23	-1.57	-1.46	-0.28			
Group6	-1.71	-2.05	-1.94	-0.77	-0.48		
Group7	-1.98	-2.33	-2.22	-1.04	-0.76	-0.27	
Group8	-2.5	-2.9**	-2.8*	-1.6	-1.3	-0.8	-0.5

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

Table 7-6: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of *pro/wh*

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.12						
Group3	0.28	0.16					
Group4	0.48	0.36	0.20				
Group5	0.27	0.15	-0.01	-0.21			
Group6	0.54	0.42	0.26	0.06	0.27		
Group7	1.07	0.95	0.79	0.59	0.80	0.53	
Group8	3.6**	3.5**	3.3**	3.1**	3.3**	3.0**	2.5

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

Table 7-7: Mean scores of judgements on sentences with inanimate object *pro* in main sentences (*I/pro/M*) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Contro	6.593	7.259	7.225	8.606	8.680	8.894	9.252	9.045
Experi	7.212	7.330	6.200	6.314	6.045	6.730	5.823	2.781

Table 7-8: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of *I/pro/M*

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.67						
Group3	-0.63	0.03					
Group4	-2.01*	-1.35	-1.38				
Group5	-2.09*	-1.42	-1.46	-0.07			
Group6	-2.30**	-1.63	-1.67	-0.29	-0.21		
Group7	-2.66**	-1.99*	-2.03*	-0.65	-0.57	-0.36	
Group8	-2.5**	-1.8	-1.8	-0.4	-0.4	-0.2	-0.2

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

Table 7-9: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of I/pro/M

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.12						
Group3	1.01	1.13					
Group4	0.90	1.02	-0.11				
Group5	1.17	1.29	0.16	0.27			
Group6	0.48	0.60	-0.53	-0.42	-0.68		
Group7	1.39	1.51	0.38	0.49	0.22	0.91	
Group8	4.4**	4.6**	3.4**	3.5**	3.3**	4.0**	3.0**

**p<0.01, *p<0.05

Table 7-10: Mean scores of judgements on sentences with inanimate object pro in subordinate sentences (I/pro/S) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Contro	6.096	6.489	5.844	6.782	7.332	7.642	7.654	9.300
Experi	5.907	5.762	5.847	5.482	5.741	5.445	5.229	2.766

Table 7-11: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of I/pro/S

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.39						
Group3	0.25	0.64					
Group4	-0.69	-0.29	-0.94				
Group5	-1.24	-0.84	-1.49	-0.55			
Group6	-1.55	-1.15	-1.80	-0.86	-0.31		
Group7	-1.56	-1.16	-1.81	-0.87	-0.32	-0.01	
Group8	-3.2**	-2.8**	-3.5**	-2.5**	-2.0	-1.7	-1.7

**p<0.01, *p<0.05

Table 7-12: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of I/pro/S

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.14						
Group3	0.06	-0.09					
Group4	0.43	0.28	0.37				
Group5	0.17	0.02	0.11	-0.26			
Group6	0.46	0.32	0.40	0.04	0.30		
Group7	0.68	0.53	0.62	0.25	0.51	0.22	
Group8	3.1**	3.0**	3.1**	2.8**	3.0**	2.7**	2.5**

**p<0.01, *p<0.05

Table 7-13: Mean scores of judgements on sentences with inanimate object *pro* coindexed with an argument in an adjunct (I/pro/A-adjunct) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Contro	7.007	6.902	6.858	7.511	8.417	8.914	9.044	9.468
Experi	7.250	6.423	6.021	6.555	6.635	6.722	5.867	2.529

Table 7-14: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of I/pro/A-adjunct

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.01						
Group3	0.15	0.04					
Group4	-0.50	-0.61	-0.65				
Group5	-1.41	-1.52	-1.56	-0.91			
Group6	-1.91	-2.01*	-2.06*	-1.40	-0.05		
Group7	-2.04*	-2.14**	-2.19**	-1.53	-0.63	-0.13	
Group8	-2.5**	-2.6**	-2.6**	-2.0	-1.1	-0.6	-0.4

**p<0.01, *p<0.05

Table 7-15: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of I/pro/A-adjunct

