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SYNTACTIC ATTRITION IN L2 MANDARIN SPEAKERS

by

Shu-Pei Wang

A dissertation submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Instructional Psychology & Technology

Brigham Young University

August 2007

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BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

Shu-Pei Wang

This dissertation has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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As chair of the candidate's graduate committee, I have read the dissertation of Shu-Pei Wang in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for

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## ABSTRACT

### SYNTACTIC ATTRITION IN L2 MANDARIN SPEAKERS

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Doctor of Philosophy

The purpose of this study was to explore how syntactic skill was maintained or lost by L2 Mandarin Chinese learners over time. In addition, this study endeavored to discover how a learner's L1 affects the attrition process of word order in Mandarin Chinese.

To find out how certain Chinese syntactic structures were subject to attrition over time and how syntactic errors could be attributed to L1 transfer, five types of Chinese syntax that either resembled English, were very different from English, or had no counterpart in English were selected. They included subject-verb-object sentences, modifiers before modified, time and other adverbial clauses, and *把* *ba* construction.

Twenty-four university students of Chinese-as-a-second-language speakers, who intensively learned and used Mandarin Chinese in a host culture setting for 16-22 months, participated in this study. By the time participants were tested a second time, they had discontinued regular usage of the L2 for 12 to 17 years. To find out how L2 syntactic attrition developed over time, participants were divided into three groups according to the year of departure from the L2 environment. They were also grouped into two groups by the length of time in the L2 setting to examine whether exposure time to the L2 affected the maintenance of overall L2 syntactic skill.

The results indicated that the subjects retain a fair amount of their language education within the first couple years of discontinued regular L2 usage. In the meantime, it was found that the extra six months exposed to the L2 does not extend the long-term maintenance of overall L2 syntactic skill.

The results did not show that the distance of structural properties between the learner's L1 and L2 necessarily predicted patterns of regression towards L1 syntactic ordering. Instead, the frequency of use, how often the structure appears in daily interaction with the target society and how well the syntactic structure was acquired in the first place, played a greater role in predicting whether the structure will likely be forgotten.

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## Chapter 1: Introduction

Learning a foreign language can be a daunting task for most people. In response, much research has been performed to help language instructors better assist language learners in the acquisition of new language skills. Unfortunately, even after much language instruction and devotion to learning a new language, many language learners find, to their frustration, that their abilities wane once their environment is no longer conducive to continued use and study of that language. Indeed, “language loss affects all of us. It occurs in every corner of the world, taking its toll among young and old alike” (Hansen, 1999, p.3). Losing a foreign language can be just as frustrating as acquiring a new one. Even people who have succeeded in mastering a foreign language to a significant degree still are susceptible to a loss of proficiency in one or more of the basic language skills (listening, speaking, reading, and writing) once regular usage of that language is discontinued. Therefore, understanding language attrition is equally important as studying language acquisition. This understanding can help language learners to not only master a second language, but increase the permanence of their proficiency.

Compared to the amount of research on language acquisition, the problem of language loss or attrition has not attracted much serious attention until the past two decades (Berko-Gleason, 1982; Oxford, 1982). In fact, it was not until after a conference held at the University of Pennsylvania in May 1980 that the processes of language loss or attrition gained an organized focus, and the study of attrition began to become a better known field (Lambert & Freed, 1982). During the same year, two dissertations were written on how children forget second languages (Allendorff, 1980; Hansen, 1980). The following year, another dissertation investigated the loss of a foreign language by classroom learners (Godsall-Myers, 1981). Since then, publications continued to explore and extend the study of language attrition throughout the 1980s. The

second conference on language attrition in 1986 was an international conference held at the University of Nijmegen in the Netherlands (Weltens, De Bot, & Van Els, 1986). Also many professional publications have recognized the importance of this fast-growing, expanding field and have devoted entire issues to the theme of language attrition, such as *Applied Psycholinguistics* in 1986; *ITL Review of Applied Linguistics* in 1988; and *Second Language Acquisition Studies* in 1989. Concerning the value of understanding attrition, Russell (2004) stated,

Scholars have become increasingly aware of the interrelatedness of the processes of language acquisition, maintenance, and attrition . . . and with that awareness has come the realization that not only should our knowledge of the acquisition process inform our attempts to understand the process of attrition, but that our study of language attrition can also be expected to inform our understanding of its acquisition. (p. 297)

There are four primary reasons for performing this study. First, this study attempts to expand the understanding of regression of second languages, but more specifically, it attempts to add insights on the regression of Mandarin Chinese. Attrition has been less commonly studied and most of the attrition studies that have been performed have focused on West Germanic or Romance languages, and not Chinese. As Bahrck (1984) said, “Much effort is devoted to the acquisition of foreign language skills,” but little is known about their rate of attrition. “Knowledge about attrition would yield benefits to teachers and students of foreign languages, because it would lead to understanding how various procedures of acquisition affect the rate of loss, and would ultimately help to establish optimum conditions of rehearsal, so as to minimize the potential for later attrition” (p. 105). Additionally, research on attrition of Chinese (Sino-Tibetan language family), which is also commonly considered as “non-cognate” or a “truly

foreign language” (Jordan & Walton, 1987, p. 64), is comparatively small. This is valuable to explore the nature of attrition in Chinese for further and perhaps more complete insight into the nature of second language attrition.

Second, this study compares the syntactic errors learners made after short-term disuse of the L2 to those errors after prolonged disuse for purpose of designing future teaching materials and curriculum. The comparison of subjects’ syntactic errors between long-term and short-term disuse should reveal how vulnerable certain grammatical structures are to attrition. There are two explanations to the variability in the vulnerability of certain structures to attrition: either the structures with less attrition might have been the structures that were acquired earlier (Berko-Gleason, 1982; Cohen, 1974, 1975; Kuhberg, 1992; Moorcroft & Gardner, 1987) or structures are less vulnerable because they are better-learned (Godsall-Myers, 1981). The understanding of these explanations can then be applied to designing curriculum. If it is the case that structures earlier in the acquisition process are less vulnerable to attrition, then the sequence of lesson presentation should be changed so that the structures most vulnerable to attrition are taught earlier, to allow learners time to reinforce these structures. If, on the other hand, structures are more subject to attrition because they are less easily acquired or internalized, then instructors should strive to understand the root causes and the underlying principles for these errors and then arrange materials, define progress, and design activities accordingly. Teachers may then apply and use the knowledge about problematic L2 grammatical features to design efficient teaching methods and curriculum, so that once instruction is discontinued the L2 skills can be more accessible in the future and learners’ L2 proficiency can be prolonged.

Third, this study attempts to discover how a learner’s L1 affects the attrition process of word order in Mandarin Chinese. It seems obvious when a foreign-language learner studies a



foreign language he or she relies, consciously or unconsciously, to some extent on his or her mother tongue and to find similarities and draw conclusions about the second language within the framework of the first. Studies of L1 influence/transfer in second language acquisition (SLA) have been massively supported by a vast collection of empirical data, but almost all of these are concerned with acquisition rather than loss or maintenance. Sharwood (1983) claimed that both language acquisition and attrition could be seen as a similar principled form of change in competence of a language: acquisition is increasing the competence and attrition is decreasing the competence of a language. If so, similar processes such as language transfer should be at work in the process of language acquisition, as well as on language attrition. It would be worthwhile for researchers to investigate whether or not the learners' first language also plays a similar role on the process of second language attrition, given that the L1 influences the acquisition of L2.

Finally, this study exposes more complex linguistic structures through observing subjects over a longer period of time of language disuse. Most studies on the regression of a second language observe subjects for short periods of time (usually several months to 3 years) following their exposure to the second language. These studies attempt to explain attrition without allowing enough time for it to more fully take effect in its subjects. Consequently, these studies may not be able to expose the attrition patterns of more complex linguistic structures and may even limit the researchers from generating valid and conclusive results. As Smith (1996) pointed out, long-term language attrition may be "the most important [of research] because it looks at more complex and varied structures over longer amounts of time in larger samples of subjects" (p.5). In order to expose these more complex structures, this study follows the subjects through a longer period of disuse (12 years).

## Chapter 2: Review of Literature

In this chapter, I synthesize and review some relevant and notable empirical findings in an attempt to assess several hypotheses regarding the processes of attrition and their linguistic consequences. First, the theories in second language acquisition will be reviewed to obtain a general understanding of attrition—the manner in which it occurs and how quickly it sets in. The second section examines the effect of individual, instructional, social and other factors on the rate of attrition. Finally, to give the reader a general knowledge of Mandarin Chinese word order, the following rules are outlined: subject-verb-object sentences, modifiers before modified, time and other adverbial clauses, and 把 *ba* construction.

### *Theories in Second Language Attrition*

During the past two decades language attrition has begun to attract more attention from researchers. Few current studies of L1 influence on Chinese language attrition exist. Even though there are limitations on finding literature directly relevant to this study, some documented findings in other language attrition studies can still help frame the general understanding of the trends and the nature of second language attrition. For the purpose of a general review of attrition literature, these studies are surveyed in three separate categories: the nature of the attrition process, the rate of FL/L2 loss in the attrition process, and affective variables of language attrition.

### *The Nature of the Attrition Process*

Probably one of the most widely studied themes in the language attrition process is whether the attrition phenomenon of language skills occurs in the reverse order of acquisition. This is probably the case because tracking the processes of both acquisition and attrition to verify

whether second language happens in the reverse of acquisition indeed has several constraints and is quite time-consuming.

Cohen's earlier study (1974), which focused on forgetting a second language, demonstrated that L2 attrition comes in the reverse order of acquisition, which was consistent with Ribot's in 1883. In Cohen's first study of language forgetting by Anglo children enrolled in kindergarten in the Culver City Spanish Immersion Program, the subjects were given the Oral Language Achievement Measure Test twice during the summer recess, once at the beginning and once again at the end. He found that after a three-month period of disuse of Spanish in an L1 environment, the subjects began to resist speaking Spanish on some occasions, to suffer some loss of accuracy (e.g., prepositions, article adjective agreement), and to avoid making longer utterances.

In his second study (1975), Cohen followed three of the students in his 1974 study in order to look at whether second language attrition happened in the reverse order of acquisition. He found that two of the subjects demonstrated greater attrition in the *ser/estar* distinction, the definite article, the simple present, and the present progressive tense (structures that were usually acquired later). The results of his analysis did support the reverse order hypothesis, that is, the most currently acquired linguistic features would be lost first. This view has been supported by a number of following researchers (Berko-Gleason, 1982; Kuhberg, 1992; Moorcroft & Gardner, 1987) who all have reported that loss of proficiency of second language is the mirror of acquisition.

Kuhberg (1992) conducted a longitudinal study of two Turkish girls aged seven and eleven respectively. The attrition of German in the two girls was compared to the L2 acquisition of an eleven-year-old Turkish boy. Kuhberg followed the subjects for 15-20 months. The data

were collected through conversation and the retelling of picture stories. According to his observation, he found that the two Turkish girls demonstrated considerable attrition in personal object pronouns, articles, conjunctions, clauses, modal particles, and modal verbs that are acquired very late and slowly. From that he concluded, "It becomes obvious that L2 attrition, at least for the linguistic phenomena that were investigated, is to a large extent the mirror of L2 acquisition" (p.152).

Olshtain (1989) added an important dimension to this research. In her study of Israeli ESL children, she divided the students into two groups. One group consisted of fifteen younger subjects, aged five to eight, who had learned English as a second language in an L2 environment. The other group consisted of older subjects, aged 11 to 15, who all had reached a near-native level of proficiency in speech and English literacy after two or more years in an English environment. The results indicated that each subject in the former group demonstrated incorrect generalization of the irregular forms of noun plurals and verbs in the past tense, while subjects in the older group did not exhibit any significant cases of a reversal of the acquisition process. Since the regular forms are taught before the irregular forms, the result may indicate that the attrition is in the reverse order of acquisition. Olshtain explained,

Reversal of acquisition occurred for this group of subjects probably for two main reasons; first, they might not have reached a sufficiently stable mastery of regular/irregular rule application upon return to the Hebrew environment, and second, they had not yet acquired true literacy ability in English, which otherwise could have compensated for the lack of spoken English input. (p.163)

Olshtain made no definitive conclusions, but the observation is more or less consistent with Godsall-Myers (1981) in that the best-learned forms, whether learned early or late, should

be the least vulnerable. Even though the results of Olshtain's study did support the *regression theory* that indicates in some ways the L2 loss in a reverse order of acquisition, she still brings up one concern with this issue:

Attrition studies, in general, tend to be limited by the lack of availability of large enough samples of cases similar in nature. Since predictor variables play an important and complex role in attrition individuals display rather different combinations of variables, making it difficult for the research to arrive at conclusive results. (p. 164)

Although the generalization of the reverse order hypothesis is limited, it does uncover some trends of L2 attrition and provides theoretical background for the present study.

Furthermore, the concern mentioned by Olshtain also raises our interest in testing the regression theory by studying larger samples over longer periods of time.

#### *The Rate of the Attrition Process over Time*

Several studies have concluded that the younger a child is, the more loss there will be of second language skills in a short period of time. For example, Magiste's study (1979) compared English language regression in two Dutch children aged ten and four respectively. After they were removed from the second language environment and returned to the Netherlands for seven months, Magiste found that the younger child had lost the English skills almost completely, while the older child showed only some signs of L1 transfer errors into English and about a fifty percent decrease in the length of utterance. Likewise, Berman and Olshtain (1983) found in their study of Israeli children that the younger subjects, aged five to seven, suffered more loss of the second language than older subjects, aged eight to fourteen. They reasoned that "[because] these children had not yet achieved literacy in English, most of them had no further contact with English once they returned to Israel, and they moved very rapidly back into an all-Hebrew way

of life” (p. 233). On the other hand, they found that the older children “do retain a fair amount of native-like command of English” (p. 233). Olshtain confirmed that age might affect language attrition in terms of the learner’s literacy level in her later study (1989).

However, the situation with older learner attrition is very much different. As early as 1932, Kennedy proposed attrition follows a traditional forgetting curve: it sets in rather quickly, but its rates decline exponentially in subsequent periods. The proposition was supported by a number of researchers (Godsall-Myers, 1981; Weltens et al., 1989). Bahrick’s longitudinal study (1984) provided more persuasive and deeper insights on this point of view, since it contained many subjects with different lengths of time of L2 Spanish study, as well as many different periods of disuse (in some cases, even up to fifty years). He noticed that after the period of significant attrition of the first few years, the retention remained unchanged for up to thirty more years. In other words, the results obtained in his study indicated that a large loss might set in at the beginning period of disuse of L2/FL, followed by a fairly slow and gradual loss.

