

Abstract

The study focuses on the cross-linguistic influence from the second language (L2) to the first language (L1). The main objective is to investigate the effect of English on Mandarin from the perspective of complement event coercion. The study also considers the relationship between the L2 effect and three constraints, namely, length of residence in the English environment, amount of English exposure, and English proficiency. 35 English monolinguals, 34 Mandarin monolinguals, and 29 advanced Mandarin Chinese-English adulthood bilinguals undertook two acceptability judgment tasks, one in English and the other in Mandarin. The monolingual groups took one task in their language, and the bilingual group took both tasks. In the two tasks, the target coercion sentences were acceptable in English but the equivalent Mandarin coercion sentences were unacceptable.

The main results were within expectation. The bilinguals tended to accept not only the English coercion sentences, which were also accepted by the English monolinguals, but also the equivalent Mandarin coercion sentences, which were rejected by the Mandarin monolinguals overall. The results indicated that the bilinguals' English was influencing their Mandarin to a large degree. When the three constraints were taken into consideration, the influence of the English proficiency on the L2 effect was found, but the other two variable aspects did not show a significant influence on the L2 effect.

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Conventions

1. The conventions used in examples come from Li and Thompson (1981).
2. *: an expression is either structurally or semantically unacceptable for native speakers.
3. * (x): The expression is unacceptable if x is not included.
4. Glosses and translations:
 - a. Each Mandarin sentence has two lines of English below it. The first line is a literal translation for the sentence, and the second line is idiomatic English equivalent to the Mandarin example.
 - b. In Mandarin, there is no indicator to show whether a noun denotes singular or plural. We gloss all Mandarin nouns as English singular nouns.
 - c. In Mandarin, there is no indicator to show whether a pronoun denotes feminine and masculine. We gloss Mandarin pronoun *ta* as ‘3sg’ and translate it as “*she/he*” in English.
 - d. Colons are used in glosses where a Mandarin item needs to be glossed by more than one English item. For instance, Mandarin item *huier* is glossed as ‘a:while’ in English.
5. Pinyin: the transcription is *Pinyin* which is the official romanization script for the pronunciation of Mandarin.

List of abbreviations

3sg:	Third person singular pronoun
AJT:	Acceptability judgment task
ASSOC:	Associative (<i>-de</i>)
CAH:	Contrastive analysis hypothesis
CCH:	Creative construction hypothesis
CEC:	Complement event coercion
CG:	Control group
CL:	Classifier
CRS:	Currently relevant state (<i>le</i>)
DUR:	Durative aspect (<i>-zhe, zai</i>)
EG:	Experimental group
GEN:	Genitive (<i>-de</i>)
L1:	First language
L2:	Second language
NOM:	Nominalizer (<i>de</i>)
NP:	Noun phrase
PFV:	Perfective aspect (<i>-le</i>)
P&P:	Principles and Parameters
SD:	Standard deviation
SLA:	Second language acquisition
SPSS:	Statistical Product and Service Solutions
UG:	Universal Grammar
VOT:	Voice Onset Time
VP:	Verb phrase

Chapter 1 Introduction

The main aim of the present study is to explore whether there is an influence of English (the second language, L2) on Mandarin Chinese (the first language, L1) in advanced Mandarin Chinese-English adulthood bilinguals. The study also examines whether the L2 effect (if it appears in the bilingual participants) will be affected by three frequently discussed constraints, namely, length of residence, amount of English exposure, and English proficiency. The participants include those who have lived in an English-speaking country for at least five years. The study is conducted, using the acceptability judgment task method, which has been acknowledged as one of the most popular approaches applied to research on language-related areas, such as syntactic literature, bilingualism, language transfer, and language attrition (Altenberg & Vago, 2004; Dąbrowska, 2010; Schmid, 2011 ch 12).

Most of the previous studies in the field of cross-linguistic influence have put their emphasis on the influence of the first language on a second language (Balcom, 2003; Laufer, 2003). This was the case of the Contrastive Analysis Hypothesis (Lado, 1957), the Creative Construction Hypothesis (Dulay & Burt, 1974a; Selinker, 1972), first language transfer (Ard & Homburg, 1992; Zobl, 1982), and other later work in second language acquisition (Foley & Flynn, 2013; White, 2003). These studies have developed their research in almost every linguistic domain, such as phonology, morphosyntax, lexicon-semantics, and pragmatics. In these domains, L1 effects have been observed as either positive or negative (Foley & Flynn, 2013; Gass, 2013).

In contrast to the large amount of work, focusing on the first language influence on a second, only a handful of studies have investigated the reverse phenomenon; that is, the influence of a second language on the first. Some researchers in the field of bilingualism (Fillmore, 1991; Romaine, 1995) consider the reverse linguistic phenomenon early on; however, most of them focus on childhood bilinguals. The L2 influence has not received scholars' full attention until Cook (1991, p. 112) introduced the *multi-competence* theory, which states 'the compound state of a mind with two grammars'. According to the multi-competence hypothesis, the internalized knowledge of advanced bilinguals is not the same as that of monolinguals, and this difference is hypothesized as the result of the

bilinguals' L1 and L2 influencing each other (Balcom, 2003). As Cook (1993) suggests, bilinguals' linguistic competence should be investigated in various aspects of the grammar to see in which domains the influence between L1 grammar and L2 grammar occurs. To date, studies in the field of bilingualism have provided much theoretical and empirical evidence to show that the L1 competence of bilinguals is subject to L2 influence in phonology (e.g., Cook, 2002; Major, 1992) and lexicon and semantics (e.g., Dewaele & Pavlenko, 2003; Laufer, 2003; Pavlenko & Jarvis, 2002), while in linguistic areas, such as morphosyntax (Jarvis, 2003) and pragmatics (Waas, 1996), the investigation is still limited (Pavlenko, 2000). The research, exploring the L2 influence, has shown that the L2 effect on L1 could be positive, negative, or neutral (Cook, 2003; Jarvis, 2003; Kecskes & Papp, 2000), and it is affected by various constraints (e.g., length of residence, amount of language exposure, language proficiency) (Pavlenko, 2000). Reviewing those studies, most of them have investigated the L2 influence in two languages close to each other, such as Dutch-English, Spanish-English, and Russian-English; but for two languages with distant linguistic systems, such as Mandarin-English, little is known.

The present study makes a contribution to research of the influence of L2 on L1 by investigating the L2 English influence on L1 Mandarin Chinese lexical syntactic and semantic selections, on verbs and prepositions/connectives (e.g., *begin* (English) – *kaish* (Mandarin), *before* – *qian*), which require a complement denoting an event. According to Pustejovsky (1991), English is a language in which event information (e.g., an activity of reading) required by the predicate (e.g., *begin*) of a sentence (as (1a)) does not need to always be expressed (as in (1b)); rather, the event information can be coerced to an explicit nominal argument (e.g., *the book* in (1b)) by the predicate. This operation is termed by Pustejovsky (1991; 1993) as *type coercion*, specified as *complement event coercion* (CEC) in this study. In Mandarin, however, the operation mostly does not work for the items that require an event-denoting complement. The event information is mostly expressed in a sentence (as in (2a)); otherwise, the sentence does not make sense (as in (2b)) (Song, 2014). The relevant information of complement event coercion in English and Mandarin will be described in section 2.2.

- (1) a. I began *reading/to read* the book.
 b. I began the book.
- (2) a. wo kaishi-le du zhe-ben shu (*du* denotes an action of reading)
 I begin-PFV read this-CL book
 ‘I began *reading/to read* the book’.
- b. * wo kaishi-le zhe-ben shu
 I begin-PFV this-CL book
 ‘I began the book’.

Complement event coercion was chosen and studied for two reasons. First of all, as is shown above and is demonstrated in section 2.2, the English lexical targets, requiring an event-denoting complement, have more possibilities than the Mandarin equivalents. That is, the English items can take either an event-type argument (e.g., *reading/to read the book*) or an entity-type argument (e.g., *the book*) to denote an event, while the latter is mostly not the case in equivalent Mandarin items. This difference makes it easy to detect experimentally whether Mandarin Chinese-English bilinguals can accept unacceptable coercion sentences in Mandarin (as (2b)) to which the English translations are acceptable (as (1b)), so as to see whether English has influence on Mandarin of the bilinguals. The second reason to study complement event coercion is that, coercion is not a well-known linguistic phenomenon, which results in a little risk of metalinguistic awareness interfering with the experiment. The complement event coercion in English is not well known outside of the small specialist community of linguistics. Native English speakers as well as L2 English bilinguals most probably have no explicit knowledge of it. Similarly, the difference between Mandarin and English with respect to coercion has not been recognized by most of the L1 Mandarin learners of L2 English (even though there are a few linguists starting to research on the topic) (Lin, Hsieh, & Huang, 2009). Therefore, complement event coercion provides an ideal ground to examine the L2 English effect on L1 Mandarin in Mandarin Chinese-English speaker. Since the two languages are quite different in many linguistic respects, it is presumed that the L2 influence (if it appears)

was more likely to be detected in advanced bilinguals.

The thesis is organized as follows. Chapter 2 briefly describes relevant theories in cross-linguistic influence in bilingualism, and explains specific differences between English and Mandarin Chinese with respect to complement event coercion. In Chapter 3, research methodology is demonstrated in detail, followed by a chapter presenting the results of the study. In Chapter 5, the results will be discussed by considering the research questions of this study, applying relevant theories and comparing and contrasting results from previous studies in the field. The final chapter draws conclusions of the research and provides an overall evaluation of the study and suggestions for future research.

Chapter 2 Theoretical framework

This chapter provides an overview of the theories, which are relevant to the present study. The theories are situated in two main domains: one is cross-linguistic influence in bilingualism, and the other is in the syntax-related field. In the cross-linguistic domain, three sub-fields will be discussed: cross-linguistic influence in second language acquisition, multi-competence hypothesis, and effects of the second language on the first. In the syntax-related field, the linguistic phenomenon *complement event coercion* will be introduced with a comparison between Mandarin and English in the phenomenon.

2.1 Cross-linguistic influence in bilingualism

Cross-linguistic influence in bilingualism has been widely investigated in the past several decades. The influence has been noted in both second language acquisition (SLA) and bilinguals' first language. Before we start a general overview for the relevant theories, it is necessary firstly to clarify several notions: first language acquisition, second language acquisition, and bilingualism. The L1 acquisition is a process of a speaker learning his/her first language (-s); that is, the process of a child learning his native language (-s) (Wang, 2014). After the acquisition of the L1, the process of learning any other language (-s) could be a second language acquisition (ibid.). The objective of learning a second language is to become a bilingual speaker rather than to 'pass for a native speaker' (Cook, 2003, p. 4). A bilingual speaker is not two monolingual speakers in one body (Grosjean, 1989). In order to investigate a bilingual's language competence, it is of importance to fairly investigate their competence in each language (cf. Dahl, 2014).

2.1.1 Cross-linguistic influence in Second Language Acquisition

In 1953, Ulrich Weinreich defined interference 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' ((Weinreich, 1953, p. 1), quoted in Cook, 2003, p. 1). This viewpoint is consistent with what most people commonly think about the notion of the cross-linguistic influence, i.e., a bilingual's first language (L1) has impact on his/her second

language (L2). Under Weinreich's (1953) theoretical framework, most of the previous studies in second language acquisition have put their emphasis on the influence of the first language on a second in the past several decades (Cook, 2003; Foley & Flynn, 2013). The influence is also known as *language transfer* (Gass, 2013).

The first language transfer involves two separate underlying learning processes, namely, positive transfer (facilitation) and negative transfer (interference) (Gass, 2013 ch 4). The determination of whether an L2 learner has undertaken a positive transfer or a negative transfer is based on the learner's product, i.e., whether the use of L1 leads to correct L2 utterances or incorrect L2 utterances. Lado's (1957, p. 59) point of view shows that the two separate learning processes come from similarities and differences between an L1 and an L2. This notion established a base for *Contrastive Analysis Hypothesis* (CAH). The CAH states that differences between an L1 and an L2 are difficult for an L2 learner to acquire, which causes interference errors (negative transfer) in the production of the L2; hence, the differences need to be learned. Similarities are easy for an L2 learner to acquire, which leads to a faster and earlier acquisition (positive transfer); thus, the similarities do not need to be learned in the L2 learning process (Foley & Flynn, 2013; cf. Gass, 2013).

However, this hypothesis has received multiple criticisms from subsequent empirical works. These criticisms come from two main perspectives: one considers interference errors, and the other concerns notion of difficulty (Gass, 2013). According to the CAH, it is predicted that the errors in L2 speakers' production are mainly caused by differences between an L1 and an L2, that is, interference errors. This prediction was not borne out in Dulay and Burt's study (1974a) in which they reported that the interference errors from participants' responses only accounted for a small percentage. Most of the L2 errors, they argued, were developmental and similar to L1 errors produced by children. They argued that it was innate mechanisms that guided the development of a new L2 system (or *interlanguage*, Selinker (1972)), which is known as *Creative Construction Hypothesis* (CCH). Also, from the point of view of CAH, differences between an L1 and an L2 indicate the relative difficulty of language use, and similarities indicate the ease of language use. This assumption was contradicted by results obtained in Dulay and Burt's (1974b) another study in which the researchers discovered an overall similar accuracy order when Spanish-English children and Mandarin-English children

produced L2 English functional morphemes, regardless of L1s.

Although much research has questioned the validity of CAH, it is no doubt that the significant roles of the first language in SLA cannot be neglected. The facilitation of similarities between an L1 and an L2 in the L2 learning process has been confirmed by many studies (Ard & Homburg, 1992; Laufer & Eliasson, 1993; Zobl, 1982). Ard and Homburg (1992) examined response latencies of Spanish-English speakers and Arabic-English speakers to different English lexical items. The researchers found that the Spanish speakers performed better than Arabic speakers not only with the English words to which there were Spanish words orthographically and/or semantically similar, but also with the English words to which there were Spanish words orthographically and/or semantically distant. The better performance of the Spanish speakers in the English vocabulary test was attributed to the existence of many cognates in the two languages. The bilinguals can easily transfer the similar knowledge into the L2 (e.g., words similar in orthography or semantics) and then spend more of the learning time on other aspects where the L1 and the L2 have no overlap (e.g., words dissimilar in orthography and semantics), which facilitates the L2 learning. Similar evidence was also provided by Zobl (1982), who reviewed many studies focusing on the L1 effect on the development of specific L2 structures (e.g., determiners, articles, copulas).

Apart from the significant roles of actual (surface level) similarities between an L1 and an L2 in the L2 acquisition, it has been argued that presumed closeness (abstract level) of languages to each other might also be of importance (Foley & Flynn, 2013). The presumed closeness refers to a learner's perception of language distance, which is not necessarily the actual language distance (Gass, 2013 ch 6; Kellerman, 1979). As was stated by Gass (2013), an L2 learner seems to undertake a process of making decisions about which L1 structures are suitable to be transferred in the L2. The decision-making process depends not just on the consideration of actual linguistic similarities and differences between an L1 and an L2, but goes further to place L1 transfer in a domain of concept, i.e. how close L2 learners view their L1 to the L2. For example, Mandarin speakers learning L2 Dutch consider their L1 phonology different from the L2 phonology, while the Germans learning L2 Dutch might consider their L1 phonology identical or fairly similar to the L2 phonology. Therefore, the German learners of Dutch are expected to carry more L1 transfer in the SLA. The assumed closeness of

languages influencing L2 learning is also mentioned by Sabourin, Stowe and De Haan (2006).

So many studies in SLA have demonstrated the role of the L1 transfer from different perspectives, while scholars in the field presumed, during the development of Universal Grammar (UG) (Chomsky, 1965), that UG might also play a role in second language acquisition at some level (Foley & Flynn, 2013). The Principles and Parameters model (P&P) of UG (Chomsky, 1986) maintains that abstract universal principles regulate human language, and parameters across languages lead to cross-linguistic differences. Considering both the role of L1 and the role of UG, the scholars put their emphasis on the 'initial state' of the L2 acquisition (Foley & Flynn, 2013:104). Some of the established approaches presume that L2 acquisition starts with the L1 grammar. Take, for example, *Full Transfer/Full Access* (FT/FA) (Schwartz & Sprouse, 2000). It supposes that the initial state of SLA is constituted of L1 grammar, which indicates a full transfer of the L1 in the acquisition; but UG is fully accessible during the course of the L2 acquisition when the L1 grammar is insufficient to accommodate L2 input, which indicates a full access of UG (cf. Foley & Flynn, 2013; Gass, 2013; Schwartz & Sprouse, 2000; White, 2003 ch 3). According to FT/FA, since L2 learning starts with L1 grammar, it is impossible that L2 learners obtain complete L2 grammar. Another approach, *Minimal Tree Hypothesis* (MTH) (Vainikka & Young-Scholten, 1996), also assumes L1 grammar as the starting point of SLA. But, in contrast to FT/FA, MTH defines the L1 transfer only in lexical categories (e.g., nouns, verbs) and not in functional categories (e.g., determiners, complementizers). The functional categories are gradually added to L2 grammar on the basis of L2 evidence (cf. Foley & Flynn, 2013; Gass, 2013; Vainikka & Young-Scholten, 1996; White, 2003 ch 3). On the basis of this view, there is no L1 transfer in functional categories and L2 learners with different L1 backgrounds are supposed to develop functional categories with the same approach (White, 2003 ch 3). However, Epstein, Flynn, and Martohardjono (1996) argued that UG constitutes the initial state of SLA, as in child L1 acquisition and constrains the developing L2 grammar (interlanguage) throughout the stages. Since there is supposedly no effect of the L1 grammar at the starting point of the interlanguage grammar, L2 learners can in theory reach ultimate achievement as native speakers (Epstein et al., 1996; cf. Foley & Flynn, 2013; Gass, 2013; White, 2003 ch 3). There are also other approaches claiming no direct access to UG in adult SLA (cf. Cook, 1996;

Foley & Flynn, 2013). The roles of L1 grammar and UG in SLA remain controversial and future research is still needed.

2.1.2 Multi-competence hypothesis

As Cook (2003) stated, the term *multi-competence* was initially introduced for sake of convenience. While *interlanguage* had been acknowledged as the standard term for L2 learners' developing L2 system, there was no an appropriate word to refer to L2 speakers' knowledge of both L1 (the L1 grammar) and L2 (the interlanguage). Therefore, the term multi-competence was coined to denote a compound state of a mind with two or more languages (Cook, 1991, p. 112) (for the sake of consistency, the notion of multi-competence in the present study will only be considered as talking about two languages, as what Cook (2003) did in his study).

