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DO NON-NATIVE GRAMMARS ALLOW VERBS
TO RAISE TO AGREEMENT?

THESIS

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

Sabine Thépaut Grace

Denton, Texas

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The purpose of this thesis is to determine whether the setting of the verb movement parameter in L2 is dependent on agreement acquisition. The Optionality hypothesis (Eubank, 1994) is tested by examining the L2 grammar of Chinese learners of English. To test this hypothesis, the sentence matching procedure originally described in Freedman and Forster (1985) is used. It is found that no current theory truly accounts for the results that are obtained.

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CHAPTER 1

INTRODUCTION

The study

Researchers have recently looked at the issue of parameter settings as an evidence of Universal Grammar (UG) operating in second language (L2) acquisition. A parameter might be set one way for one language and another way for another language. Yet, one crucial question remains unanswered: What happens when the L2 parameter is different from that of the L1? Do L2 learners adopt the parametric value of the L2 as soon as they receive positive data? Or, do they initially assume the parametric value of the L1 and transfer it to the L2? To test the latter hypothesis, researchers such as White (1991) have looked at the setting of the verb raising parameter by French speakers of English. Vainikka and Young-Scholten (1994,1995) have proposed the Minimal Trees hypothesis in which only functional projections from the native language (L1) transfer into the L2. On the other hand, Schwartz and Sprouse (1994, 1995) have advanced the Absolute Influence hypothesis in which all L1 parametric values transfer into the L2.

However, the question remains whether the dichotomy mentioned above does indeed hold. That is, do the results of L2 studies conform to the transfer of L1 values or to the

adoption of L2 values? As White (1992) points out, French learners of English allow both verb raising and verb non-raising. In other words, verb raising seems optional. Eubank (1994) proposes an analysis of this optionality in the initial state of L2 acquisition: parameter setting is dependent on whether the L2 learner has acquired agreement in the target language. The purpose of the thesis, then, is to test Eubank's analysis by analyzing the L2 grammar of Chinese learners of English.

Overview of procedures

The control group included 19 native speakers of English. The experimental group consisted of 32 native Mandarin, Cantonese, and Hokkien learners of English as a second language. The sentence matching procedure based on Freedman and Forster (1985) was used as the main instrument of the study. In addition, the non-native speakers participated in an on-line translation task to determine whether they had acquired English agreement. A one-way ANOVA was calculated for the control group and a two-way ANOVA was computed for the experimental group.

Overview of the remaining chapters

Chapter 2 summarizes the literature relevant to the study. In particular, the verb movement parameter and the pertinent syntactic differences between French and English are reviewed. In addition, the three competing views regarding the initial state of L2 acquisition are examined.

At the end of the chapter, the two hypotheses of this thesis are formally presented.

Chapter 3 offers a presentation of the method used in this study, including a description of the subjects, materials, procedures and analyses. In addition, the rationale behind the main instrument of the study (the sentence matching procedure) is summarized.

Chapter 4 describes the results obtained for the control and the experimental groups.

Chapter 5, Discussion, interprets the results. This chapter examines the L2 grammar of the Chinese learners of English. Importantly, both hypotheses are refuted. It is found that no current theory truly accounts for the results obtained. This chapter also presents the limitations of the study and offers some further areas of research.

Appendix A contains questionnaire given to the native speakers and Appendix B the one handed out to the non-native speakers. Appendix C presents the pairs of sentences used in the sentence matching procedure. Appendix D includes the sentences of the on-line translation task.

CHAPTER 2

REVIEW OF LITERATURE

At the origin of the current hypotheses on the initial state of L2 acquisition are the extensive work of White (e.g, 1989b, 1990/1991,1991,1992) on L2 acquisition of English by French learners, and the verb movement parameter proposed by Pollack (1989) and Chomsky (1991) among others. Therefore, the present chapter first reviews the differences between French and English that are pertinent to the verb movement parameter. White's studies are summarized, and the three hypotheses regarding the initial state of the L2 acquisition are discussed. Finally, the basis for the current study--the acquisition of the English verb placement by Mandarin speakers--is presented.

Differences Between French and English

French and English exhibit several distinctive syntactic differences. One area of difference is the placement of adverbs. Another one is the negation placement.

Adverb placement.

In French, an adverb may be inserted between the verb and its direct object (SVAO). However, this movement is not allowed in English (*SVAO). The French placement is shown in (1a) below, which contrasts with the English placement of adverbs in (1b).

- (1) a. Jean va souvent à Paris.
 b. *John goes often to Paris.

Further, an adverb cannot intervene between the subject and the finite verb in French while such insertion is allowed in English. An example of the ungrammatical placement in French is shown in (2a) below while its English counterpart is illustrated in (2b).

- (2) a. *Jean souvent va à Paris.
 b. John often goes to Paris.

Finally, an adverb may appear after a nonthematic verb in French and in English, as shown in (3a) and (3b) below.

- (3) a. Jean est souvent allé à Paris.
 b. John has often gone to Paris.

However, in both French and English, an adverb may precede or follow a non-finite verb, as seen in (4a-b) below.

- (4) a. Aller souvent/souvent aller à Paris est une
 bonne idée.
 b. Often to go to Paris/to go often to Paris is a
 good idea.

Negator placement.

Negator placement is also different in French and English. In French, the main negator *pas* comes after the finite verb, as illustrated in (5a) below. By contrast, the negator in English never appears after a thematic verb, as shown in (5b); it must come after an auxiliary, as seen in (5c) below.

- (5) a. Jean ne va pas à Paris.
 b. *John goes not to Paris.
 c. John does not go to Paris.

French and English also exhibit differences in the placement of the negator for sentences containing non-finite verbs. Both negators can only precede the non-finite verb in French whereas, in English, it can either precede or follow the non-finite verb in English, as shown in (6a-c).

- (6) a. Ne pas aller à Paris est stupide.
 b. *N'aller pas à Paris est stupide.
 c. Not to go/to go not to Paris is stupid.

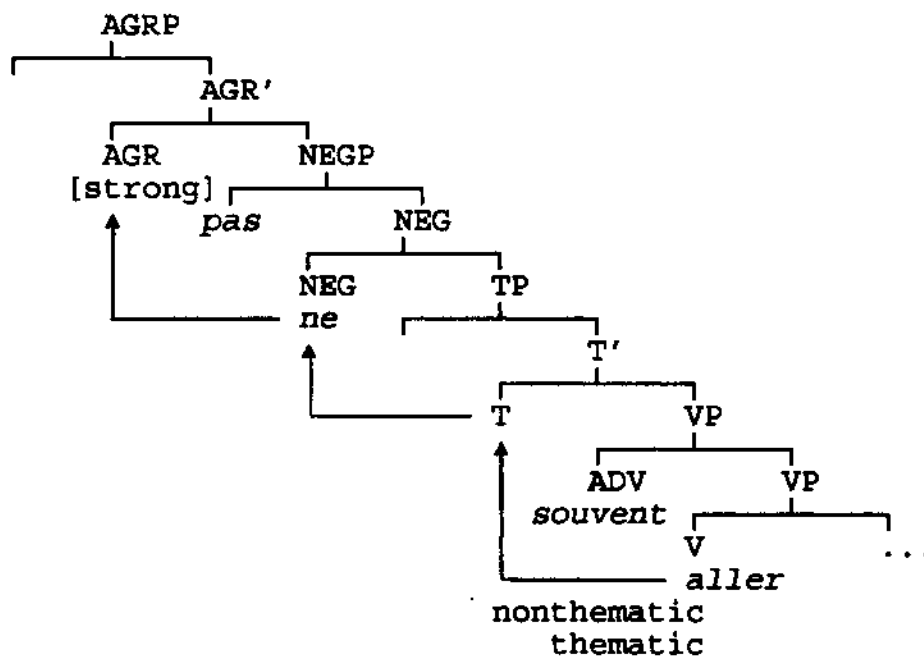
The Verb Raising Parameter

Pollock (1989), Chomsky (1991) and Belletti (1990) have posited one parameter that explains the differences between the negator and adverb placements in French and English as well the variation in question formation. All three argue that Inflection (INFL) splits in two separate categories, Agreement (AGR) and Tense (T).