To the contrary, some researchers proposed that there is an “initial plateau” when second language skills still were maintained and comprehended before a significant attrition really sets in. Cohen (1989) found that the subjects with whom he experimented did not demonstrate significant L2 attrition until nine months after discontinued use of the target language. Weltens and Van Els (1986) also claimed there is no significant loss in initial periods of disuse of L2. Recently, Kuhberg (1992) and Tomiyama (1994), in their study of children, supported this idea, reporting that subjects did not demonstrate significant attrition until about six months after non-use of the L2.

In light of these two observations, it cannot be concluded definitely which one is more accurate, particularly since most studies only experimented with disuse intervals of only several

months (pre- and post-summer recess). In order to gain more accurate and valid insights, more longitudinal studies will need to be conducted.

### *Variables of FL/L2 Loss*

Two variables may have an influence on FL/L2 loss. First, the linguistic affective variables of L2 loss will be explored. This includes linguistic features of the target language and the transfer from the L1 to that target language. Secondly, affective variables from the perspective of the individual learner will be explored. This includes individual factors such as the subjects proficiency and the time spent in the L2.

### *Linguistic Effect*

In studying the relationship between language attrition and linguistic features, Berko-Gleason (1982) gained particular insights in some linguistic subsystems that may suffer differential attrition. It was found that routines and sequences, like the days of the week and numbers from one to ten, and “emotionally laden” (p. 260) words, like curses and body parts, are relatively durable in the attrition process. Berko-Gleason’s conclusion was verified by Berman and Olshtain (1989) in an attrition study of their L2 children:

There are certain types of knowledge which are deeply entrenched through the original learning experience, where English [the second language] was acquired to the point of native-like proficiency in a naturalistic setting at school, with friends, in the neighborhood, and often at home with siblings even though not with parents. Such knowledge seems very resistant to loss, especially among the older children. (p. 233)

Several reports have pointed out that the more difficult a language feature is, the more likely a learner will lose it. Anderson (1982) clarified this idea, proposing that “those linguistic features that took the longest for an individual to acquire and master will be the hardest to

maintain” (p.113). A similar conclusion was claimed by Olshtain (1989), who indicated that the linguistic features that were more difficult to acquire will be easier to lose. One common observation pointed out in both of these recent studies is that the contrast between L1 and L2 will likely affect the attrition. In other words, the larger the distance between two languages, the more difficult linguistic features there will be for language learners. Similar findings also could be found in the research of Weltons and Grendel (1993).

A number of researchers also claimed that different elements within the language system suffered different levels of attrition (i.e., frequency, markedness, fixed expressions and functional load). Anderson (1982) pointed out that elements that are less functional, marked, or frequent are more vulnerable. Hansen (1980) explained why fixed/formulaic expressions are better retained during the attrition process with Wong Fillmore’s claim that “formulaic expressions provide the basis for learners to sort out the rules and forms of the language they are acquiring” (p.181). Likewise, Van Els (1986) also observed “particular foreign language elements which even have a strong ‘native’ flavor --such as idioms, idiomatic phrases and ‘social fillers’-- are not lost at the same rate as other elements when a person’s foreign-language competence is breaking down” (p.10). Yoshida (1989) investigated English attrition of Japanese learners who had spent a certain time studying abroad in the U.S. He found that some English elements such as listening comprehension, phonology, and very frequent or pragmatic-laden items were retained well regardless of lack of practice. Consistent with Yoshida’s finding, Yoshitomi (1992) pointed out that content associated with pragmatically laden and meaningful events were retained longer.

Yet another issue is whether different linguistics levels (phonology, morphology, syntax and lexicon) within each sub-skill (speaking, listening, writing and reading) suffer differential attrition. Weltens and Van Els (1986) reported that non-use affects specific linguistic levels of the



French speaking ability of native Dutch speakers before attrition shows in the overall skills. In Weltens's 1987 study, he found "language skills in which automated process play a major part, are likely to be less subject to loss once they have been acquired: rate and degree of loss on the phonological level will be less than on the lexical level" (p. 23). Similar phenomena were reported by Scherer (1957) and Van Els (1989), who found that the subjects suffer most attrition on both the syntactic and lexical levels and concluded that grammar and lexical items are the first two skills to be affected by attrition.

Pino-Silva (1989) contributed another important insight in the relationship between language attrition and linguistic features. He investigated five Venezuelan children who acquired English at a native level in an English-speaking environment and before returning to a Spanish-speaking environment. The results showed that general proficiency, comprehension, and segmental pronunciation were retained, but vocabulary, intonation, and fluency were subject to attrition.

Recently, Yoshitomi (1994) conducted a multiple case study of Japanese returnees' attrition of English-speaking skills. The samples were collected from four subjects aged nine to ten, after non-use of English for a period of time ranging from zero to more than twelve months. The tasks that were measured involved free interaction, story description, planned speech, and listening comprehension. In addition, the subjects were interviewed and given written questionnaires every three months. Contrary to Pino-Silva's study, it was found that all subjects demonstrated only a slight regression over time in sub-skills of English, such as lexicon and syntactic command, regarding the use of verb morphology and articles. However, their overall accuracy of English usage regressed heavily over time. It has been suggested that non-use affects

the global skills before attrition shows in each linguistic sub-skill of English competence among Japanese returnees.

Russell (1999) conducted a syntactic analysis on the reduction of language competency with 20 subjects of Japanese-as-a-second-language speakers. All subjects in the study returned to the US after approximately two years of residence in Japan with intensive, informal language learning. Ten of the subjects had taken eight or more credit hours of reading-oriented formal instruction since their return from Japan, while the other 10 had little or no formal instruction in the language following their return.

The goals of Russell's analysis were (a) to examine the changes and focus particle usage after two years of relative disuse of Japanese, (b) to analyze particle errors and changes in error rates for specific particles, (c) to measure differences in syntactic complexity over time, using both T-unit-based quantitative measures as well as qualitative analyses of specific syntactic constructions (e.g., complement clauses, conditionals, modal constructions, reason/purpose clauses, time and other adverbial clauses, relative clauses, etc.), and (d) to compare the two groups of subjects to see whether the formal instruction affected retention of syntactic competency.

Russell's analysis found that over time the subjects' speech samples began to show declining syntactic complexity and increasing rates of particle and other syntactic errors. It was also found that the group with participants who received formal instruction showed greater retention of overall syntactic ability as compared to the group who did not receive such instruction. Russell's analysis also addressed that higher initial levels of proficiency correlated the better extent of maintenance of specific syntactic features.

### *Effect of L1 Transfer on L2 Attrition*

Before examining the impact of language transfer on L2 loss and to shed light on the current viewpoints on the role of L1 transfer in attrition, a brief review on the subject of transfer phenomena as it pertains to L2 acquisition from various perspectives will be made.

L1 influence or transfer typically affects sequences of L2 acquisition by “either slowing [its] development or modifying it” (McLaughlin, 1987, p. 149). The term *transfer* generally refers to when a learner (mistakenly) applies rules and forms of his/her first language (L1) into his/her second or foreign language. The use of the term transfer to describe the effects of the L1 on L2 may trace back to centuries ago. Linguists have made use of different approaches to explain language transfer, which have led to a diversified definition and use of transfer.

Views about language transfer have gone through significant change. Initially, transfer was recognized within a behaviorist framework of learning, which implies “the ‘earlier habits’ of the L1 would be carried over into the L2” (Ellis, 1994, p. 29). In other words, learner’s L1 transfer was considered to be an obstacle during the learning process. For instance, Weinreich (1953) perceived that transfer “[is evidenced as] those instances of deviation from the norms of either language which occur in the speech of bilinguals as a result of their familiarity with more than one language” (p.1). Lado (1957) not only recognized surface structure but also added culture as an equally significant component. In the preface of his book, *Linguistics Across Cultures*, he noted,

Individuals tend to transfer the forms and meanings and the distribution of forms and meanings of their native language and culture to the foreign language and culture-both productively when attempting to speak the language and to act in the culture and

receptively when attempting to grasp and understand the language and the culture as practised by natives. (Lado, 1957, in Larsen-Freeman & Long, 1991, pp. 52-53)

Different from the standpoint of a behaviorist, Corder (1983) argued that transfer is primarily a communication strategy. He suggests using the term *borrowing* to replace transfer which came from the school of behaviorist learning theory. He emphasizes that borrowing is “a performance phenomenon, not a learning process: therefore a feature of language use and not of language structure” (p.92).

Also under the cognitivist paradigm, Dulay, Burt and Krashen (1982) suggest that there are two likely explanations of L1 influence on the process of L2 acquisition. One is from a psychological perspective, which suggests that there is influence from old habits when new ones are being learned. The second is from a sociolinguistic perspective, which describes the occurrence of language interactions when two language communities are in contact. Three such examples are *borrowing, fossilization and code-switching*. Borrowing essentially means the incorporation of linguistic property from one language into another. Persistent errors could lead to fossilization where a learner is uncorrected for some reason, but is still able to successfully get their message across and so the mistaken grammar fossilizes in that state. Code-switching describes the use of two language systems for communication, usually evidenced by a sudden, brief shift from one to another. This shift is not an indication that the speaker is unaware of her error, but rather a result because she simply does not know of a better way of phrasing the sentence and must revert to her L1 to express herself.

To describe the effect of L1 in SLA, *crosslinguistic influence* was proposed by Kellerman and Sharwood-Smith (1986) as an extensive term for transfer which includes not only transfer as it shows in comprehension and production, or borrowing in Corder’s (1983) terminology, but

also what underlies this transfer in communication and the results thereof (i.e., the incorporation of L1 elements into the learner's language system: transfer as a learning process). In other words, L1 influence was not viewed as an accidental or irregular accumulation of L1 borrowings in an individual bilingual, but was placed firmly within the overall system of the source and the target language.

Odlin (1989) argued that transfer should not solely be considered as interference or as a "falling back on the native language" (p. 26). He pointed out that the notion of interference is inadequate because it reflects only one type of transfer – negative transfer – while taking no account of positive transfer. Moreover, while L2 learners sometimes revert to the L1 as a default mechanism in producing L2, the "falling back" explanation of transfer is not sufficient because transfer may involve more than native language influence alone. He concluded,

A fully adequate definition of transfer seems unattainable without adequate definitions of many other terms, such as strategy, process and simplification....One might plausibly argue that a fully adequate definition of transfer presupposes a fully adequate definition of language. (p. 28)

Researchers, such as Cook (1991), Crystal (1987), and Milroy (1987), used the term code switching to refer to the switching back and forth between L1 and L2 to overcome the deficiencies of the L2. The learner falls back on structures or patterns from the L1 in order to get a message across, especially when a speaker needs to compensate for some difficulty, to express solidarity, to convey an attitude, or to show social respect (Crystal, 1987; Berthold, Mangubhai, & Bartorowicz, 1997). Similarly, O'Malley and Chamot (1990) defined transfer as "the use of previous linguistic or prior skills to assist comprehension or production" (p. 120).

Recent researchers have switched focusing on structural differences between L1 and L2 to the process and interlocutors involved in the interactions between L1 and L2. Berthold et al. (1997), for example, used the term *interference* to refer to the transference of elements of one language to another at various levels (e.g., phonological, grammatical, and orthographic levels). They define *phonological interference* as foreign accents stemming from stress, rhyme, intonation and speech sounds from the L1 that influences the L2. *Grammatical interference* is defined as the L1 influencing the L2 in terms of word order, use of pronouns and determinants, tense, and mood. *Lexical interference* is the borrowing of words and converting them so they sound more natural in the other language. *Orthographic interference* includes the spelling of one language altering another.

In sum, whether structural differences between L1 and L2 are perceived as the basis for language transfer, language borrowing, language interference, or code-switching, they do serve as a means of predicting and/or explaining difficulties of second language learners given a particular mother tongue in learning a particular target language. For purposes of this paper, the terms *L1 influence*, *L1 transfer*, and *language interference* will be used interchangeably.

The influence of the native language (L1) on the acquisition of a second/foreign language (L2/FL) has long been the center of research and a controversial issue in second language acquisition (SLA) since the middle of the last decade (Odlin, 1989). The phenomenon of L1 influence seems quite obvious to anyone who has attempted to learn or teach a foreign language. We encounter so many examples of the interfering effects of our L1s. For example, speakers of languages which have no /r/-/l/ distinctions generally have difficulty with English /r/ and /l/, and many L2 learners' tend to substitute the corresponding allophonic variants in the their first languages.

There are, of course, many other influences at play when we learn a foreign language; however, the influence that the mother tongue has on the language we produce when we use a foreign language has become a very important area of study for people interested in second language acquisition, language teaching, and language in general. As Gass and Selinker (1983) assert that “knowledge of the NL plays an extensive role in SLA; evidence presented in studies reported there strongly supports this view, which can be stated as SLA fact” (p.171).

From the 1940s to the 1960s, structuralists reached the peak of their success under the influence of behaviorism in psychology, proposing the Contrastive Analysis Hypothesis (CAH). The major assertion of the CAH was that structurally different areas of the two languages involved would cause interference (i.e., difficulties or errors). However, along with the emergence of Chomsky’s rationalist position on language acquisition in the 1970s, the influence of L1 in SLA was reassessed as a cognitive phenomenon, which cannot be explained solely by linguistic means as attempted in the framework of the traditional CAH (Long & Sato, 1984).

This newly-emerged cognitivist paradigm in the early 1970s formed the two major hypotheses in SLA. One was the Creative Construction (CC) Hypothesis and the other was the Interlanguage (IL) Hypothesis (see Faerch & Kasper, 1987). The proponents of those hypotheses argued for the universal autonomous system of L2 as a guiding force of SLA. This view was strongly held by the CC proponents, opposing that the learners’ L1 plays a relatively minor role in developing their target language (e.g., Dulay & Burt, 1972, 1973, 1974).

Although the proponents of CC cast doubts on the L1 transfer effects in SLA, there is so much evidence pointing to the existence of transfer effects that such phenomena can hardly be ignored (Schachter, 1988). Based on the facts, the proponents of the IL hypothesis endeavor to reassess the significance of L1 transfer in learners’ IL development. Instead of focusing on the

comparison of native and target language, as in the former CA paradigm, researchers turned their focus on the learner language production itself. In Selinker's seminal articles published in 1966 and in 1969, he systematically compared the learners' native language, their interlanguage, and their target language. Selinker regarded language transfer as a source from which the learner actively draws in IL development. He also recognized the language production of learners as a language system in its own right with an internal consistency and grammar. The way of Selinker's data analysis is now a basis for current studies of L1 transfer in SLA. As a consequence, the role of the learners' L1 shifted from a minor role (as argued by the CC proponents) to a relatively influential role in the late 1970s.