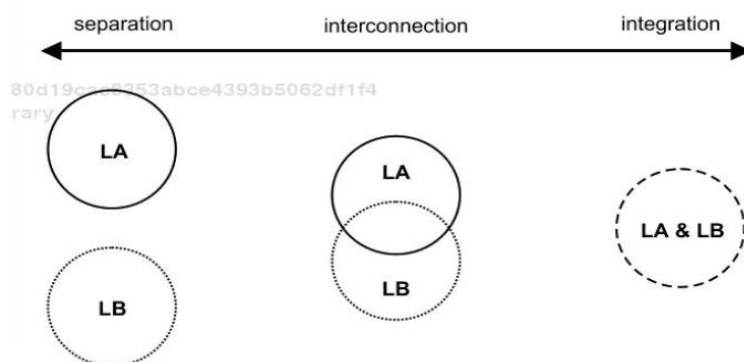
The multi-competence hypothesis states that an individual, who knows two languages (a bilingual or an L2 user), has a different compound state of mind, compared to an individual, who knows only one language (a monolingual) (Cook, 1991; 1992; 1993; 1996; 2002; 2003). The different characteristics of bilinguals from monolinguals are reflected in varying aspects in which bilinguals' L2 knowledge and L1 knowledge have been acknowledged as two of the most obvious aspects (Cook, 1996; 2002; 2003). In interlanguage theory L2 users' second language grammar is a developing system, which gravitates toward native level of competence (i.e., becoming balanced bilinguals), although it is rare that L2 users can achieve that state. Based on empirical evidence, it is possible of course that L2 users' pronunciation of the L2 can be identical or quite similar to the natives'; however, the grammatical intuition between the two groups is still not the same (Cook, 1992). When considering L2 users' L1 knowledge, it has been reported that their L1 deviates from monolingual native speakers in some linguistic aspects, such as in phonology, and lexicon and semantics, which have been best researched in the field of L2 influence (Pavlenko, 2000). Take, for example, in phonology, the L2 users' pronunciation of the L1 tends to move away from that of the L1 and toward to that of the L2 in terms of Voice Onset Time (VOT) (Cook, 2002; Major, 1992; Pavlenko, 2000) for voiceless stops, such as /p/ and /t/ (Major, 1992).

Apart from L2 knowledge and L1 knowledge, L2 users' language use and minds are also not the same as the monolinguals' (Cook, 2002; 2003). In terms of language use, L2 users are able to conduct some activities, which are not possible for those who only speak one language. For instance, L2 speakers are able to code-switch from one language to the other when they talk to another who also knows the two languages. It is a case that one Mandarin Chinese-English student talks to another peer in America, and uses both Mandarin words and English words in one sentence. Besides code-switching, L2 users are also able to translate what they have heard in one language into the other language, which is what interpreters and translators do. Another distinct characteristic, which has been noticed by scholars in bilingualism, is that an individual, who speaks two languages, has distinct minds from an individual knowing only one language. Cook (1992; 2002) argued that L2 users' experience of learning a second language changes their mind in ways (e.g., more flexible thinking, more rapid language awareness, and better communication skills) that transcend the actual language knowledge. One piece of evidence, documented in Galambos and Goldin-Meadow's study (1990), is that Spanish-English bilingual participants performed more speedily in the stages of grammatical awareness than Spanish monolinguals and English monolinguals. The result, from the point of view of the researchers, indicates facilitation of the bilingual experience in the development of metalinguistic abilities in specific aspects. The similar results are also shown in the study of Bialystok (1991).

While the experience of learning a second language distinguishes L2 users from monolinguals, the multi-competence theory further raises the question of what kind of relationship the L1 and L2 have in the mind of an L2 user. Cook (2003, pp. 6-11) provided three possibilities for the question, namely, 'total separation', 'total integration', and 'integration continuum'. The total separation model claims that the two languages of an L2 user are independent, and there is no connection between the languages (Cook, 2003). In contrast to the separation model, the total integration model assumes that languages in one mind form a single system, which, however, does not mean that L2 users cannot choose which elements of the merged system they need to use in a specific situation (*ibid.*). Cook (2002; 2003) pointed out that the total separation is not absolutely true because two languages of an L2 user are in the same mind. Total integration is not absolutely true either because an L2 user

is able to keep two languages in one mind separate. Both Cook (2002; 2003) and Francis (1999) argued that the two models are more likely to denote two endpoints of an integration continuum, as shown in Figure 2.1. Between the two endpoints are different degrees of interconnection, which depend on multiple constraints.

Figure 2.1: The integration continuum of possible relationships in multi-competence (from Cook (2002, p. 11))



The integration continuum is applicable in different linguistic elements across languages (Cook, 2002; 2003). Take, for example, the complement of lexical items in syntax-semantic interfaced domain considered in the present study. The sentences' complement of two languages of an L2 user could be separate. A Mandarin Chinese-English bilingual might know that the event-denoting complement (e.g., *making the film*) of some English verbs (e.g., *finish*) could be represented by an entity-denoting noun phrase (e.g., *the film*) (Pustejovsky, 1991), as in *The director has finished the film*, although in Mandarin this representation does not work in those English verbs' Mandarin equivalents (Li & Thompson, 1981; Song, 2014). Or the bilingual might arrive at the English use of an entity-type noun phrase denoting an event, by connecting the use to his/her L1 Mandarin. Or the bilingual might have a merged system in terms of the complement in his/her mind that shifts from an English noun phrase complement referring to an event, to a Mandarin verb phrase when needed. Results of the present study indeed indicate a degree of interconnection between the L2 and the L1 in the bilingual participants in the domain of the complement of some lexical items.

While the relationship of the L1 and an L2 seems to have been elaborated by the concept of integration continuum, further doubt, based on the multi-competence theory, is raised; that is, how an L2 user controls the use of his/her two languages. Grosjean (1989; 2001) explained

bilinguals' language use with a *situational continuum*. The continuum ranges from a monolingual language mode to a bilingual language mode, on the basis of proportion that two languages are involved in a specific context. *Language mode* refers to 'the state of activation of a bilingual's language and language processing mechanisms at a given point in time' (Grosjean, 2001, p. 2). In the monolingual mode, an L2 user effectively activates one language when he/she talks to a monolingual, but the L2 user never completely turns off the other language; in the bilingual mode, an L2 user simultaneously activates two languages when he/she talks with a person, who also knows the two languages (Grosjean, 2001, pp. 2-3). In this sense, the situational continuum seems not to be about which language is to be used but rather about how much of each language is to be used (Cook, 2003).

The concept of multi-competence, furthermore, also leads to a reconsideration of previous notions for 'monolingual native speaker' and 'L2 user'. The former is previously regarded as the 'norm' by researchers in SLA and linguists, and the latter as an 'approximation' to a monolingual native speaker (Cook, Iarossi, Stellakis, & Tokumaru, 2003, p. 193). Arguing against the concepts of monolingual norm and bilingual approximation, Cook (1997) argued that L2 users should be viewed in their own right (e.g., success of being an L2), instead of with reference to native speaker norms (e.g., failure of reaching linguistic competence as native speakers). L2 users' language competence should be fairly investigated in each language (cf. Dahl, 2014). The multi-competence hypothesis has guided researchers in the field of bilingualism to not only just investigate L2 users' language competence in the L2, which is acknowledged to be largely affected by the L1, but also to investigate L2 users' language competence in the L1, which is reported to be probably affected by the L2 in specific linguistic aspects.

2.1.3 Effects of the second language on the first

Referring to Weinreich's (1953) definition concerning interference as deviations from 'either' language, most of people considered only the possibility of influence from an L1 to an L2 and neglected the possibility of influence from an L2 to an L1 (Cook, 2003). Cook expressed that this neglect might be due to the fact that the L2 effect cannot be easily detected in our everyday lives. It can only be identified when the L1 loss occurs to some degree, e.g.,

an L2 user cannot fluently talk with his/her native monolingual peers. Research on the L2 influence has rarely been investigated until Cook's (1991) *multi-competence* theoretical framework was postulated.

Scholars in the field of bilingualism consider the influence of an L2 on an L1 early on. Nevertheless, most of their research focuses on childhood bilinguals (Fillmore, 1991; Romaine, 1995). One of reasons that childhood bilinguals are more researched in the field than other groups of bilinguals may be that L2 effects in childhood bilinguals seem to be more easily detected (Fillmore, 1991). This is because bilingual children start to learn an L2 language when their L1 system has not been completed yet. With this situation, these children's L1 is still not stable enough to deal with the encounters with an L2. It is possible, as a result, that the native language is affected by a second language. Considering Fillmore's proposal, it seems that once an individual's native language system is completed (or becomes 'matured'), his/her competence in the language will not be changed any more (Pavlenko, 2000). This similar concept is also suggested in MacWhinney (1997).

However, the idea that the native language will be not changed as long as it becomes complete is argued against later by many scholars interested in the area of L2 influence on L1 in adulthood bilinguals (Cook et al., 2003; Pavlenko, 2000; Pavlenko, 2004; Pavlenko & Jarvis, 2002). Pavlenko (2000) in her work has reviewed empirical evidence to show that L2 influence on L1 also exists in late bilinguals, especially in the domains of phonology and lexicon and semantics. The evidence can be supported to a large degree by the multi-competence theoretical framework (ibid.), where two languages of an L2 user form a complex compound system in which both the first language and the second language form a part of the system (Cook, 2002). In the sense, it is quite possible that the two languages can interact with each other and have an impact on the knowledge of the other, as the integration continuum expresses.

The effects of L2 on the L1 have been evaluated in three ways: negative effects, positive effects, and neutral effects (Cook, 2003). Reviewing the previous studies on L2 effects, most have emphasized the harmful effects of L2 on L1, most commonly the L1 attrition/loss. This is the case of adult bilinguals, who immigrated to an L2 environment and now are living there (Montrul, 2005). Montrul explains that when a learner acquires a second language and uses it

more, he/she will at the same time use less his/her first language and thus gradually lose some abilities in the L1 knowledge. The similar notion has been documented in many of studies exploring L2 influences on L1 (Balcom, 2003; Fillmore, 1991; Major, 1992; Montrul, 2002, 2005; Pavlenko, 2000; Pavlenko, 2004; Romaine, 1995; Seliger & Vago, 1991; Waas, 1996).

Apart from the negative effects of L2 on an L1, there are also some studies (Bialystok, 1991; Galambos & Goldin-Meadow, 1990; Kesckes & Papp, 2000; Murphy & Pine, 2003; Yelland, Pollard, & Mercuri, 1993) suggesting that L2 learning can facilitate the use of L1. Data presented from Kesckes and Papp (2000) has shown that Hungarian-English bilinguals performed better in using complex sentences in the L1 than Hungarian monolinguals did. Also, Yelland and his fellows (1993) demonstrated a facilitation effect of learning L2 Italian on L1 English reading in English children. The advanced metalinguistic awareness in L2 users has also been reported in the study of Galambos and Goldin-Meadow (1990).

Besides negative effects and positive effects of L2 on L1, a few studies (Cook, 2003; Cook et al., 2003; Jarvis, 2003; Sridhar & Sridhar, 1980) have also suggested that L2 effects are probably neither bad nor good, but neutral and merely ‘amount to differences’ (Cook, 2003, p. 12). In the study done by Jarvis (2003), the researcher examined an advanced Finnish-English adult from a variety of collected data (e.g., naturalistic data, oral narrative data, sentence grammaticality judgment task, and self-reported data) and found that the participant’s L1 grammar seemed not to be deteriorated, rather to be expanded with some L2 patterns. The changes of the L1 were evaluated as neither good nor bad. Similarly, Sridhar and Sridhar (1980) claimed that L2 speakers’ two languages’ grammars can integrate into code-switched expressions to form a whole syntactic structure, but the grammars themselves do not change. L2 users have a complex language system in which the two languages interact with each other. It is hard, therefore, to decide whether the L2 effect is positive or negative.

When exploring L2 effects on the L1, previous studies have also posited varying constraints under which L2 effects operate. Pavlenko (2000) lists 10 specific constraints, which have been reported in much of the research, exploring L2 influence. Of those constraints, three are suggested as critical ones, namely, age of initial exposure (or *age of arrival* for immigrants (Herschensohn, 2013), length and amount of L2 exposure, and language proficiency (Pavlenko, 2000; Pavlenko, 2004; Pavlenko & Jarvis, 2002). Pavlenko

(2000) summarized that while all L2 users are probably affected by the experience of learning a second language, L2 influence will be most significant in younger L2 learners (e.g., Kecskes & Papp, 2000; Montrul, 2002), or L2 users with high amount of L2 exposure in the past and present (e.g., De Bot, Gommans, & Rossing, 1991; Major, 1992; Pavlenko & Jarvis, 2002; Waas, 1996), or L2 users with high level of L2 proficiency (e.g., Major, 1992; Su, 2001; Tao & Thompson, 1991). However, the constraints are contentious and some of them have not been widely examined to date (Pavlenko, 2000). Therefore, it is still necessary to do more research to refine, expand, or exclude specific constraints.

The present study partly contributes to the research on investigating the relationship between the L2 effect and possible constraints. Apart from the main purpose of investigating the L2 effect, the study also examines whether the L2 effect is affected by two of the three above mentioned critical factors, i.e., length and amount of L2 exposure and L2 proficiency. The length and amount of L2 exposure as two factors were considered: that is, length of residence in the L2 environment and amount of the L2 exposure of the bilinguals' total language use per week. We did not examine the impact of the age of the initial exposure (or age of arrival) on the L2 influence because firstly, all the bilingual participants immigrated to an English-speaking country after the age of 12. From Montrul's (2005) viewpoint, this age is out of the critical period, which crucially influences language learning. Secondly, even though some of the bilingual participants have started to learn English before age 12 (that is, before Grade 6 in the educational system of China), they learned very basic English skills (Lin, 2002), which would not significantly affect the results obtained from the present study. Therefore, in this study, the links between the L2 effect and length of residence in the L2 environment, amount of L2 exposure, and L2 proficiency, were considered.

2.2 Comparison of English and Mandarin Chinese from the perspective of complement event coercion (CEC)

The present study is mainly to investigate the L2 effect on the L1 in advanced Mandarin Chinese-English adulthood bilinguals, by examining the participants' judgments on some Mandarin unacceptable sentences, where English equivalents were acceptable expressions.

The linguistic phenomenon involved in this study is what Pustejovsky (1991; 1993) postulated as *type coercion*, specified here as *complement event coercion* (CEC). A few studies (Lin & Liu, 2005; Song, 2012, 2014) comparing English and Mandarin in CEC have noted that this linguistic element is common in English but not frequent in Mandarin in the target lexical items selected for the present study. Therefore, while the English target coercion sentences are acceptable to native English speakers, most of the equivalent Mandarin coercion sentences (a few exceptions) are unacceptable to native Mandarin monolinguals. The lexical items considered in this study are a few verbs and temporal adpositions, which require a complement denoting an event, such as verbs *begin* (English) - *kaishi* (Mandarin), *try* - *shi*, *regret* - *houhui*, temporal connectives *before* - *qian*, *after* - *hou* (Frisson & McElree, 2008; Jackendoff, 1997 ch 3; Katsika, Braze, Deo, & Piñango, 2012; Li, 2013; Li & Thompson, 1981; Lin & Liu, 2005; Pustejovsky, 1991, 1993, 2011; Pustejovsky et al., 2003; Song, 2012, 2014; Traxler, Pickering, & McElree, 2002).

Before starting the comparison of English and Mandarin in CEC, which is defined as a semantic issue (Jackendoff, 1997 ch 3; Pustejovsky, 1991, 1993), a comparison of the target items from perspective of syntactical selection, i.e., subcategorization, should be made. A lexical item's subcategorization frame specifies the syntactic type of the item's complement (e.g., obligatory arguments and adverbials modifying the item) (Balcom, 2003). Referring to previous lexical literature (Pustejovsky, 1991; 2011), the English target words can take as the object complement both verb phrase (VP) (in forms of gerund or infinitive clause) and noun phrase (NP); the noun phrase can be either eventive or entity-type. These three options are schematized in (3) below, followed with an example, where target words are italicized.

(3) a. X [_ VP] (X = target lexical items requiring an event-denoting complement)

E.g., He *began* [reading/to read the book].

b. X [_ NP_{eventive}]

E.g., He *began* [his reading].

c. X [_ NP_{entity-type}]

E.g., He *began* [the book].

Compared with subcategorizations of the English lexical items, the Mandarin equivalents can also be subcategorized for a VP complement or an NP complement; but the VP complement is more common, and the NP complement is more likely to be event-type rather than entity-type (a few exceptions will be discussed later) (Li & Thompson, 1981; Lin & Liu, 2005; Song, 2014). The subcategorization frames are shown in (4) below with an example for each option.

(4) a. X [_ VP]

E.g., ta *kaishi-le* [du zhe-ben shu]

3sg *begin*-PFV [read this-CL book]

‘He *began* reading/to read the book’.

b. X [_ NP_{eventive}]

E.g., ta *kaishi-le* [ta-de gongzuo¹]

3sg *begin*-PFV [3sg-GEN work]

‘He *began* his work’.

¹ *gongzuo* ‘work’ here is an eventive nominal rather than a verb, since the item is modified by a genitive *ta-de* ‘his’.

- c. * X [_ NP_{entity-type}]
- * E.g., ta *kaishi*-le [zhe-ben shu]
 3sg *begin*-PFV [this-CL book]
 ‘He *began* the book’.

It is interesting to note that while c. X [_ NP_{entity-type}] is acceptable for the English target item, it is unacceptable for the Mandarin equivalent. This difference is what the present study focuses on.