Chomsky (1991) follows Pollock (1989) in assuming that the underlying structure of English and French sentences containing adverbs is identical. The differences stem from the verb raising possibilities. In short verb movement, the verb raises to T past ADV while in long verb movement, the verb raises from T to AGR past NEG. In French, finite

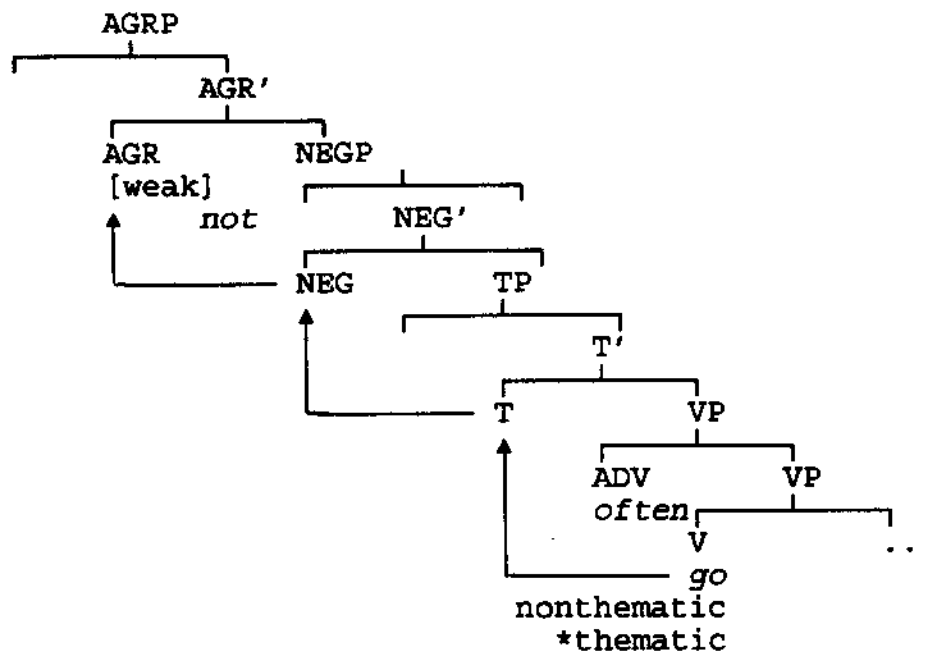
thematic verbs must first move to T, and then to AGR¹ whereas non-finite verbs only move to T. Therefore, finite thematic verbs exhibit long verb movement, and non-finite thematic verbs evince short verb movement in French. In contrast, English prohibits verb raising of finite thematic verbs. Hence, finite thematic verbs remain in VP, and AGR and T must lower to V. Only nonthematic verbs (*do* and auxiliaries) can raise to T and AGR in English. Trees of the French and English verb movement are shown in Figure 1 and Figure 2.

Figure 1. French verb movement.



¹Pollock (1989) assumes that TP dominates AGRP, but Chomsky (1991) posits that AGRP dominates TP. See Chomsky and Belletti (1990) for rationale.

Figure 2. English verb movement.



The differences in long and short verb movement are based on the richness of inflection (e.g., Pollock, 1989). Therefore, languages with rich agreement (e.g. French) allow thematic verb raising; languages with weak agreement (e.g, English) prohibit thematic verb raising but allows lowering of inflection to the verb. Hence, (2a) above is ungrammatical. Importantly, the richness of inflection does not affect nonthematic verbs. That is, nonthematic verbs raise to AGR in languages with both rich and weak agreement systems.

The Transfer View Explored

White (i.e., 1989b, 1992) has extensively researched the acquisition of English by learners whose native language is French. The following section summarizes White's research that is relevant to the present study. First, the pertinence

of the adjacency parameter for case assignment to explain the acquisition of English by French learners is reviewed. Second, three related studies and their criticisms are presented. In these studies, White describes similar experiments, but she analyzes the data from the perspectives of the verb movement parameter described above.

Adjacency for case assignment.

One of the early parameters of UG, namely the one requiring adjacency for case assignment, requires that "a noun phrase receiving case must be next to its case assigner" (White, 1989a, p. 136). In English, adjacency for case assignment is obligatory. This parameter would seem to explain why (2) above, which exhibits a SVAO word order, is ungrammatical. However, many languages, such as French, do not observe this principle. Hence, (1) above, which exhibits a SVA order, is grammatical.

The adjacency parameter meets the Subset Principle requirement. The Subset Principle states that learners will pick the less general grammar unless positive data indicate that they should choose the more general alternative (White, 1989b). Languages which allow SVO but not SVAO exhibit the value [+strict adjacency], and languages where both SVO and SVAO appear display the value [-strict adjacency]. French, which has the value [-strict adjacency], is thus a superset of English, which has the value [+strict adjacency].

White (1989b) looks at L2 acquisition in this regard.

She posits that if the Subset Principle effectively operates in L2 acquisition, French-speaking learners of English will adopt the [+strict adjacency] value of the parameter. There will be no evidence in the English input that will show them otherwise. Thus, French learners of English will not produce sentences such as (2) above in English.

Subjects included 95 French learners of English and a control group (n=14). The tests involved three judgement tasks: a paced judgment task, an unpaced multiple-choice judgment task, and a comparison task. The tests included sentences observing strict adjacency and sentences violating it. White found that L2 learners were significantly more likely than the control group to accept sentences that violate strict adjacency in English (i.e, SVAO). In other words, they did not reject ungrammatical sentences, which indicates that the L2 learners were not observing the Subset Principle. Since the Subset Principle does not appear to operate in L2 acquisition, White suggests that the L1 value of the parameter was transferred.

White (1989b)'s findings would seem to explain failure in L2 acquisition. However, her study is somewhat problematic. First, as mentioned above, French permits SAVO as well as SVAO only in dependent non-finite clauses whereas English only allows SOV. Therefore, one must ignore this property of the French language to conclude that French is a superset of English. In addition, White fails to look at

other possibilities regarding adjacency on case assignment, namely the subject-adverb relationship. In more recent analyses, adjacency case assignment has been subsumed in the verb movement parameter described above (e.g., Pollock, 1989). It should be noted that the verb movement parameter does not meet the Subset Principle requirement (Wexler & Manzini, 1987). That is, raising is not a subset of lowering, or vice-versa.

Effects of instruction.

Since the verb movement parameter involves a cluster of properties, it can be assumed that L1 learners will acquire the parameter as a whole (White, 1990/1991). For instance, French-speaking children will know that adverbs come after verbs when they receive positive input from the placement of the negator. Indeed, White (1990/1991, 1991) looks at whether negative evidence on one of the properties of the verb movement parameter in L2 suffices to trigger the whole parameter for L2 learners. In particular, White (1991) investigates whether instruction (or negative and positive data) on question formation has any effect on English adverb placement by French-speaking learners.

Subjects included 138 French learners of English in an intensive program and a control group of 26 English native speakers. Subjects were aged between 10 and 12. Eighty-two subjects were specifically instructed on adverb placement (henceforth the adverb group). This group received negative

input on the ungrammaticality of SVAO and positive input on the grammaticality of SAV in English. Fifty-six subjects were taught question formation (henceforth the question group). All subjects were pretested on adverb placement and were posttested twice, once immediately after instruction, and once at the end of the program. Part of the adverb group was retested one year later. (During that period, they did not receive any instruction on adverb placement.) Since the question group was unavailable, an additional group, which had received no instruction on either adverb placement or question formation, was included in the follow-up study. Each test consisted of three tasks: a grammaticality judgment task, a preference task, and a manipulation task.

The results of the initial study show differences between the adverb and the question groups. The adverb and the question groups evince similar results in the pretest. However, the adverb group exhibits significantly different results in the posttest from the question group. The adverb group seemingly learned that SVAO is prohibited in English. Additionally, this group is more likely to use SAV. The question group does not show any differences on their acceptance of the SAVO order, suggesting that positive data does not suffice to know that SAVO is ungrammatical. When comparing the results of the pretest and the posttest, it can be seen that the question group increasingly accepts SAV.

Results from the follow-up study show that students have not retained what they had been taught on adverb placement. Their scores on the follow-up test are not significantly different from their scores on the pretest, nor are they significantly different from the scores of the group which had not received any specific instruction on adverb placement or question formation. Although they exhibit some changes in their use of SAV, they accept SVAO.