It is worth noting that instead of concerning ourselves with the existence or non-existence of transfer, as attempted by Selinker, the major interest of IL studies is then to attempt to specify the conditions under which language transfer typically occurs or does not occur (i.e., to investigate transferability, rather than transfer). A number of constraints on the transferability of items have been identified: the language level, sociolinguistic factors, linguistic markedness, prototypicality, language distance (e.g., linguistic differences), and the learner's psychotypology, and developmental factors involving universal principles or tendencies in language acquisition (Referred to Ellis, 1994).

Without going too far beyond the range of this discussion, in the present study I merely explore the three predicting constraints on transferability that incorporate both linguistic and nonlinguistic factors. These constraints include (a) language level (phonology, lexis, grammar, and discourse), (b) language distance (the extent to which specific linguistic differences between the target and native languages), and (c) the level of language proficiency.



The picture about the role of L1 has now become more refined and at the same time more complex. It is now generally accepted that a learner's L1 effects vary according to the linguistic subsystem (e.g., phonetics and phonology, morphology, syntax, lexicon) in which they appear, but to what extent and on which linguistic levels are still open questions.

A number of studies of SLA have generally shown that there exists a native language influence on a phonological level (e.g., Ioup, 1984; Hammarberg & Williams, 1993; James, 1996). The same applies for transfer on a lexical level (e.g., Kellerman, 1986; Appel, 1996). Different phenomena of lexical transfer have been specified according to the degree of their adaptation to the target language (TL) norm or to the extent of their conscious use (e.g., Faerch & Kaspar, 1986). There has been considerable debate as to whether there is significant transfer in syntax. For example, Towell and Hawkins (1994) report that syntactic structures displayed by the L2 learners (different from the target language) are frequently traceable to L1 syntactic patterns. Odlin (1989) asserts that evidence from the acquisition of English, Spanish, Dutch and German "strongly suggest that basic word order is one kind of syntactic pattern susceptible to native language influence" (p. 95). However, many researchers (e.g., Faerch & Kaspar, 1986; Vogel, 1992) oppose this view and claim that learner's L1 has little influence on syntax. Sayehli (2001) indicates that one of the reasons for this disagreement might be that the transfer of syntactical properties is simply not as obvious as the transfer of properties from other linguistic levels. To support her argument, she refers to Ioup's study (1984), which indicates that language teachers no longer are able to distinguish learners' native language background as soon as the phonological clues were eliminated, while the syntactical errors still existed.

In contrast, the learner's L1 may possibly facilitate L2 learning when the syntactic structures of the target language are similar to those of the native language. Odlin (1989)

explains that “learners speaking a language with a syntax similar to that of the target language tend to have less difficulty with articles, word order, and relative clauses” (p. 36). Such similarities can, to a certain extent, provide the learner with a basis for making accurate predictions about the nature of the L2 system.

Gass’s two studies (1979; 1983) may give us an idea about how transfer can have a facilitative effect. She investigated 17 adult learners of L2 English to examine how the subjects’ different language backgrounds affect their sentence-awareness on various structural aspects of relative clauses. Gass divided her subjects into two groups: L1s that allowed pronoun retention (for example, Persian and Arabic) and ones that did not allow it (for example, French and Italian). She discovered that learners in the first group were much more likely to produce sentences like, “The woman that I gave a book to *her* is my sister,” as grammatically correct than learners in the second group. Those learners in the second group, whose languages were similar to English in not permitting pronoun retention, also made fewer errors in a sentence-joining task.

On the other hand, learner’s L1 may also interfere L2 learning when the syntactic structures of the target language diverge from those of the native language. For example, an earlier study conducted by Nagara (1972) provides convincing evidence for basic word-order transfer among Japanese learners of Pidgin English in Hawaii; subjects produce a great number of examples of Subject-Object-Verb (SOV) patterns derived from their native tongue, regardless of numerous target language discourse clues and the strong Subject-Verb-Object (SVO) structure of English. Hedgcock’s (1990, 1991) studies of the gain and loss of selected morphological and syntactic structures in Spanish by college-age speakers of English revealed a firm resistance among subjects to adopt the word order of the target language. In contexts requiring use of an object pronoun in L2, where SVO must become SOV (through affixation), he found that almost

none of the subjects was able to construct those sentences in the target sequence, indicating an unalterable adherence to rigid L1 (English) word order.

Another area in which L1-to-L2 transfer is frequently observed is the rigidity of word order (Odlin 1989). Granfors and Palmberg (1976) studied whether learners acquiring an L2 with rigid word order produce errors as a result of assuming that the same amount of flexibility in their L1 word order can be applied to their L2. They gathered written samples from speakers of L1 Finnish (a flexible SVO language) who were learning English (a rigid SVO language). They concluded that sentences such as “*This weekend got F. any fish*” (“This weekend F. caught no fish”) emerged in their subjects’ production because of syntactic transfer from L1. In the same investigation, native speakers of Swedish, a rigid SVO language, produced far fewer errors of this type. Similar word order violations have been noted in the L2 English output of speakers of French, an SVO language that has a more flexible word order.

White (1989) investigated the Adjacency Condition on Case Assignment (Chomsky, 1981, 1986), which requires that a noun phrase (NP, ‘Mary’) that receives case be located next to its case assigner (the verb in this case ‘does’). Adjacency or Verb raising thus refers to the acceptability of inserting material between a case-assigner and its NP. English allows for the following:

1. Mary slowly does her homework.
2. Mary does her homework slowly.
3. Slowly Mary does her homework.
4. Mary is slowly doing her homework.

English does not, however, accept intervening material between the case-assigner (verb) and its object, as in the following:

5. \*Mary does slowly her homework. (*Marie fait lentement ses devoirs.*)

French, on the other hand, is more flexible in this respect and allows for all of the above 5 sentences (All examples appear in White 1989, pp.149-50).

White concludes that French speakers are more likely to commit errors when learning English with syntactic rule of the Adjacency Condition on Case Assignment because French is more lenient. It therefore appears that language learners acquiring an L2 with more rigid word order than their primary language produce more errors because they tend to expect the rules of the L2 to be lenient.

The issue of proficiency in relation to L1 transfer has been relatively controversial. For instance, Taylor (1975) argued that less proficient learners rely more on L1 transfer, while errors produced by more advanced learners reflect their strategy of overgeneralization from already acquired Inter-language (IL) features. In the area of phonology, Major (1986) examined the validity of the *Ontogeny Model*, which claims that transfer errors decrease but developmental errors<sup>1</sup> increase and then decrease chronologically. His longitudinal study of L2 acquisition of Spanish *r* with four American-English speakers in fact provided strong support for the model.

Unlike Taylor and Major, Hammerly (cited in James, 1994) claimed that L1 transfer is strongest in beginners and near-natives. Coppieters (1987) demonstrated that adult learners with near-native language proficiency developed essentially different fundamental grammars from native speakers. According to the study, those near-native non-natives relied radically on their native language in the areas of basic grammatical contrasts.

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<sup>1</sup> Developmental errors are made when developing any new language skills, such as overgeneralization, omission etc.

On the contrary, Jansen, Lalleman and Muysken (1981) demonstrated word order transfer to bring about different acquisition patterns in a study of word order patterns preferred by Arabic- and Turkish-speaking immigrant workers in the Netherlands. Speakers of Arabic (a primarily SVO language) tend to identify basic Dutch word order as SVO. On the other hand, speakers of Turkish (an SOV language) naturally identify basic Dutch word order as SOV. Such L1-based preferences were most notable among the less proficient speakers of Dutch; this finding corresponds with that of Bickerton and Givón (1976), who found a reverse relation to exist between transfer and proficiency level. Hedgcock (1991) adds a further insight to this assertion:

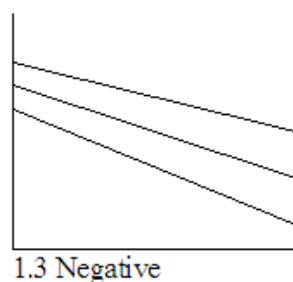
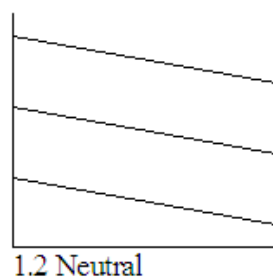
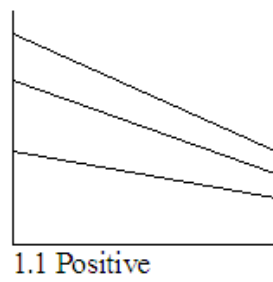
If, indeed, a high level of transfer is indeed an indicator of low L2 proficiency, as these studies predict, a similar tendency could be found to operate in attrition. When the source of L2 input is removed, it appears inevitable that the persistent dominance of L1 properties will continue and strengthen, such that the learner will regress toward the L1. On the other hand, if attrition sets in, learners with higher L2 proficiency may regress toward the L1 more slowly than the low-proficiency ones, but in the same sequence. (p. 98)

#### *Individual, Instructional, and Other Factors on the Rate of Attrition*

##### *Proficiency Effect*

Researchers have different opinions about the relationship between proficiency level and attrition. One well-known proposal on this issue is claimed by Weltens (1989). Weltens pointed out that, theoretically, there are three possible relationships between original proficiency level and attrition: (a) a positive relationship (“the more you know, the more you lose”); (b) a neutral

relationship (“You lose a fixed amount regardless of your total knowledge”); and (c) a negative relationship (“The more you know, the less you lose”) (see Figure 1).



*Figure 1.* Possible Relationships between Proficiency Level and Attrition from Weltens, 1989, pp. 13-14.

This positive relationship is supported by Scherer (1957) and Hedgcock (1991). Scherer (1957) investigated the loss of German vocabulary, grammar, and reading skills of first year German students over the period of summer vacation. He found a slight improvement in reading and slight regression on grammar and vocabulary in the lower-level group. However, the more

proficient group demonstrated greater attrition on each language skill compared to the less proficient one. He suggested that it may be because “the good students had more to forget” (p. 176). Hedgcock also argues that the positive relationship might occur even though it oversimplifies human memory.

The neutral hypothesis, in which the proportion of knowledge lost over a given period of time is equal for all proficiency levels, was supported by Smythe et al. (1973) and Weltens et al. (1989). However, most second language studies reported a reverse correlation between language proficiency and attrition.

As early as 1932, Kennedy proposed that high levels of proficiency make language skills less subject to attrition. However, he also indicated that proficiency only lengthens the L2 retention in the first few years; thereafter, attrition is still inevitable. Edward (1977) investigated language proficiency effect on language attrition among 455 English-French bilinguals of the Canadian Public Service (209 native English speakers and 246 native French speakers). He reported that successful prior or initial learning is one of the critical variables for long-term retention of second language skills. Robinson’s research (1985) also confirms this point. He found that the more advanced learners also demonstrated higher retention of L2, at least in the areas of syntax and vocabulary. Reetz-Kurashige (1995) added further insight into this issue; he pointed out that the level of proficiency at separation from the second language environment was the most essential factor in determining attrition.

Recent studies of attrition as it relates to the initial level of proficiency have been published by Nagasawa (1999) and Russell (1999). Nagasawa’s study focused on the effects of initial proficiency, learning experiences, and formal study. She found that initial achievement of Advanced High on ACTFL scale is the crucial factor that had an effect on differential attrition.

Russell's study examined the syntactic competence of twenty non-native speakers of Japanese over two years after their return from the target language environment. He found a positive correlation between subjects' initial proficiency and different degrees of retention or attrition of syntactic features. That is, subjects with higher proficiency tended to have higher attrition. In another study, Russell (2004) suggests that there is a close correlation between a "higher level of initial proficiency" (p. 229) and the minimal loss of fluency displayed by the subjects that he had studied.

In another direction, Neisser (1984) examined the relationship between original proficiency and attrition in terms of a critical threshold that, once acquired, makes loss unlikely. He claimed that beyond the "critical threshold during learning," some parts of language have been embedded into "mental representations of complex information structures" (p. 34) which will resist interference or forgetting, at least for a considerable period of time. In the same year, Bahrick (1984) conducted a study of 773 students who had taken different amounts of Spanish classes in high school and college. One of his findings, as it relates to Neisser's notion, states,

The larger the number of courses taken, the greater the portion of content with permastore longevity (any knowledge that survives over 25 years). It appears that the total amount of content to be forgotten during the five years following training is relatively constant for individuals at different levels of training but this amount becomes a progressively smaller portion of total knowledge with higher levels of training. (p.116)

These findings seemed to indicate that the critical threshold of knowledge attrition would progress rather slowly and slightly. In 1992 Yoshitomi's study echoed this view. She reported



that “a learner who has reached the critical threshold of L2 proficiency is more likely to exhibit some resistance, especially in the early stages of disuse” (p.297).

Recently, Smith (1996) performed a longitudinal study on 30 subjects’ verb usage from 1986 to 1988. Two main conclusions were drawn from his study:

1. There was no overall decline in percentage of target-like use (TLU) of verbs over the first six years of removal from the L2 environment.
2. Those specific verb forms that had a TLU below 85% at the initial testing showed significant attrition over the first six years. Those verb forms that had a TLU above 85% remained constant over the same amount of time. (pp.59-60)

Smith concluded that his findings are consistent with either Bahrick’s threshold theory or Kennedy’s proposal that high levels of proficiency result in less attrition. One common conclusion made from these studies is that all these researchers regard the level of proficiency as the critical factor in L2 attrition.

#### *Time Exposure to the L2*

Hideyuki (1997) investigated the attrition of the English language in junior/senior high school students who spent a significant period of time (more than three years) in English-speaking countries. During the time separated from the L2 setting, subjects in the study were only given one hour a day (five days per week) of formal English instruction. Additional attention was given to the subjects’ writing proficiency to see if their English language skills had changed since being away from the L2 environment. She administered a written test on a cross-sectional framework of the subjects from grades 7 through 12 (ages 12-18) in order to examine various aspects of writing competence. Contextual Conventions (CC), Contextual Language

(CL), Story Construction (StC), overall Quotient and the total number of words of the writing samples were also evaluated.