From the perspective of semantic selection, c. X [_ NP_{entity-type}] involves the linguistic phenomenon – *type coercion* (Pustejovsky, 1991; 1993). Referring to Pustejovsky (1991), the complement event coercion is a semantic operation converting an explicit complement argument to the type which is expected by normal semantic interpretations; otherwise, there would be a type mismatch in the argument. Take, for example, the aspectual verb *begin* in the three English sentences in (3). The meaning of *begin* requires a participant (the subject), who begins to take an action and another participant (the object complement), who signals an action which is begun to take by the subject referent. All three sentences in (3) above are perfect expressions. The first two sentences differ from the third one in the nature of what is begun by the subject. In (3a) and (3b), what is begun by a particular person, he, is an event of reading, but in example (3c), what is begun is a physical object, book. It seems that there is an error in the semantic argument type of example (3c), while the sentence is still grammatically well-formed. In order to interpret (3c), *begin* has to ‘trigger’ a change in the meaning of its complement *the book* by taking an operation of coercing the entity, the book, an event meaning. The event information can be interpreted, based on a given context and the lexical semantics (Pustejovsky, 1991; Pustejovsky & Boguraev, 1993) of the noun phrase, *the book*, particularly a referent’s telic role (purpose and function of the referent of the noun, e.g., a book is used to read) and agentive role (factors bringing the referent about, e.g., a book is created through a writing activity) (Pustejovsky, 1991). Therefore, the noun *book* in (3c), even though essentially denoting an entity, can also be interpreted as *reading a book*, which denotes a telic role of the book in the context, or *writing a book*, which denotes an agentive role of the book.

With respect to complement event coercion, there are some differences between the English target words considered in this study and the Mandarin equivalents. Song (2012; 2014) noted that the English targets can freely take a coercion operation, whereas their Mandarin correspondences cannot. This viewpoint is consistent with what Pustejovsky (1991; 1993) proposed about English lexical semantics: English is a language in which the event meaning that a lexical item selects for can be substantially incorporated into a nominal word. For the $X [_ NP_{\text{entity-type}}]$, X can coerce an event denotation to the entity meaning of an NP, and the event denotation does not need to be compulsorily expressed in a sentence. A reader/hearer can interpret the unexpressed event meaning depending on telic role or agentive role of the referent signaled by the explicit NP as well as a given context.

In the Mandarin, however, an event meaning is more commonly expressed if it is required (Li & Thompson, 1981). More specifically, the $X [_ VP]$, as shown in example (4a), is available to all Mandarin target words; the $X [_ NP_{\text{event-type}}]$, as in (4b), is applicable to some of the items; while $X [_ NP_{\text{entity-type}}]$, as in (4c), does not work in most cases. Since the meaning of X requires its direct object to refer to an event, the event denotation should be present in a sentence, either by a VP or an eventive NP but not an entity-denoting NP. For the sake of simplicity, here, this situation is classified as Situation 1, differing from Situation 2 described in the following. Situation 2 includes five of the Mandarin target lexical items to which the construction $X [_ NP_{\text{entity-type}}]$ is applicable but just to some idiomatical expressions (Song, 2012; 2014). Several examples for Situation 1 and Situation 2 are found in the following.

Situation 1 – *CEC is available to English lexical items but not available to the Mandarin equivalents*

The target words classified into Situation 1 include aspectual verbs *begin* (English) – *kaishi* (Mandarin), *start*² – *kaishi*, *continue* – *jixu*, *finish* – *wan*, a control verb *attempt* – *shitu*, and a factive *regret* – *houhui*.

² English verbs *begin* and *start* have the same Mandarin equivalent *kaishi*.

Considering the English lexical items, they can syntactically permit both a VP complement and an NP complement, and the NP can be either event-type or entity-type, as the three syntactic representations listed in example (3). Since the meaning of the target words requires their complement to be event-denoting, when the complement is a VP or an eventive NP, they can refer to an event in nature and thus coercion operation is not needed. But when the complement is an entity-denoting NP, the English targets are supposed to coerce an event meaning to the NP (Pustejovsky, 1991; 2011; Pustejovsky et al., 2003).

For the Mandarin items, they can subcategorize for a VP or an NP complement, but the NP is defined to event-type not entity-type (Song, 2014; Li & Thompson, 1981). Both the meaning of a VP complement and that of an eventive NP match the semantic selection of the target items, whereas the meaning of an entitive NP does not. Since these Mandarin target words do not have the function of coercion, the required event information has to be present and signaled by a V/VP (= V + NP) in a sentence. Therefore, if there is an entitive NP argument as the complement of the target items, a V is required to add to the NP to form a VP, denoting an action taken by the subject referent; otherwise, the sentence does not make sense. An example is found in (5) below where the target word is italicized and the verb of the complement is in parentheses.

(5) [(3) in Appendix 2]

zai deng huochē de shíhòu tā *jìxù* – zhe
 DUR wait train NOM time 3sg *continue* – DUR

*(du) tā – de xiǎoshuō
 (read) 3sg – GEN novel

‘While he waited for the train, he *continued* (to read) his novel.’

In example (5), the Mandarin expression is unacceptable without the verb *du*, while the English translation is completely acceptable without the verb (*to*) *read*. The meaning of the target item *jìxù* ‘continue’ requires an object complement to refer to an action, which is continued by a subject participant. In example (5) the NP complement *ta-de xiaoshuo* ‘his

novel’ refers to a particular novel which deviates semantically from what the verb *jixu* requires. Therefore, a verb needs to be added to form a VP (e.g., *du ta – de xiaoshuo* ‘(to) read his novel’, or *xie ta – de xiaoshuo* ‘(to) write his novel’) to refer to an action. An event interpretation can be elicited from the referent novel’s telic role (e.g., reading) or agentive role (e.g., writing). In the English translation, the target verb *continue* is supposed to coerce the event interpretation to the entity interpretation of *his novel* to meet semantic selection of the verb *continue*. Thus, the English sentence without the verb *(to) read* is still a perfect expression.

Situation 2 – *CEC is available to English lexical items and infrequently available to the Mandarin equivalents*

The target lexical items, classified into Situation 2 include two control verbs *prefer* (English) – *gengxihuan* (Mandarin), *try* – *shi*, an aspectual verb *complete* – *wancheng*, and two temporal connectives^{3 4} *before* – *qian*, *after* – *hou*.

Similar to the English lexical items, classified in Situation 1, the English target items, classified in Situation 2, have the same syntactic and semantic selections. All of them syntactically permit either a VP complement or an NP complement, and the NP complement can be either eventive or an entitive. When there is an entity-type NP as the direct object of the targets, the NP could be coerced by the targets to ‘produce’ an event interpretation on the basis of telic role and agentive role of the NP referent.

The Mandarin lexical items all syntactically allow a VP complement (Li & Thompson, 1981). In Situation 2, the items *wancheng* ‘complete’, *qian* ‘before’, and *hou* ‘after’ also

³ Two prepositions *before* and *after* have both locative uses (e.g., position, sequence) and temporal uses (e.g., time) (Pustejovsky, 2011). This study only considers the temporal use with which the two lexical items require an event-denoting complement.

⁴ The target lexical items *before* - *qian*, and *after* - *hou* are represented differently in English and in Mandarin. In English, preposition phrases with *before* and *after* can occur both in initial position and in final position of their sentences. The two prepositions act as pre-positions in English, which are represented syntactically as *before/after* [_ NP/VP]. In Mandarin, however, the preposition phrases with *qian* ‘before’ and *hou* ‘after’ usually occur in initial position of their sentences (Li & Thompson, 1981). This two prepositions act as post-positions in Mandarin, which are framed as [NP/VP _] *qian/hou*.

permit an eventive NP (as shown in (6)) or an entitive NP (as shown in (7)), which is different from the items in Situation 1. But there are not a lot of cases with eventive complement, and even less with entitive complement which is more likely to be used in specific cases, e.g., Mandarin idiomatical expressions (Song, 2012; 2014). The target verbs *shi* ‘try’ and *gengxihuan* ‘prefer’ sometimes also permit an entity-denoting NP (as can be seen in example (8)) but not as common as a VP complement. No literature to date documents that *gengxihan* and *shi* can take an eventive NP as a complement argument. Song (2014) supposed that the *shi* ‘try’[_NP] is available when the NP refers to food and clothes; but for *gengxihuan* ‘prefer’[_NP], there is still no clear definition that states in which cases the construction is acceptable.

- (6) a. *wancheng* zhe – ge xiangmu b. *wanfan* ⁵*qian/hou*
complete this – CL project dinner *before/after*
‘(to) *complete* the project’ ‘*before/after* the dinner’
- (7) a. [(23) in Appendix 2] b. [(26) in Appendix 2]
wancheng wo – de lunwen fan *qian/(hou)* xi shou
complete I – GEN thesis food *before/(after)* wash hands
‘(to) *complete* my thesis’ ‘wash your hands *before/(after)* the meal’
- (8) a. [(24) in Appendix 2] b. [(25) in Appendix 2]
shi zhe – jian jiake *gengxihuan* na – shuang baisedede xie
try this – CL jacket *prefer* that – CL white shoe
‘(to) *try* the jacket’ ‘(to) *prefer* the white shoes’

⁵ *wanfan* ‘dinner’ can be either entity-type denoting physical entity food or event-type denoting an event of eating (Li, 2013; Song, 2012).

From the perspective of semantic selection, for these five Mandarin items in Situation 2, when they carry a VP argument or some of them infrequently carry an eventive NP argument, the semantic denotation of these two kinds of arguments match the semantic selection of the target items. Therefore, the relevant sentences are well-formed and acceptable. When there is an entitive NP argument as the direct object of the items, mostly the relevant sentences will be unacceptable because the meaning of the NP does not semantically match the required argument type. In order to correct the unacceptable expressions, a V is required to add to the NP to denote an action taken by a subject referent, as shown in example (5). For those exceptionally acceptable Mandarin cases in which the target words take an entity-denoting NP complement, the coercion seems to be performed by these target items; but still, the cases are not a lot.

In terms of complement event coercion, English and Mandarin Chinese discrepancies are noted in the target lexical items. The Mandarin targets mostly cannot carry an entitive NP complement and coerce an event meaning to the NP, while the English equivalents of the Mandarin targets can. Therefore, while the English coercion sentences, including the English target items, are acceptable expressions, their equivalent Mandarin sentences are unacceptable. The distinction of the Mandarin target items from their English equivalents in the phenomenon of coercion makes it easy to detect experimentally whether L2 English is influencing the L1 of Mandarin Chinese-English bilinguals, by examining whether the bilinguals accept the Mandarin ungrammatical coercion sentences, where the corresponding English translations are grammatical. It was predicted that the bilingual participants would accept those Mandarin sentences.

Chapter 3 Methodology

The aim of the present study is to investigate L2 influence on L1 with consideration of three constraints: length of residence, amount of language exposure, and language proficiency. Two research questions are posed: (1) is there an effect of L2 English on L1 Mandarin in advanced Mandarin Chinese-English adulthood bilinguals in terms of complement event coercion? (2) If the L2 effect exists, is it influenced by the bilinguals' length of residence in the English environment, the amount of English exposure in their total language use per week, and the English proficiency? We hypothesized: (1) there is an effect of L2 English on the L1 Mandarin in the bilingual participants; (2) The L2 effect will be more significant in the bilinguals with longer residence in the English environment, more English use per week, and higher English proficiency.

This chapter provides detailed description about the information of the participants, materials used in the study, research procedures, and methods applied to data analysis.

3.1 Participants

Participants were divided into three groups: an experimental group (EG) of Mandarin Chinese-English adulthood bilinguals and two control groups of Mandarin Chinese monolinguals (Mandarin CG) and English monolinguals (English CG).

There were a total of 29 bilinguals participating in the study. All bilingual participants were currently living in an English-speaking country. They immigrated to the current country after the age of 12, and had lived there for at least five years. All bilinguals had advanced English proficiency, which was determined by their results in an online Cambridge English proficiency test and an English sentence acceptability judgment task designed for this study. Before moving to the current country, most of the bilinguals spoke Mandarin Chinese, and some also spoke their own dialects; but no one spoke Cantonese, which is officially called a dialect but differs from Mandarin Chinese to a large extent. As Kurpaska (2010, p. 121) states, the grammar between Mandarin and other dialects or among dialects are almost the same. Also, to my knowledge, there is no literature reporting differences between Mandarin and dialects in the domain of the complement of lexical items. Therefore, dialects were not

considered as a factor influencing participants' performance in tasks. Apart from Mandarin and English, none of the bilingual participants considered themselves to be competent in using another language, even though some of them reported that they had experience of learning another language in school. Therefore, it was not likely that the bilinguals' other languages had an effect on their native language. All of the bilinguals listed college/university as his/her highest level of education.

A total number of 35 English monolingual controls participated in the study. All of the monolinguals were currently living in their own country, where English is their native language. Some of them had experience living in other countries, but the length of residence was less than two years, which was not likely to have an effect on their native language. All participants reported that they were at a beginning level of using other languages (if they have learned other languages). All participants had college/university as their highest level of education.

34 Mandarin monolingual controls undertook this study. All of the participants were living in the northwest of China, where the dialects spoken had no difference from Mandarin Chinese except for the pronunciation of words. None of the participants had experience living in other countries. They all reported that they had learned English at school but only at beginner level or even lower, and no longer (or rarely) used it now. Therefore, these participants were considered as Mandarin Chinese monolinguals. They all had college/university as their highest level of education.

Biographical information of the English monolinguals, the Mandarin monolinguals, and the Mandarin Chinese-English bilinguals is displayed in Table 3.1, followed by linguistic information of the Mandarin Chinese-English bilinguals in Table 3.2.

Table 3.1: Biographical information about all participants

	Mandarin Chinese- English bilinguals	Mandarin monolinguals	English monolinguals
Number	29	34	35
Gender			
Female	13	18	20
Male	16	16	15
Age at time of testing			
Range	23-48	22-56	19-56
Mean	33	31	32
SD	7.08	9.98	8.91
Highest level of education	College/University	College/University	College/University

Note: Number = number of participants; range = range of ages of participants per group at time of taking part in the study; mean = average age of participants per group; SD = standard deviation which refers to level of variation from the average age of participants.

Table 3.2: Linguistic information about all bilingual participants

	Range	Mean	SD
Age of initial exposure to English	6-24	11	4.04
Age of immigration	12-37	23	5.30
Length of residence	5-27	11	5.71
Amount of language exposure	Before	Now	
English exposure	10%-30%	30%-98%	
Mandarin exposure	70%-90%	2%-70%	
Other language exposure	0%-5%	0%-10%	

Note: If a reported length of residence was approximately 5.5 years, the length was considered as 5 years; Amount of language exposure = percentage of a specific language exposure in the bilinguals' total language use per week; before = the period when the participants were living in China; now = the period when the participants were living in an English-speaking country; Mandarin exposure =

bilinguals' language use of both Mandarin and dialects. Since no literature has reported that there is a difference between Mandarin and Chinese dialects in the complement of a sentence that this study focuses on, Mandarin rather than Chinese dialects was considered as the native language of all bilingual participants.

3.2 Materials

Part 1 – Acceptability Judgment Task (AJT)

Grammaticality or acceptability judgment task (AJT) has been acknowledged as the most widely used method in research on language acquisition, bilingualism and syntactical literature (Altenberg & Vago, 2004; Dąbrowska, 2010; Schmid, 2011; Schütze & Sprouse, 2013). Two acceptability judgment tasks were designed for the present study, one in English (Appendix 1) and the other in Mandarin (Appendix 2). Both tasks are consisted of a total number of 60 sentences (30 grammatical sentences and 30 ungrammatical sentences) in which 33 were fillers, and 27 were non-fillers relevant to the research questions. The English non-fillers were idiomatic English translations of the Mandarin non-fillers. Non-fillers were further divided into three sentence types: coercion sentences, which were target sentences of this study, non-coercion sentences, and coercion exceptions. The coercion sentences and non-coercion sentences were paired, and all elements of each pair were designed as similar as possible. Details about the three sentence types are shown in Table 3.3⁶, with an example of each type. The number in parentheses, following the sentence type, shows how many sentences of that type were included in both tasks. A Likert-scale was employed with a scale ranging from 1 (completely unacceptable) to 6 (completely acceptable) (the midpoint 3.5 was set as the alpha level, which was only used in the analysis and was not given in the actual tasks). The scale was given for each sentence so that the participants could assign each sentence with different degrees of acceptability.

⁶ The English equivalents of the Mandarin coercion exceptions should have been classified into the coercion type rather than the type of coercion exceptions, because these English sentences are common English coercion expressions. However, since it would make it easy to follow and discuss in the rest of the thesis, the English equivalents of the Mandarin coercion exceptions were classified into the coercion exception type in English, as Table 3.3 illustrates.

Table 3.3: Three sentence types in the English AJT and the Mandarin AJT

<p>Coercion sentences (11)</p>	<p>Sentences with coercion structure, acceptable in English but their Mandarin equivalents were ungrammatical according to the description of complement event coercion given in theoretical framework (section 2.2). The bilingual participants were expected to perform similarly to the English monolinguals but differently from the Mandarin monolinguals in this type of sentences.</p> <p>(9) [(6) in Appendix 1] (The target item is in italics.)</p> <p>He <i>regretted</i> the comments immediately.</p> <p>[6] in Appendix 2</p> <p>* ta liji jiu <i>houhui</i>-le naxie pinglun</p> <p>3sg immediately then <i>regret</i>-PFV those comment</p>
<p>Non-coercion sentences (11)</p>	<p>Sentences without coercion structure, acceptable both in English and in Mandarin. It was predicted that the bilinguals performed similarly to both the English monolinguals and the Mandarin monolinguals in this type of sentences.</p> <p>(10) [(17) in Appendix 1] (The verb of the complement is in bold here.)</p> <p>The manager of the company <i>regretted</i> making the mistake.</p> <p>[(17) in Appendix 2]</p> <p>gongsi-de jingli <i>houhui</i> fan-le na-ge cuowu</p> <p>company-ASSOC manager <i>regret</i> make-PFV that-CL mistake</p>
<p>Coercion exceptions (5)</p>	<p>Exceptional sentences with coercion, acceptable both in English and in Mandarin. We predicted that there was no difference between the bilinguals and the two groups of monolinguals in the judgments of this type of sentences.</p> <p>(11) [(23) in Appendix 1]</p> <p>Finally I <i>completed</i> my thesis.</p> <p>[(23) in Appendix 2]</p> <p>wo zhongyu <i>wancheng</i>-le wo-de lunwen</p> <p>I finally <i>complete</i>-PFV I-GEN thesis</p>

Target lexical items used in the two acceptability judgment tasks were equivalents in English and Mandarin. In the English acceptability judgment task, 11 target lexical items (see Table 3.4) were included. Each coercion sentence and its paired non-coercion sentence included one lexical item. There were also five of the 11 items (classified in Situation 2, which was mentioned in section 2.2) used in the five coercion exceptions respectively. In the Mandarin acceptability judgment task, 10 target lexical items (there were two English items having the same Mandarin translation, i.e., *begin/start-kaishi* in Mandarin) (see also Table 3.4) were included. Except for *kaishi* ‘begin/start’, which was used in two coercion sentences and their non-coercion pairs, other target Mandarin lexical items were used in the rest of the coercion type and the non-coercion type, one in each pair. Five of the items (classified in Situation 2) were also included in the five exceptional Mandarin coercion sentences.