White (1991) notes that the question group in the follow-up study scored lower on the tests because the subjects might not have received appropriate positive input. Students might have failed to retain that SVAO is ungrammatical because they did not receive any follow-up in this area. Nevertheless, results show that the subjects fail to reset the verb movement parameter in English (SAV, *SVAO). In addition, results support the idea that learners assume the L1 value of the verb-raising parameter. In other words, the L1 value of the parameter seems to transfer to the L2. Further, negative input is instrumental, at least in the short run, in helping the student to know that SVAO is ungrammatical in English, while positive input alone does not suffice. Finally, White (1990/1991) notes the following:

The interlanguage grammars of L2 learners appear to allow possibilities that are inconsistent with either value of the parameter. ... [A] possibility is that L2 learners take the positive evidence ... not as evidence

against verb raising but as evidence for its optionality. (p.357)

Schwartz and Gubala-Ryzak (1992) refute White's (1990/1991,1991) analysis and conclusion. They note that while the subjects in the adverb group correctly reject SVANP in English in the short term, they also incorrectly reject SVAPP. Indeed, the L2 learners in the adverb group seem to have concluded that nothing can intervene between verbs and any XPs. Schwartz and Gubala-Ryzak suggest that while the L2 learners in the adverb group changed their linguistic behavior, they did not change their L2 grammar. If they had changed their verb movement parameter to the value appropriate to English, they would have switched from SVANP to SAVO order. Their acceptance and usage of SVAPP should not have increased. Additionally, Schwartz and Gubbala-Ryzak suggest that SVAPP can involve five different syntactic derivations in French and English, but only one of them includes verb movement. It is unlikely that instruction on verb movement alone would affect all the five possible derivations. Finally, Schwartz and Gubala-Ryzak consider a third possibility: the correct rejection of SVAO is due to verb movement, and the incorrect rejection of SVAPP is due to pattern-matching. However, they reject this third possibility for reasons of parsimony since this would necessitate that L2 learners have additional cognitive mechanisms. Schwartz and Gubala-Ryzak conclude that formal

instruction has an effect on language use but not on language knowledge.

It should be noted that White (1990/1991, 1991) and Schwartz and Gubala-Ryzak (1992) focus on the fact that learner's focus on word order would suffice to unlearn verb movement. However, as pointed out by Chomsky (1991) and Pollock (1989), the underlying factor causing lowering or raising is based on the richness of agreement system and not on word order.

Long and short verb movement.

White (1992) analyzes the data from her previous studies (1990/1991, 1991) with a different perspective. She examines whether the functional categories AGR and T can explain the output of French learners of English. In particular, she investigates short and long verb movements in questions, negations, and adverb placement. Recall that in French, the verb raises to T past ADV in the short verb movement while the verb raises from T to AGR past NEG in the long verb movement. In contrast, English prohibits movement of nonthematic verb out of V (see Figure 2 above).

White (1992) suggests that the rich inflection system in French transfers to English. She notes that positive data on question formation and negation is presumably sufficient to reset the verb movement parameter to the L2. Therefore, French children acquiring English learn that long verb movement is prohibited in English. However, positive data

does not suffice to unlearn short verb movement in English. The group that has not received negative input on adverb placement continues to raise thematic verbs past adverbs. White proposes that "these learners may be treating finite verbs in English like non-finite verbs in French" (p. 285). She does not favor a pure transfer of the L1 parameter value to the L2, nor does she advance that learners automatically adopt the L2 values. Rather, she argues that the L2 learners show a middle-of-the road setting. Indeed, she suggests the following:

These learners may be treating finite verbs in English like non-finite verbs in French. That is, they appear to think that short verb movement of the verb past the adverb to AGR is optional, which suggests that they have not in fact realized that AGR is opaque in English. (p. 285)

Views on the Initial State

The term "initial state" refers to the earliest stage of L2 acquisition. This acquisition stage has recently received a lot of attention, and several competing views have been proposed. Of interest in the L2 initial state literature is the transfer or non-transfer of functional and lexical projections.² The Minimal Trees hypothesis advanced

²Cowper (1992) writes: "The term functional category is opposed to the term lexical category because functional and lexical categories exhibit different clusters of properties, as listed in (1).

by Vainikka and Young-Scholten (1994, 1995) predicts the full transfer of lexical projections in the initial state of L2 acquisition. Functional projections do not transfer. At the opposite end of the spectrum, the Absolute Influence hypothesis advanced by Schwartz and Sprouse (1994) suggests the transfer of functional as well as lexical projections. That is, according to this view, the whole native grammar, including strength of inflection, transfers to the L2. A third view submitted by Eubank (1994, 1995a, 1995b) offers a middle-of-the-road approach. Eubank's Optionality hypothesis indicates that CP, IP, and VP transfer but without specification for strength of inflection. The following section reviews the three hypotheses on the initial state of L2 acquisition and presents the shortcomings of the Absolute Influence and Minimal Tree hypotheses.

Minimal Trees.

Vainikka and Young-Scholten (1994, 1995) base their argument on the Weak Continuity approach in L1 acquisition. Under this approach, the child only has access to an undifferentiated functional projection and a VP. Vainikka

-
- (1) a. LEXICAL CATEGORY (N, V, A)
 -have substantive meaning
 -assign θ -roles to their arguments
 -are open classes (new words can be created)
 -permit indefinite recursion on X' ...
 b. FUNCTIONAL CATEGORIES (COMP, INFL, DET)
 -lack substantive meaning
 -do not assign θ -roles
 -are closed classes (no new words can be created)
 -do not permit recursion of X' " (p. 173).

and Young-Scholten argue that the Initial state in L2 acquisition is similar to that of the L1. Specifically, they posit that the Minimal Trees approach "account[s] for the development of phrase structure: i.e., at any given stage of development, as few positions and projections are posited as are needed to analyze the data, and no more" (p. 267). Functional projections such as CP are acquired through input data alone.

To test their hypothesis, Vainikka and Young-Scholten (1994) examine cross-sectional data from Turkish and Korean adults learning German (n=17). The researchers are specifically interested in verb-complement order, verb raising, subject-verb agreement, and null subjects. Their aim is to "determine whether an IP/AGRP is present in the speaker's grammar at various points of development" (p. 268). When reviewing the data, they base their claim for verb raising on word order, and not on agreement. Turkish, Korean, and German have a head-final VP and a head-final AGRP. However, German is different from Turkish and Korean in that it is a V2 language: The finite verb raises to a head-initial COMP position. In addition, unlike Korean and Turkish, German prohibits null thematic subjects. Finally, Korean does not have subject-Verb agreement, unlike German and Turkish.

The subjects were in various stages of acquisition and had received little formal instruction. They performed five

elicitation tasks and grammaticality judgment tasks. Vainikka and Young-Scholten identified three developmental stages. In the first stage, L2 adult learners have no functional projections. They transfer their L1 VP into the L2. Therefore, they do not raise the verb. In addition, they have not reset the null subject parameter to German. In the intermediate stage, the L2 learners' grammar has underspecified functional projections. Interestingly, the researchers found that the subjects raised the verb fifty percent of the time, and they note that "verb raising is optional for these speakers" (p. 289). The resetting of the null subject parameter also seems optional. In the final stage, the L2 learners' grammar includes more specified projections. Both Korean and Turkish subjects have acquired agreement; they obligatorily raise the verb and do not allow pro-drop subjects. In other words, acquisition of agreement implies verb raising. Vainikka and Young-Scholten claim to find that IP and German agreement are acquired separately in L2 acquisition and conclude that the L2 verb raising parameter is triggered by word order and auxiliaries. However, the researchers are unclear about the implications of such conclusion. As mentioned above, Pollock (1989) and Chomsky (1991) propose that verb movement and agreement are interconnected.

Absolute Influence.

The Absolute Influence hypothesis developed by Schwartz

and Sprouse (1994) claims that "the L1 grammar serves as the point of departure in L2 A[cquisition]" (p. 321). That is, relevant L1 parametric values transfer to the L2 in the initial state of acquisition. In particular, Schwartz and Sprouse look at whether Turkish word order and verb placement transfer to German because of the Turkish nominative case checking parameter. They examine the spontaneous data of a Turkish speaking learner of German over a 26-month period.