The results showed that when compared to those junior high school learners of learning Japanese as a foreign language, the StC and Quotient scores of the senior subjects were significantly higher. She also observed that the senior learners who had a three-year intensive exposure time in the U.S. showed a greater overall writing competence with an ability to utilize the English language in more creatively expressive and mature ways. Also, throughout their junior high school the study found that the subjects' CC, CL, StC, and Quotient scores also increased at a more rapid rate than those who did not have an intensive exposure to the English speaking countries. Based on the findings, she concluded that intensive exposure to the English language gave those senior high school learners a solid foundation of language skills. Consequently, the five-hour a week English lessons were sufficient for these returnees to maintain and improve their skills even after being away from the L2 environment.

#### *Summary of L2/FL Attrition*

The preceding review of literature provides several important theories and trends of L2/FL attrition. First, some reports have sustained the "regression theory," which is that L2 attrition reverses the order of acquisition. However, we still need to be aware that, as Glass (1978) warned, "it is easy to be trapped by the attractiveness of a regression hypothesis into making sweeping analogies between the development and dissolution of language abilities" (p.101). Second, there are different opinions about the rate of attrition and the effect of proficiency levels on L2 attrition. Two different patterns in terms of the rate of attrition have been observed. One is that attrition begins immediately, followed by an exponential regression. The other is that there is an initial plateau of sustained proficiency before real attrition occurs. With regard to the

connection between the original proficiency level and L2 attrition, some showed that people with higher proficiency levels experienced more or less attrition, whereas others showed that L2 attrition are independent of proficiency levels. Others show that attrition varies according to different linguistic features and levels. A number of studies showed that the grammar and lexical terms are the first two skills to be affected by attrition.

### *Theories in Chinese Language Attrition*

Whereas the above studies dealt with L2 attrition in general, in this section I will explore studies of attrition of Chinese as the second language. For most English learners, Chinese is commonly regarded as a “truly foreign language” (Jordan & Walton, 1987, p. 64). One important reason is the wide linguistic gap between these language systems. In studies most directly related to the present one, Zhang (1988) investigated 40 college students who had a similar experience of learning and using Mandarin Chinese in a total-immersion L2 environment for 16 to 22 months while doing voluntary missionary service. The foci of his study were to examine how subjects suffered attrition in vocabulary and tonal accuracy after returning to an English-speaking environment. Findings of Zhang’s study demonstrated significant attrition after one to five years of disuse on vocabulary recall, whereas the attrition among the four basic lexical tones was insignificant. This finding is particularly interesting because it contradicts traditional belief that “the phonological segments (i.e., consonants and vowels) of Mandarin do not present any particular difficulty for American learners of Mandarin L2; rather, its tones are difficult for them to acquire” (Shen, 1989, p. 27). Compared to the theory proposed by some researchers that the more difficult the forms, the easier lost (e.g., Anderson, 1982; Olshtain, 1989; Weltens & Grendel, 1993), Zhang’s finding is obviously not the case.

Twelve years later, a follow-up study on 29 of the 40 subjects from Zhang's study was conducted by Wang R. (1999). Her study examined and analyzed how well vocabulary was retained over long periods of time. The results of her study showed a significant degree of attrition on the recall of vocabulary items among all subjects. It was noticed that vocabulary that is more often used is less subject to attrition and less difficult to retrieve. Three years later, a longitudinal study by Wang S. (2002) investigated how the patterns of tone attrition differed between the tones produced in citation forms and those in sentence contexts. Contrary to expectations, the results of her study showed little tone attrition after 12 years. The study also found that subjects suffered most attrition in most Chinese tone *sandhi* rules. This may indicate that subjects did not initially acquire or adequately internalize those grammar rules, regardless of the lack of attrition in overall tones.

#### *Word Order in Mandarin Chinese*

One of the major foci of the present study is to examine whether the learners' first language plays a role in the process of second language attrition, given that the L1 influences the acquisition of L2. To help frame the general knowledge of Chinese word order (in particular the aspects of Chinese order that either resemble English, are much different than English, or have no counterpart in English), the following section will briefly introduce the differences and similarities between Chinese and English on several syntactic structures. The five syntactic structures are a) placement of adverbial phrases, b) verb copying, c) coverbs/ prepositions d) numerical series, and e) object-raising in Chinese specific *把* *ba*. In this section, all Chinese terms used will be presented with the Chinese word first in italics, then its pronunciation, followed by the English translation in single quotes.

*The Basic Chinese Sentence Structure*

Chinese, like English, is essentially a SVO language (Li & Thompson, 1989); that is, the subject/topic precedes the verb, in which the subject/topic usually occurs in sentence-initial position, while the object follows the verb:

He        eats        noodles.

他        吃        面。

Subject   Verb        Object

Although Chinese and English exhibit the same structural property in the SVO ordering, many factors (e.g., functions of meaning) can affect the word order in Chinese. With the aim of examining syntax attrition on these aspects of Chinese order, which are much different from or have no counterpart in English, details vis-à-vis the contrast between Chinese and English grammatical features is given below.

Chinese is different from English in that modifiers are placed with respect to what they modify. This difference is particularly apparent in the case of verbal modifiers. In Chinese all modifiers occur before the verbs and verb phrases they modify. In English, on the other hand, adverbial phrases can occur in many different positions. In Chinese, the sentence ‘He studied conscientiously in the library yesterday’ must take one of two forms:

1. a.    他 昨天    在图书馆    认真地    学习。

He yesterday    in library    conscientiously    study.

b.    昨天 他    在图书馆    认真地    学习。

Yesterday he    in library    conscientiously    study.

But the same sentence in English can be said in quite a few more ways, as in *a-f*:

2. *a.* He studied conscientiously in the library yesterday.
- b.* He conscientiously studied in the library yesterday.
- c.* Yesterday he studied conscientiously in the library.
- d.* Yesterday in the library he studied conscientiously.
- e.* Yesterday he conscientiously studied in the library.
- f.* Yesterday in the library he conscientiously studied.

### *Placement of Adverbial Phrases*

The basic word order for Chinese adverbial expressions is primarily affected by “factors of meaning (i.e., *semantic* factors) rather than grammatical ones which determine the order of major constituents with respect to the verb” (Li & Thompson, 1981, p. 20). The position of preverbal or postverbal signals a difference of meaning. For instance, preverbal position is a signal for definiteness for topics, subjects, and objects; namely for whether these topics, subjects, and objects are already known to both the speaker and the listener. The following sections illustrate the semantic difference between pre- and postverbal position and grammatical contrast between Chinese and English for two adverbial expressions: time phrases and locative phrases.

*Time phrases.* In Chinese, placement of time phrases cannot be as freely moved around within a sentence as they can in English. There are three different semantic factors which determine the placement of time phrases in sentences. These are (a) whether or not the sentence tends to express ‘time *when* - punctual time’ or ‘time *how long* - durative time’; (b) whether or not the sentence is negative or positive; and (c) whether or not the sentence describes a habitual or a one-time occurrence. How these functions of meaning affect placement of time phrases is explained in more detail below.

*'Time When' versus 'Time How Long'*. When time phrases specify 'time when' for topics, subjects, and objects, such as 'yesterday' or 'last month', they must be in preverbal position; they may occur either before or after the topic or subject of a sentence and precede the verb. If time phrases express 'time how long' for topics, subjects, and objects, such as 'three weeks', 'a year', or 'two days', they must be in the postverbal position; they occur only in the position after the verb. The illustrations of these two different semantic tendencies are shown as in examples (1) and (2):

1. a. 我 两 - 点钟 有 课。  
 I two - o'clock have class.  
 I have a class at two o'clock.

b. 两 - 点钟 我 有 课。  
 Two - o'clock I have class.  
At two o'clock I have a class.

c. \* 我<sup>2</sup> 有 课 两 - 点钟。  
 I have class two - o'clock  
 I have a class at two o'clock.

2. a. 他 睡 - 了 两 - 天。  
 He sleep - PFV two - days.  
 He slept for two days.

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<sup>2</sup> “\*” denotes erroneous sentence structure

b. \*他 两-天 睡 - 了。

He two – days sleep - PFV

He slept for two days.

c. \*两-天 他 睡 - 了。

Two – days he sleep - PFV<sup>3</sup>

For two days he slept.

In (1) *a-b*, the verb 有 *you* ‘have’ has a punctual meaning, in which the time phrases indicating ‘when’ for the subject and object of the sentence occur preverbally and are acceptable, whereas (1) *c*, in which the same time phrase occurs postverbally, is unacceptable. In (2) *a*, in which the verb *shui* ‘sleep’ is durative, the opposite holds true: the postverbal time phrase is acceptable, whereas the preverbal ones are not acceptable, as seen in (2) *a-c*. In contrast, the placement of time phrases in English is more flexible, which is acceptable in both initial position and final position regardless of punctual or durative time, while in medial position is only acceptable in Chinese.

In English, however, time phrases can occur in either preverbal or postverbal position, depending on the discourse function of the adverbs or what is meant to receive emphasis. For example, see (3) *a-d*:

3. a. I have a class at two o’clock.

b. At two o’clock I have a class.

c. He slept for two days.

d. For two days he slept!

---

<sup>3</sup> PFV stands for perfective aspect (*-le*)



*Negative versus positive sentences.* When phrases that signify a certain time are negated by negative particles such as 不 *bu*, 没有 *mei* (*you*) ‘not / have not / did not’ the actions can not carry a complement of duration to indicate how long it happened. In this type of Chinese sentence, the time phrase must occur in the position immediately following the subject or topic, yet before stating what did not take place (i.e., before the verb). Therefore, in Chinese, the sentence “He didn’t attend class for three days” must take the following sequence:

- 1     *a.*     他            三 - 天            没(有)        上 - 课。
- He            3 - days            didn’t        attend - class
- b.*     \*他            没(有)        上 - 课        三 - 天。
- He            didn’t        attend - class     3 - days
- c.*     \*三 - 天     他            没(有)        上 - 课。
- 3 - days     he            didn’t        attend - class

The compound verb *shang-ke* ‘attend a class’ has been negated by 没有 *mei* (*you*) ‘have not / did not’. Thus (1) *a*, in which the time phrase occurs preverbally, is acceptable, while (1) *b*, in which the same time phrase occurs postverbally, is unacceptable. In (1) *c*, the time phrase is unacceptable because it is stated before the subject.

*Habitual versus one-time occurrence.* If time phrases are simply dealing with a one-time occurrence, such as ‘next time’, ‘at this moment’, etc., they may occur either before or after the topic or subject of a sentence and precede the verb, which is similar to the usage of punctual time phrases. When phrases signal the habit with frequency of an action during a certain time duration, such as ‘three times a week’ or ‘every other week’, the time period with the duration should precede the verb while the frequency should come after.

The following examples illustrate the pattern in Chinese for the English sentence “She went there once every three weeks”:

1. a. 她 每-三-周 去 那里 一次。  
 She every- three- weeks go there once
- b. 她 每-三-周 去 一次 那里。  
 She every- three- weeks go once there
- c. \*她 每-三-周 一次 去 那里。  
 She every- three- weeks once go there
- d. \*她 去 那里 每-三-周 一次。  
 She go there every- three- weeks once

As in (1) *a-b*, the phrase 三周 *sanzhou* ‘three weeks’ is a duration in which the time phrases occur preverbally and the frequency 一次 *yici* ‘once’ occurs either before or after the object and after the verb and is acceptable. However, in (1) *c* the time phrase of frequency is unacceptable because it is stated before the verb. (1) *d*, in which the same time phrase of duration occurs postverbally, is unacceptable.

*Locative phrases.* In general, preverbal position signals location of actions, while postverbal position signals location of a person/thing as a result of the action, as in (1) *a-d*.

1. a. 他 在 桌子 - 上 跳。  
 3sg<sup>4</sup> at table - on jump  
 S/he jumped (up and down) on the table.

<sup>4</sup> 3sg stands for third person singular pronoun

b. 他 跳 桌子 - 上。

3sg jump at table - on

S/he jumped onto the table.

c. 他 在 桌子 - 上 写。

3sg at table - on write

S/He is writing (something) at the table.

d. 他 写 在 桌子 - 上。

3sg write at table - on

S/He is writing (something) onto the table.

Sentences (1) *a* and (1) *c* “show a locative phrase in the preverbal position, which indicates the location of the action. Sentence (1) *b* and (1) *d* show a locative phrase in the postverbal position, which indicates the location of a person/thing as a result of the action” (All examples appear in Li & Thompson, 1981, pp. 22-23).

### *Verb Copying*

*Verb copying* refers to a grammatical process in which a verb is “copied” after its direct object when in the presence of certain adverbial elements, as in the following form:

(subject)     verb    direct object    verb    adverbial element

(Li & Thompson 1981, p. 443)

Li and Thompson give a detailed description of adverbial elements. They state that the term adverbial element is meant to be a cover term for four different types of adverbial expressions: (a) quantity adverbial phrase, (b) complex stative construction, (c) locative phrase, and (d) directional phrase. In each of the following examples, the unacceptable version of the

sentence, without verb copying, is presented first, followed by the acceptable version, with verb copying:

1. Quantity adverbial phrase

a. \*我 学 了 中文 两- 年。

I study PFV Chinese two - year

b. 我 学 中文 学 了 两- 年。

I study Chinese study PFV two - year

I studied Chinese for two years.

2. Complex stative construction

a. \*他 念 - 书 得 很 快。

3sg read - book CSC<sup>5</sup> very fast

b. 他 念 - 书 念 得 很 快。

3sg read - book read CSC very fast

S/He reads very quickly.

3. Locative phrase

a. \*爸爸 挂 帽子 在 衣-架-上。

daddy hang hat at clothes - rack - on

b. \*爸爸 挂 帽子 挂 在 衣-架-上。

daddy hang hat hang at clothes - rack - on

Papa hangs hats on the clothes rack.

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<sup>5</sup> CSC stands for complex stative construction (*de*)

#### 4. Directional phrase

- a. \*我们 走 - 路 到 市场 了。  
we walk - road to market CRS<sup>6</sup>
- b. 我们 走 - 路 走 到 市场 了。  
we walk - road walk to market CRS

We walked to the market.

(Examples appear in Li & Thompson, 1981, pp. 443-445)

Li & Thompson (1981) identify that the verb-copying construction has several grammatical properties. First, verb copying is usually not needed when the direct object is referential and animate or definite; the direct object is typically nonreferential. Second, the first occurrence of the verb does not take any aspect markers such as the perfective – 了 *le* or the experiential – 过 *guo*. Third, the negative particle in a sentence must occur before the second verb rather than the first verb. Fourth, adverbs such as 只 *zhi* ‘only’, 还 *hai* ‘still’, and 也 *ye* ‘also’, can occur only in the position before the second occurrence of the verb, not before the first verb.