Table 3.4: Target lexical items in the English AJT and the Mandarin AJT

Aspectual verbs		Other verbs		Temporal connectives	
English	Mandarin	English	Mandarin	English	Mandarin
begin	kaishi	regret	houhui	before	qian
start	kaishi	prefer	gengxihuan	after	hou
continue	jixu	try	shi		
finish	wan	attempt	shitu		
complete	wancheng				

Note: Situation 1 includes the target lexical items: *begin – kaishi*, *start – kaishi*, *continue – jixu*, *finish – wan*, *regret – houhui*, *attempt – shitu*. Complement event coercion is available to the English lexical items but not available to the Mandarin equivalents.

Situation 2 includes the target lexical items: *complete – wancheng*, *prefer – gengxihuan*, *try – shi*, *before – qian*, *after – hou*. Complement event coercion is available to the English lexical items and infrequently available to the Mandarin equivalents.

The Mandarin AJT and the English AJT were undertaken by the experimental group of Mandarin-English bilinguals, the two control groups of English monolinguals and Mandarin monolinguals: the EG took both tasks, and the two CGs took one task in their language. The main purpose of the present study was to examine whether the bilinguals accepted the Mandarin ungrammatical coercion sentences to which the English equivalents were acceptable. Therefore, it was necessary to know how native English monolinguals and native Mandarin monolinguals judged those sentences. This was achieved by asking the English CG and the Mandarin CG to take the tasks. The bilingual participants' judgments in the two tasks would be compared with the judgments given by the two monolingual groups. In the English acceptability judgment task, it was predicted that the EG would accept all three types of sentences, similar to the English CG. In the Mandarin acceptability judgment task, it was expected that there was no difference between the EG and the Mandarin CG in the judgments on non-coercion sentences and coercion exceptions but that there would be differences on coercion sentences; that is, the Mandarin monolinguals were expected to reject the Mandarin coercion sentences, and the bilinguals were expected to accept the sentences to a greater extent.

In order to make sure the participants were familiarized with the acceptability judgment task, written instructions describing the procedures of the task, were given at the beginning of the task. They also provided two examples: one was a completely unacceptable sentence, and the other was a completely acceptable sentence.

Part 2 –Language use questionnaire and English proficiency test

All participants were invited to complete a background questionnaire about biographical and linguistic information after they completed an acceptability judgment task. The bilinguals were also invited to take a Cambridge English proficiency test.

The English CG and the Mandarin CG did the same questionnaire in their language (Appendix 3 & 4 respectively). Most of the questions were open-ended, including biographical information, such as age, gender, highest level of education, and linguistic information, such as previous experiences with foreign languages, foreign language learning, and current language use.

The EG were asked to complete both a background questionnaire (Appendix 5) and a Cambridge English proficiency test (<http://www.cambridgeenglish.org/test-your-english/adult-learners/>), which were attached after the Mandarin AJT and the English AJT respectively. The questionnaire was almost the same as the one done by the Mandarin CG except that a few more questions, which were only relevant for the bilinguals not the monolinguals, were added. Note that the bilinguals' judgments on the Mandarin target sentences and the English equivalents needed to be compared to see whether there was cross-linguistic influence from L2 English to L1 Mandarin. In order to ensure that the author could match the same bilingual's judgments in the two tasks, one question was designed asking participants to set a nickname, which would be used in the two tasks. The English proficiency test consisted of 25 close-ended questions, asking participants to complete sentences or conversation. After completing the English proficiency test, the participants would get a score to evaluate their English proficiency level (scores for each level shown in Table 3.5). Based on this test, the bilingual participants were divided into advanced English users and proficient English users (see Table 3.6 for details).

Table 3.5: Scores for each proficiency level in Cambridge English proficiency test

Preliminary	Intermediate	Advanced	Proficient
10-15	16-19	20-22	23-25

Note: Scores for each level were adapted from descriptions of the original Cambridge English proficiency test; Maximum score of the English proficiency test is 25.

Table 3.6: Bilinguals' scores in the Cambridge English proficiency test

	Advanced	Proficient
Number	21	8
Range	20-22	23-25
Mean	21	23
SD	0.76	0.70

Note: Advanced = bilinguals with advanced English proficiency; Proficient = bilinguals with proficient English; Number = number of participants per group; Range = range of scores that participants per group received in the English proficiency test; Mean = mean score per group in the English proficiency test; SD = standard deviation, referring to amount of variation from mean score per group.

Requiring all participants to complete a questionnaire and also asking bilinguals to take an English proficiency test served different purposes. Completing a background questionnaire would exclude participants, who were not qualified for the present study. Knowing the qualified bilingual participants' background information about language acquisition and language use assisted in analysis of potential constraints, which affected the participants' different performance on the tasks. Requiring the English proficiency test ensured that the bilinguals were at an advanced level of English proficiency.

3.3 Procedures

The English CG and the Mandarin CG participated in the study once and the EG participated in the study twice. Two English tests and two Mandarin tests were carried out on Surveygizmo: English test 1 included an English AJT and an English questionnaire; English test 2 included the English AJT and a link of starting the English proficiency test; Mandarin test 1 consisted of a Mandarin AJT and a questionnaire designed for Mandarin monolinguals; Mandarin test 2 consisted of the Mandarin AJT and a questionnaire designed for bilinguals. The two CGs took the English test 1 and the Mandarin test 1 respectively. The EG took the Mandarin test 2 first and then the English test 2, but the two tests were administered to the bilinguals with at least three days (mostly half month) between the tests.

The whole experiment was conducted online and the data collection lasted for 1 ½ months. The experimental process was divided into two periods. During the first period, the two CGs' data and the EG's data of the Mandarin test 2 were collected. The second period served to collect the EG's data of the English test 2. On the first day of the first period, links of the English test 1 and the two Mandarin tests, generated by Surveygizmo, were shared on the Facebook page of the author and also shared by friends of the author to their Facebook pages. Instructions for inviting participants to take part in the study were provided above the links respectively, described as follows.

Translation of instruction for Mandarin Chinese-English bilinguals:

'... If you are a native Mandarin speaker, and you have lived in an English speaking country for at least five years, please follow the link and take the survey. The deadline for completing the first survey is Jan 6th, 2016. After you complete the first survey, we sincerely invite you to take the second survey, which will be published on my Facebook page on Jan 7th, 2016...'

In order to increase the possibility that the bilingual participants, who had done the Mandarin test 2, could also participate in the English test 2, the exact date of publishing the English test was also mentioned at the end of the Mandarin test. Hence, if participants completed the Mandarin test, they would notice the date, which would remind of them again of the date of the English test.

Instruction for native English monolinguals:

'... If you are a native English speaker and you cannot fluently speak another language, please follow the link and take the survey. The deadline of completing the survey was Jan 6th, 2016...'

Instruction for native Mandarin monolinguals was translated to Mandarin from the English instruction above.

On the first day of the second period, a link to the English test 2 for the bilingual group was shared on the author's Facebook page a half month after the Mandarin test 2 was shared. This link was subsequently shared by the author's friends. The instruction was as follows:

‘... If you have participated in the first survey, we sincerely invite you to participate in this second one. Your complete answers in both surveys are significantly important for our research... If you did not take the first survey but now you are planning to participate in the study, please complete the first survey, and then do the second one at least three days after you do the first...’

In total, 33 Mandarin Chinese-English bilinguals, 35 Mandarin monolinguals, and 35 English monolinguals participated in the study. At the end of the testing experiment, all collected data was entered into Excel for an overview and further analysis and discussion. Valid data for each group were included, based on different criteria.

For the two monolingual groups, the criteria were as follows:

(1) Participants were native speakers of English or Mandarin Chinese, and they were currently living in their own country at the time of taking part in the study;

(2) Participants could not speak other languages apart from their native language, or they were at the beginning level of using other languages (one native Mandarin speaker was excluded).

For the Mandarin Chinese-English bilingual group, the criteria were as follows:

(1) Participants were currently living in an English-speaking country and had lived there for at least five years;

(2) Participants participated in both the Mandarin test 2 and the English test 2;

(3) Participants received a score of at least 20 in the English proficiency test (3 participants were excluded);

(4) Participants assigned the English target sentences a mean acceptability score not two points less than the mean acceptability score, given by rest of all 30 bilingual participants.

The criteria for bilinguals were used for two purposes: firstly, to ensure that all selected participants were advanced English speakers and had acquired the linguistic phenomenon of coercion in English; also, to ensure that the participants took both the Mandarin test and the English test and thus their data in the two tests could be compared later.

Data of 29 bilinguals, 34 Mandarin monolinguals, and 35 English monolinguals were included for this study. Based on the criteria for selecting for qualified participants, four out of the 33 bilinguals were excluded: three got a score of below 20 in the English proficiency test, and one got a score of 23 in the proficiency test but her mean acceptability score for the

English target sentences was two points lower than the overall mean score given by the rest of 30 bilinguals. One out of the 35 Mandarin monolinguals was excluded because he reported that his English was at intermediate level and he was still taking English courses now as a master's candidate. All English monolingual participants met the requirement of English monolinguals; therefore, all data from this group of participants were valid.

3.4 Data analysis

All valid data was transferred to Statistical Product and Service Solutions (19.0) (SPSS), which is a software used for data analysis. Basically, mean acceptability scores were calculated to compare overall judgments by different groups. *p*-value was obtained through a non-parametric Mann-Whitney U test or a non-parametric Kruskal-Wallis H test to examine whether or not there were statistically significant differences between groups. According to Nachar (2008), the Mann-Whitney U test is more trustworthy for the sample with small size and non-normal distribution. Since the sample size in the study was relatively small and the samples were not always normally distributed, the Mann-Whitney U test rather than other tests (e.g., ANOVA) was used in data analysis when there were two independent variables involved. The Kruskal-Wallis H test, an extension of the Mann-Whitney test (Breslow, 1970), was used when there were three independent variables involved. The results are described in the next chapter, which is followed by a chapter providing a detailed discussion.

Chapter 4 Results

This chapter presents results of the present study. The first two sections focus on overall results of the EG and the English CG, and the EG and the Mandarin CG in the judgments of target sentences (that is, coercion sentences) and two other types of sentences relevant to the research questions (that is, non-coercion sentences and coercion exceptions) in the English AJT and the Mandarin AJT respectively. The following section makes a comparison of the three groups' judgments together. In the fourth section, mean judgments of the EG and the Mandarin CG in the Mandarin individual sentences within the three types are presented. The next section shows judgments of subgroups of the bilinguals classified with respect to length of residence, amount of English exposure of the total language use per week, and English proficiency. The chapter ends with a summary of the results.

Basically, results are shown by mean acceptability score and *p*-value. The mean score was presented at two decimal places, calculated in Excel. The *p*-value or *asymptotic significance* (two-tailed)⁷ (*asympt. Sig.*, in short) (the $\alpha < 0.05$) was obtained through a non-parametric Mann-Whitney U test or a non-parametric Kruskal-Wallis H test.

4.1 Judgments of the English CG and the EG in the English AJT

Table 4.1 presents results of the English CG and the EG in the judgments of English target coercion sentences and the other two relevant types of sentences. This table shows that the English CG judged the coercion sentences, the non-coercion sentences, and the coercion exceptions as almost equally acceptable, with mean acceptability scores of 5.21, 5.29 and 5.42 respectively, which were notably higher than the alpha 3.5 and close to the maximum score of 6. The data indicated that the English monolinguals almost completely accepted these English sentences. The standard deviations showed that there was a higher level of variance among the judgments of the English CG on the coercion sentences (SD 0.50) and the paired non-coercion sentences (SD 0.48), compared to that on the coercion exceptions (SD 0.35). Through a Kruskal-Wallis H test, there was no statistically significant difference ($H = 2.733$, $df = 2$, $p = 0.255$) between the sentence types in the judgments of the English CG (Appendix 6).

⁷ All significant tests were two-tailed unless one-tailed significance was stated.

Table 4.1 also shows results of the EG in the judgments of English sentences of the three types. The mean acceptability ratings given to the coercion sentences, the non-coercion sentences, and the coercion exceptions were 4.79, 5.08, and 5.34 respectively. All mean scores were higher than the alpha 3.5, which indicated that the EG generally accepted all these sentences, notably the coercion sentences whose Mandarin equivalents were considered to be ungrammatical referring to the syntactic literature. The calculated standard deviations showed that there was a higher level of variance among the mean ratings to the non-coercion sentences (SD 0.54), compared to that to the coercion sentences (SD 0.47) and to the coercion exceptions (SD 0.43). Based on *p*-value (Appendix 7) through Kruskal-Wallis H tests, statistically significant differences between the sentence types ($H = 12.763$, $df = 2$, $p = 0.002$) in the judgments of the EG were noted but only between the target sentences and the coercion exceptions ($p < 0.001$). The contrast between the target sentences and the paired non-coercion ones did not reach significance ($p = 0.062$).

In comparing the results of the English CG to the results of the EG presented above, in general, both groups accepted all English sentences in the three types. The mean acceptance ratings of the English CG were higher than the mean ratings of the EG, overall. According to *p*-value (Appendix 8) obtained through Mann-Whitney U tests, the English CG assigned significantly higher mean judgments on the target coercion sentences than the EG ($U = 741.000$, $Z = 3.154$, $p = 0.002$), while the differences between the two groups in the judgments of the non-coercion pairs ($U = 636.500$, $Z = 1.744$, $p = 0.081$) and the coercion exceptions ($U = 568.500$, $Z = 0.834$, $p = 0.404$) did not reach significance. The overall results were consistent with expectation.

Table 4.1: Mean acceptability scores of the English CG and the EG in the English AJT

English sentence type	Group	Number	Mean	SD
Coercion sentences	English CG	35	5.21	0.50
	EG	29	4.79	0.47
Non-coercion sentences	English CG	35	5.29	0.48
	EG	29	5.08	0.54
Coercion exceptions	English CG	35	5.42	0.35
	EG	29	5.34	0.43

Note: English CG = a group of English monolingual participants; EG = a group of Mandarin Chinese-English bilingual participants; Number = number of participants per group; mean = mean acceptability score per group; SD = standard deviation, referring to amount of variation from mean scores; Coercion sentences = acceptable English coercion sentences whose Mandarin equivalents were unacceptable; Non-coercion sentences = acceptable English non-coercion sentences whose Mandarin equivalents were acceptable; Coercion exceptions = acceptable English coercion sentences whose Mandarin equivalents were acceptable for native Mandarin monolinguals.

4.2 Judgments of the Mandarin CG and the EG in the Mandarin AJT

Recall that in the Mandarin AJT, all target coercion sentences were unacceptable according to the description of complement event coercion in the literature of lexical semantics.

Table 4.2 illustrates mean judgments of the Mandarin CG and the EG on the Mandarin coercion targets, the coercion-paired non-coercion items, and the coercion exceptions. As is shown in this table, the Mandarin CG rated the non-coercion sentences and the coercion exceptions as almost completely acceptable, with mean acceptability scores of 5.51 and 5.83 respectively. Compared to the acceptance ratings given to these two types of sentences, the CG assigned the target ones a notably lower acceptance rating of 2.55, which was below the alpha 3.5. The data indicated that the Mandarin CG did not accept the sentences with the coercion type. The variances, among the Mandarin CG's judgments on the sentences of the coercion type, the non-coercion type, and the exception type, were at a similarly low level, with SDs of 0.38, 0.28, and 0.22 respectively. Through Kruskal-Wallis tests, there were

statistically significant overall differences ($H = 78.153$, $df = 2$, $p < 0.001$) between the three sentence types, especially between the target coercion type and the non-coercion type ($p < 0.001$) (Appendix 9) in the judgments of the Mandarin CG.

Table 4.2 also illustrates mean judgments of the EG on the three types of Mandarin sentences. The EG assigned higher ratings to the non-coercion items and the coercion exceptions, with mean rates of 5.45 and 5.77 respectively, than the coercion targets, with a mean rate of 4.35 which, however, was still well above 3.5. The results indicated that the EG generally accepted all three sentence types, notably the ungrammatical coercion type but with a slight preference to the non-coercion type. The standard deviations depicted that dispersions were at a relatively higher level among the judgments of EG on the sentences of the coercion type (SD 0.46) than on the sentences of the non-coercion type (SD 0.34) and the coercion exceptions (SD 0.31). Using Kruskal-Wallis tests, statistically significant differences ($H = 58.790$, $df = 2$, $p < 0.001$) between the sentence types were noted, particularly between the coercion sentences and the non-coercion pairs ($p < 0.001$) (Appendix 10).

Table 4.2: Mean acceptability scores of the Mandarin CG and the EG in the Mandarin AJT

Mandarin sentence type	Group	Number	Mean	SD
Coercion sentences	Mandarin CG	34	2.55	0.38
	EG	29	4.35	0.46
Non-coercion sentences	Mandarin CG	34	5.51	0.28
	EG	29	5.45	0.34
Coercion exceptions	Mandarin CG	34	5.83	0.22
	EG	29	5.77	0.31

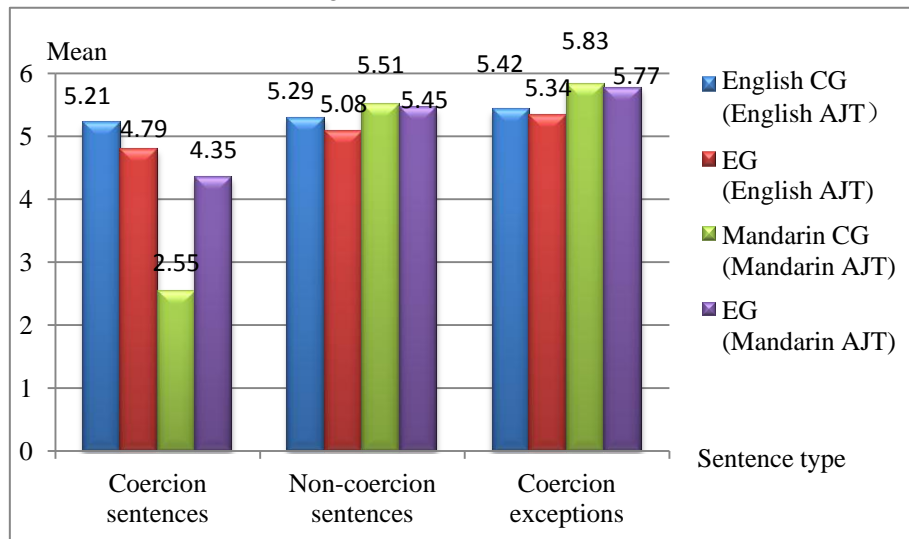
Note: Mandarin CG = a group of Mandarin monolinguals; EG = a group of Mandarin Chinese-English bilingual participants; Number = number of participants per group; mean = mean acceptability score per group; SD = standard deviation, which refers to level of dispersion from mean score; Coercion sentences = Mandarin unacceptable coercion sentences, where the English equivalents were acceptable; non-coercion sentences = Mandarin acceptable non-coercion sentences, where the English equivalents were acceptable; coercion exceptions = exceptional Mandarin acceptable coercion sentences, where the English equivalents were also acceptable.