Schwartz and Sprouse identify three developmental stages. In the first stage, the subject exhibits a SOV order, which is the correct word order in Turkish and German. Schwartz and Sprouse claim that the subject has transferred the Turkish COMP functional projection into German. In the second stage, he acquires inversion with pronominal subjects. The researchers propose that subject pronouns can be analyzed as clitics in the interlanguage. Importantly, nominative clitics are allowed in German, but not in Turkish. Finally, in the third stage, the subject produces inversions with pronominal as well as nonpronominal subject. In this stage, he allows cliticization and raising of SPEC to AGRP.

Schwartz and Sprouse propose that the Turkish learners of German use Turkish embedded clause structure in their German main clauses. Even though they implicitly reject the claim that main clauses transfer to main clauses, their

analysis has several problems. First, we can hardly talk of an initial state of acquisition when an L2 learner produces embedded clauses. Thus, Schwartz and Sprouse examine late data and do not explore the actual initial state of acquisition. Secondly, the strong view of transfer states that all L1 parametric values initially transfer to the L2. However, Eubank (1994) found discrepancies between the Absolute Influence hypothesis and spontaneous data produced by three French children learning English (aged between 4.6 and 11). Since French negation requires long movement where the finite thematic verb raises through Agreement to Negation, Schwartz and Sprouse predicts that finite thematic verbs will be found to the left of the negator in early stages of acquisition. However, contrary to what the strong view of transfer predicts, the French children did not produce any sentences where finite thematic verbs precedes the negator. Therefore, Schwartz and Sprouse's claim is not entirely justified.

Optionality.

The question, then, is what happens in the initial state of L2 acquisition? In contrast to the views proposed by White (1990/1991, 1992) and Schwartz and Sprouse (1994), Eubank (1994, 1995) proposes a more limited view of transfer. The lack of transfer leaves a void that Eubank (1994) calls "inert". This inertness is what gives rise to optionality. Eubank claims that French speaking learners of

English allow SVAO not because the verb raising parameter transfers, but because the parameter does not transfer. He argues that the lack of transfer is shown by the learners' acceptance of SAV. Eubank proposes that functional projections as well as lexical projections transfer, but values associated with inflection, such as the strength of agreement, do not transfer from L1 into the initial representation of L2. Instead, they are acquired. Eubank's Optionality is also different from the Minimal Trees approach proposed by Vainikka and Young-Scholten (1994). Recall that under this approach, L1 functional projections do not transfer; rather, they are triggered by input alone. However, Eubank (1995a) demonstrates that functional projections do transfer into the L2.

Both the Absolute Influence hypothesis and the Optionality hypothesis predict, for different reasons, that French learners of English will accept verb raising. Therefore, it is necessary to look at the acquisition of languages that do not have verb raising in either the native language or the target language of L2 learners. Chinese learners of English appear to meet these conditions.

Chinese Syntax

The L2 acquisition of English by Chinese speakers should demonstrate the validity of the Optionality hypothesis. Chinese can be divided into five main varieties, including Mandarin, Cantonese, and Hokkien. Although

vocabulary and structure may differ, these three dialects share some similar features. For instance, they do not have number/person inflections of the subject or object for the verbs (Li and Thompson, 1990). Likewise, they do not allow thematic verb raising. Ernst (to appear) notes that thematic verbs do not raise to AGR in Mandarin Chinese, as shown in (7a-b) below.³

- (7) a. *tamen renzhen taolun-le zheige wenti*
 they serious discuss-PRF this-CL problem
 'They discussed this problem seriously.'
- b. **tamen taolun-le renzhen zheige wenti*
 they discuss-PRF serious this-CL problem

(7b) is ungrammatical because the verb has raised past the adverb. Hence, like English, Mandarin Chinese is an INFL lowering language.

Cantonese Chinese is also a verb lowering language. Similarly to Mandarin and English, Cantonese does not permit either thematic verb raising past adverb or movement of the thematic verb out of the VP in negative sentences, as shown in (8a-d) below.

- (8) a. *John saiat sei? fan*
 John often eat rice
 'John often eats rice.'
- b. **John sei? saiat fan*
 John eat often rice

³Ernst (to appear) also mentions that Taiwanese negation is similar to that of Mandarin Chinese. Therefore, Taiwanese is an INFL lowering language.

- c. John msei? fan
 John not-eat rice
 'John does not eat rice.'
- d. *John sei? m fan
 John eat not rice

Therefore, Cantonese Chinese is also an INFL lowering language.

Likewise, Hokkien, another Chinese dialect, does not allow the thematic verb to raise to AGR or to move outside the VP in negative sentences, as exemplified in (9a-d) below.

- (9) a. John takaŋ tʃa pəŋ
 John every day eat rice
 'John eats rice every day.'
- b. *John tʃa takaŋ pəŋ
 John eat every day rice
- c. John bo tʃa pəŋ
 John not eat rice
 'John does not eat rice.'
- d. *John tʃa bo pəŋ
 John eat not rice

The Absolute Influence Hypothesis proposed by Schwartz and Sprouse (1994) predicts the complete lack of verb raising in the English-Chinese interlanguage because the Chinese value of the verb raising parameter will transfer. On the other hand, the Optionality analysis proposed by Eubank (1994) suggests that the verb raising parameter (i.e., agreement) will not transfer. Instead, verb raising will be allowed until the inflectional characteristics of the L2 are acquired. The hypotheses for Chinese learners of English that follow from Eubank's view are presented in (10a-b)

below.

(10a) Hypothesis 1

Chinese learners of English who have acquired agreement will accept SAVO and reject SVAO in English.

(10b) Hypothesis 2

Chinese learners of English who have not acquired agreement will accept both SAVO and SVAO.

The present study seeks to obtain a better understanding of the initial state of L2 acquisition. In particular, the non-transfer of the verb raising parameter in the initial state of L2 acquisition is investigated by testing the two hypotheses mentioned in (10a-b) above. To carry out this task, native Mandarin, Cantonese, and Hokkien learners of English as a second language will participate in the experiment.

CHAPTER 3

METHOD

This chapter first discusses the rationale behind the main instrument used in this thesis--the sentence matching (SM) procedure. Then, the subjects, materials, procedures and analyses for both the control and experimental groups are described.

The Sentence Matching Procedure

The sentence matching procedure based on Freedman and Forester's (1985) work appears to be an adequate tool to test the hypotheses made above. In this procedure, the subject must determine whether pairs of sentences are identical. Response latencies are measured. The idea behind the SM procedure is that subjects will respond more quickly to grammatical pairs of sentences than to ungrammatical ones. Therefore, if the grammar of Chinese learners of English allows SVAO, response latencies for ungrammatical sentences will not be significantly different from that of grammatical sentences.

Importantly, Freedman and Forster (1985) did not find any effects of ungrammaticality for violations of the constraints on empty categories in wh-islands in English. Therefore, response latencies for ungrammatical sentences such as (11) below were not significantly longer than for

grammatical sentences involving wh-movement.

(11) Who did you say where went?

The researchers indicate that the SM procedure takes place at the level of S-Structure. Since the constraints on empty categories are processed at a later stage in the derivation of sentences, they argue that the SM procedure is not sensitive to the ungrammaticality of sentences such as (11). However, since this thesis is not concerned with wh-movement constraints, the justification of Freedman and Forster's explanation is not relevant.

Crain and Fodor (1987) offer a different explanation for the lack of effect. They claim that the SM procedure is sensitive to the correctability of sentences and not to the level of representation at which the procedure takes place. In other words, response latencies are longer for ungrammatical sentences that can be easily corrected than for ungrammatical sentences that cannot be corrected. If Crain and Fodor are correct in assuming the effect of correctability in the SM procedure, then the data used in this study prevail because they are correctable.

On the other hand, Eubank (1993) and Clahsen, Hong, and Sonnenstuhl-Henning (1995) note that the SM procedure is not sensitive to sentences with projections above IP. Therefore, ungrammatical sentences with CP, such as wh-questions, do not yield any longer response latencies. Again, since the present study does not include sentences with a CP, the

justification for Eubank's and Clahsen, Hong, and Sonnenstuhl-Henning's findings is irrelevant.

Subjects

originally, twenty subjects participated in the control experiment, but one was rejected because he was bilingual with English and Spanish. Since Spanish, like French, is a verb raising language, results may not have been reliable. In addition, one subject was bilingual with English and Thai. However, this subject was retained because Thai is an INFL lowering language⁴. Therefore, the control group consisted of 19 University of North Texas students. Fourteen subjects were undergraduate and 5 were graduate students; 16 were female, and 3 were male. Their age ranged from 20 to 42 (\bar{X} = 26). They were all native speakers of English. Each subject earned extra-credit for participating in the study.