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.83						
Group3	1.23	0.40					
Group4	0.70	-0.13	-0.53				
Group5	0.62	-0.21	-0.61	-0.08			
Group6	0.53	-0.30	-0.70	-0.17	-0.09		
Group7	1.38	0.56	0.15	0.69	0.77	0.85	
Group8	4.7**	3.9**	3.5**	4.0**	4.1**	4.2**	3.3**

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

Table 7-16: Mean scores of judgements on sentences with animate object pro in main sentences (A/pro/M) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Contro	6.995	7.340	7.387	8.377	8.903	8.047	9.170	9.453
Experi	7.327	6.980	6.276	5.998	5.769	5.899	5.068	3.455

Table 7-17: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of A/pro/M

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-0.35						
Group3	-0.39	-0.05					
Group4	-1.38	-1.04	-0.99				
Group5	-1.91	-1.56	-1.52	-0.53			
Group6	-1.05	-0.71	-0.66	0.33	0.86		
Group7	-2.18**	-1.83	-1.78	-0.79	-0.27	-1.12	
Group8	-2.5**	-2.1**	-2.1**	-1.1	-0.6	-1.4	-0.3

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

Table 7-18: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of A/pro/M

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.35						
Group3	1.05	0.70					
Group4	1.33	0.98	0.28				
Group5	1.56	1.21	0.51	0.23			
Group6	1.43	1.08	0.38	0.10	-0.13		
Group7	2.26**	1.91*	1.21	0.93	0.70	0.83	
Group8	3.9**	3.5**	2.8**	2.5**	2.3**	2.4**	1.6

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

Table 7-19: Mean scores of judgements on sentences with animate object *pro* in subordinate sentences (A/*pro*/S) by the EFL groups

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
Contro	7.133	6.837	7.097	7.435	7.651	7.966	8.044	8.675
Experi	7.697	6.747	6.155	6.387	5.630	5.999	5.388	2.141

Table 7-20: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the control sentences of A/*pro*/S

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.30						
Group3	0.04	-0.26					
Group4	-0.30	-0.60	-0.34				
Group5	-0.52	-0.81	-0.55	-0.22			
Group6	-0.83	-1.13	-0.87	-0.53	-0.31		
Group7	-0.91	-1.21	-0.95	-0.61	-0.39	-0.08	
Group8	-1.5	-1.8	-1.6	-1.2	-1.0	-0.7	-0.6

Table 7-21: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the experimental sentences of A/pro/S

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	0.95						
Group3	1.54	0.59					
Group4	1.31	0.36	-0.23				
Group5	2.07	1.12	0.52	0.76			
Group6	1.70	0.75	0.16	0.39	-0.37		
Group7	2.31*	1.36	0.77	1.00	0.24	0.61	
Group8	5.6**	4.6**	4.0**	4.3**	3.5**	3.9**	3.3**

**p<0.01, *p<0.05

Table 7-22: Mean scores of judgements on sentences with object pro in a sentential subject (pro/SS) by the CFL groups

	Group1	Group2	Group3	Group4	Group5	Group6
Control	5.225	6.713	6.494	7.932	8.214	8.697
Experi	5.023	6.025	6.152	7.563	7.857	8.734

Table 7-23: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of pro/SS

	Group1	Group2	Group3	Group4	Group5
Group2	-1.49				
Group3	-1.27	0.22			
Group4	-2.71**	-1.22	-1.44		
Group5	-2.99	-1.50	-1.72	-0.28	
Group6	-3.47**	-1.98**	-2.20**	-0.77	-0.48

**p<0.01, *p<0.05

Table 7-24: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of *pro/SS*

	Group1	Group2	Group3	Group4	Group5
Group2	-1.00				
Group3	-1.13	-0.13			
Group4	-2.54**	-1.54	-1.41		
Group5	-2.83**	-1.83	-1.71	-0.29	
Group6	-3.71**	-2.71**	-2.58**	-1.17	-0.88

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

Table 7-25: Mean scores of judgements on sentences with object *pro* in a wh-island (*pro/wh*) by the CFL groups

	Group1	Group2	Group3	Group4	Group5	Group6
Control	6.479	6.912	7.246	8.172	8.233	8.594
Experi	6.776	7.299	7.068	7.967	8.612	8.607