#### *Coverbs/Prepositions*

Coverbs are a specific set of verbs in Mandarin which often refer to English prepositions because they are generally used to convey the meaning of prepositions and appear before the noun phrase they modify. Therefore, a coverb phrase must always be used in conjunction with other verbs in a sentence. The reason why they are called coverbs rather than prepositions is because many coverbs can also function as verbs in many cases. As stated by Li & Thompson

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<sup>6</sup> CRS stands for currently relevant state (*le*)

(1981), the traditional term coverb was invented to avoid labeling them either as verbs or prepositions.

Coverbs introduce expressions covering a wide range of factors including location, direction, timing, association, means, instrument, etc. (Yip & Rimmington, 2004). The class of coverbs contains words that are partly like verbs and partly like prepositions, such as *跟* *gen* ‘with’, *从* *cong* ‘from’, *朝* *chao* ‘facing’, *沿* *yan* ‘along’, *离* *li* ‘be apart from’ and the like, as well as forms that figure prominently in certain grammatical constructions, such as *在* *zai* ‘at’ used in locative constructions, *把* *ba* the marker of benefactive and indirect object constructions” (Li & Thompson, 1981, p. 356). The general formula of the phrase formed by coverbs follows:

Subject/ Topic + coverbal + noun phrase + verb

Examples of coverb phrases are shown in *a-d*:

a. 我 要 跟 他 去。

I want with 3sg go

I want to go with him.

b. 向/往 东 走。

Toward East Walk

Walk Toward the East.

c. 他 从 中国 回-来。

He from China come - back

He came back from China.

### *Sequence of Numerical Series*

In the Chinese method for expressing numerical series, such as a date, address, list, etc., general information precedes specific information. That is to say, concepts are arranged in a descending order, from information with a large scope preceding to more specific, which is often opposite of the listing convention in English.

For example,

a. 2006 年 5 月 17 号。

2006 year 5<sup>th</sup> month 17<sup>th</sup> day

May 17, 2006.

b. 中国 北京 清华路 16 号 5 楼。

China Beijing Qinghua R.d. 16 No. 5<sup>th</sup> floor

5<sup>th</sup> flr., 16 Qinghua Rd., Beijing, China

### *Object-raising in Chinese Specific 把 ba*

There is a specific linguistic feature, the *把 ba* construction, found in the Chinese language. Li and Thompson (1981) claimed that “from a structure point of view, the *ba* construction is straightforward; in general, the direct object is placed immediately after *ba* and before the verb” (p. 463). The basic pattern of the *ba* sentence is subject + *ba* + noun phrase + verb + other elements (e.g., the locality phrase, resultative complements) as the following sentence shows the English sentence “I finished reading the book”:

我 把 书 看 - 完 了。

I ‘ba’ book read - finish PFV/CRS

(Subject ‘ba’ noun phrase Verb – Resultative Complement PFV/CRS)

I finished reading the book.

As revealed in Hong's (1992) study, this type of structure poses pragmatic difficulties for L2 learners. Hong identified three phases of the use of *ba* construction. In Phase A, Hong posited that learners see it as an alternate word order. In Phase B, learners start to reanalyze the function of *ba* and try to figure out in what contexts it should be used. In Phase C, learners learned the pragmatic value of *ba* construction and no longer associate it with the English object.

#### *Research Questions*

In light of the literature on L2 attrition, four primary research questions were formulated as the focus of this study:

1. To what extent was L2 syntactic skill maintained or lost over time?
2. How did length of exposure time to the L2 affect the maintenance of overall L2 syntactic skill over time?
3. How were five selected Chinese syntactic structures subject to attrition over time?
4. Were errors related to those structures attributed to L1 transfer?



## Chapter 3: Method

### *Participants*

Data used for analysis in this study were from two sources. The first set was collected by Zhang in 1986. His study contained 40 participants who were all native speakers of English, were students at Brigham Young University, and had served volunteer missions for The Church of Jesus Christ of Latter-day Saints in a Mandarin speaking area. Before leaving for their missions, each received a two-month period of intensive language training. After the initial language study, they were sent to the assigned mission area and intensively learned and used Mandarin Chinese in a host culture setting for 16-22 months. Since the main daily activity of their mission was talking to and preaching to Chinese natives, each had a similar total immersion experience in an L2 environment of listening to and speaking Mandarin. From this experience, these missionaries had achieved a level of proficiency such that they were able to converse freely, collaborate, and establish friendships with the native Mandarin speakers by the time they left the L2 environment. By the time Zhang's study was conducted, the length of the participants discontinued regular usage of the L2 ranged from several months to five years. One critical requirement for selection of participants was that they had not taken any Chinese classes or regularly used Mandarin after their return.

The second data set was collected by Wang R. in 1998. She located 29 participants from Zhang's original group of 40 participants for a follow-up study. By the time participants were tested, they had discontinued regular usage of the L2 for 12 to 17 years. Since the current study attempts to analyze change in the participants' syntactic competence across time, the data used in the current study was that of participants tested in both the Zhang and Wang R. studies. Since five subjects' recordings were missing, distorted, or disqualified, only 24 participants' recordings

provided usable data for analysis in the present study. Among the 24 participants, nineteen are male and five are female. Twelve of the participants learned and used Mandarin Chinese in a host culture setting for 22 months and the others for 16 months. For further research purposes, participants were first divided into three groups according to the year of departure from the L2 environment. Afterwards, they were grouped into two groups by the exposure time to the L2. Table 1 shows the number of participants in each group.

Table 1

*Number of Participants*

Group	Year	16 month			22 month			Combined		
		Males	Females	Total	Males	Females	Total	Males	Females	Total
1	1981	0	0	0	3	0	3	3	0	3
	1982	1	0	1	2	0	2	3	0	3
2	1983	2	1	3	1	0	1	3	1	4
	1984	3	0	3	0	0	0	3	0	3
3	1985	1	2	3	2	0	2	3	2	5
	1986	0	2	2	4	0	4	4	2	6
Total		7	5	12	12	0	12	19	5	24

*Instruments*

*Background Questionnaire*

The background questionnaire asked about participants' demographic characteristics, previous experience with Mandarin Chinese as a second language, the number of Chinese classes taken, and the frequency of use of Chinese after returning from their missions. This was done to ensure that the subjects all had not used their L2 following their return and to find out the lengths

of their exposure to the L2 and the year they returned. A copy of the questionnaire may be found in Appendix A.

### *Oral Test*

In order to examine to what extent L2 syntactic skill was maintained or lost over time, an oral test was designed to measure participants' overall retention of Chinese syntactic competence. The test contained 55 written English sentences. The participants were asked to provide an oral translation in Chinese for the parts of the sentences underlined. The 55 English sentences used for this study are included in Appendix B.

To find out how certain Chinese syntactic structures were subject to attrition over time and how syntactic errors could be attributed to L1 transfer, five types of Chinese syntax that either resembled English, were very different than English, or have no counterpart in English, were first selected. For each of the five syntactic structures, a number of variations were identified for that structure. For example, for placement of adverbial phrases the variations were punctual time adverbials, positive durative time adverbials, negative durative time adverbials, and habitual time adverbials. Thus 11 out the original 55 test questions were selected for analysis because they dealt specifically with any one of the variations of syntactic structures. Table 2 displays variations of the five selected Chinese syntactic structures and the eleven corresponding test questions.

### *Procedures*

Since this study is based on existing data, the procedures described here will encompass two other studies, in addition to the current one. As mentioned above, the same test was administered twice by two different researchers in the years 1986 and 1999. The first test was administered by Zhang in 1986. In a language laboratory on the Brigham Young University

campus, participants were given the aforementioned oral test which included the instructions and questions.

Table 2

*English Sentences for the Five Syntactic Structures*

Syntactic Structure	Variation(s)	English Sentence
placement of adverbial phrases	a. punctual time adverbial b. positive durative time adverbial c. negative durative time adverbials d. habitual time adverbials	a. We saw 3 movies that day b. He stayed in Beijing for 2 months c. They haven't come back for one year d. She went there once 3 weeks
coverbs/ prepositions	a. from ' <i>cong</i> ' b. toward; the direction of ' <i>wang/xiang</i> '	a. From China returned to the U.S. b. Go East
verb copying	a. quantity adverbial phrase b. complex stative construction	a. He has been studying English for 3 years b. He writes Chinese characters very slowly
numerical series	a. dates b. address	a. Today is Sunday November 3 <sup>rd</sup> , 1985 b. His home address is No. 7 Chang'an street Beijing China
object-raising in Chinese Specific <i>ba</i>	No variations	Put the teacup on the table, please

Test instructions were given to each participant at the beginning of the examination during both tests. An accompanying tape with the same instructions and questions was played so that participants could hear the prompt and follow along. They were asked to orally translate a series of English sentences into equivalent Chinese sentences. The answers were then recorded on audiotape. When answering a question, if they simply did not know how to respond to the sentences, they could express themselves to this effect. If they could not recall how to say certain words in Chinese, they were allowed to use English to keep the flow of their responses. Following the test, participants were asked to fill in the background questionnaire. Twelve years

after Zhang's study was conducted, those participants who were located by Wang R. were tested again with the same questions, setting, and procedures.

The taped responses for both tests were later transcribed verbatim onto a transcription form (See Appendix C) and reviewed for accuracy. The written transcriptions were then used in the analysis of attrition of syntactic competence over time. The transcriptions of the subjects' test results were independently scored for syntactic errors on each sentence by two native Mandarin raters. The purpose of this study was first explained to these raters, and they were then instructed in the requirements of their tasks. Afterwards, the raters worked on a sample to practice until they felt comfortable with what they were asked to do. If the two raters did not reach an agreement, a third native Mandarin rater was asked to arbitrate and make a decision. After judgments were completed, numbers of correct responses and ratios for the total scores of 55 on both tests were listed in the data for each participant. Next, the proportion of subjects who answered correctly on each of the 11 selected questions for both the first and second tests were calculated. Erroneous responses to each of the test questions was then listed and classified for further qualitative analysis.

### *Scoring*

One point was awarded for each sentence counted as correct syntax sentence and zero points were awarded for acceptable responses. A decision on correctness of responses produced by participants was based on the following rubric:

1. For sentences with more than one correct translation, either response would have earned a point for that sentence. For instance, the following translations of 'How do I get to the Beijing Hotel?' were all accepted:

北京饭店怎么去? 'How [does one] get to the Beijing Hotel?'

我怎么去北京饭店? ‘How do I get to the Beijing Hotel?’

北京饭店在哪里? ‘Where is the Beijing Hotel?’

2. Responses that matched a regional variant of syntax were also reckoned correct. For instance, the following translations of ‘He studied history for a year’ were acceptable:

他有學一年的歷史

‘He has studied a year of history’ includes the character 有 *you* ‘have/has’ to

signify complete verb tense, which grammar comes from the Taiwanese dialect,

and is commonly heard in Taiwan.

3. Responses with correct syntax but including minor vocabulary mistakes, such as selections of noun, verb, and classifier etc., were judged correct as long as there was no impact on meaning. For example,

我在电影那里等你 ‘I’ll wait for you at the movie theatre.’

The syntax is correct but the missing 院 *yuán* ‘ground’ makes the sentence read

‘at movie’ instead of ‘at the movie theater.’

我会煮中国菜 ‘I can cook Chinese food’

Using the wrong verb ‘to boil in water,’ instead of using the more general but

appropriate verb 做 *zuò* ‘to make’.

这个桌子破掉了 ‘This table is broken’

The table was improperly described as being ‘with a hole in it’ (as in clothing)

instead of ‘broken’

他已经学了 500 块中国字 ‘He has learned 500 Chinese characters so far’

The subject used the classifier for land or partitions instead of the general

classifier, which is more appropriate for Chinese characters.

请把 tea cup or [那个东西] 放在桌子上 ‘Put the tea cup on the table, please’

Participants didn’t know how to say a certain noun in Chinese (in this case, tea cup), and they either said the noun in English, or they said ‘that thing’ in Chinese.

4. Responses where meanings were correct but responses did not match the correct Chinese syntax were considered erroneous sentences and were scored as incorrect, as in the following:

宁宁是很聪明也很用功 ‘Ning-Ning is both intelligent and hard-work.’

Has a syntax error where the 是 *shi* ‘is’ should not have been used.

他已经读 3 年的英文 ‘She has been studying English for three years.’

The response is missing 了 *le*, which makes verbs perfective aspect or complete.

请你放茶杯在桌子上 ‘Put the tea cup on the table, please’

The expression ‘Please place the teacup on the table’ – not correctly expressed because it did not use the 把 *ba* structure.

5. Responses that were correct syntactically but meanings were different were marked incorrect. For example, the following translations of ‘Miss Chang sings Chinese songs very well’ and ‘She writes Chinese characters very slowly’ were not marked as correct:

- a. 张小姐唱的中文歌很好听

The response incorrectly places the focus on the songs, rather than on Miss Zhang, resulting in ‘The Chinese songs that Miss Zhang sings sound beautiful.’ The correct translation for ‘Miss Zhang sings Chinese songs very well’ should be 张小姐唱中文歌唱得很好听, which uses verb replication.

张小姐很会唱中文歌

The response incorrectly means “Miss Zhang is very experienced with singing songs that are Chinese.

b. 他写中文字很慢

To translate “She writes Chinese characters very slowly,” one must use the verb copying, where the verb is repeated twice in the sentence, to be correct. In essence, a direct translation from the correct Chinese syntax would result in 他写中文字写得很慢, which when translated directly from syntax is “She writes Chinese characters, writing them very slowly.” The correct meaning expressed here suggests that she writes Chinese characters unacceptably slow, perhaps out of lack of experience. The response does not use this verb replication, and is therefore incorrect.

他慢慢地寫中文字

The response is grammatically correct, but incorrectly means “She takes her time while writing Chinese characters,” suggesting that she writes the characters slowly out of her own choice, rather than because of lack of experience.



## Chapter 4: Results

This chapter presents the results responding to the four research questions asked in the present study. For each question, a description of analysis method used was first stated, followed by a description of results from statistical analysis and a synopsis of the findings.

The first research question of the present study explores the extent L2 syntactic skill was maintained or lost over time. A one-factor Analysis of Variance (ANOVA) was performed. The independent variable is length of discontinued regular usage of the L2, and the dependent variable is test scores. The subjects were grouped into three groups according to the length of disuse of the L2 with a two-year interval between. When there was statistical significance at a level set at  $p \leq 0.05$ , an appropriate post hoc test was conducted. Since the groups being compared have unequal sample sizes, the Scheffe test was used if the groups variances are homogenous. If the groups variances were not homogeneous, then the Games-Howell or Tukey-Kramer test was used instead.