Thirty-three students enrolled at Richland College or at the University of North Texas participated in the non-native experiment, but one was rejected because he indicated on the questionnaire that he was bilingual with Cantonese and English. The experimental group (n = 32) consisted of

⁴Thai prohibits raising of the thematic verbs past the adverb, as exemplified in (12a-b) below.

- (12) a. *John maʔdza gin kraus*
 John often eat rice
 'John often eats rice.'
 (26) b. **John gin maʔdza kraus*
 John eat often rice

native Mandarin ($n = 25$), Cantonese ($n = 6$) and Hokkien ($n = 1$) speakers. Two subjects were bilingual with Mandarin and Taiwanese, one was bilingual with Mandarin and Malay, and one was trilingual with Korean and Japanese. Eighteen subjects had acquired agreement, and fourteen had not (according to the criteria below). Seventeen were male, and fifteen were female. The mean age was 28 with a range from 19 to 48 years. The mean length of residence was two years and nine months with a range from 4 months to 18 years. Participation was completely voluntary and did not affect the subjects' academic standing.

Material

The first part of the control experiment involved filling out a questionnaire (See Appendix A). Questions included sex, age, native language, and educational background (undergraduate/graduate). For the non-natives, the questionnaire had additional questions regarding their length of residence and the number of years they had been speaking English (see Appendix B).

The control experiment.

The second part of the experiment used a version of the sentence matching procedure (see Bley-Vroman and Masterson, 1989), administered by a computer program developed by Bley-Vroman and Eubank (1989). Two sentences are displayed on a computer screen for a very short time; the first sentence appears in the top left corner of the screen, and the second

one in the bottom right corner. As soon as the second sentence is displayed on the screen, the subject must decide as quickly as possible whether the two sentences are identical by pressing the blue key (the "J" key covered by a blue dot) if they are identical or the red key (the "F" key covered by a red dot) if they are not. These instructions (blue=identical and red=different) are consistently displayed at the top of the screen. After a very short time, the pair of sentences disappears. To initiate a new pair, the participant presses, with no time constraint, the space bar. If the subject should accidentally press a key other than "J", "F", or space bar, he or she will hear a beep sound. For each pair, the response latency in milliseconds is measured. The experiment includes four different types of sentence pairs: grammatical-identical, ungrammatical-identical, grammatical-different, and ungrammatical-different, as seen in (13a-d) below. The different pairs of sentences only vary by one word.

(13) a. Grammatical-Identical

The mother always buy the tapes.

The mother always buy the tapes.

b. Ungrammatical-Identical

The woman finds sometimes the pencils.

The woman finds sometimes the pencils.

c. Grammatical-Different

The woman sometimes counts the cookies.

A woman sometimes counts the cookies.

d. Ungrammatical-Different

Watches the policeman never the magazines.

Counts the policeman never the magazines.

The researcher is only concerned with grammatical and ungrammatical identical pairs of sentences. Grammatical and ungrammatical different pairs are distractors so that subjects are not able to identify what is being tested. (The distractors are discarded before the calculation of statistics.) The presentation of sentence pair is randomized in order to ordering effects unwanted effects.

The actual test consisted of 100 pairs of sentences (see Appendix C). Fifty five pairs matched and 45 did not match; 60 sentences were distractors. Among the 40 pairs of interest, 20 grammatical-identical exhibited SAVO, and 20 ungrammatical displayed SVAO. Each sentence was restricted to five chunks, since Masterson (1993) found an effect for length in chunks (response latencies were shorter for six-chunk sentences than for seven-chunk sentences). All lexical entries were controlled for familiarity: only the vocabulary that appeared in the first three chapters of an ESL grammar book for beginners was used. In order to avoid lexical differences, the same vocabulary was used when designing the test. That is, 10 subject NPs, 5 frequency adverbs, 10 verbs, and 10 object NPs were repeated to create 100 sentences.

The L2 experiment.

Non-native speakers participated in a similar sentence matching procedure. Only one change was made: the instructions on the screen indicated "blue=same" because several subjects were beginners and would not have understood the word "identical". In addition, non-native speakers were tested for agreement.

Because the hypotheses being tested differentiate between subjects who have acquired agreement and those who have not, it is necessary to determine this independently. To do so, an on-line translation task developed by A. Vainikka and M. Young-Scholten (personal communication, September 19, 1994) was used. A Mandarin Chinese informant translated, morpheme by morpheme, 30 English sentences into Mandarin Chinese. The same procedure was repeated with a Cantonese informant. Of these 29 sentences, 10 tested agreement; 15 sentences were distractors, and 4 were used in the practice session (see Appendices D and E). The items were also controlled for length and frequency. Both informants recorded the 30 Chinese sentences on a tape. They repeated each sentence twice, allowing time for the translation of the sentences.

Procedure

The control experiment.

The control experiment took place in a computer laboratory at the University of North Texas. Subjects

enrolled in an introductory linguistics course were first asked to fill out the questionnaire. Next, subjects were given oral instructions on how to use the program. These instructions were also repeated on the computer screen. Subjects practiced the task with six sentence pairs. After the practice session, they started the actual experiment. However, in order to minimize unwanted effects, the first sentence of the test was a "fake" item. A delay of 1750 milliseconds occurred between the display of the first sentence and the second sentence on the screen.

The L2 experiment.

The L2 experiment was similar to the control experiment. It took place in a computer as well as a foreign language laboratory at the University of North Texas and at Richland College. First, the non-native speakers filled out the questionnaire. About half of them performed the SM task first, and the other half participated in the on-line translation task first. For the non-natives, the delay between the display of the first sentence and the display of the second sentence in the SM task was adjusted to 4000 ms. Regarding the on-line translation task, the non-natives were first given oral instructions on the tape in Mandarin or Cantonese Chinese, depending on their first language. It was specified that they needed to respond as quickly as possible, and that they could not write anything. They listened to each item and translated it in English (see

Appendix D). There was a period of 10 seconds between each item. They practiced the task with four sentences. Again, the first item of the actual experiment was fake to prevent unwanted effects. The subjects' translation was recorded on a tape. Based on their translation into English, the non-native speakers were placed in one of two groups: Acquired Agreement and Not Acquired Agreement. The subjects were placed in the Acquired Agreement group if they produced 7 to 10 agreements in the on-line translation task. They were assigned to the Not Acquired Agreement group if they produced less than 7 agreements.

Analysis

As noted above, all the distractors of the SM control experiment were deleted. Next, in order to minimize the effects of outliers, response latencies that were greater than two standard deviations from a mean were adjusted to two standard deviations. In addition, incorrect answers were excluded. Again, this prevented outliers from contaminating results. Finally, a one-way ANOVA was calculated using time as the dependent variable and grammaticality as the independent variable.

The same analysis was conducted for the L2 experiment. However, a second independent variable was included. As noted above, non-native speakers were also tested for agreement and were placed in one of two groups based on the results of the on-line translation task. A two-way ANOVA was

performed, with time as the dependable variable, and agreement and grammaticality as the independent variables. Subsequently, a one-way ANOVA was calculated to determine the interaction of time with grammaticality for the non-native speakers who had acquired agreement. A one-way ANOVA was also computed, with time as the dependent variable and grammaticality as the independent variable, for the non-native speakers who had not acquired agreement.

CHAPTER 4

RESULTS

This chapter presents the results of both the control group and the experimental group.

The control Experiment

The results for the control group, which was composed exclusively of native speakers, indicate that the sentence matching procedure is sensitive to ungrammatical sentences (SVAO) such as (13b), repeated here for convenience.

(13) b. The woman finds sometimes the pencils.

Native speakers responded more rapidly to grammatical sentences (SAVO) than to ungrammatical ones. The mean response latency in milliseconds for grammatical and ungrammatical sentences are shown in Table 1. The mean response time for ungrammatical sentences was 67 ms longer than for grammatical sentences. A one-way ANOVA was performed to measure the variance of time, the dependent variable, due to grammaticality, the independent variable. The ANOVA results indicate that the difference in response latencies between grammatical and ungrammatical sentences was significant ($F = 4.408, p = .036$).