Assessing the results of the Mandarin CG to the results of the EG displayed above, the two groups of participants performed similarly in the non-coercion items and the coercion exceptions; whereas, their judgments on the coercion targets yielded a remarkable difference. That is to say, while the Mandarin CG generally rejected the target items, the EG tended to accept them. According to *p*-value (Appendix 11) through Mann-Whitney tests, the judgments of Mandarin CG on the target coercion items were significantly lower than the judgments of EG ($U = 2.000$, $Z = -6.780$, $p < 0.001$), but the mean ratings between the two groups to the non-coercion items ($U = 523.000$, $Z = 0.416$, $p = 0.677$) and the coercion exceptions ($U = 518.500$, $Z = 0.379$, $p = 0.705$) did not have a large difference. Overall, the results were consistent with expectation.

4.3 Comparison of judgments in the English AJT and the Mandarin AJT

Since all three types of sentences in the English AJT and the Mandarin AJT correspond with each other, it is worthwhile to compare overall judgments of the EG and the two CGs in the two tasks together. As is displayed in Figure 4.1, the three groups of participants rated the non-coercion sentences and the coercion exceptions as equally acceptable in the two tasks, all with mean acceptance ratings above 5. This means that all participants almost completely accepted these two types of sentences in the tasks overall. The most notable differences between the three groups were acceptance ratings assigned to the target coercion items. In terms of the English coercion targets, both the English CG and the EG generally accepted these items, even though the degree of acceptability was distinct. However, this distinction of judgments between the English CG and the EG was not as obvious as the distinction between the Mandarin CG and the EG in responses to the Mandarin coercion targets. The Mandarin CG rejected this sentence type overall, the EG, however, accepted it. Also, it was surprising that the EG showed an equal degree of acceptability to the English coercion targets and the Mandarin correspondences, although the former received a slightly higher mean score than the latter.

Figure 4.1: Mean acceptability scores of the EG, the English CG, and the Mandarin CG in the English AJT and the Mandarin AJT



Note: English CG (English AJT) = judgments of the English monolinguals in the English acceptability judgment task; EG (English AJT) = judgments of the Mandarin Chinese-English bilinguals in the English acceptability judgment task; Mandarin CG (Mandarin AJT) = judgments of the Mandarin monolinguals in the Mandarin acceptability judgment task; EG (Mandarin AJT) = judgments of the Mandarin Chinese-English bilinguals in the Mandarin acceptability judgment task; Mean = mean acceptability score per group.

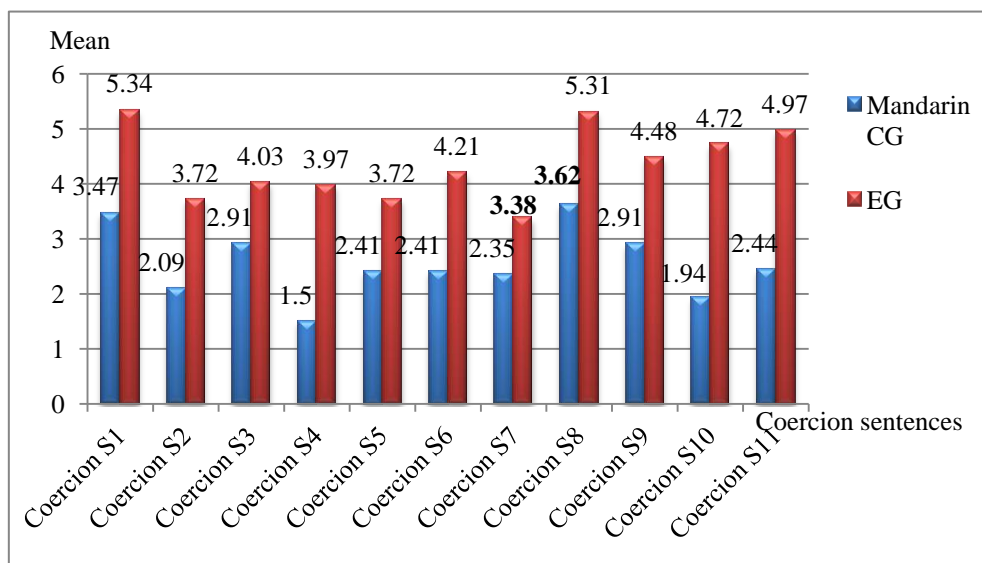
4.4 Comparison of judgments of the EG and the Mandarin CG on individual sentences

This section focuses on judgments of the EG and the Mandarin CG on Mandarin individual sentences of the three sentence types.

Judgments on Mandarin unacceptable coercion sentences

Figure 4.2 displays the judgments of the EG and the Mandarin CG on 11 Mandarin coercion sentences. The figure shows the EG assigned notably higher acceptance ratings on all coercion targets than the Mandarin CG did. Rated by the EG, all targets received mean acceptance ratings above 3.5 except for sentence 7 (shown as (12) in the following), which was given a mean acceptability score of 3.38. Rated by the Mandarin CG, all targets received mean acceptability scores below 3.5 except for sentence 8 (shown as (13) in the following), which was rated a 3.62 on the scale.

Figure 4.2: Mean acceptability scores of the EG and the Mandarin CG on the Mandarin coercion sentences



Note: Mandarin CG = Mandarin monolingual participants; EG = Mandarin Chinese-English bilingual participants; Mean = mean acceptability score per group; Coercion S = Mandarin unacceptable coercion sentence; 1-11 = numbers of the sentences in Appendix 2.

(12) [(7) in Appendix 2]

* na – ge fuwusheng wancheng – le na – ge funv
 that – CL waiter complete – PFV that – CL woman

dian de suoyou kaiweicai
 order NOM all appetizer

‘The waiter *completed* the appetizers that the woman had ordered.’

(13) [(8) in Appendix 2]

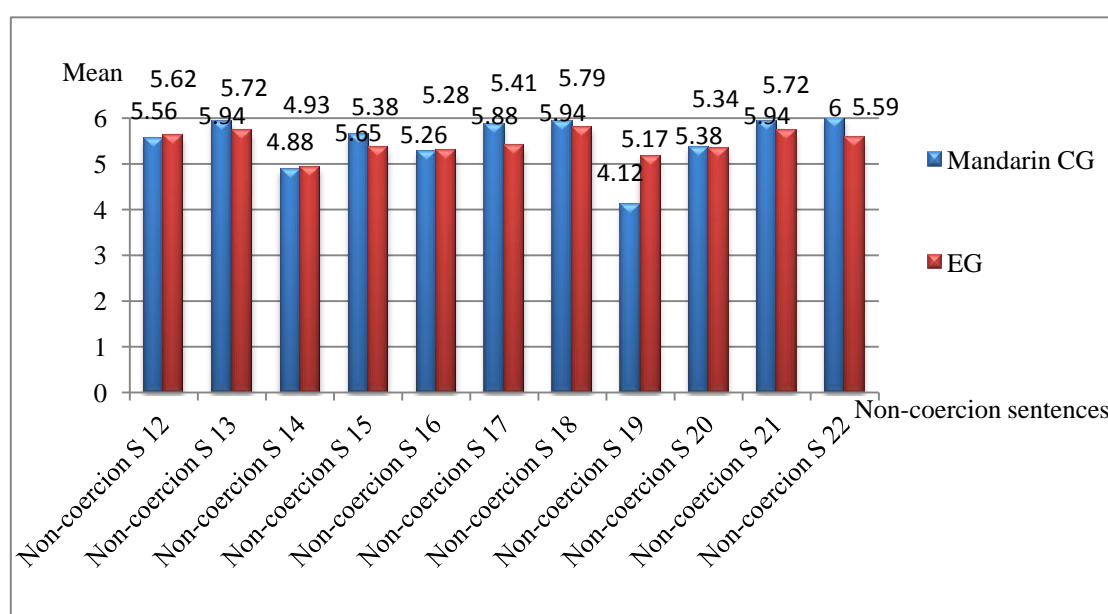
* yuehan shi – le na – liang zixingche
 John try – PFV that – CL bike

‘John tried the bike.’

Judgments on Mandarin acceptable non-coercion sentences

Figure 4.3 displays the judgments of the EG and the Mandarin CG on 11 Mandarin non-coercion sentences. As is illustrated in the figure, the EG and the Mandarin CG assigned all non-coercion items equally high acceptance ratings of around 5 which were well above 3.5. The results indicated that the two groups of participants accepted all 11 sentences of the type on average.

Figure 4.3: Mean acceptability scores of the EG and the Mandarin CG on the Mandarin non-coercion sentences

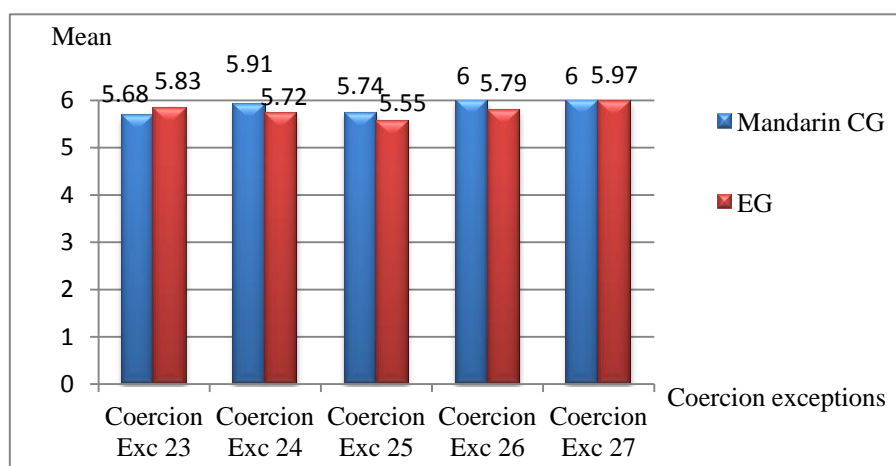


Note: Mandarin CG = Mandarin monolingual participants; EG = Mandarin Chinese-English bilingual participants; Mean = mean acceptability score per group; Non-coercion S = Mandarin acceptable non-coercion sentence; 12-22 = numbers of the sentences in Appendix 2.

Judgments on Mandarin acceptable coercion exceptions

Figure 4.4 displays the judgments of the Mandarin CG and the EG on five Mandarin coercion exceptions. It is obvious from the figure that the five items received mean acceptability scores of almost or already 6 on the scale. The ratings indicated that all five coercion exceptions were highly and equally acceptable to the participants in both groups.

Figure 4.4: Mean acceptability scores of the EG and the Mandarin CG on the Mandarin coercion exceptions



Note: Mandarin CG = Mandarin monolingual participants; EG = Mandarin Chinese-English bilingual participants; Mean = mean acceptability score per group; Coercion Exc = exceptional Mandarin acceptable coercion expressions; 23-27 = numbers of the sentences in Appendix 2.

Summarizing this section, in the judgments of the non-coercion sentences and the coercion exceptions, there was no considerable difference between the EG and the Mandarin CG: both groups accepted the non-coercion type and the coercion exceptions; however, in the judgments of the target coercion sentences, there was a large difference between the groups: while the Mandarin CG rejected most cases of the coercion type, the EG tended to accept most cases within the type.

4.5 Judgments of subgroups of the bilinguals in the Mandarin AJT

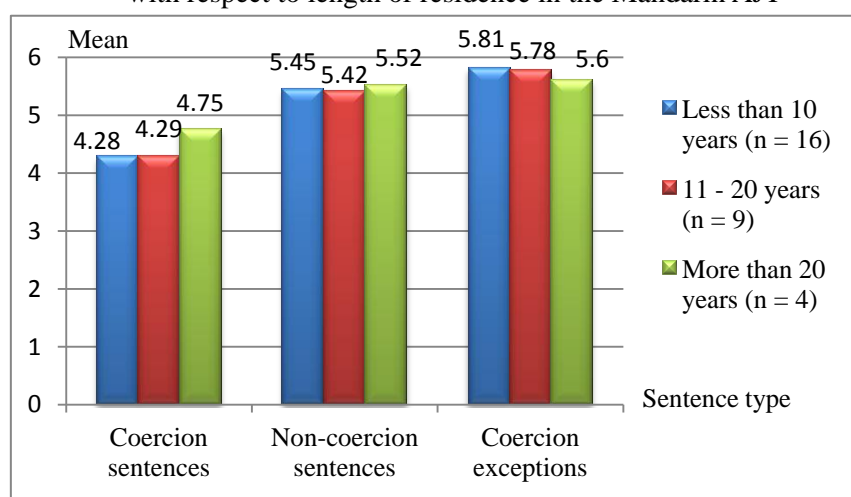
From the perspective of subgroups, this section shows the bilingual participants' responses to the Mandarin coercion targets and to the other two types of items, i.e., the coercion-paired non-coercion items and the coercion exceptions. The subgroups were divided on the basis of variable aspects of length of residence, amount of English exposure per week on average, and English proficiency respectively. The relevant information was obtained from the completed bilingual participants' questionnaires.

Results of subgroups of the bilinguals with respect to length of residence

In terms of the length of residence, the bilingual participants in the study were divided into three subgroups: a group of bilinguals who had lived in an English-speaking country for less than 10 years, a group with 11 to 20 years' residence, and a group with more than 20 years' residence.

Figure 4.5 illustrates the results of subgroups of bilinguals in the judgments of the three types of Mandarin sentences. The groups demonstrated the same pattern of response, that is, there was an effect of sentence type: the non-coercion items and the coercion exceptions were assigned equally higher acceptance ratings than the coercion items, overall. While there were no large differences among the groups in the mean judgments on the non-coercion items (mean 5.45, 5.42, and 5.52) and the coercion exceptions (mean 5.81, 5.78, and 5.6), there were some differences on the coercion items (mean 4.28, 4.29, and 4.75). However, when a Kruskal-Wallis test was run to contrast the differences between the groups' judgments on the coercion items, no significance ($H = 4.047$, $df = 2$, p (one-tailed) = 0.066) was found (Appendix 12), although the p -value was close to the alpha $p < 0.05$ level.

Figure 4.5: Mean acceptability scores of subgroups of the bilinguals with respect to length of residence in the Mandarin AJT



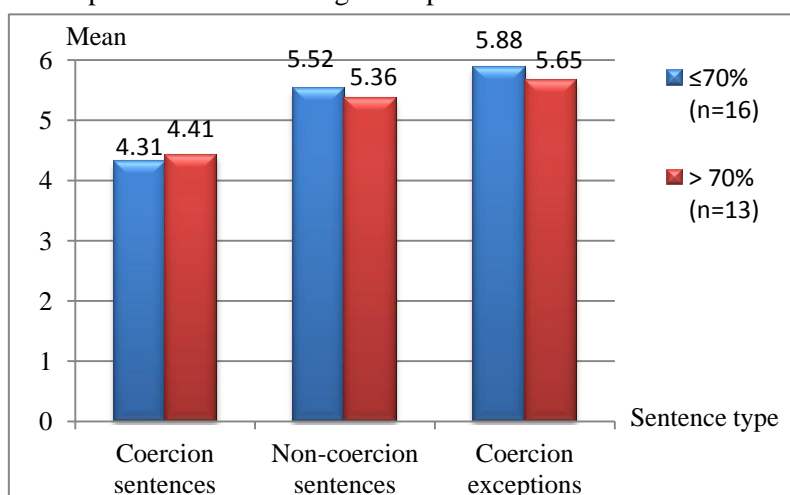
Note: Less than 10 years = a group of bilinguals with less than 10 years' residence in an English-speaking country; 11-20 years = a group of bilinguals with 10 to 20 years' residence in an English-speaking country; More than 20 years = a group of bilinguals with more than 20 years' residence in an English-speaking country; Mean = mean acceptability score per group.

Results of subgroups of the bilinguals with respect to amount of English exposure

In terms of the amount of English exposure per week, the participants in the study were classified into two subgroups: a group of participants who reported that less than 70% (including 70%) of their language use each week on average was English, and a group of participants who reported that more than 70% of their language use each week on average was English.

Figure 4.6 illustrates the results of bilingual subgroups in the Mandarin AJT. In terms of sentence type, the two groups of participants assigned the non-coercion type and the coercion exception type relatively higher mean scores than the coercion type. In terms of group, there were different ratings to each type of sentences: Compared with the group with more English exposure, the group with less English exposure assigned higher ratings to the non-coercion sentences (mean 5.52 and 5.36) and the coercion exceptions (mean 5.88 and 5.65) but a lower rating to the coercion sentences (mean 4.31 and 4.41). When a Mann-Whitney test was run to look at the significance of the difference between the groups in the judgments of the target coercion items, the contrast turned out nonsignificant ($U = 118.500$, $Z = 0.639$, p (one-tailed) = 0.2615) (Appendix 13).