As seen in Table 3, the mean retention score on the first test for the group after a two-year period of discontinued regular L2 usage is higher than the groups with a longer length of disuse of the L2. ANOVA shows a statistically significant difference on the mean values of retention among the groups,  $F(2, 21) = 8.183, p = .002$ . The Levene test of homogeneity showed that the error variance of the dependent variable is equal across groups ( $p = .443$ ). Since the variances of the groups are assumed to be homogenous, Scheffe's test was thus used for a post hoc analysis. The result indicated that the significant differences of the mean of retention scores were between the first and the second groups ( $p = .005$ ) and the first and the third group ( $p = .027$ ). On the second test, the mean differences on loss scores among groups were not very different (see Table 4). ANOVA showed that the mean differences on loss scores among groups was not statistically

significant,  $F(2, 21) = .364, p = .699$ . In summary, the results indicated that the subjects retain a fair amount of their linguistic skill within the first couple years of discontinued regular L2 usage; thereafter, attrition was still inevitable though the rate of regression decreases in the long run.

Table 3

*Descriptive Statistics of First Test for Groups by Length Discontinued Regular Usage of the L2*

Group	Length discontinued regular usage of the L2	$n$	$M_1$	$SD_1$
1	Within 2 years	11	47.18	5.33
2	Within 4 years	7	37.43	4.43
3	Within 6 years	6	39.00	6.81

Table 4

*Descriptive Statistics of Difference of Means between the First and Second Tests for Groups by Length Discontinued Regular Usage of the L2*

Group	Length discontinued regular usage of the L2	$n$	$M_2$	$SD_2$	$M_1 - M_2$
1	Within 13 years	11	29.5	4.14	12.18
2	Within 15 years	7	22.14	7.43	14.14
3	Within 17 years	6	35.45	9.78	10.17

The second research question addressed whether exposure time to the L2 affected the maintenance of overall L2 syntactic skill over time. A two-way repeated measures ANOVA was conducted in SPSS using groups as the between-factor and test occasion as the within-factor. The results did not provide statistically significant evidence to conclude that the exposure time to the L2 had an effect on the maintenance. Table 5 shows descriptive statistics of the first and second tests for groups by length of exposure in the L2 setting.

Table 5

*Descriptive Statistics for Groups by Length of Exposure in the L2 Setting*

Group	Test Occasion				Total	
	First Test		Second Test			
	Mean	SD	Mean	SD	Mean	SD
1 (16 months)	40.83	6.24	29.33	9.93	35.08	10.01
2 (22 months)	43.75	7.68	30.75	7.89	37.25	10.01

As seen in Table 6, a two-way repeated measure ANOVA showed no significant difference between the two groups,  $F(1, 44) = .104, p = .748$ . In conclusion the extra six months exposed to the L2 does not extend the long-term maintenance of overall L2 syntactic skill.

Table 6

*Analysis of Variance Groups by Length of Exposure in the L2 Setting*

Source	<i>df</i>	<i>F</i>	<i>p</i> -Value
Test Occasion	1	27.852	.000
Group	1	.871	.356
Test Occasion x Group	1	.104	.748
error	44		

\*significance level of 0.05

The third research question of the present study was how the five selected Chinese syntactic structures were subject to attrition over time. The proportion of subjects who answered correctly on each of the 11 selected questions for both the first and second tests were calculated to see how each of the five syntactic structures are subject to attrition over time.

As seen in Table 7, the results showed that the sequence for the scope of dates was the most vulnerable to attrition on the first test. The coverb for 往/向 *wang/xiang* 'toward' and the

verb copying for quantity adverbial phrases are the next most vulnerable among the selected syntactic structures. In contrast, placement of punctual time adverbials is the least vulnerable to attrition while coverb *M cong* ‘from’ is the second least vulnerable to attrition. On the second test, verb copying for quantity adverbial phrase has the lowest retention rate while verb copying for complex stative construction and numerical series for dates has the same low retention rates. The placement of punctual time adverbials suffers the least attrition, while within the same syntactic structure of placement of adverbials for negative durative time remains the second least subject to attrition on the second test.

In regards to the changes of the retention rate between the first and the second tests, the results shows that numerical series for addresses has the greatest increase in attrition over time, followed by verb copying for complex stative construction. The retention rate for numerical series for dates had no change, remaining the same low percentage (4%). The two variations of placement of time adverbials, negative durative adverbials and habitual time adverbials have the same one percent change of attrition, although their retention rates are very different. The attrition rates for negative durative time adverbials from the first to second tests are 88% and 83%, respectively, while the retention rates habitual time adverbials changes from 10% to 9% (See Table 7).

Table 7

*Proportions of Subjects to Answer Correctly on Each of the Selected Questions for the Two Tests*

Syntactic Structure	Variation	English Sentences	Number and percent of subjects to translate correctly into Chinese		
			1 <sup>st</sup> test	2 <sup>nd</sup> test	Difference
1. placement of adverbial phrases	a. punctual time adverbial	a. We saw 3 movies that day	24 (100%)	22 (92%)	2 (8%)
	b. positive durative time adverbial	b. He stayed in Beijing for 2 months	19 (79%)	17 (71%)	2 (8%)
	c. negative durative time adverbials	c. They haven't come back for one year	21 (88%)	20 (83%)	1 (4%)
	d. habitual time adverbials	d. She went there once 3 weeks	10 (42%)	9 (38%)	1 (4%)
2. coverbs/ prepositions	a. <i>cong</i> 'from'	a. From China returned to the U.S.	23 (96%)	18 (75%)	5 (21%)
	b. <i>wang/xiang</i> 'toward; the direction of'	b. Go East	9 (38%)	7 (29%)	2 (8%)
3. verb copying	a. quantity adverbial phrase	a. He has been studying English for 3 years	9 (38%)	2 (8%)	7 (29%)
	b. complex stative construction	b. He writes Chinese characters very slowly	12 (50%)	4 (16%)	8 (33%)
4. numerical series	a. dates	a. Today is Sunday November 3 <sup>rd</sup> , 1985	4 (16%)	4 (16%)	0 (0%)
	b. address	b. His home address is No. 7 Chang'an street Beijing China	18 (75%)	9 (38%)	9 (38%)
5. object-raising in Chinese specific <i>ba</i>	No variations	Put the teacup on the table, please	19 (79%)	14 (58%)	5 (21%)

With regard to the question of whether errors related to the five selected Chinese syntactic structures contributed to the L1 transfer, a qualitative analysis was done on the subjects' erroneous responses in both tests. Each erroneous response to each of the selected questions was classified and a linguistic description was given to explain in what manner the responses were considered incorrect. Then the counts of students to commit various patterns of error, such as the type of L1 transfer error, were calculated. The results were then used to see what proportions of errors are attributed to the influence of L1 transfer.

The following section displays each of the five Chinese syntactic structures, the counts and percentages of subjects that translated that structure incorrectly, and the types of errors the subjects committed. First, the syntactic structures that more closely resemble English are discussed (e.g., the placement of time adverbials), followed by the structures that are different from the English order (e.g., coverb/preposition and numerical series). Finally, the structures that have no counterpart in English (e.g., verb copying and *ba*-constructs) are discussed.

Table 8 displays the counts and percentages of subjects that incorrectly translated sentences that focused on placement of time adverbials, and the types of errors the subjects committed.

Table 8

*Count and Percentage of Erroneous Responses on Sentences for Placement of Time Adverbials*

		Time adverbials	Count and Percentage of Erroneous Response	
			1 <sup>st</sup> test	2 <sup>nd</sup> test
1. Punctual time adverbials <b>'We saw 3 movies that day'</b>	Correct form(s)	那天我們看了 3 個(部)電影 <u>That day</u> we saw 3 movies		
	Incorrect form(s)	a. 我們看了 3 個電影那天 We saw 3 movies <u>that day</u> Don't remember	*70 (0%)	*1 (4%)
2. Positive durative time adverbials <b>'He stayed in Beijing for 2 months'</b>	Correct form(s)	a. 他住在北京 2 個月 He stayed in Beijing for 2 months b. 他在北京住了 2 個月 He in Beijing stayed <u>for 2 months</u>	0 (0%)	1 (4%)
	Incorrect form(s)	a. <u>2 個月</u> 他住在北京 <u>For 2 months</u> he stayed in Beijing	*1 (4%)	*0 (0%)
		b. 他 2 個月留/住在北京 He <u>for 2 months</u> stayed in Beijing c. 他留 2 個月在北京 He stayed <u>for 2 months</u> in Beijing	3 (13%)	4 (17%)
3. Negative durative time adverbials <b>'They haven't come back for one year'</b>	Correct form(s)	他們 <u>1 年</u> 沒回來了 They <u>for one year</u> haven't come back		
	Incorrect form(s)	a. 1 年他們沒有回來 For one year they haven't come back	3 (13%)	2 (8%)
		b. 他們沒有回來 1 年的時間 They haven't come back for one year c. 他們走了 1 年以前，他們還沒回來 They are gone a year ago, they haven't come back	*0 (0%)	*1 (4%)
4. Habitual time adverbials <b>'She went there once every three weeks'</b>	Correct form(s)	他每 3 個星期去 1 次那裏 She every 3 weeks went once there 他每 3 個星期去那裏 1 次 She every 3 weeks went there once		
	Incorrect form(s)	a. 他每 3 個星期 1 次去那裏 She every 3 weeks once went there	*8 (33%)	*2 (8%)
		b. 他去那裏每 3 個星期 1 次 She went there every 3 weeks once	*3 (13%)	*0 (0%)
		c. 他每 3 個星期去那裏 She every 3 weeks went there	?2 <sup>8</sup> (8%)	? 7 (29%)
		d. 他每個禮拜 1 次 3 個禮拜去了 She every week once three weeks went	*0	*1 (4%)
		e. 他是 3 個禮拜去過 She was 3 weeks going there	0	1 (4%)
		Don't remember	1 (4%)	4 (17%)

<sup>7</sup> \* erroneous responses, that have syntactic orders that resemble the English grammar but not acceptable in Chinese.

<sup>8</sup> ? the type of error is suspicious to L1 transfer influence but also be possible to not well- acquired at the first place.

## *Placement of Time Adverbials*

### *Punctual Time Adverbials*

According to Chinese grammar, when a time phrase specifies a time associated with a verb such as ‘yesterday’ and ‘next time’, the time phrase can either be placed before or after the topic or subject of a sentence, but must precede the verb. The correct form for a sentence like ‘We saw three movies that day’, for example, would have the punctual time adverbial ‘that day’ either before or after the subject ‘we’ but before the verb ‘saw.’ As shown in Table 8, the only erroneous response in this study for this structure (incorrect form 1(a)) places the punctual time phrase after the subject and verb of the sentence, which is correct in English but not allowed in Chinese.

### *Positive Durative Time Adverbials*

If a time phrase expresses ‘time how long’ for a verb to occur in a positive sentence, named as a positive durative time adverbial, it can take place only in the position after both the verb and the preposition, as illustrated by the correct forms (a) and (b) (see Table 8). The incorrect form 2(c) misplaces the durative time adverbial in the position after the verb but before the preposition. Both incorrect forms 2(a) and 2(c) happen to be correct in the word order of English. On the first test, most erred by placing the durative time adverbial ‘for two months’ in the preverbal position, either incorrectly in the position before or after the subject ‘he’, as in the incorrect forms 2(a) and 2(b). On the second test, subjects avoided giving erroneous form 2(a) entirely, whereas the proportions that responded with 2(b) and 2(c) increased by 4% and 9% respectively.

### *Negative Durative Time Adverbials*

A phrase that signifies a certain time is negated by particles such as 沒有 *meiyou*



‘have/has not’, 不 *bu* ‘not’, 没 *mei* ‘without’ is a negative durative time adverbial. It is how long something *did not* happen: ‘He hasn’t returned for 3 years’. In this type of Chinese sentence, the relative word order of the duration (time adverbial), verb, and the subject is different than that of the positive durative time. The time phrase must occur in the position immediately following the subject or topic but before the verb. The correct form for ‘They haven’t come back for one year’, has the durative time adverbial ‘for one year’ in the position right after the subject ‘they’ and before the verb ‘haven’t come back’ (see Table 8). On the first test, all the erroneous responses came in form 3(a), which misplaces the time adverbial in the position before the subject. On the second test, two additional forms 3(b) and 3(c) appeared. One participant incorrectly placed the time adverbial after the verb, as the incorrect form 3(b), while the other gave a response that translates directly to ‘They are gone one year ago, They still haven’t returned,’ as the incorrect form 3(c). This is incorrect in both English as well as Chinese. The incorrect forms 3(a) and 3(b) happen to be correct when translated directly into English.

#### *Habitual Time Adverbials*

When a phrase signals the habit with frequency of an action during a certain time period, such as ‘twice every other week’, the time period should precede the verb while the frequency should come after. In the correct forms 4(a) and 4(b) for the sentence ‘She went there once every three weeks’, the time period ‘every three weeks’ precedes the verb ‘went’ and the time adverbial of frequency ‘once’ comes after. The incorrect forms 4(a), 4(b), and 4(d) have both time adverbials, the time period with duration and the frequency, together before the verb. The incorrect form of 4(b) has the time adverbials together after the verb. The incorrect forms 4(c) and 4(e) place the time period adverbial phrase before the verb, but miss the adverbial of frequency. On the first test, the results showed that the majority of the subjects tended to place

the time adverbials of frequency ‘once’ together with the period ‘every three weeks’ either before or after the verb, as shown in forms 4(a), 4(b), and 4(d). This is likely due to the English convention of placing time adverbials that describe how frequently across a period of time (e.g., ‘once a week’, ‘twice every other week’, etc.). Meanwhile, on the second test, the most common error took the form of 4(c): ‘She every 3 weeks went there’, omitting the frequency ‘once’. This may be caused by L1 influence where the frequency ‘once’ of the action is implied.

### *Coverbs/ Prepositions*

Coverbs are a specific set of verbs in Mandarin which often correspond to prepositions in English. As introduced in Chapter 2, the reason why they are called coverbs rather than prepositions is because many coverbs can also function as verbs in many cases. Therefore, a coverb phrase must always be used in conjunction with other verbs in a sentence as in the following:

(Subject/ Topic +) coverbal + noun phrase + verb

从 *cong* ‘From’

As seen in Table 9, the correct form for the sentence ‘returned to the U.S. from China’ places the origin ‘from China’ at the beginning, the verb ‘return’ in the middle, and the destination ‘to the U.S.’ at the end. On the first test, only one participant erred with form 1(a) by incorrectly placing the verb ‘return’ or ‘returned’ at the end. On the second test, the majority of the incorrect responses misplaced the verb ‘returned’ before the origin ‘from China’, which more closely resembles the English syntax.