Table 1

Native speakers' mean response latencies

Ungrammatical	Grammatical	F
1537 ms	1470 ms	4.408*

* $p = .036$.

The L2 Experiment

As mentioned above, thematic verbs cannot raise past the adverb in weak agreement languages such as English and Chinese. Therefore, the following results were expected:

1. non-native speakers who had acquired agreement would accept SAVO and reject SVAO; hence, response latencies on SVAO sentences would be significantly longer than those on SAVO sentences.
2. non-native speakers who had not yet acquired agreement would accept both SAVO and SVAO; hence, response latencies on SVAO sentences would not be significantly different from those on SAVO sentences.

Grammaticality.

Non-native speakers, regardless of agreement acquisition, responded more quickly to grammatical sentences than ungrammatical ones. The mean response latencies in milliseconds are shown in Table 2. The mean response time between grammatical and ungrammatical sentences was 73 ms. A one-way ANOVA was performed, with time as the dependent

variable and grammaticality as the independent variable. The ANOVA results indicate that the difference of 73 ms between grammatical and ungrammatical sentences was not significant ($F = 1.559$, $p = .212$).

Table 2

Non-native speakers' mean response latencies

Ungrammatical	Grammatical	F
2789 ms	2716 ms	1.559*

* $p = .212$.

Agreement.

In order to determine whether agreement had any effects on grammaticality, non-native speakers were further divided into two groups based on their performance on the on-line translation task. Eighteen subjects had acquired agreement, and fourteen had not. Results indicate that the non-native speakers who had acquired agreement responded more quickly than those who had not. The mean response latencies for each group are given in Table 3. The difference in response latencies was 332 ms. A two-way ANOVA was performed, with time as the dependent variable, and agreement and grammaticality as the two independent variables. The main effect for agreement was significant ($F = 32.844$, $p = .00$), but the main effect for grammaticality was not significant ($F = 1.622$, $p = .203$). The two-way interaction between

agreement and grammaticality was significant ($F = 3.661$, $p = .056$).

Table 3

Non-native speakers' mean response latencies based on agreement acquisition

Agreement	No agreement	F
2607 ms	2939 ms	32.844*

* $p = .00$.

Grammaticality based on agreement acquisition.

The non-native speakers who had acquired agreement responded more quickly to ungrammatical sentences than to grammatical sentences. The difference was 24 ms. In contrast, the non-native speakers who had not acquired agreement responded more quickly to grammatical sentences than to ungrammatical sentences. The difference was 198 ms. Response latencies for grammatical and ungrammatical sentences by the non-native speakers who had acquired agreement and those who had not are indicated in table 4. A one-way ANOVA for the non-native speakers who had acquired agreement was performed, with time as the dependent variable and grammaticality as the independent variable. Results indicate that the difference of 24 ms was not significant ($F = .104$, $p = .747$), which refutes hypothesis 1. A one-way ANOVA for the non-native speakers who had not acquired

agreement was performed, with time as the dependent variable and grammaticality as the independent variable. Results indicate that the difference of 198 ms was significantly different ($F = 4.840$, $p = .028$). Hence, hypothesis 2 is not confirmed.

Table 4

Non-native speakers' mean response latencies for grammatical and ungrammatical sentences based on agreement acquisition

	Ungrammatical	Grammatical	F
Agreement	2594 ms	2619 ms	.104*
No Agreement	3039 ms	2841 ms	4.840**

* $p = .747$. ** $p = .028$

To summarize, the two hypotheses stated in chapter 2 are refuted, and no effect for grammaticality is found.

CHAPTER 5

DISCUSSION

The purpose of the present study was to determine whether the setting of the verb movement parameter in L2 was dependent on agreement acquisition. To do so, the grammar of Chinese learners of English was analyzed using the sentence matching procedure. Two hypotheses were presented in Chapter 2. The results of the analysis, described in Chapter 4, refutes both hypotheses. The first section of Chapter 5 presents an interpretation of these somewhat surprising results. The second section discusses the limitation of the study. The third section offers suggestions for future research.

Interpretation of the Results

Results indicated that the non-native speakers who had acquired agreement responded more quickly than those who had not acquired agreement to both grammatical and ungrammatical sentences. This finding is not surprising. L2 learners who have acquired agreement are more likely to have reached a higher level of proficiency. Hence, they are able to read sentences faster and respond to them more quickly.

Results indicated that non-native speakers, regardless of agreement, responded more quickly to grammatical sentences than to ungrammatical sentences. This finding

parallels the results of the control group composed of native speakers only. Both findings are consistent with previous sentence matching studies (e.g., Eubank, 1993): the SM procedure is sensitive to ungrammatical sentences operating at the IP level. However, even though non-native speakers' responses were not significant, there is no reason to believe that they pose problems about the procedure itself.

Non-native speakers who had not acquired agreement responded faster to grammatical than ungrammatical sentences. Hence, hypothesis 2 was rejected. This finding may be explained in terms of transfer from the L1 into the L2 and therefore seems to validate the Absolute Influence hypothesis proposed by Schwartz and Sprouse (1994). Recall that under the Absolute Influence hypothesis, lexical and functional projections, including the strength of inflection, transfer from L1 to L2. Since both English and Chinese are INFL lowering verbs, L2 learners do not raise the verb past ADV.

In contrast, the finding that non-native speakers who had not acquired agreement responded faster to grammatical sentences than to ungrammatical ones does not support the Minimal Trees hypothesis advanced by Vainikka and Young-Scholten (1994), and the Optionality hypothesis submitted by Eubank (1994). The Minimal Trees hypothesis poses the transfer of lexical projections only. The Optionality

hypothesis predicts that functional and lexical projections transfer, but values associated with inflection do not transfer from L1 into the initial state of L2. Hence, both views predict, for different reasons, that the requirement for raising is removed, which leads to optional verb movement in the L2. Since the L2 learners responded faster to grammatical sentences than to ungrammatical ones, verb movement does not appear optional.

Importantly, these results are to be regarded with caution. While the overall sample ($n = 32$) evinced reliable results, the two subgroups based on agreement were rather small ($n = 14$ and $n = 18$). Therefore, results may be based on accidental occurrences. Indeed, the deviation from the mean for the L2 learners who have not acquired agreement varied to great extent. The mean for the response latency of that subgroup was 3027 ms with a range of 2861 ms (1736 ms was the fastest response and 4596 ms the slowest). The range of the standard deviation was 1597 ms with 2053 ms being the highest and 457 ms being the lowest. With such dispersion, one might posit whether the results that were obtained are accidental, especially in light of the small number of subjects for that subgroup. Hence, the responses of the L2 learners who have not acquired agreement may not actually be attributable to transfer.

The analysis of the grammar of the L2 learners who have acquired agreement evinces a different pattern. Results

indicated that these learners responded more quickly to ungrammatical sentences than to grammatical sentences. Hence, hypothesis 1 was rejected. Indeed, it seems that the non-native speakers have assumed a value that is not present in either the L1 or the L2. In other words, they have unlearned the value of Chinese, a weak inflection language, and apparently adopted an underspecified INFL value. These results refute the transfer views advanced by Schwartz and Sprouse (1994). If Schwartz and Sprouse were correct in assuming the transfer of the whole grammar, the non-native speakers who had acquired agreement would have responded more quickly to grammatical sentences than to ungrammatical sentences. Results do not support the Optionality hypothesis advanced by Eubank (1994) either. The verb movement should not be optional for these L2 learners because they have acquired agreement. However, the Minimal Trees hypothesis advanced by Vainikka and Young-Scholten (1994) is supported because under this hypothesis, L2 learners would have not rejected ungrammatical sentences.

Similarly to the the L2 learners who have not acquired agreement, L2 learners who have acquired agreement evince very dispersed means. The mean for the response latency of that subgroup was 2680 ms with a range of 2202 ms (1617 ms was the fastest response and 3818 ms the slowest). The range of the standard deviation was 1520 ms with 270 ms being the highest and 1789 ms being the lowest. Again, such dispersed

deviation from the mean indicates that results for the L2 learners who have acquired agreement are to be regarded with caution.