Table 7-26: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of *pro/Wh*

	Group1	Group2	Group3	Group4	Group5
Group2	-0.43				
Group3	-0.77	-0.33			
Group4	-1.69	-1.26	-0.93		
Group5	-1.75	-1.32	-0.99	-0.06	
Group6	-2.12**	-1.68	-1.35	-0.42	-0.36

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

Table 7-27: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of *pro/Wh*

	Group1	Group2	Group3	Group4	Group5
Group2	-0.52				
Group3	-0.29	0.23			
Group4	-1.19	-0.67	0.90		
Group5	-1.84	-1.31	-1.54	-0.65	
Group6	-1.83	-1.31	-1.54	-0.64	0.00

Table 7-28: Mean scores of judgements on sentences with inanimate object *pro* in main sentences (*I/pro/M*) by the CFL groups

	Group1	Group2	Group3	Group4	Group5	Group6
Control	5.870	6.594	5.619	6.230	6.027	6.622
Experi	6.053	7.742	8.012	8.026	8.832	8.990

Table 7-29: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of *I/pro/M*

	Group1	Group2	Group3	Group4	Group5
Group2	-0.72				
Group3	0.25	0.98			
Group4	-0.36	0.36	-0.61		
Group5	-0.16	0.57	-0.41	0.20	
Group6	-0.75	-0.03	-1.00	-0.39	-0.59

Table 7-30: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of I/pro/M.

	Group1	Group2	Group3	Group4	Group5
Group2	-1.69				
Group3	-1.96*	-0.27			
Group4	-1.97*	-0.28	-0.01		
Group5	-2.78**	-1.09	-0.82	-0.81	
Group6	-2.94**	-1.25	-0.98	-0.96	-0.16

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

Table 7-31: Mean scores of judgements on sentences with inanimate object *pro* in subordinate sentences (I/pro/S) by the CFL groups

	Group1	Group2	Group3	Group4	Group5	Group6
Control	5.881	5.938	5.417	5.758	5.423	5.751
Experi	6.679	7.047	6.688	7.329	8.145	8.403

Table 7-32: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of I/pro/S

	Group1	Group2	Group3	Group4	Group5
Group2	0.06				
Group3	0.46	0.52			
Group4	0.12	0.18	-0.34		
Group5	0.46	0.51	-0.01	0.33	
Group6	0.13	0.19	-0.33	0.01	-0.33

Table 7-33: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of I/pro/S

	Group1	Group2	Group3	Group4	Group5
Group2	-0.37				
Group3	-0.01	0.36			
Group4	-0.65	-0.28	-0.64		
Group5	-1.47	-1.10	-1.46	-0.82	
Group6	-1.72	-1.36	-1.71	-1.07	-0.26

Table 7-34: Mean scores of judgements on sentences with inanimate object *pro* coindexed with an argument in an adjunct (I/pro/A-adjunct) by the CFL groups

	Group1	Group2	Group3	Group4	Group5	Group6
Control	5.704	5.265	5.540	5.930	5.708	6.210
Experi	5.427	6.842	7.015	7.467	8.085	8.519

Table 7-35: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of I/pro/A-adjunct

	Group1	Group2	Group3	Group4	Group5
Group2	0.44				
Group3	0.16	-0.27			
Group4	-0.23	-0.66	-0.39		
Group5	0.00	-0.44	-0.17	0.22	
Group6	-0.51	-0.94	-0.67	-0.28	-0.50

Table 7-36: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of I/pro/A-adjunct

	Group1	Group2	Group3	Group4	Group5
Group2	-1.42				
Group3	-1.59	-0.17			
Group4	-2.04**	-0.62	-0.45		
Group5	-2.66**	-1.24	-1.07	-0.62	
Group6	-3.09**	-1.68*	-1.50	-1.05	-0.43

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

Table 7-37: Mean scores of judgements on sentences with animate object *pro* in main sentences (A/*pro*/M) by the CFL groups

	Group1	Group2	Group3	Group4	Group5	Group6
Control	5.453	6.698	6.784	7.143	7.895	6.473
Experi	5.506	7.640	7.715	7.276	8.213	8.475

Table 7-38: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of A/*pro*/M

	Group1	Group2	Group3	Group4	Group5
Group2	-1.24				
Group3	-1.33	-0.09			
Group4	-1.69*	-0.45	-0.36		
Group5	-2.44**	-1.20	-1.11	-0.75	
Group6	-1.02	0.22	0.31	0.67	1.42