向/往 *wang/ xiang* ‘Toward (the direction of)’

The correct form for translating the simple coverb phrase ‘go East’ is to place the coverb ‘toward’ at the beginning, followed by the direction ‘east’, and in conjunction with the verb ‘go’.

The results on the first test showed that most erroneous responses incorrectly placed the verb 往 *wang* ‘toward’ alone in the sentence, as the incorrect form 2(a). Four of the participants who responded incorrectly as the incorrect form 2(c) misplaced the verb 走 *zou* ‘go’ alone in the sentence. The other two participants erred as in the incorrect form 2(b), which places the verb ‘go’ before the direction ‘east’. The results on the second test showed that the majority of the subjects had erred, either favoring the English word order as in the incorrect form 2(b) or by omitting either the verb or the coverb altogether as in 2(a) and 2(c).

Table 9

*Coverbs/ Prepositions*

	Coverbs/ Prepositions		Number of participants (%)	
			1 <sup>st</sup> test	2 <sup>nd</sup> test
1. <i>cong</i> ‘From’ ‘returned to the U.S. from China’	Correct form(s)	從中國回到美國去 From China returned to the U.S.		
		a. 從中國到美國回來 from China to the U.S. return	1 (4%)	4 (17%)
		b. 回來美國從中国 returned the U.S. from China	* <sup>9</sup> 0	*1 (4%)
		Don’t remember	0	1 (4%)
2. <i>wang/xiang</i> ‘Toward; the direction of’ ‘go East’	Correct form(s)	向東走/往東走 Toward (the direction of) East go		
	Incorrect form(s)	a. 向東方/往東方 Toward (the direction of) East	? <sup>10</sup> 9 (38%)	? 8 (33%)
		b. 去東 Go East	* 4 (17%)	* 7 (29%)
		c. 東走/去 East go	? 0 (0%)	? 2 (8%)
		Don’t remember	2 (8%)	4 (17%)

<sup>9</sup> \* erroneous responses, that have syntactic orders that resemble the English grammar but not acceptable in Chinese.

<sup>10</sup> ? the type of error is suspicious to L1 transfer influence but also be possible to not well- acquired at the first place.

### *Sequential Order of Numerical Series*

The correct form for describing dates is to order the words from larger to smaller scope, which is often the opposite of the listing convention in English (for example, ‘1998 May’ instead of ‘May 1998’).

#### *Word Order in Calendar Dates*

As displayed in Table 10, the majority of mistakes made (by 12 subjects) on both the first and second tests took the incorrect form 1(a), in which information is presented in the specific-to-general order and is the opposite of the listing convention in Chinese. The incorrect form 1(b) combines the syntax for numerical series from both Chinese and English. These subjects were influenced by both English word order (placing the day first) and Chinese word order (placing the year before the month).

#### *Word Order in Location Addresses*

The correct form the word order for addresses follows the same rule as for dates: from larger to smaller scope. On the first test, participants had erred either by completely following English order for addresses (which is arranged in a specific-to-general order as the incorrect form 2(a)), or by combining Chinese and English syntaxes in the incorrect form 2(b). One important finding was that on the second test, all 15 subjects who made incorrect sequence of the address completely followed their L1 and reversed the word order.

### *Verb Copying*

Verb copying refers to a grammatical process in which a verb is repeated or copied after its direct object when in the presence of certain adverbial elements, formulated as (subject) + verb+ direct object+ verb+ adverbial element (Li & Thompson, 1981). For example, when a verb ‘sing’ has the direct object ‘song’ in the English sentence ‘He sings songs very well’, the

sentence is unacceptable without having the verb ‘sing’ copied in Chinese: ‘He sings songs, and sings them very well’.

Table 10

*Sequential Order of Numerical Series*

Sequential Order of Numerical Series		Number of participants (%)		
		1 <sup>st</sup> test	2 <sup>nd</sup> test	
1. dates	Correct form(s)	今天是 1985 年 11 月 3 號/日 Year 1985, month 11, day 3, Sunday		
	Incorrect form(s)	a. 今天是星期天 11 月 3 號/日 1985 年 Sunday, 11 <sup>th</sup> month, day 3, year 1985	*12 (50%)	*14 (58%)
		b. 今天是星期天 1985 年 11 月 3 號/日 Sunday, Year 1985, Month 11, Day 3	8 (33%)	3 (13%)
		Didn't remember	0	3 (13%)
2. address	Correct form(s)	他家的地址是中國北京長安街 7 號 China Beijing Chang'an street No. 7		
	Incorrect form(s)	a. 他家的地址是 7 號長安街北京中國 No. 7 Chang'an street Beijing China	*3 (13%)	*15 (63%)
		b. 他家的地址是長安街 7 號北京中國 Chang'an street No. 7 Beijing China	3 (13%)	0 (0%)
		Don't remember	0	2 (8%)

*Quantity Adverbial Phrase*

The correct forms for ‘He has been studying English for three years’ either copy the verb 学 *xue* ‘to learn’, or are a work-around sentence structure as demonstrated in Table 11. The incorrect form 1(a) does not copy the verb ‘study’ after the direct object ‘English’. The incorrect forms 1(b) and 1(c) do not have the verb copied and misplace the adverbial phrase ‘three years’ either before or after the subject. The incorrect forms 1(a) and 1(c) resemble English syntax. On the first test, the majority of participants erred either with the incorrect form 1(a) or 1(b), while only one placed the adverbial phrase after the subject as the incorrect 1(c). It was noted that on

the second test, only two subjects could produce the correct form, while most subjects showed signs of heavy regression. The mistakes were similar to those in the first test, but there was a significantly greater number of those making mistakes by using the incorrect word order as in 1(b), which is not correct word order in English. This structure resembles the order used for positive sentence with punctual time adverbial phrases, only without a direct object. Most likely, the subject was not familiar with or had not internalized verb copying, which caused him to overgeneralize the placement for punctual adverbials.

Table 11

*Verb Copying*

		Verb Copying	Number of participants (%)	
			1 <sup>st</sup> test	2 <sup>nd</sup> test
1. quantity adverbial phrase <b>'He has been studying English for 3 years'</b>	Correct form(s)	他學英文學了3年 He learns English, has been learning for 3 years. 他學了3年的英文 He has learned 3 years' worth of English.		
	Incorrect form(s)	a. 他學/讀英文3年了 He studied English for 3 years.	*7 (29%)	*7 (29%)
		b. 他3年學/讀英文 He 3 years studied English.	7 (29%)	14 (58%)
		c. 3年他在學英文 During 3 years, he was studying English.	*1 (4%)	*1 (4%)
2. Complex stative construction <b>'He writes Chinese characters very slowly'</b>	Correct form(s)	他寫中文字寫得很慢 He writes Chinese characters, writes [them] very slowly. 他的中文字寫得很慢 His Chinese characters are written very slowly		
	Incorrect form(s)	a. 他慢慢地寫中文字 He takes his time writing Chinese characters.	4 (17%)	6 (25%)
		b. 他寫中文字很慢/很慢慢地 He writes Chinese characters very slow/ slowly.	*5 (21%)	*11 (46%)
		c. 他寫的中文字很慢 His written Chinese characters are slow.	3 (13%)	0 (0%)
		d. 他中文字慢慢寫 His Chinese characters write slow.	0	1 (4%)
		Don't remember		2 (8%)

### *Complex Stative Construction*

The correct form for the sentence either uses verb copying or in passive voice and is shown in Table 11. The incorrect form 2(a) constructs grammatically correct sentences, but changed the meaning of the sentence. The original sentence is a statement on a person's writing speed in general, while the latter only speaks concerning a moment in time. The incorrect form 2(b) does not have the verb 'write' copied and appears to use the English word order. The incorrect forms 2(c) and 2(d) have completely different meanings than the original sentence and resemble neither the English nor Chinese orders. The majority of participants translated the sentence question using English word order in the second test, in the manner of form 2(b).

### *Object-raising in Chinese Specific 把 ba*

When the subject is an animate object, such as a human or animal, the 把 *ba* construction is used to describe its actions upon direct objects. In general, the direct object is placed immediately after *ba* and before the verb. The correct form to produce a sentence containing the Chinese-specific *ba* for the sentence 'Put the tea cup on the table, please' is to have *ba* before the direct object 'teacup' followed by the verb 'put', then followed by the place, 'on the table'. In Table 12, the incorrect forms (a), (b), and (d) mistake translating the sentence directly, using the English order and without using *ba*. Forms (b) and (d) place 'please' at the end of the sentence, resembling the English 'Take the teacup and put it on the table, please'. Form (b) also uses another verb 拿 *na* 'to take', which is similar to *ba*, suggesting that the subject remembered the gist of the *ba* structure, but forgot the exact word to use. The incorrect form (c) places the verb after the object, which is incorrect in both Chinese and English. On the second test, all subjects who responded to the question incorrectly showed a noticeable tendency to avoid the *ba* structure altogether and to rely on a direct, word-for-word transfer from English (see the incorrect forms

(a), (d), and (e)). These responses are correct in English but not acceptable in Chinese.

Table 12

*Object-raising in Chinese specific 把 ba*

Object-raising <i>ba</i> construction		Number of participants (%)		
		1 <sup>st</sup> test	2 <sup>nd</sup> test	
1. <i>ba</i> construction sentence	Correct form(s)	請把茶杯放在桌(子)上 Please place the teacup on the table.		
	Incorrect form(s)	a. 請(你)放茶杯在桌(子)上 Please place the teacup on the table	*3 (13%)	*4 (17%)
		b. 拿茶杯放在桌(子)上, 請你 Take the teacup and place it on the table, please you	*1 (4%)	*0 (0%)
		c. 請把茶杯在桌(子)上面放 Please take the teacup on the table put	1 (4%)	0 (0%)
		d. 放茶杯在桌子上, 請 Place teacup on [the] table, please	*0 (0%)	*1 (4%)
		e. 你的茶杯, 請放在桌子上 Your teacup, please place it on the table.	*0 (0%)	*1 (4%)
		Didn't remember	0 (0%)	4 (17%)



## Chapter 5: Discussions and Conclusions

The findings of this study relating to the four research questions are discussed in this chapter. Several limitations of this study, as well as some recommendations and pedagogical implications are also presented.

With regard to the extent L2 syntactic skill was maintained or lost over time, the results indicated that the subjects retain a fair amount of their linguistic education within the first couple years of discontinued regular L2 usage. This is different with what has been asserted by a number of researchers, that a large loss would set in at the beginning period of disuse of L2/FL (Bahrick, 1984; Godsall-Myers, 1981; Weltens et al., 1989). One possible explanation for this difference is that the learning contexts between the subjects in this study and those investigated in previous studies were different. In other words, the fluency of subjects of the current study was attained through immersion and experiential learning, whereas subjects in other studies usually only had classroom learning to draw upon. The subjects of the current study had missionary experience, in which they gained an extended and intense exposure to the language. This perhaps gave the subjects of these studies a greater degree of stability in the target language, which lengthened the L2 retention in the first few years.

Regarding the question of whether exposure time to the L2 affected the maintenance of overall L2 syntactic skill over time, contrary to expectations, it is found that the extra six months of exposure time to the L2 does not extend the maintenance of overall L2 syntactic skill over time. This is interesting because most the Church of Jesus Christ of Latter-Day Saints sister missionaries, who had served 6 months less than their male counterparts, felt that because they were cut off from the target culture setting just when they were beginning to master the target language, they were not able to obtain a firm hold upon it. The lack of a statistically significant

difference between the 16- and 22-month groups might have resulted because the test questions all dealt with basic grammar structures used in everyday interactions. The extra six months may have had an insignificant effect on the attrition of basic grammar. Indeed, both the 16- and the 22-month groups might have already crossed a proficiency threshold or a similar linguistic base built through intensive, informal interactions with native speakers while immersed in the L2 environment.

*The Selected Chinese Syntactic Structures with the Least and Most Attrition*

Concerning the question of how the five selected Chinese syntactic structures were subject to attrition over time, this section describes the structures that underwent the most and the least attrition, because they revealed the most about language pedagogy and therefore were most worthy of discussion. The results showed that over time the syntactic structure of punctual time adverbials suffered the least attrition, while verb copying for quantity adverbial phrases had the greatest attrition. From the analysis of these structures, it was found that the frequency of use and the language training of the subjects allowed the subjects to overcome, for at least a few years, the attrition that usually results because of language distance.

Subjects in this study did not seem to be affected by their more flexible L1 word order patterns in their placement of punctual time adverbials. They showed only a slight regression (2%) over time. This is contrary to what has been widely believed, that learners acquiring an L2 with a rigid word order produce transfer errors as a result of a flexible word order in their L1 (Hedgcock, 1991; Nagara, 1972; Odlin, 1989; White, 1989). From informal observation and teaching material used of the subjects' language training, it appears that learners were constantly reminded about the difference and importance of Subject-Adverbial-Verb-Object (SAVO) word order in Chinese while learning Chinese. In addition, before subjects left for the host country of

L2, they learned Chinese at a Missionary Training Center where teachers used Subject-Time-Place-Verb-Object (STPVO) as a heuristic for learners of Chinese. Because of this kind of instruction, a high amount of awareness was generated vis à vis, producing SAV/SAVO order in Chinese, which in turn led to better retention. Another possible reason that SAVO structure was remembered best is that it proved to be socially useful to them while they were in the Chinese culture setting. Indeed, the usefulness of the language in a particular society can be one of the factors that commonly affects L2 acquisition and maintenance (Reilly & Tarey, 1988). That is, subjects remembered certain structures well not only because there were already familiar with the rules of word ordering from their language training, but also because they had ample opportunity to utilize and practice the linguistic knowledge they had learned in various contexts while interacting with native speakers during the 16-22 months spent in the L2 environment.