Since the response latencies are so dispersed, it would seem intuitively preferable to place the nonnative speakers in one of three (and not two) groups: Acquired Agreement, Somewhat Acquired Agreement, and Not Acquired Agreement. For instance, L2 learners in the Acquired Agreement group would produce agreement 90% of the time or more in obligatory contexts. This would prevent nonnative speakers from being incorrectly placed in the Acquired Agreement group since it is unlikely that 10% of agreement production would be due to chance. L2 learners who produce agreement between 60 and 89% of the time in obligatory contexts would be placed in the Somewhat Acquired group, and the L2 learners who supply agreement in less than 59% of the time would be assigned to the Not Acquired Agreement group. Although such placement into three groups based on agreement seems intuitively better, no theoretical background substantiates this reasoning. Since a theoretical basis does not exist, it is impossible to make theoretical hypotheses. Hence, it is necessary to place the L2 learners in one of two subgroups.

Limitations

To summarize, the findings of the present study would seem to support the Absolute Influence hypothesis for the L2 learners who have not acquired agreement. In contrast,

results appear to support the Optionality and the Minimal Trees hypotheses for the nonnative speakers who have acquired agreement. However, these findings should not be overgeneralized. As mentioned above, the sample size of the two subgroups was rather small. Hence, results may have been skewed in one direction. Another problem may have derived from the artificiality of the research design.

In addition, the on-line translation task may not be a reliable tool to determine whether a non-native speaker has acquired agreement. During the experiment, it was noticed that the subjects had sufficient time to correct their oral output. Hence, some subjects who appeared to have acquired agreement may not in fact have done so.

Another problem of the on-line translation task deals with one of the elicited sentence, which is shown in (15) below.

(15) He lives in Dallas now.

L2 learners are usually taught to use the present progressive with the time adverb now. Indeed, the majority of the subjects used the present progressive instead of the simple present. Hence, this sentence did not reveal whether the subject had acquired agreement or not.

Suggestions for Further Research

A better understanding of the setting of the verb movement parameter in L2 may be obtained in several ways. For instance, the sample should be large enough to avoid the

effects of marginal individuals.

In addition, future research should use more naturalistic data to determine whether a non-native speaker has acquired agreement. Conversations between the researcher and the subjects could be directed to elicit a third person singular *s* to test agreement. Subjects could also be asked to tell a story or describe a cartoon, much like in Vainikka and Young-Scholten (1994)'s research. Since such tasks do not require the location of a bilingual informant, the researcher would not be limited to speakers of a particular language.

Finally, there is a clear consensus in the L2 acquisition field that studies need converging data drawn from several research designs, and not only from a single type of design (e.g., Masterson, 1993). Therefore, one might want to test the acquisition of the verb raising parameter of an INFL lowering language by speakers of an INFL lowering language using, for instance, grammaticality-judgment tasks. Then, the obtained findings could be compared with the results of a sentence matching procedure. This is important because each research design may yield different results.

APPENDIX A
NATIVE SPEAKERS' QUESTIONNAIRE

Questionnaire

Personal Information

Name: _____

Age: _____

Sex: _____

Native language: _____

How long have you been in the United States? _____

How long have you been speaking English? _____

Educational Background

Undergraduate: _____

Graduate: _____

APPENDIX B

NON-NATIVE SPEAKERS' QUESTIONNAIRE

Questionnaire

1. Name: _____
2. Age: _____
3. Sex: _____
4. Undergraduate _____ Graduate _____
5. Native language: _____
6. How long have you been in the United States? _____
7. How long have you studied English? _____
8. How would you describe your skill level in English?
(Please check one)
Beginner _____ Intermediate _____ Advanced _____
9. Other language(s): _____
Beginner _____ Intermediate _____ Advanced _____
Bilingual _____

APPENDIX C
SENTENCE MATCHING PROCEDURE

Practice Sentences

The woman rarely drops the oranges.
The woman rarely drops the oranges.

The boy never carries the magazines.
The boy never carries the magazines.

The sometimes buys child the apples.
The sometimes buys child the apples.

The father often watches the tapes.
The father often loses the tapes.

The girl flowers rarely loses the.
The girl flowers never loses the.

Test SentencesGrammatical-Identical Sentences

The woman often loses the books.
The woman often loses the books.

The boy always needs the toys.
The boy always needs the toys.

The child rarely finds the cookies.
The child rarely finds the cookies.

The father never takes the oranges.
The father never takes the oranges.

The man sometimes wants the magazines.
The man sometimes wants the magazines.

The mother often drops the apples.
The mother often drops the apples.

The girl always carries the pencils.
The girl always carries the pencils.

The teacher rarely buys the flowers.
The teacher rarely buys the flowers.

The policeman never watches the tapes.
The policeman never watches the tapes.

The student sometimes counts the pictures.
The student sometimes counts the pictures.

The woman always finds the oranges.

The woman always finds the oranges.

The boy rarely takes the magazines.
The boy rarely takes the magazines.

The child never wants the apples.
The child never wants the apples.

The father sometimes drops the pencils.
The father sometimes drops the pencils.

The man often carries the flowers.
The man often carries the flowers.

The mother always buys the tapes.
The mother always buys the tapes.

The girl rarely watches the pictures.
The girl rarely watches the pictures.

The teacher never counts the books.
The teacher never counts the books.

The policeman sometimes loses the toys.
The policeman sometimes loses the toys.

The student often needs the cookies.
The student often needs the cookies.

Ungrammatical-Identical Sentences

The woman finds sometimes the pencils.
The woman finds sometimes the pencils.

The boy takes often the flowers.
The boy takes often the flowers.

The child wants always the tapes.
The child wants always the tapes.

The father drops rarely the pictures.
The father drops rarely the pictures.

The man carries never the books.
The man carries never the books.

The mother buys sometimes the toys.
The mother buys sometimes the toys.

The girl watches often the cookies.
The girl watches often the cookies.

The teacher counts often the oranges.
The teacher counts often the oranges.

The policeman loses always the magazines.
The policeman loses always the magazines.

The student needs rarely the apples.
The student needs rarely the apples.

The woman takes always the pictures.
The woman takes always the pictures.

The boys wants rarely the books.
The boys wants rarely the books.

The child drops never the toys.
The child drops never the toys.

The father carries sometimes the cookies.
The father carries sometimes the cookies.

The man buys often the oranges.
The man buys often the oranges.

The mother watches always the magazines.
The mother watches always the magazines.

The girl counts rarely the apples.
The girl counts rarely the apples.

The teacher loses never the pencils.
The teacher loses never the pencils.

The policeman needs sometimes the flowers.
The policeman needs sometimes the flowers.

Distractor Sentences

Grammatical-Different Sentences

The student finds often the tapes.
The student finds often the tapes.

The woman sometimes counts the cookies.
A woman sometimes counts the cookies.

The boy often loses the oranges.
The child often loses the oranges.

The child always needs the magazines.
The child sometimes needs the magazines.

The father rarely finds the apples.
The father rarely takes the apples.

The man never takes the pencils.
The man never takes five pencils.

The mother sometimes wants the flowers.
The mother sometimes wants the tapes.

The girl often drops the tapes.
A girl often drops the tapes.

The teacher always carries the pictures.
The policeman always carries the pictures.

The policeman rarely buys the books.
The policeman never buys the books.

The student never watches the toys.
The student never counts the toys.

The woman often needs the apples.
A woman often needs the apples.

The boy always finds the pencils.
The father always finds the pencils.

The child rarely takes the flowers.
The child sometimes takes the flowers.

The father never wants the tapes.
The father never carries the tapes.

The man sometimes drops the pictures.
The man sometimes drops two pictures.

The mother carries often the books.
The mother carries often the cookies.

The girl buys always the toys.
A girl buys always the toys.

The teacher watches rarely the cookies.
The student watches rarely the cookies.

The policeman counts never the oranges.
The policeman counts often the oranges.

The student sometimes the pictures carries.
The student sometimes the pictures carries.

The the woman never buys oranges.

The the woman never buys oranges.

The boy magazines sometimes watches the.
The boy magazines sometimes watches the.

Child often counts the the apples.
Child often counts the the apples.

The always loses the pencils father.
The always the loses pencils father.

Needs the man rarely the flowers.
Needs the man rarely the flowers.

Ungrammatical-Different Sentences

The student finds sometimes the magazines.
The student takes sometimes the magazines.

The woman carries never the tapes.
The woman carries never three tapes.

The boy buys sometimes the pictures.
The boy buys sometimes the cookies.

The child watches often the books.
A child watches often the books.