Figure 4.6: Mean acceptability scores of subgroups of the bilinguals with respect to amount of English exposure in the Mandarin AJT



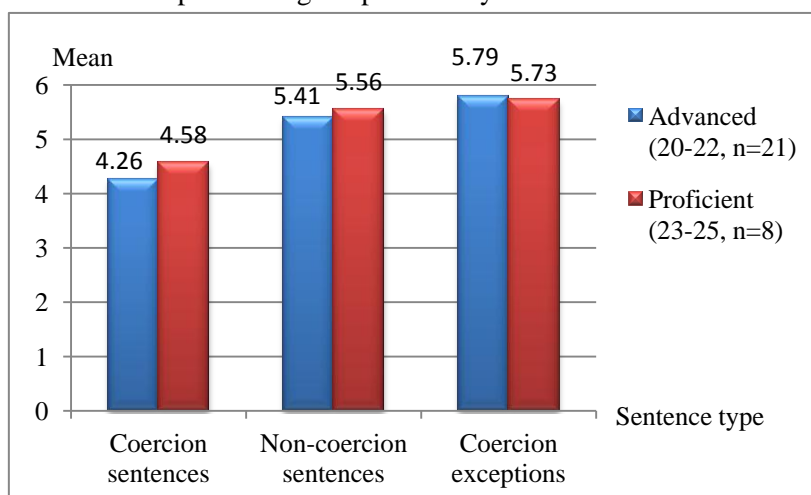
Note: ≤70% = a group of bilinguals in the study who reported that English was exposed less than 70% in their total language use per week; > 70% = a group of bilinguals in the study who reported that English was exposed more than 70% in their total language use per week; n = number of participants per group; Mean = mean acceptability score per group.

Results of subgroups of the bilinguals with respect to English proficiency

In terms of the English proficiency, the bilinguals in the present study were categorized into two subgroups: an advanced group, in which bilinguals got scores between 20 to 22 in the Cambridge English proficiency test, and a proficient group, in which bilinguals got scores between 23 to 25 (maximum=25) in the proficiency test.

Figure 4.7 depicts the mean ratings of subgroups of bilinguals to the items within the three sentence types. As shown in this figure, both the advanced group and the proficient group rated the three types of sentences alike, with higher acceptability ratings to the non-coercion items and the coercion exceptions than the coercion targets. While there were no large differences between the advanced group and the proficient group in the acceptance ratings to the non-coercion type (mean 5.41 and 5.56) and the coercion exception type (mean 5.79 and 5.73), there was a considerable difference between the groups in the mean judgments on the target coercion items (mean 4.26 and 4.58). The contrast, using a Mann-Whitney test, reached significance ($U = 120.500$, $Z = 1.791$, p (one-tailed) = 0.0365) in the case (Appendix 14).

Figure 4.7: Mean acceptability scores of subgroups of the bilinguals with respect to English proficiency in the Mandarin AJT



Note: Advanced = a group of bilingual participants with advanced English proficiency; Proficient = a group of bilingual participants with proficient English proficiency; 20-22 = scores that the advanced English proficiency level requires; 23-25 = scores that the proficient English proficiency level requires; n = number of participants per group; Mean = mean acceptability score per group.

Summarizing this section, in terms of the mean acceptability scores, while the subgroups, classified with the three aspects mentioned above, assigned equal acceptance ratings to the non-coercion items and the coercion exceptions respectively, they assigned relatively different ratings to the Mandarin unacceptable coercion targets. When Mann-Whitney tests or Kruskal-Wallis tests were run to test the significance of the differences between the subgroups in the judgments on the targets, no significant difference was found between the subgroups with respect to length of residence and amount of language exposure, but there was a significant difference between the subgroups with respect to English proficiency. While the results did not conform to our prediction that the bilinguals' overall judgments in the Mandarin target sentences would be affected by the variable aspects of length of residence and amount of English exposure, the results conformed to our prediction that the participants' judgments would be affected by their English proficiency.

4.6 Summary of results

In general, the three groups of participants rated the sentences within expectations, where the Mandarin Chinese-English bilinguals accepted both the English acceptable coercion sentences and the Mandarin unacceptable coercion equivalents. In the English acceptability judgment task, both the English monolinguals and the bilinguals accepted all three types of sentences, but the former showed a higher degree of acceptability to the English coercion sentences than the latter. In the Mandarin acceptability judgment task, both the Mandarin monolinguals and the bilinguals assigned equally high acceptance ratings to the non-coercion sentences and the coercion exceptions overall; however, to the target coercion sentences, the two groups showed a different pattern of responses: the Mandarin monolinguals generally rejected the unacceptable coercion items, but the bilinguals tended to accept them.

When the three variable aspects were considered, all subgroups in each aspect showed the same pattern of response between the sentence types: they all assigned higher mean acceptance ratings to the Mandarin sentences with the non-coercion structure and the coercion exceptions than the sentences with the coercion structure. Considering the subgroups' judgments on the coercion targets, no significant difference was found between the subgroups, regarding the length of residence and the amount of English exposure respectively, although

there might be a potential trend in their judgments; however, a significant difference was noted between the subgroups, concerning the English proficiency: the group with proficient English assigned notably higher mean ratings to the targets than the group with advanced English.

Chapter 5 Discussion

This Chapter is divided into seven sections. The first two sections focus on the results of the Mandarin Chinese-English bilinguals, the English monolinguals, and the Mandarin monolinguals in the English AJT and the Mandarin AJT respectively, which is followed by a comparative discussion about the three groups' results altogether in the third section. The fourth section considers the bilinguals' and the Mandarin monolinguals' results in individual Mandarin sentences within the three sentence types (i.e., target coercion sentences, coercion-paired non-coercion sentences, and coercion exceptions), which is then followed by a discussion of the results of the bilingual subgroups on the target coercion sentences. The last section but one is a short evaluation of the acceptability judgment task as a method in the study. The Chapter ends with a summary of discussions.

5.1 Overall pattern of judgments in the English AJT

Results of the Mandarin Chinese-English bilinguals in the English AJT, compared with results of the native English monolinguals, have shown that the bilingual participants have similar English grammars to the native English speakers, at least in coercion relevant parts. Similar to the English monolinguals, the bilingual participants generally accepted all three types of English sentences, especially the target coercion ones whose Mandarin equivalents are unacceptable according to the syntactic literature (see section 2.2). However, even though the bilinguals accepted the English coercion targets, they still showed a distinct degree of acceptability compared with the English monolinguals ($p = 0.002$).

The results conform to the main criterion of selecting the participants for this study, that is, the bilinguals are advanced English speakers. As Cook (1996) proposes, acceptability judgment task is one piece of possible evidence to decide whether L2 learners' knowledge of L2 is equivalent to the knowledge of the L2 native speakers. This can be achieved by comparing L2 learners' acceptability judgments with native speakers' judgments. Similar viewpoints are also documented in other relevant studies (e.g., Cook, 1992, 1997; Seliger & Vago, 1991). In this study, the bilingual participants demonstrate the same pattern of response to the English sentences as the English monolinguals; therefore, it is supposed that the

bilinguals' grammars are equivalent or similar to the grammars of the native English speakers. Hence, the bilinguals can be considered, to a large degree, as advanced English users.

The result of the distinct acceptability degree to the English target coercion items given by the bilinguals and the English monolinguals, to some extent, conforms to what Contrastive Analysis Hypothesis (CAH) claims. The hypothesis was mentioned in the theoretical framework of this paper (see section 2.1.1). The CAH states that similar elements between an L1 and an L2 are easier and faster for L2 learners to acquire than different elements. Recall the literature of lexical semantics put forward by Pustejovsky (1991; 1993) (see also section 2.2), event information that the English lexical items carry can be coerced to an explicit entity-type nominal. In Mandarin, however, it is more common that event information is expressed in a sentence rather than incorporated into a nominal word (Lin & Liu, 2005; Song, 2014). Based on the difference between English and Mandarin, it might be the case that a Mandarin learner of English acquires English non-coercion structure easier and faster than coercion structure. For the advanced English speakers in this study, even though they accept the coercion sentences, the degree of acceptability to these sentences is not equivalent to the degree depicted by the native English speakers. The grammatical intuition of the advanced bilinguals is still not the same as that of the native speakers, as the interlanguage theory and the multi-competence theory refer (see section 2.1.2).

5.2 Overall pattern of judgments in the Mandarin AJT

Results of the Mandarin-English bilinguals in the Mandarin AJT, compared with results of the Mandarin monolinguals, have demonstrated that the bilinguals differ from the monolinguals in the coercion relevant parts of the L1 grammar. Comparing the two groups' judgments in the three types of Mandarin sentences, there was no notable difference between the two groups' ratings to the non-coercion sentences (mean 5.45 and 5.51, $p = 0.677$) and the coercion exceptions (mean 5.77 and 5.83, $p = 0.705$), but there was a significant difference between the two groups' ratings to the target coercion items (mean 4.35 and 2.55, $p < 0.001$). In other words, while the monolinguals tended to reject the coercion items, the bilinguals tended to accept them.

The results conform to what Cook (1992; 1996; 2002) argues about L1 knowledge of L2 speakers. Cook states that learning an L2 probably affects a learner's L1 grammar, so that L2 learner's L1 grammar deviates from that of the monolinguals (see also section 2.1.2). As is discussed in the theoretical framework (see also section 2.2), the Mandarin coercion sentences, in theory, should receive very low acceptance ratings, just as the ratings given by the Mandarin monolinguals. However, the bilinguals assigned these sentences a higher mean acceptance rating, which indicates that the bilinguals differ from the Mandarin monolinguals in the relevant parts of the grammar, in which the coercion does not function in those Mandarin target lexical items. The result is also consistent with what many scholars propose about L2 users' L1 competence (e.g., Major, 1992; Waas, 1996); that is, a bilingual's L1 competence might change in adulthood. This change probably results in bilinguals' different grammaticality and acceptability judgments from monolinguals' judgments on the L1 abnormal expressions (Cook, 1992; Seliger & Vago, 1991). In this study, the bilinguals' judgment to the Mandarin target sentences is deviant from the judgment given by the Mandarin monolinguals, which indicates that the bilinguals' competence in Mandarin has some degree of change.

5.3 Comparison of judgments in the English AJT and the Mandarin AJT

After comparing the bilinguals' judgments with the judgments of the two monolingual groups on the three types of sentences in both the English AJT and the Mandarin AJT, it is reasonable to presume that the bilinguals' L1 Mandarin is quite possibly influenced by their L2 English. As shown in Figure 4.1 (see section 4.3), the bilinguals assigned high mean acceptance ratings not only to the English coercion sentences, which were acceptable to the native English monolinguals, but also to the Mandarin equivalents, which were generally unacceptable to the native Mandarin monolinguals. Moreover, the bilinguals assigned the target sentences, both in English and in Mandarin, very similar acceptance ratings (mean 4.79 and 4.35), although the former received a slightly higher mean score than the latter did.

The results suggest that the bilinguals' L2 grammar has some impacts on their judgments in L1 Mandarin; moreover, there seems to be a direct transfer from English to Mandarin in the bilinguals' judgments. From the point of view of Cook et al. (2003), a general effect of

learning an L2 on learners' concept of language is that they are more aware of some parts of the L2 grammar, which they have not encountered in their L1 grammar. As a result of this effect, they are susceptible to new grammars because the acquisition of an L2 at some level has opened their eyes to other linguistic knowledge. In a sense, the Mandarin-English bilinguals in this study might also be susceptible to the coercion sentence structure, due to the acquisition of the L2 English, in which the coercion structure is common for the target lexical items. This probably leads to their similar judgments on the Mandarin ungrammatical coercion sentences to the judgments on the corresponding English coercion ones. The similar results are also reported by Pavlenko and Jarvis (2002) in their Russian-English bilingual participants in the aspect of lexical borrowing and case marking.

Montrul (2005), in her work, cited Seliger's (1996) notion of L1 attrition and then in a more strict sense, defines the L1 attrition as the loss of some aspects of a previously acquired L1. Montrul presumes that the L1 attrition occurs more likely to adult L2 learners, who have immigrated to the L2 environment for several years and are still living there at the moment. The L1 attrition is reflected in bilinguals' grammaticality judgments which are different from monolinguals' judgments (Major, 1992; Montrul, 2005; Schmid, 2011; Seliger & Vago, 1991). The Mandarin-English bilinguals in the present study have lived in an English-speaking country for at least five years. In the Mandarin AJT, they displayed a significantly different judgment on the Mandarin ungrammatical coercion sentences from the Mandarin monolinguals. The difference, if referring to Seliger's (1996) and Montrul's (2005) viewpoints, can be attributed to the emergence of L1 attrition at some level. However, it is actually hard to tell whether the L1 attrition has occurred to the bilingual participants. This is because the bilinguals assigned equal acceptability ratings to the Mandarin coercion-paired non-coercion sentences (and the coercion exceptions), which are grammatical expressions in Mandarin, as the monolingual participants did. This indicates that the bilinguals, to a large extent, have not lost Mandarin grammars relevant to the non-coercion construction. Moreover, the English equivalents of the Mandarin non-coercion sentences are also fully acceptable. Therefore, there is no reason why the non-coercion relevant parts of the bilinguals' L1 Mandarin grammar should change.

Instead of saying that the Mandarin-English bilinguals' L1 grammar has been 'attrited', it might be more plausible to say that their L1 grammar has been augmented. The bilinguals in the study not only accepted the Mandarin grammatical non-coercion sentences, but they also highly accepted the ungrammatical coercion sentences which were rejected by the Mandarin monolinguals overall. This finding indicates that the total set of grammatical Mandarin sentences for the bilinguals becomes larger than that for the Mandarin monolinguals, at least in the domain of complement event coercion. A similar notion is also suggested by Jarvis (2003) and a few other researchers (Cook, 2003; Dewaele & Pavlenko, 2003) in the field of bilingualism. Jarvis examined L2 effects on an advanced adult Finnish-English speaker by way of qualitative analysis. He found that the L2 effect emerges in the participant, and the effect, from the point of view of the researcher, seems to augment, rather than replace the participant's L1 grammar, since the participant's L1 structures appear to remain almost intact. As Jarvis states, L2 effect should not be considered as a sign of L1 attrition. However, it does not mean that the bilingual's L1 is still the same as monolinguals'. The results obtained in the present study seem to be compatible with what Jarvis argues.

5.4 Comparison of judgments of the EG and the Mandarin CG on individual sentences

This section focuses on some deviant judgments between the bilinguals and the Mandarin monolinguals on specific Mandarin sentences of the three types, particularly sentences within the coercion type.

Judgments on Mandarin unacceptable coercion sentences

The bilinguals' and the Mandarin monolinguals' judgments of Mandarin coercion sentences have shown that, in general, the bilingual group accepted all target sentences, which were rejected by the monolingual group. When looking at two groups' judgments on specific sentences of the type (see Figure 4.2 in section 4.4), it was found that the mean judgment of sentence (7), shown as (14) in the following, and the mean judgment of sentence (8), shown as (16) in the following, stood out from the rest. The bilinguals assigned a relatively lower acceptance rating to (14), which should have been given a higher rating, similar to the mean

ratings to other target sentences of the type; the Mandarin monolinguals assigned a relatively higher acceptance rating to (16), which should have been given a lower rating, similar to the mean ratings to the rest of the type. The two deviations are explained in the following.

(14) [(7) in Appendix 2]

* na – ge fuwusheng wancheng – le na – ge funv
that – CL waiter complete – PFV that – CL woman

dian de suoyou kaiweicai
order NOM all appetizer

‘The waiter *completed* the appetizers that the woman had ordered.’

The mean acceptability score (3.38) of sentence (14), given by the bilingual group, deviates from our prediction that the group would assign all target sentences acceptance ratings above 3.5. Before the bilinguals’ unexpected judgment on (14) was further analyzed, one possibility was assumed for their distinct response to the sentence. It was assumed that they might not accept the English equivalent either so as not accept the Mandarin sentence. If so, then a conclusion could be made that the L2 English effect on the L1 Mandarin was not reflected on the coercion sentence (14). The participants’ judgment on the equivalent English sentence (7), shown as (15) in the following, was checked. Surprisingly, they assigned the incidentally same mean acceptance rating (mean 3.38) to the English sentence as to the corresponding Mandarin sentence (see Appendix 15). The lower mean score to the English equivalent indicates that the participants tended to not accept it either. At first glance, the result seems to conform to our hypothesis abovementioned.

(15) [(7) in Appendix 1]

The waiter *completed* the appetizers that the woman had ordered.

However, it might also be necessary to know whether the English monolinguals accepted the English sentence (Anne Dahl, p.c.). The English monolingual group's judgment on (15) was then checked. It was noted that they rated the sentence with a lower mean score (3.77) as well (see also Appendix 15), even though they showed a tendency of accepting the sentence. Referring to the literature of lexical semantics (Pustejovsky, 1991; 2011), English aspectual verb *complete*, which is the target lexical item in (15), can take the complement an entity-denoting noun phrase (*the appetizers* in (15)). Thus, sentence (15), in theory, is a grammatical expression in English. Since the test was anonymous, it was impossible to interview the English monolingual participants about why they assigned (15) a relatively lower acceptance rating, compared with the ratings to other English coercion sentences. The researcher sent the English sentence to native English speakers outside the control group. They responded that the sentence was grammatical and also acceptable to some extent, but just sounded odd, because the expression *complete the appetizers that the woman ordered* could either be interpreted as (to) complete an activity of serving the appetizers by a particular waiter, or as (to) complete an activity of making the appetizers by a chef rather than by a waiter in question. What those native English speakers described, for the moment, is considered as semantic or pragmatic oddness of the sentence, which is also pointed out by Dabrowska (2010) as one of the factors that influences participants' acceptability judgments. Therefore, the conclusion – the L2 effect on the L1 in the bilingual participants is not reflected on the Mandarin sentence (14), cannot be made. The bilinguals' unacceptance to the Mandarin (14) might be because of its semantic oddness.

Looking at the Mandarin monolinguals' judgments on the Mandarin target sentences, the mean rating of sentence (16) stood out from the rest of the coercion type.

(16) [(8) in Appendix 2]

* yuehan	shi – le	na – liang	zixingche
John	try – PFV	that – CL	bike
‘John tried the bike.’			

Sentence (16) received an unexpectedly higher acceptance rating (3.62), compared with the mean ratings given by the monolinguals to other Mandarin target sentences. Song (2012; 2014) and Li and Thompson (1981) point out that in a Mandarin sentence that involves one of the target lexical items, the complement of the items is required to be event-denoting, and the event information is syntactically required to be explicitly expressed either in the form of a verb phrase or an eventive noun phrase in most cases. In (16), the complement of the target item *shi* ‘try’ is an entity-denoting nominal *zixingche* ‘bike’. In theory, the sentence is an ungrammatical expression in Mandarin. However, it tends to be accepted by the Mandarin monolinguals. The deviant response is probably due to the nature of the sentence. That is, the Mandarin expression *shi na-liang zixingche* ‘(to) try the bike’ only refers to *(to) try to ride the bike* rather than other options, such as *(to) try to repair the bike* or *(to) try to sell the bike* or something else. In this sense, it is possible that the Mandarin monolinguals rate the sentence as acceptable, because they can easily interpret the sentence even though there is no event-denoting verb (e.g., *qi* ‘ride’ referring to an activity of riding) present in the complement of the verb *shi* ‘try’.