On the other hand, subjects suffered much greater attrition on syntactic structures of the two variations of verb copy. Several possibilities may account for this. First, this might indicate that subjects had difficulties learning these syntactic structures because there was no parallel in L1 English for this type of syntactic structures. In addition, unlike the rather basic SVO structure, this type is much more complex and difficult to master. It required setting new rules while adding new linguistic elements which are lacking in the L1, which might have been more difficult to acquire, and thus more vulnerable to attrition. Thus these errors might also have resulted because the learner has perhaps not fully internalized or automated the L2 linguistic properties enough to conform to target norms. Second, these subjects might have overgeneralized the SAVO order to their error. The majority of the subjects shows a great tendency of making mistakes by using the incorrect word order as in incorrect form (b) (see Table 11) 他3年學/讀英文 *ta sannian xue/du yingwen* 'He 3 years learned/studied English'. This incorrect form is not

correct word order in English but resembles the order used for positive sentences with punctual time adverbial phrases, only without a direct object. Most likely, the subject was not familiar with or had not internalized verb copying, which caused him/her to overgeneralize the placement for punctual adverbials rule. Third, a subject could have been unable to practice and retain correct L2 grammar because a suitable method to communicate an idea was used instead of the one we tested. A returned missionary might have reached a fluent level of Chinese in terms of speed, but without accurate grammar. The subject may also have used communicative strategies of omission and alternative word choice to avoid usage of the syntactic structure, but still communicated without difficulty with native Chinese speakers, but errors in production could have become fossilized. For example, saying 他寫中文字寫得很慢 *ta xiezhongwenzi xiede henman* 'He writes Chinese characters, writes [them] very slowly' instead of saying 他的中文字寫得很慢 *tade zhongwenzi xiede henman* 'His Chinese characters are written very slowly' or 他寫中文字很慢 *taxie zhongwenzi henman* 'He writes Chinese characters very slow', which also can be considered another type of L1 transfer or a sign of incomplete acquisition with alternative word choice or omission (Ringbom, 1992). With the latter, the different word order slightly changes the exact meaning of the sentence, but the intended meaning can still be understood.

The results did not show that the distance of structural properties between the learner's L1 and L2 necessarily predicted patterns of regression towards L1 syntactic ordering. Instead, it seems that the frequency of use (i.e., how often the structure appears in daily interaction with the target society) and how well the syntactic structure was acquired in the first place played a greater role in predicting whether the structure will likely be forgotten.

One of the findings that showed how the frequency of use superceded the L1 influence on syntactic errors is that of the syntactic structure of the Coverb 从 *cong* 'from'. It was expected

that since the order is reversed in the L1, the subjects would have scored lower on the two tests. However, subjects did not show significant signs of regression in either the first or the second tests as previously expected. An examination of the subjects' performance in translating addresses compared to that of translating dates also supports the theory that the amount of attrition is lessened for the more commonly used structures. In other words, the fact that the subjects scored lower on full dates suggests that full dates are less functional in the L2 society. In their exposure to the L2 environment, the subjects were most likely rarely asked to express a date in full. Instead, an abbreviated date such as 'Monday' or 'August' would have sufficed instead of '1985, August 14<sup>th</sup>, Monday.' To contribute to the likelihood of attrition, once the subjects had returned to the US, they would return to an environment where the style of dates no longer matched that of Chinese. Interestingly, the results on the first test for addresses are higher than those for dates. Most likely, the higher scores resulted because part of a missionary's duty was communicating, recording, and locating the addresses of contacts' homes and meeting places. Mission duties allow the subjects to practice and retain this area of L2 language. Consequently, this made the memory of how to order addresses more resistant to loss.

However, it is noted that after extended disuse, subjects still tended to adhere to L1 syntactic ordering even when forming the *月 日 年* *ba* construction and numerical series for addresses, which sentence structures are often used. The subjects had a strong tendency of regression towards the English word order in the second test while expressing the *月 日 年* *ba* construct, even though commonly used in everyday Chinese.

The finding indicated that, like the frequency of use, the better the syntactic structure was acquired at initial stage, the more the L1 influence on syntactic errors was reduced. Although the structure of the habitual time phrase appears in daily interaction with the target society, subjects

showed comparatively greater difficulties producing it in correct word order. As seen in Table 8, subjects' retention rates of habitual time adverbials remained low (changed from 10% to 9%) over time. The majority of the subjects tended to place the time adverbials of frequency 'once' together with the period 'every three weeks' either before or after the verb. This is likely due to the English convention of placing time adverbials that describe how frequently something occurs across a period of time (e.g., 'once a week', 'twice every other week', etc.). In the second test, the most common error took the form of 'She every 3 weeks went there', omitting the frequency 'once'. This may be caused by either L1 influence where the frequency 'once' of the action is implied and therefore omitted or that the subjects did not learn this syntactic structure correctly in the first place and therefore never did know exactly how to put the two types of time adverbials (frequency and the time period) in their correct positions.

#### *Limitations and Suggestions for Further Research*

Not only is the number of subjects used in this study comparatively few, all subjects in this study had a rather unusually intensive and extended period of time where they were immersed in the L2 environment. They had all spent approximately 16 to 22 months in Chinese speaking areas with intensive, informal learning experiences (missionaries were required to speak at least 8 hours a day with native speakers in Chinese). Because of the small sample size and the group's special characteristics, there may be a lack of external validity of some of the findings, such as the effect of length of exposure to the L2 on overall retention. It would be important to examine a greater number of language learners so that a better generalization about the population can be made. In addition, the attrition patterns of these learners to students from a normal classroom environment or who have had the typical study abroad experience should be studied in greater depth. To better understand the influence of native language on syntactic

patterns, it is also necessary to compare the language output of Chinese learners from diverse primary language backgrounds.

Since this study deals only with the syntax of short sentence form, and subjects were asked to translate one sentence at a time from English into Chinese, the results may not entirely reflect how subjects would demonstrate their understanding of these syntactic rules in larger contexts and more advanced settings. For further insight into the nature of syntactic attrition, it would be valuable to look at the patterns of syntactic attrition from larger contexts, such as story telling, responding to spontaneous interview questions, and finding/correcting errors contained in a paragraph containing sentences with multiple syntactic structures. Studies of syntax attrition in larger connected contexts should provide an opportunity for accessing and observing an authentic and dynamic picture of the syntax system. This might be more effective at discovering how extended time in the L2 environment will affect the attrition patterns that follow.

If an initial test was administered right after the subjects returned from their mission, it would have helped determine the initial level of Chinese competency acquired by the missionaries while immersed in the language environment of their missions. This would have allowed us to divide the subjects according to different proficiency levels and compare them with each other.

#### *Pedagogical Implications and Recommendations*

This study reveals several L2 structural properties that resist loss or regression for longer periods than others. It would be worthwhile to find out what lengthened the retention of these structural properties, so that pedagogical approaches that better enable successful learning of fundamental Chinese grammar could be developed. A number of researchers suggest that “best-learned” L2 knowledge is more resistant to deterioration than aspects of L2 not fully internalized

(Berko-Gleason, 1982; Berman & Olshtain, 1983). Berko-Gleason (1982) states that “best learned means most overlearned, or most nearly automatized” (p.21). Based on the postulation mentioned above and the case of high retention on the placement of punctual time adverbials found in this study, it is suggested that L2 syntactic instruction should focus on how to make those potentially problematic structures (i.e., verb copying, placement of habitual time adverbials) to become more “overlearned” and “automated”. One suggestion to achieve this objective is to have the structures periodically and repeatedly appear in various forms and engaging contexts, such as reading articles, listening activities, writing assignments, and oral performance, to deepen learners’ memory traces.

Secondly, we must be aware that the low rate of accuracy on the tests does not necessarily imply attrition, since many subjects could not even produce accurate translations of certain sentences on the first test. Thus lack of initial learning may have also been a key factor. As McLaughlin (1987) says, “Such errors occur because learners lack the necessary information in the second language or the attentional capacity to activate the appropriate second-language routine” (p.150). If this is the case, instructors need to help learners of Chinese attain a solid foundation of syntactic proficiency. First, instructors must evaluate how seriously the errors obstruct comprehension and identify the root causes and underlying principles of the errors. Afterwards, they should apply the knowledge about problematic L2 grammatical features to design efficient teaching methods and curriculum accordingly. This foundation would make the L2 skills more accessible in the future once instruction is discontinued. One important thing that both teachers and learners should attend to most carefully are those subtle errors that may be grammatically correct, but still break down communication and result in misunderstanding, such as the difference between 他慢慢地寫中文字 *ta manmandi xiezhongwenzi* ‘He takes his time



writing Chinese characters' and 他寫中文字寫得很慢 *ta xiezhongwenzi xiede henman* 'He writes Chinese characters, writes [them] very slowly.'

Moreover, it would also be helpful if instruction could raise the learners' awareness of the difference between L1 and L2, especially on syntactic structures with problematic L2 features. For instance, when teaching the object-raising Chinese specific 把 *ba* construction, teachers should emphasize and clarify the difference between a native-correct phrase that uses the *ba* construct and one that does not use the *ba* construct correctly but still communicates the gist of the message. Early on teachers should also stress the problematic structures, or the errors that learners most often make (such as verb copying, placement of habitual time adverbials, the coverb structure, etc.). They should demonstrate what these problems typically involve and then show the correct usage for the learners, to provide them a foundation of knowledge for self-checking or self-correction when learners put them into practice.

In addition, it is suggested that the observed sequence in which the selected syntactic structures deteriorated in this study could be used as a basis for the order of teaching grammatical rules and the amount of time spent on each rule for design of special programs. This can be applied to the design of refresher courses, targeted to learners who are returning to the L2 setting after years of discontinued regular use of the L2. It can also be applied to short-term preparation courses for business people who want to learn the very essentials of a language in the shortest amount of time possible. Based on the findings of this study, the syntactic structures that are basic, functional, and easier to acquire could be taught towards the beginning of the curriculum at a faster pace, such as placement of punctual time adverbials. After which, the other variances of this type of syntactic structure, such as the difference between adverbial order in negated or positive phrases, could be taught followed by the placement of habitual time

adverbials in relation to other parts of speech. Structures that are more difficult to master, such as verb copying, should also be taught towards the beginning, but be taught at a slower pace to allow learners enough time to absorb what is being taught.

Lastly, it would also be helpful to classify and enumerate the variances of the same grammar structure for students during a single unit in the curriculum to allow students to draw connections between the variances and be able to apply a learned syntactic formula whenever that syntactic rule can be applied. For instance, if learners are familiar with how to use the coverb *从 cong* 'from' correctly, they should be taught that using other representative coverbs require the same sentence structure. It is hoped that the present study will provide researchers, instructional designers, teachers, and learners of Chinese with information and suggestions to further their effort to acquire syntactic rules more efficiently and accurately and thus be able to retain them better.

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Appendix A: Chinese Attrition Study Demographic Data

Name \_\_\_\_\_ Date \_\_\_\_\_

Local Phone \_\_\_\_\_ Address \_\_\_\_\_

Permanent Phone \_\_\_\_\_ Address \_\_\_\_\_

Place of Mission \_\_\_\_\_

Dates of Mission: From \_\_\_\_\_ To \_\_\_\_\_

Compared with how well you spoke Chinese during your test in 1986-87, how well do you feel you speak now? (Circle a number)

Better      same      worse

1 2 3 4 5 6 7

Compared with how well you understood spoken Chinese during your test in 1986-1987, how well do you feel you understand now? (Circle a number)

Better      same      worse

1 2 3 4 5 6 7

Compared with how well you read and wrote Chinese during your test in 1986-1987, how well do you feel you understand now? (Circle a number)

Better      same      worse

1 2 3 4 5 6 7

Have you studied Chinese formally since your last test with us? Yes \_\_\_\_ No \_\_\_\_

If so, how much \_\_\_\_\_ Number of semesters \_\_\_\_\_

When? \_\_\_\_\_

How many months have you spent in a country where Chinese is spoken since your last test with us? \_\_\_\_\_

Here in the States, how often have you spoken Chinese since your last test with us?

Almost Never | 1 2 3 4 5 6 7 | Constantly

How often have you read Chinese since your last test with us?

Almost Never | 1 2 3 4 5 6 7 | Constantly

How often have you listened to Chinese TV or radio since your last test with us?

Almost Never | 1 2 3 4 5 6 7 | Constantly

Have you used Chinese in your career? Yes \_\_\_\_ No \_\_\_\_\_

If yes, how? \_\_\_\_\_

## Appendix B: Chinese Attrition Study Oral Test Part II

Directions: The next part tests your ability to recall and produce orally a variety of Chinese structures. For each question, you will see a printed sentence in English, with one or more words (or, in some instances, the entire sentence) underlined. You are to say aloud the appropriate Chinese equivalent of the underlined portion.

Example B. Can you reach it? You're taller than I am.

1. Please look at lesson two.
2. Today is Sunday, November 3, 1985.
3. He didn't put the book on the table.
4. That group is all Americans. Are you also Americans?
5. He stayed in Beijing for two months.
6. Don't let him watch T.V.; make him do his homework first.
7. I know you didn't have an appointment with him, but did you get to see him?
8. I'm busy now, can we talk about it some other time?
9. His home address is No. 7, Changan Ave., Beijing, China.
10. I'm so busy I don't have time to eat.
11. The movie is about to begin.
12. They haven't come back for one year.
13. She has been studying English for three years.
14. She went there once every three weeks.

15. I can cook Chinese food.
16. She writes Chinese characters very slowly.
17. Don't you like him very much?
18. I'll wait for you at the movie theatre.
19. Drinking is not allowed here.
20. He can't walk because his leg is broken.
21. How is it that YOU are going to Shanghai?
22. He lived in France but didn't study French.
23. He will go back to China next month.
24. Mr. Wang returned to the U.S. from China last Friday.
25. I like to eat everything except beef.
26. Miss Chang sings Chinese songs very well.
27. Put the tea cup on the table, please.
28. It's very cold outside; let's go in.
29. We saw three movies that day.
30. Turn right at the next traffic light.
31. I haven't had time yet, but I WILL go to see him.
32. Right after we had our meal, we went to a movie.
33. Once, he was absent from class for three days.

34. I had three lessons today.
35. He read one more book than I did.
36. I'm outside – please bring out my sweater.
37. Ning-Ning is both intelligent and hard-working.
38. Can you finish reading that book within two hours?
39. Your house is nearer to mine than his is.
40. Finish eating before you read the newspaper.
41. He has learned 500 Chinese characters so far.
42. He studied history for a year.
43. Please make yourself at home; eat a little more.
44. We ought not to regard the young people as untrustworthy.
45. He and I are going there together.
46. To get to the post office, go east.
47. I will never go there again.
48. This table is broken.
49. His car was stolen by someone.
50. Classes don't start until 9:00, but he comes at 8:00.
51. He had talked about it yesterday, and he talked about it again today.
52. I don't have a map. How do I get to the Beijing Hotel?



53. I'm busier than you, but Mr. Wang is even busier.

54. How do you say this sentence in Chinese?

55. I have never been to Taiwan.