The father counts always the toys.
The girl counts always the toys.

The man loses rarely the cookies.
The man needs rarely the cookies.

The mother needs never the oranges.
The mother needs always the oranges.

The girl finds sometimes the magazines.
The girl finds sometimes four magazines.

The teacher takes often the apples.
The teacher takes often the tapes.

The policeman wants always the pencils.
One policeman wants always the pencils.

The student drops rarely the flowers.
The child drops rarely the flowers.

Woman the buys often the books.
Woman the buys often the books.

The always boy watches the toys.
The always boy watches the toys.

The child counts the rarely cookies.
The child counts the rarely cookies.

The father never the loses oranges.
The father never the loses oranges.

The man sometimes needs magazines the.
The man sometimes needs magazines the.

Apples the mother often finds the.
Apples the mother often finds the.

Girl always the takes the pencils.
Girl always the takes the pencils.

The rarely wants teacher the flowers.
The rarely wants teacher the flowers.

The policeman drops the never tapes.
The policeman drops the never tapes.

Mother the never finds the tapes.
Mother one never finds the tapes.

The sometimes girl takes the pictures.
The sometimes teacher takes the pictures.

The teacher wants the often books.
The teacher drops the often books.

The policeman always the drops toys.
The policeman always two drops toys.

The student rarely carries cookies the.
The student rarely carries oranges the.

Pencil the women sometimes counts the.
Pencil two women sometimes count the.

Boy often the loses the flowers.
Child often loses the the flowers.

The always needs child the tapes.
The rarely needs child the tapes.

The father finds the rarely pictures.
The father takes the rarely pictures.

The man never the books takes.

The man never three books takes.

The the mother sometimes wants toys.
The the mother sometimes wants cookies.

The child oranges often drops the.
A child oranges often drops the.

Girl always carries the the magazines.
Teacher always carries the the magazines .

The rarely buys the teacher apples.
The never buys the teacher apples.

Watches the policeman never the magazines.
Counts the policeman never the magazines.

APPENDIX D

ON-LINE TRANSLATION TASK

Practice Sentences

Are you hungry?

The chair is white.

That book is thick.

My teacher is nice.

Test sentences

The boy likes his English class.

The boy eats breakfast every day.

The girl watches television every night.

He lives in Dallas now.

The woman teaches English at the university.

The mother kisses her baby often.

The student read a book every afternoon.

He studies every afternoon.

The father drinks coffee every morning.

Distractor Sentences

Are you happy today?

Do you like English?

Do you drink coffee every morning?

How long have you been in the U.S.?

Do you understand English?

Bananas are yellow and delicious.

Oranges are round and sweet.

My car is expensive.

English is hard to learn.

My hair is brown and curly.

That hat is big and red.

These dogs are small, but mean.

Those houses are big and beautiful.

This child is quiet and pretty.

This exercise is easy.

APPENDIX E

MORPHEME BY MORPHEME TRANSLATION OF TEST ITEMS

1. The boy likes the class.

這男孩喜歡這班級(課)

這個男孩喜歡這班級(課程).

2. The teacher walks to school each morning.

這老師走路到學校每一早晨.

這個老師每天早上走路到學校.

3. The boy eats breakfast every day.

這男孩吃早餐每一天

這個男孩有每天吃早餐的習慣.

4. The girl watches television every night.

這女孩看電視每一晚上.

這女孩有每天晚上看電視的習慣.

5. He lives in Dallas now.

他住在達拉斯現在

他現在住在達拉斯.

6. The woman teaches English at the university.

這女人教書英文在這大學.

這個婦人在這所大學教授英文.

7. The mother kisses her baby often.

這母親親吻她的嬰兒時常。

這個母親時常親吻她的嬰兒。

8. The student reads a book every Saturday.

這學生讀書一書本每星期六。

這個學生有每一週六看一本書的習慣。

9. He studies every afternoon.

他讀書每下午

他有每天下午讀書的習慣。

10. The father drinks coffee every morning.

這父親喝咖啡每早晨。

這個父親有每天早上喝咖啡的習慣。

REFERENCES

- Belletti, A. (1990). Generalized Verb movement. Torino, Italy: Rosenberg & Sellier.
- Bley-Vroman, R. and Eubank L. (1989). Match Test Version 2 [Computer program]. Honolulu, HI: University of Hawai'i at Manoa; Denton, TX: University of North Texas.
- Bley-Vroman, R., & Masterson, D. (1989). Reaction times as a supplement to grammaticality judgements in the investigation of second language learners' competence. University of Hawai'i Working Paper in ESL, 8, 207-237.
- Chomsky, N. (1991). Some notes on Economy of derivation and representation. In R. Freidin (Ed.), Principles and Parameters in Comparative Grammar (p. 417-454). Cambridge, MA: MIT Press.
- Clahsen, H., Hong, U., & Sonnenstuhl-Henning I. (1995). Grammatical constraints in syntactic processing: Sentence-matching experiments on German. The linguistic Review, 12, 5-33.
- Cowper, E. A. (1992) A Concise Introduction to Syntactic Theory. Chicago: University of Chicago Press.
- Crain, S., & Fodor, J. (1987). Sentence matching and overgeneration. Cognition, 26, 123-169.
- Ernst, T. (in press). Negation in Mandarin Chinese. Natural Language and Linguistic Theory.

- development. In T. Hoekstra & B.D. Schwartz (Eds.), Language Acquisition Studies in Generative Grammar (pp.369-388). Amsterdam: John Benjamins.
- Eubank, L. (1995). Negation in early German-English interlanguage: Examining the L2 initial state. Unpublished manuscript. University of North Texas, Department of English, Denton.
- Eubank, L. (in press). On the transfer of parametric values in L2 development. Language Acquisition.
- Freedman, S., & Forster, K. (1985). The psychological status of overgenerated sentences. Cognition, 19, 101-131.
- Li, C. N. & Thompson, , S. A. ((1990). Chinese. In B. Comrie (Ed.), The world's major languages (811-833). New York: Oxford University Press.
- Masterson, D. (1993). A comparison of grammaticality evaluation measurements: Testing native speakers of English and Korean (Doctoral dissertation, University of Hawai'i). Dissertation Abstracts International (1994), 54/7A, 2559.
- Pollock, J.Y. (1989). Verb movement, Universal Grammar and the structure of IP. Linguistic Inquiry, 20, 363-424.
- Schwartz, B. D. & Gubala-Ryzak, M. (1992). Learnability and grammar reorganization in L2 acquisition: Against negative evidence causing the unlearning of verb movement. Second Language Research, 8, 1-38.
- Schwartz, B. & Sprouse, R. (1994). Word order and nominative

- case in nonnative language acquisition: A longitudinal study of (L1 Turkish) German interlanguage. In T. Hoekstra and B. Schwartz (Eds.), Language Acquisition Studies in Generative Grammar (pp. 317-368). Amsterdam: John Benjamins.
- Vainikka, A., & Young-Scholten, M. (1994). Direct access to X'-theory: Evidence from Korean and Turkish adults learning German. In T. Hoekstra and B. Schwartz (Eds.), Language Acquisition Studies in Generative Grammar (pp. 264-316). Amsterdam: John Benjamins.
- Vainikka, A., & Young-Scholten, M. (1995). Gradual Development of I₂ Phrase Structure. Unpublished manuscript, University of Pennsylvania and University of Durham, Department of Linguistics and English Language, Durham, UK.
- Wexler, K., & Manzini, R. (1987). Parameters and learnability in binding theory. In T. Roeper & E. Williams (Eds.), Parameter Setting. Dordrecht: Foris.
- White, L. (1989a). The adjacency condition on case assignment: Do L2 learners observe the subset principle? In S. M. Gass & J. Schachter (Eds.), Linguistic Perspectives on Second Language Acquisition (pp.134-158). Cambridge: Cambridge University Press.
- White, L. (1989b). Universal Grammar and Second Language Acquisition. Amsterdam: John Benjamins.
- White, L. (1990/1991). The verb-movement parameter in second

- language acquisition. Language Acquisition, 1, 337-360.
- White, L. (1991). Adverb placement in second language acquisition: Some effects of positive and negative evidence in the classroom. Second Language Research, 7, 131-161.
- White, L. (1992). Long and short verb movement in second language acquisition. Canadian Journal of Linguistics, 37, 273-286.