Table 7-39: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of A/pro/M

	Group1	Group2	Group3	Group4	Group5
Group2	-2.13**				
Group3	-2.21**	-0.08			
Group4	-1.77*	0.36	0.44		
Group5	-2.71**	-0.57	-0.50	-0.94	
Group6	-2.97**	-0.83	-0.76	-1.20	-0.26

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

Table 7-40: Mean scores of judgements on sentences with animate object *pro* in subordinate sentences (A/pro/S) by the CFL groups

	Group1	Group2	Group3	Group4	Group5	Group6
Control	7.271	7.068	7.044	7.724	8.219	6.468
Experi	6.194	7.680	7.761	7.119	8.482	8.392

Table 7-41: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the control sentences of A/pro/S

	Group1	Group2	Group3	Group4	Group5
Group2	0.20				
Group3	0.23	0.02			
Group4	-0.45	-0.66	-0.68		
Group5	-0.95	-1.15	-1.18	-0.50	
Group6	0.80	0.60	0.58	1.26	1.75*

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

Table 7-42: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the experimental sentences of A/pro/S

	Group1	Group2	Group3	Group4	Group5
Group2	-1.49				
Group3	-1.57*	-0.08			
Group4	-0.93	0.56	-0.64		
Group5	-2.29**	-0.80	-0.72	-1.36	
Group6	-2.20**	-0.71	-0.63	-7.27	0.09

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

Appendix 15: SENTENCES CONCERNING PR, SDR AND LDR IN THE TESTS FOR THE EFL AND CFL LEARNERS

1. Sentences for the EFL learners

A. Preverbal Reflexives

- (1) His daughter is only three years old, but herself is able to put on her clothes now.
- (2) You don't have to go to turn off the washing-machine; itself will stop in fifteen minutes.
- (3) That child didn't let his parents know, himself went to London yesterday.

B. Object Reflexives

- (4) John knows Bill trusts himself.
Here:
himself = 1) Bill 1)
 = 2) John 2)
- (5) Peter thinks John doesn't have confidence in himself.
Here:
himself = 1) Peter 1)
 = 2) John 2)

2. Sentences for the CFL Learners

(Note: In the experiment, all Chinese Sentences were presented in both Chinese character and Chinese *pinyin* alphabet. Here are given only the versions of Chinese *pinyin* alphabet.)

A. Preverbal Reflexives

- (1) tade nuer cai san sui, danshi ziji yijing hui chuan yifu le.
- (2) ni bu bi qu guan xiyiji, shi wu fenzhong zhihou, ziji hui ting de.

- (3) na ge haizi meiyou gaosu ta baba he mama, ziji yi ge ren
zuotian dao Beijing qu le.

B. Object Reflexives

- (4) Wang Ping renwei Zhang Bo xiangxin ziji.

Here:

ziji = 1) Zhang Bo
2) Wang Ping

1)
2)

- (5) Zhang Bo zhidao Li Ming dui ziji mei you xinxin..

Here:

ziji = 1) Zhang Bo
2) Li Ming

1)
2)

Appendix 16: TABLES FOR CHAPTER 8

Table 8-1: Mean scores of judgements on the sentences with preverbal reflexives (PR) by each of the 8 EFL groups.

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
PR	6.708	5.546	4.293	3.957	3.393	3.347	2.641	2.141

Table 8-2: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the PR sentences.

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	1.16						
Group3	2.41**	1.25					
Group4	2.75**	1.59	0.34				
Group5	3.31**	2.15**	0.90	0.56			
Group6	3.36**	2.20**	0.95	0.61	0.05		
Group7	4.07**	2.91**	1.65*	1.32	0.75	0.71	
Group8	4.57**	3.40**	2.15**	1.87**	1.25	1.21	0.50

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

Table 8-3: Mean scores of judgements on the SDB and the LDB for English reflexives by each of the 8 EFL groups.