Judgments on Mandarin acceptable non-coercion sentences and coercion exceptions

When comparing the bilinguals’ judgments with the Mandarin monolinguals’ judgments on individual non-coercion sentences (see Figure 4.3 in section 4.4) and individual coercion exceptions (see Figure 4.4 in section 4.4), there is no obvious difference found between the groups. Both groups behaved alike, assigning a mean of around 5 or even higher to each of the non-coercion sentences, and assigning a mean of (almost) 6 to each of the coercion exceptions. In that sense, it is supposed that the bilinguals’ L1 grammar relevant to the non-coercion construction and the coercion exceptions, have remained intact, which accords with what Jarvis (2003) has proposed about the L1 maintenance of his Finnish-English participant.

5.5 Judgments of the subgroups of bilinguals in the Mandarin AJT

Recall that the cross-linguistic influence from an L2 to an L1 has been found to be affected by a variety of factors (Pavlenko, 2000). Therefore, it is necessary for the present study to investigate whether some factors have affected the level of influence of L2 English on L1 Mandarin. As mentioned in the theory chapter (see also section 2.1.3), many studies in the field of bilingualism (Pavlenko, 2000; Pavlenko, 2004; Pavlenko & Jarvis, 2002) have identified that L2 effects are significantly influenced by age of arrival (Schmid, 2011 ch.6), length and amount of L2 exposure (De Bot et al., 1991; Pavlenko & Jarvis, 2002), and language proficiency (Su, 2001; Tao & Thompson, 1991). Based on the bilinguals' linguistic background (see Table 3.2 in section 3.1) reported in the questionnaire, all participants immigrated to the English environment after the age of 12. This age does not critically influence the participants' language development (Montrul, 2005) of English so as to in turn affects their L1 Mandarin competence; therefore, the age of arrival is not considered as a variable aspect in the present study. Since the length and the amount of language exposure for the participants (see also Table 3.2 in section 3.1) are quite different, the original constraint as two factors are concerned in this study, i.e., the length of residence in the English environment and the amount of English exposure per week on average. Considering the English proficiency, the participants, based on their scores (see Table 3.6 in section 3.2) obtained in the Cambridge English proficiency test, are divided into two groups: a group with advanced English and a group with proficient English. The three aspects are taken into account to examine whether they have some degree of impact on the L2 effect in the Mandarin-English adulthood bilinguals.

Based on the results we have obtained and discussed in the previous sections, the L2 English effect is reflected on the bilinguals' judgments on the Mandarin target coercion sentences. Therefore, for the sake of simplicity, the following discussion will only consider the results of the groups in this sentence type.

Results of the subgroups of bilinguals with respect to length of residence

In this study, length of residence is not identified to significantly affect the influence of English on Mandarin in the Mandarin-speaking adulthood bilinguals. Three subgroups of participants, classified by length of residence in the English environment with less than 10 years' residence, between 11 to 20 years' residence, and more than 20 years' residence, display the same pattern of response to the Mandarin target sentences (mean 4.28, 4.29, and 4.75, p (one-tailed) = 0.066), although the difference of mean judgments is quite close to the significance level ($p < 0.05$). The results do not conform to our prediction: the L2 effect would be more significant on the bilinguals with longer residence in the L2 environment (De Bot et al., 1991; Major, 1992; Pavlenko, 2000; Tao & Thompson, 1991; Waas, 1996).

From the perspective of mean acceptance ratings, given by the three groups of participants, there seems to be a potential trend between the L2 effect and the variable length of residence, as was predicted. First, when the mean scores of the groups were examined, it was found that the group with 11 to 20 years' residence rated the target sentences almost the same as the group with less than 10 years' residence did. Then, we checked the mean ratings given by the individuals within the two groups. The result of participant 24, who was in the group with 11 to 20 years' residence, stood out from the rest of the group, with the mean acceptability score of 3.27 (see Appendix 17 for details about bilingual individuals' mean judgments on the Mandarin target coercion sentences), which was lower than the average score of the group. Therefore, we did the test again by excluding the result of the participant. The mean rating of the group changed from 4.29 to 4.42, but the contrast between the three groups (mean 4.28, 4.42, and 4.75) still did not reach the significance. However, since participant 24 met all the criteria of recruiting the bilinguals for this study (see section 3.3), we decided to include participant 24 and keep the original result of the group.

The non-significance of the different judgments between the groups is presumed to be quite possibly due to the small size of the participants, which is also suggested by Field (2003 ch 6) as one reason for the lack of significance. In the group of participants with more than 20 years' residence in an English-speaking country, there are only 4 bilinguals included (see Figure 4.5 in section 4.5). The lack of data prevents us from making any further claims about the relationship between the L2 effects and the length of residence.

Results of the subgroups of bilinguals with respect to amount of English exposure

The amount of L2 English exposure is not found to be a critical factor affecting the L2 effect on the L1 in the bilinguals. Two subgroups: one with less than 70% English exposure per week, and another with more than 70% English exposure, show a similar degree of acceptability to the Mandarin target sentences (mean 4.31 and 4.41, p (one-tailed) = 0.2615). The results do not conform to our prediction: the L2 effect would be more significant in the participants with more English exposure in their daily language use (De Bot et al., 1991; Laufer, 2003; Major, 1992; Pavlenko & Jarvis, 2002)

De Bot and his colleagues (1991) investigated L1 grammaticality judgments of Dutch-French speakers, who immigrated to France after turning 17 years old. They found that the L2 influence on specific sentence types was more significant in the participants, who have had high amount of exposure to the L2 French. A similar result is also reported by Stoessel (2000), which is documented in the study of Pavlenko (2000). In our study, from the perspective of the mean acceptability score, there seems to be a tendency that the coercion sentences would be given a higher mean acceptability score by the bilingual group with more English use than the group with less English use. However, as long as the difference between the two group's judgments does not reach the significance, it can be random.

Our study's finding that the amount of language exposure turns out to be nonsignificant in the L2 effect may be due to the only consideration of the variable of amount of language use. In the study, this single factor was taken into account rather than both the length of residence and the amount of English use together, just as some relevant studies did. In the study of De Bot et al. (1991), their results show that if the length of residence in L2 environment was also concerned together with the amount of language use, the L2 effect would be reflected in more sentence types. Once again, however, due to the relatively small number of participants in the present study, it made no sense to examine the correlations between these two constraints and the L2 effect. But this may provide a plausible suggestion for further research with large sample size.

Results of the subgroups of bilinguals with respect to English proficiency

Data obtained from this study indicates that the variable aspect of English proficiency has a crucial impact on the L2 effect in the bilingual participants. The two groups of participants with advanced and proficient English proficiency assigned different mean acceptance ratings to the Mandarin target sentences (mean 4.26 and 4.58). The contrast reached significance (p (one-tailed) = 0.0365) through a Mann-Whitney test. The results conform to our prediction: the L2 effect would be more evident in the bilinguals with better L2 English fluency.

The finding is consistent with results found in some previous research in the domain of cross-linguistic influence (Major, 1992; Montrul, 2005; cf. Pavlenko, 2000; Su, 2001; Tao & Thompson, 1991). In her study, Su (2001) reports results of a Mandarin sentence-processing task, performed by Mandarin-English speakers at beginner level, intermediate level and advanced level. Su's results show that when conducting the task, the English learners at beginning level and the Mandarin monolingual controls behaved alike: they all relied on the semantic cue (i.e., noun animacy) in interpreting the sentences. However, the intermediate and the advanced English learners' behaviors in the Mandarin task tended to move to the English way; that is, they interpreted the L1 Mandarin by largely relying on the syntactic cue (i.e., word order), which was used by the native English speakers in an English task of the study. The tendency was more significantly reflected in the participants with advanced English proficiency. The results, from the point of view of the researcher, indicate that the English learners were influenced by their L2 English knowledge when they did the Mandarin task, and this influence was more significant in the bilinguals with higher English proficiency. The similar relationship between the L2 proficiency and the L2 influence is also documented in Major's work (1992) about L1 phonology, and Tao and Thompson's work (1991) about L1 conversation, and other relevant studies.

Summing up this section, with the help of non-parametric Mann-Whitney tests and Kruskal-Wallis tests, we establish that, among the three constraints – length of residence, amount of language exposure, and language proficiency, the third constraint has shown a significant influence on the level of L2 effect in the bilingual participants, while the first two do not. More specifically, the obtained data indicate that the higher the English proficiency is,

the more likely it is for bilinguals to accept the coercion construction in Mandarin. The similar relationship, however, was not shown in the subgroups with respect to the length of residence and the amount of language exposure, although there might be a potential trend (from the mean judgments given by the subgroups) that the coercion construction in Mandarin was more readily accepted by the L2 English speakers with longer residence in the English environment and more English use per week on average.

One might question whether or not the two statistical tests (that is, the Mann-Whitney test and the Kruskal-Wallis test) are proper to be used to analyze the collected data especially where two factors have no impact on the L2 influence. From the point of view of Nachar (2008), the Mann-Whitney test has few restrictions and is appropriate to use when the number of participants in a study is small, and the samples are asymmetrically distributed. The Kruskal-Wallis test is an extended non-parametric test from the Mann-Whitney test and is applied when three or more independent variables are taken into consideration (Breslow, 1970). At this point, the use of two non-parametric statistic tests seem to be appropriate in this study, because the number of the bilingual participants is relatively small, and more importantly the samples are not always normally distributed. For us, the results are more likely to be due to the fact that both tests are non-parametric tests which tend to have less power than parametric tests (cf. Field, 2013 ch 6). However, since parametric tests are appropriate for large sample sizes and normally distributed samples, and the relatively small sample size and non-normal sampling distribution in the study do not allow for these more powerful statistical analysis tests to be used.

5.6 Evaluation of the acceptability judgment task

Finally, we would like to make a short evaluation of the main method applied to the present study, i.e., acceptability judgment task.

Many scholars (Altenberg & Vago, 2004; Dąbrowska, 2010; Schmid, 2011; Schütze & Sprouse, 2013) agree that acceptability judgment task has become one of the most popularly and widely used methods in research on language-related areas, such as syntactic literature, first and second language acquisition, bilingualism, and first language attrition. This method provides researchers with several optional forms to use, one of which is what we used in the

present study: Likert-scaled judgments. The Likert scale in this study presents the participants a gradient acceptability, ranging from completely unacceptable to completely acceptable, and allows the participants to make relative acceptability judgments to each sentence.

However, the acceptability judgment task has some notable problems in nature, as Altenberg and Vago (2004) and other scholars point out. One of the problems is that there are many factors affecting participants' judgment on a sentence, such as, length of stimuli, stimuli's content, given contexts etc., whatever possibilities (Dąbrowska, 2010). This problem is also reflected in the present study, for instance, in the bilinguals' judgments on the English grammatical coercion sentence (7). This example is discussed in section 5.4. The bilingual participants tended to reject the sentence, which was expected to be accepted, the same as other English coercion sentences. Due to the semantic and pragmatic oddness of the English sentence, we cannot roughly conclude that the bilinguals did not accept the English sentence because they did not accept the coercion structure involved. The semantic anomaly might also have an impact on the participants' judgment of the sentence. Another notable problem worth pointing out, as is also pointed out in Schmid (2011, ch 12), is that participants might never be quite sure that each numerical value is the same distance from its neighbors' values. For example, in the Likert scale ranging from 1 to 6, applied in the present study, when a participant chose '3', this does not absolutely indicate that the sentence is three times as good as a completely unacceptable sentence. One of the bilingual participants in the study made a comment in the questionnaire attached after the Mandarin acceptability judgment task. She said that she was not clear about the exact value that each number in the scale represents. The drawbacks of the acceptability judgment task (or the Likert-scaled judgment task) might affect the participants' judgments at some level.

5.7. Summary of discussions

The present study is mainly conducted to investigate whether there is an influence of L2 English on L1 Mandarin Chinese in the advanced Mandarin Chinese-English adulthood bilinguals. We further study the relationship between the L2 effect and the three constraints – length of residence, amount of language exposure, and language exposure, which have previously been reported to have an impact on the L2 influence.

The results of the bilingual participants in an English sentence acceptability judgment task and a Mandarin sentence acceptability judgment task, compared with the results of the English monolinguals and the Mandarin Chinese monolinguals respectively, have shown that the L2 influence exists to a large degree in the bilingual participants. The influence is reflected on the bilinguals' judgments on the coercion sentences in English and in Mandarin: the bilinguals tend to accept both the acceptable English coercion sentences and the unacceptable Mandarin coercion sentences. Further, when three factors are taken into consideration to examine their influence on the L2 effect, the data indicate that the two variable aspects – the length of residence and the amount of language exposure, do not significantly affect the L2 effect in the bilinguals, even though there might be a potential trend in the judgments; whereas, the level of English proficiency significantly affect the L2 influence in the bilinguals. However, it is also necessary to note that the results of the present study might be affected by some existing limitations in terms of acceptability judgment task and non-parametric statistic tests.

Chapter 6 Conclusion

The main objective of this study was to examine the effect of L2 English on the L1 Mandarin. The thesis also dealt with the relationship between the L2 effect and the three frequently discussed constraints: length of residence, amount of English exposure, and English proficiency. 29 advanced Mandarin Chinese-English adult bilinguals, 35 native English monolinguals, and 34 native Mandarin monolinguals completed an English acceptability judgment task and a Mandarin acceptability judgment task. The bilinguals took the two tests, and the monolinguals took one test in their own language. All participants were asked to rate the acceptability of 60 sentences on a Likert-scale ranging from 1 to 6. Among the 60 sentences, 27 were non-fillers, which were further divided into three sentence types: coercion sentences, coercion-paired non-coercion sentences, and coercion exceptions. These three types of sentences were equivalent in both languages. The coercion sentences, which were target sentences, were unacceptable in Mandarin but acceptable in English; the other two types of sentences were acceptable in both languages. All participants also completed a questionnaire demonstrating their relevant background; the bilinguals also took an additional Cambridge English proficiency test to determine an approximate English proficiency.

Arguing against the traditional approach to cross-linguistic influence in SLA, where the influence is generally considered from an individual's first language to a second language (Ard & Homburg, 1992; Foley & Flynn, 2013; Gass, 2013; Lado, 1957; Selinker, 1972), Cook (1991; 1992; 2003), Pavlenko (2000), and Pavlenko and Jarvis (2002) all suggest that the cross-linguistic influence is also identified from a second language to the first, which is the case not only in childhood bilinguals (Fillmore, 1991; Romaine, 1995), but also in adulthood bilinguals (Pavlenko, 2000). Most of the previous studies, examining the L2 influence, have conducted their research in two languages with many similarities, such as, Russian-English, Spanish-English. However, little is known about the L2 influence between two languages with different linguistic systems, such as Mandarin-English. Since the two languages are quite different, it is reasonable to believe that the L2 influence is detected more likely in advanced bilinguals. Results obtained from the present study seem to support this viewpoint.

Two main findings are demonstrated in this study, which answer the first research question and part of the second research question posed for this study. The first question was: is there an effect of L2 English on L1 Mandarin in advanced Mandarin Chinese-English adulthood bilinguals in terms of complement event coercion? The results obtained in the study indicate that there is an effect of L2 English on L1 Mandarin in the bilingual participants to a large degree, and the effect is interpreted as the augment of the bilinguals' L1 grammar. To be more specific, while the Mandarin monolinguals generally rejected the Mandarin ungrammatical coercion sentences, the bilinguals tended to accept these sentences whose English coercion equivalents were generally accepted by the English monolinguals. The second research question was: is the L2 effect affected by the bilinguals' length of residence, amount of English exposure, and English proficiency? The data indicate that variations in length of language exposure and amount of English exposure of the bilinguals' total language use per week do not significantly affect the L2 English effect on the L1 Mandarin in the bilingual participants, although there might be a potential impact of the two variables on the level of the L2 influence. The participants' English proficiency, however, exerts a significant impact on the L2 effect.

The main finding of the L2 effect emerging in the bilingual participants of this study, confirms and complements results achieved by the studies focusing on L2 effects on L1 in late bilingualism. In Pavlenko (2000), the author reviews many studies demonstrating amount of evidence in phonology, lexicon and semantics, and some piece of evidence in morphosyntax and pragmatics, to show the existence of L2 influence in adulthood. The evidence covers different pairs of L1 and L2, where most are two languages close to each other, such as Russian-English, Finnish-Swedish, Dutch-French, Spanish-English. Similarly, the present study shows that in addition to those pairs of languages, the L2 influence on L1 is also found in advanced Mandarin Chinese-English adulthood bilinguals, whose L1 and L2 have large differences and are rarely investigated in the field of cross-linguistic influence from L2 to L1. The L2 influence in the bilingual participants is also found to be significantly affected by their L2 English proficiency. This finding contributes to the research on investigating the impact of L2 proficiency on L2 effects.

The study's finding that there is no impact of the length of residence and the amount of language exposure on the L2 effect is attributed to the relatively small sample size and more importantly the non-normally distributed samples. The relatively small number of participants and the non-normal sampling distribution in the study only allowed for non-parametric statistical tests (e.g., Mann-Whitney test, Kruskal-Wallis test). These tests tend to be less powerful than parametric counterparts, which are used for large sample size and normally distributed samples. Therefore, the lack of adequate data prevents us from making further conclusions about the relationships between the L2 effect and the two constraints.

While length of residence and amount of English exposure in this study do not influence the L2 effect in the advanced Mandarin Chinese-English adulthood bilinguals, there is no doubt that future studies, examining larger sample size with normal distribution and varied and extensive data will provide more promising conclusions in the relationships between the L2 influence and the two factors. Similarly, while this study uses acceptability judgment task as a method, which has some limitations in nature, future research on L2 English influence on L1 Mandarin will benefit from exploring the L2 influence through other methods, for instance, self-report data and narrative description data. Furthermore, while the present study investigates a syntactic domain of the complement of a sentence, later work exploring the L2 effect could also pay close attention to other specific syntactic elements in which Mandarin and English have distinct grammatical systems.