	Group1	Group2	Group3	Group4	Group5	Group6	Group7	Group8
SDB	6.743	7.810	7.209	7.795	8.255	8.179	8.076	8.494
LDB	4.427	3.193	3.218	2.170	3.048	1.979	1.943	0.616

Table 8-4: Pair-wise comparisons in Tukey Tests between the 8 EFL groups in judging the SDB

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	-1.07						
Group3	-0.47	0.60					
Group4	-1.05	0.01	-0.59				
Group5	-1.51	-0.45	-1.05	-0.46			
Group6	-1.44	-0.37	-0.97	-0.38	0.08		
Group7	-1.33	-0.27	-0.87	-0.28	0.18	0.10	
Group8	-1.75	-0.68	-1.28	-0.70	-0.24	-0.32	-0.42

Table 8-5: Pair-wise comparisons in Tukey Tests between the 8 EFL Groups in judging the LDB.

	Group1	Group2	Group3	Group4	Group5	Group6	Group7
Group2	1.05						
Group3	1.03	-0.02					
Group4	2.08	1.02	1.05				
Group5	1.20	0.15	0.17	-0.88			
Group6	2.27	1.21	1.24	0.19	1.07		
Group7	2.30	1.25	1.27	0.23	1.10	0.04	
Group8	3.63**	2.58	2.60	1.55	2.43	1.36	1.33

**p<0.01

Table 8-6: Mean scores of judgements on the sentences with preverbal reflexives (PR) by each of the 6 CFL Groups

	Group1	Group2	Group3	Group4	Group5	Group6
PR	5.309	6.230	5.674	7.193	8.016	8.272

Table 8-7: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the PR sentences.

	Group1	Group2	Group3	Group4	Group5
Group2	-0.92				
Group3	-0.36	0.56			
Group4	-1.88**	-0.96	-1.52*		
Group5	-2.71**	-1.79*	-2.34**	-0.82	
Group6	-2.96**	-2.04**	-2.60**	-1.08	-0.26

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

Table 8-8: Mean scores of judgements on the SDB and the LDB by each of the 6 CFL groups.

	Group1	Group2	Group3	Group4	Group5	Group6
SDB	5.150	5.166	5.021	7.104	8.273	7.931
LDB	2.875	3.803	2.289	1.855	2.895	8.380

Table 8-9: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the SDB.

	Group1	Group2	Group3	Group4	Group5
Group2	-0.02				
Group3	0.13	0.14			
Group4	-1.95	-1.94	-2.08		
Group5	-3.12*	-3.11**	-3.25**	-1.17	
Group6	-2.78*	-2.76*	-2.91**	-0.83	-0.34

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

Table 8-10: Pair-wise comparisons in Tukey Tests between the 6 CFL groups in judging the LDB.

	Group1	Group2	Group3	Group4	Group5
Group2	-0.93				
Group3	0.59	1.51			
Group4	1.02	1.95	0.43		
Group5	-0.02	0.91	-0.61	-1.04	
Group6	-5.51**	-4.58**	-6.09**	-6.52**	-5.48**

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

Appendix 17: TASKS AND TEST TYPE WHICH WERE USED IN THE PILOT STUDY BUT WERE ABANDONED IN THE MAIN EMPIRICAL STUDY

1. The Cloze Test for the EFL Subjects in the Pilot Study

Name: _____

This is a test of your understanding of written English. Here are two passages taken from fairly recent publications. In each passage some of the words are shown only by their initial letter and some dots. Complete these words to show that you understand these passages.

Now look at the example below. If you read the sentences, you will see that they make some sort of sense but that five of the words are incomplete.

EXAMPLE:

I always get u..... at seven o'clock i..... the morning. After breakfast I pack m..... lunch in my bag a..... walk round the corner t..... the bus stop.

Have you succeed? The complete words are up, in, my, and, to.

Now complete the words in both passages as quickly as you can.

(1)

The building of t..... Crystal Palace w..... a triumph. I..... i..... easy now t..... look back o..... it a..... a symbol o..... the one-time superiority o..... t..... British people. I..... came at t..... very peak o..... Britain's economic supremacy, w..... Prince Albert's confidence i..... t..... advantage t..... b..... gained f..... fair comparison f..... British manufacturers w..... entirely justified. I..... also came almost exactly half-way b..... the callous follies o.....

t..... Irish potato famine a..... the building catastrophe
o..... t..... Crimean war.

(2)

The emotional development o..... an infant starts at t.....
beginning o..... his life. I..... w..... are t..... judge
t..... way i..... w..... a human being deals w..... h.....
fellow creatures, a..... see h..... h..... builds up h.....
personality a..... life, w..... cannot afford t..... leave out
what happens i..... the earliest years, months, a..... even
weeks a..... days o..... his life.

2. The Gap-filling Task for the CFL Subjects

INSTRUCTIONS:

Try to put the following words into the appropriate brackets. Some of the words may be used more than once and some may not be used at all. You may add more than one word to a sentence.

Example:

Words: 很 hěn, 本 běn.

这(本)书大()家都说(很)有意思。
zhè (běn) shū dà () jiā dōu () shuō (hěn) yǒuyìsi.

Words: 没 méi, 过 guò, 在 zài, 会 huì, 给 gei, 了 le, 了 liǎo, 着 zhe,
着 zhāo.

- (1) 我家()北京, 但去年()我没回北京()新年。
wǒ jiā () Běijīng, dàn qù nián () wǒ méi huí Běijīng () Xīn
Nián.
- (2) 我想()他明天()来看我()。
wǒ xiǎng () tā míngtiān () lái kàn wǒ () .
- (3) 昨天你打()电话()的时候, 我()看电视。
zuótiān nǐ dǎ () diànhuà () de shíhòu, wǒ () kàn diànshì.

- (4) 昨天()那座()房子()火了。
 | zuótiān () nà zuò () fángzi () huǒ le.
- (5) 他()说起话来()没完没()。
 tā () shuō qǐ huà lái () méi wán méi () .
- (6) 他()喜欢()听()音乐番书。
 tā () xǐhuān () tīng () yīnyuè kàn shū.
- (7) 我()知道李明()以前去()英国。
 wǒ () zhīdào Lǐ Míng () yǐqián qù () Yīngguó.
- (8) 老师告诉()孩子们()马路的时候()要小心。
 lǎoshī gàosu () háizimen () mǎlù de shíhou () yào
 xiǎoxīn.
- (9) 他说()这件()事情已经()了。
 tā shuō () zhè jiàn () shìqing yǐjīng () le.
- (10) 因为她丢()自行车, 所以()她很()急。
 yīnwèi tā diū () zìxíngchē, suǒyǐ () tā hěn () jí.
- (11) 在中国, ()大部分人不()开汽车。
 zài Zhōngguó, () dà bùfen rén bú () kāi qìchē () .

MANY THANKS FOR YOUR HELP.

3. The Sentence-rewriting Task for the EFL Subjects

请按括号内的要求, 重写下列各句, 并对句子做出必要的改
 动, 使之符合英语语法要求。

例: Mary study at university next year. (否定)

重写为: Mary will not study at university next year

1. Peter goes to school everyday. (否定)

2. Mary worked in a factory last summer. (否定)

3. He gave her his address yesterday. (疑问)
4. John often plays football. (疑问)
5. He receives my letter. (将 "already" 放入句内; 将句子变为疑问句并对时态做出必要的变动。)
6. They watched TV. (将 "now" 放入句内; 将句子变为否定句, 并对时态做出必要的变动。)
7. John writes to me. (将 "yet" 放入句内; 将句子变为否定句, 并对时态做出必要的变动。)
8. They have a meeting. (将 "at the moment" 放入句内; 将句子变为疑问句, 并对时态做出必要的变动。)
9. Mary cooks Chinese food very well. (将 "can" 放入句内; 将句子变为否定句。)
10. Peter comes immediately. (将 "Should" 放入内; 将句子变为疑问句。)

4. An Example of Topic Chains Used for the CFL Subjects in the Pilot Study

Zuotian lai le ge guniang, wo wen Wang Ping ren bu renshi, Wang Ping shuo ta bu renshi, Zhanghua shuo ta renshi, ta shuo shi Li Ming de nu pengyou.

*Yesterday came a girl. I asked Wang Ping whether he knew e. Wang Ping said he didn't know e. Zhangsan said he knew e. He said e was Li Ming's girl-friend.

5. An Example of Topic Chains Used for the EFL Subjects in the Pilot Study

*Yesterday came a man to see Mary. I asked John whether he knew or not. John said he didn't. Bill said he knew. He said was Mary's new boy-friend.