Appendixes

Appendix 1: English acceptability judgment task (by sentence types)

Example sentences (2)

a. The manager punished so his mistakes.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

b. She established her own business when she was twenty years old.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Non-fillers (27)

[*The target lexical items are in italics. The complement verb of the target lexical items in non-coercion sentences is in bold. But all these italics marks and bold marks were not shown in the actual task.*]

Coercion sentences (11) (Target sentences)

(1) The author *began* his next novel during the summer.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(2) John *started* the puzzle after the lecture.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(3) While he waited for the train, he *continued* his novel.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(4) Unfortunately, the director never *finished* the film.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(5) The pianist *attempted* a new song to gain the audience's applause.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(6) He *regretted* the comments immediately.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(7) The waiter *completed* the appetizers that the woman had ordered.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(8) John *tried* the bike.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(9) When going to work, many people *prefer* the subway.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(10) We should drink iced water *before* the coffee.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(11) *After* the coffee, we started to work.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Non-coercion sentences (11)

(12) The secretary *began* to **write** her memo.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(13) Mary *started* to **write** her homework after she got back home.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(14) The tattoo artist *continued* to **draw** the outline that he had seen on-line somewhere.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(15) The editor *finished* **writing** the article at midnight.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(16) The singer *attempted* to **sing** a new song to attract fans.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(17) The manager of the company *regretted* **making** the mistake.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(18) The manufacturer *completed* **making** the products before Christmas.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(19) He did not *try* to **answer** the second question in the exam.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(20) When going on excursions, many people *prefer* to **drive** a convertible.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(21) We should eat the vegetables *before* **eating** the meat.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(22) *After eating* the meal, let us talk for a while.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Coercion exceptions (5)

(23) Finally I *completed* my thesis.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(24) You can *try* the jacket.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(25) The dancer *preferred* the white shoes.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(26) Please wash your hands *before* the meal.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(27) Drinking water *after* meals can aid digestion.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Fillers (33)

(28) She established her own business when she was twenty years old.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(29) The manager punished *so* his mistakes.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(30) We live in a house with beautiful garden.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(31) The doctor has worked at this hospital thirty years.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(32) I *maked* an appointment with my supervisor to discuss my thesis.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(33) Fred said he would stay. He *did* leave.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(34) I *hoped* that you will not be able to come to my birthday party.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(35) Even though he is a foreigner, but he likes Chinese food very much.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(36) John sent few Christmas postcards to many friends.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(37) My brother watched the movie and went to bed.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(38) She is apple of her parent's eyes.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(39) The young lady always wore a green car to parties.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(40) The lawyer asked the defendant several questions.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(41) The sports event was not cancelled because of heavy rains.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(42) I have lived here for two years.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(43) He left the room without saying noting.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(44) The patient received prescription from his doctor.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(45) When tigers eat people should keep away.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(46) I did not do nothing.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(47) Mary who Fred who John recognized invited is Penny's friend.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(48) The student write a letter to his teacher before Christmas.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(49) I still cannot speak Norwegian fluently.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(50) The journalist writed the article about the earthquake.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(51) I had seen her for long time.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(52) John spread the warm bread with shoes.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(53) The kid ate the cake while his mother is doing the housework.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(54) These days he were not busy in preparing for the exams.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(55) The president gave his New Year speech in morning.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(56) The key to the cabinets are on the table.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(57) John run saw Mary.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(58) She had very lovable dog.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(59) The number of students studying abroad is increasing.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(60) The student attend not the lecture although he was ill.

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Appendix 2: Mandarin acceptability judgment task (by sentence types)

Example sentences (2)

(a) zhe – ge xiaoxi jidong – le wo

This – CL news excite-PFV I

‘The news excited me.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(b) kan dianying de shihou qing buyao dasheng jiang hua

watch movie NOM time please no loud speech word

‘During the movie, please do not talk loudly.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Non-fillers (27)

[*The target lexical items are in italics. The complement verb of the target lexical items in non-coercion sentences is in bold. But all these italics marks and bold marks were not shown in the actual task.*]

Coercion sentences (11) (Target)

(1) * na – ge zuojia zai zhe – ge xiatian *kaishi* – le ta – de xia yi – bu xiaoshuo

That – CL author DUR this – CL summer *begin* – PFV 3sg – NOM next one – CL novel

‘The author *began* his next novel during the summer.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(2) * xia ke hou yuehan *kaishi* – le na – ge nanti

descend lecture after John *start* – PFV that – CL puzzle

‘John *started* the puzzle after the lecture.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(3) * zai deng huoche de shihou ta *jixu* - zhe ta - de xiaoshuo
 DUR wait train NOM time 3sg *continue* - DUR 3sg - GEN novel
 ‘While he waited for the train, he *continued* his novel.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(4) * buxing-de shi na - ge daoyan conglai mei wan zhe - bu dianying
 unfortunately is that - CL director never no *finish* this - CL film
 ‘Unfortunately, the director never *finished* the film.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(5) * na - ge gangqingjia *shitu* yi - shou xin qu lai y ingde guanzhong de zhangsheng
 That - CL pianist *attempt* one - CL new song come win audience NOM applause
 ‘The pianist *attempted* a new song to gain the audience's applause.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(6) * ta liji jiu *houhui* - le naxie pinglun
 3sg immediately then *regret* - PFV those comment
 ‘He *regretted* the comments immediately.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(7) * na - ge fuwusheng *wancheng* - le na - ge funv dian de suoyou kaiweicai
 That - CL waiter *complete* - PFV that - CL woman order NOM all appetizer
 ‘The waiter *completed* the appetizers that the woman had ordered.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(8) * yuehan *shi* - le na - liang zixingche
 John *try* - PFV that - CL bike
 ‘John *tried* the bike.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(9) * qu shangban shi henduo ren gengxihuan ditie
 go work time many person prefer subway
 ‘When going to work, many people *prefer* the subway.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(10) * kafei qian women yinggai xian he bing shui
 coffee before we should first drink ice water
 ‘We should drink iced water *before* the coffee.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(11) * kafei hou women jiu kaishi gongzuo – le
 coffee after we then start work – PFV
 ‘*After* the coffee, we started to work.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Non-coercion sentences (11)

(12) na – ge mishu kaishi – le xie ta – de beiwanglu
 That – CL secretary begin – PFV write 3sg-GEN memo
 ‘The secretary *began* to **write** her memo.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(13) yi hui dao jia mali jiu kaishi – le xie ta – de jiatingzuoye
 once back at home Mary then start – PFV write 3sg – GEN homework
 ‘Mary *started* to **write** her homework after she got back home.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(14) zhe – ge wenshen yishujia jixu hua – zhe na – ge ta zai wangshang kandao de lunkuo
 This – CL tattoo artist continue draw – DUR that – CL 3sg at online see NOM outline
 ‘The tattoo artist *continued* to **draw** the outline that he had seen on-line somewhere.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(15) na – ge bianji lingcheng **xie** wan – le zhe – pian wenzhang
 That – CL editor midnight **write** *finish* – PFV this – CL article
 ‘The editor *finished* **writing** the article at midnight.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(16) na – ge gechangjia *shitu* **yanchang** yi – shou xin ge lai xiying gemi
 That – CL singer *attempt* **sing** one – CL new song come attract fan
 ‘The singer *attempted* to **sing** a new song to attract fans.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(17) gongsi – de jingli *houhui* **fan** – le na – ge cuowu
 Company – ASSOC manager *regret* **make** – PFV that-CL mistake
 ‘The manager of the company *regretted* **making** the mistake.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(18) zai shengdanjie qian changjia *wancheng* – le **shengchan** suoyoude chanpin
 at Christmas before manufacturer *complete* – PFV **make** all product
 ‘The manufacturer *completed* **making** the products before Christmas.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(19) zai kaoshi zhong ta meiyou *shi* – zhe **huida** dier – ge wenti
 DUR exam middle 3sg not *try* – DUR **answer** second – CL question
 ‘He did not *try* to **answer** the second question in the exam.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(20) qu jiaoyou shi henduo ren *gengxihuan* **jiashi** changpengche
 go excursion time many person *prefer* **drive** convertible
 ‘When going on excursions, many people *prefer* to **drive** a convertible.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(21) **chi** rou *qian* women yinggai xian chi shucai
eat meat *before* we should first eat vegetable
 ‘We should eat the vegetables *before* **eating** the meat.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(22) **chi** fan *hou* women shuo huier hua ba
Eat food *after* we say a:while speech SA
 ‘*After* **eating** the meal, let us talk for a while.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Coercion exceptions (5)

(23) wo zhongyu *wancheng* – le wo – de lunwen
 I finally *complete* – PFV I – GEN thesis
 ‘Finally I *completed* my thesis.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(24) ni keyi *shi* zhe – jian jiake
 you can *try* this – CL jacket
 ‘You can *try* the jacket.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(25) na – ge wudaojia *gengxihuan* na – shuang baisedede xie
 That – CL dancer *prefer* that – CL white shoe
 ‘The dancer *preferred* the white shoes.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(26) fan *qian* xi shou
 food *before* wash hand
 ‘Please wash your hands *before* the meal.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(27) fan *hou* he shui you zhu yu xiaohua

food *after* drink water exist help to digest

‘Drinking water *after* meals can aid digestion.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Fillers (33)

(28) kan dianying shi qing buyao dasheng jiang hua

watch movie time please no loud say speech

‘During the movie, please do not talk loudly.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(29) ta hen xiangshou kan dianying

3sg very enjoy watch movie

‘She enjoyed watching the movie.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(30) ta xihuan pingguo he wo xihuan xiangjiao

3sg like apple and I like banana

‘She likes apples and I like bananas.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(31) zhe – ge xiaoxi jidong – le wo

This – CL news excite – PFV I

‘The news excited me.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(32) wo – de gen ni – de shi yiyang

I – GEN and you – GEN is same

‘Mine is the same as yours.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(33) na –wei xiansheng renshou – zhe na – jian ta zai dazhe shi mai de lve zhi waitao
 That – CL Mr. endure – DUR that – CL 3sg DUR discount time by NOM inferior qualify coat
 ‘The man endured the poor-quality coat that he had bought at the sale.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(34) zhe – ge nianqing ren you fengfu-de gongzuo jingyan
 This – CL young person have rich work experience
 ‘The young man has rich working experience.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(35) wo jue ding bu canjia bisai le
 I decide no participate contest CRS
 ‘I decided not to take part in the contest.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(36) lili zai wuye qian shuijiao le
 Lily at midnight before sleep CRS
 ‘Lily went to bed before midnight.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(37) zhe – ge dianying qunian kaishi
 This – CL movie last:year start
 ‘The movie started last year.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(38) wo ganggang du – le yi – ben feichang youqu-de shu
 I just read – PFV one – CL very interesting book
 ‘I just read a very interesting book.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

- (39) suiran ta shi waiguo rent ta hen xihuan chi zhongguo cai
 Although 3sg is foreign person 3sg very like eat China dish
 ‘Even though he is a foreigner, he likes Chinese food very much.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable
- (40) zai canguan bowuguan de shihou na – ge xiaotou qitu tou na – fu hua
 DUR visit museum NOM time that – CL thief attempt steal that – CL painting
 ‘The thief attempted to stole the painting while visiting the museum.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable
- (41) zhe – CL yun fu kangju ge – zhong yao
 This – CL pregnant woman resist each – CL medicine
 ‘The pregnant woman resisted all medicines.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable
- (42) jiaoxiang yuetuan yijing kaishi yanzou beiduofen – de y uequ le
 symphony orchestra already start play Beethoven - GEN song CRS
 ‘The orchestra has already started to play Beethoven’s symphonies.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable
- (43) tamen qunian kaishi wudao
 they last:year start dance
 ‘They started the dance last year.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable
- (44) ta zuotian wanshang chang ge le
 3sg yesterday night sing song CRS
 ‘He sang a song yesterday night.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(45) women hen qitai ming nian liang xiao zhijian de yi – ci xueshu jiaoliu
we very expect next year two school between NOM one – CL scholarship communicate
‘We expected an academic exchange between the two schools next year.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(46) pingguo gongsi – de zongcai xuanbu – le yi – kuan xin shouji
apple company – ASSOC chairman announce – PFV one – CL new phone
‘The president of Apple announced a new model.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(47) mei xiangdao wo yijing xie – le san – feng xin le
no think I already write – PFV three – CL letter CRS

‘I did not realize that I have already written three letters.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(48) women chi fan xian yihou zai taolun zhe – ge wenti
we eat food first later then discuss this – CL problem

‘We had a meal first, and discussed the matter later.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(49) ta mei you hen yaohao de pengyou jishi ta renshi henduo ren
3sg no have very good NOM friend although 3sg know many person

‘He does not have a good friend even though he knows a lot of people.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(50) ta zai jichang fanyi yijing wu – nian le
3sg at airport translate already five – CL CRS

‘She has been an interpreter at the airport for five years.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(51) zhe – ge xueqi jieshu qian tamen shitu – le yi – ci bisai
 this-CL semester end before they attempt – PFV one – CL contest
 ‘They attempted a contest before the end of the semester.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(52) fuqing zhengzai wei haizi cheng – zhe san
 father while for child hold – DUR umbrella
 ‘The father is holding an umbrella over his child.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(53) ta hen jiaoao suoyi wo bu xihuan ta
 3sg very arrogant so I no like 3sg
 ‘He is arrogant, so I do not like him.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(54) dangdai shehui chou – yan de ren yue lai yue shao
 Present society extract – smoke NOM person more come more few
 ‘Nowadays the number of smokers is decreasing.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(55) women hen gaoxing neng you jihui lai zhe – suo xuexiao fangwen
 we very happy can have opportunity come this – CL school visit
 ‘We are glad that we have an opportunity to visit this prestigious university.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(56) women zhiyou tongguo kaoshi cai neng shang daxue
 We only pass exam only can ascend university
 ‘The only way to get into college is to pass the exam.’
 Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(57) zhe – ben shu shi zui gui

This – CL book is most expensive

‘This book is the most expensive.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(58) wo qunian kaishi xue nuoweyu

I last:year start learn Norwegian

‘I began to learn Norwegian last year.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(59) zhe – ge shu jia women dasuan qu haibian du jia

This – CL summer holiday we plan go seaside spend holiday

‘We are going to the coast for our summer vacation.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

(60) zai xie xueshu wenzhang shi women yao bimin shiyong suolueyu

DUR write scholarship article time we want avoid use abbreviation

‘We should avoid abbreviations when we write an academic paper.’

Completely unacceptable 1 2 3 4 5 6 Completely acceptable

Appendix 3: Language use questionnaire for native English monolinguals

Dear participants,

Thank you very much for your participation in this research project. Tasks involved in the research are conducted anonymously.

This survey includes a sentence acceptability judgment task and a language use questionnaire. All information you provide will be absolutely confidential and will only be used for research purposes. Please note that you are free to leave the study at any point if you do not want to complete the test

Again, many thanks for your participation and support.

Best regards,

Wenting Xue (Master)
Norwegian University of Science and Technology

Language Use Questionnaire

1. Background Information

Gender:	Age:	Native language(-s):	Dialect (-s)
Place of origin: Country City	Highest level of education: () A. Primary/Elementary School B. Secondary/Middle or High School B. College/University		
Place of current residence: Country City			

2. Previous Experiences with Foreign Languages

a. Apart from your country of origin and of current residence, have you ever visited another country for a period of **a year or more**? () A. Yes B. No

b. If YES, at what age did you move to that country? For approximately how long did you stay there? What was (were) the language (-s) that you used when you stayed in the country?

Country	Age when you moved to the country	Approximate duration of stay	Language (-s)

3. Foreign Language Learning

a. Apart from English, have you ever learned another language at home, in school or in other language learning institutions, or elsewhere? () A. Yes B. No

b. If YES, please evaluate your **current** proficiency level for the language:

A. Beginner Level; B. Intermediate Level; C. Advanced Level; D. Proficiency.

Language				
Proficiency level				

4. Information on Current Language Use

Please estimate the approximate percentages of the time (from 0% to 100%) per week on average that you currently use your native language and other foreign languages, including all situations, such as at home, in school, at work, playing computer games, watching TV programs, studying on your own, taking part in lessons, communicating with family members, friends and colleagues etc. Please start with your native language. Your percentages of the time for all languages should add up to 100%.

Language	English				
Percentage of the time					

5. Other Information

If there is any other information which you think might be important about your language background and language use, please comment in the box below.

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Appendix 4: Language use questionnaire for native Mandarin monolinguals

Translation of the language use questionnaire for native Mandarin monolinguals is followed after the Chinese version.

您好！非常感谢您能在百忙之中抽出宝贵的时间参与本次语言研究。此次研究涉及到的调查和测试均采用匿名方式。

这个项目以可接受性测试为基础，包括了两个部分，即语言使用问卷以及句子可接受性判断测试。您填写的所有信息将会被严格保密，并且将只用于个人的论文分析。如果您在填写测试卷的过程中不想继续进行本次测试，您可以随时放弃继续填写。

衷心地感谢您完成此次测试！祝您一切顺利！

薛文婷（硕士）
挪威科技大学

语言使用问卷

1. 背景信息

性别：	年龄：	母语：	方言：
出生地： 国家 城市		最高教育学历：（ ） A. 小学 B. 初中或高中 C. 大学	
现居住地： 国家 城市			

2. 接触外语的经历

a. 请问除了中国，您是否曾经还在其它国家居住 **1年或者多于1年**？（ ）

- A. 居住过 B. 没有居住过

b. 如果您在**其他国家居住过**，请问您在几岁时去那（几）个国家的？大约住了多久？您在那个国家居住期间主要使用哪（几）种语言学习和交流？

国家名称	去那个国家时的年龄	居住时长	使用的语言 (可以是多种)

3. 外语学习经历

a. 请问除了汉语，您是否还学过其他的语言，包括在家、学校、语言学习机构、或者其它地方？（ ）

- A. 学过 B. 没学过

b. 如果您还学过**其他语言**，请您评估一下**现在**您的这（几）种语言的熟练程度，可分为 A. 初级水平；B. 中级水平；C. 高级水平；D. 非常流利。

语言名称				
熟练程度				

4. 现在语言的使用情况

请估计您现在平均每周分别使用母语和其他外语所用时间（包括您在家、学校、单位和其他日常生活中的学习、工作和娱乐的各个方面，比如玩电脑游戏、看电视节目、看电影，自学或者参与课堂学习，与家人、朋友、老师、同学以及同事的交流）占您所有时间的百分比（从 0% 到 100%）。请在下表中从母语开始依次列出。请注意您列出的所有语言的百分比的总和为 100%。

语言名称	汉语		
语言的使用时间所占的百分比			

5. 其它信息

如果您认为您还有其它有关语言学习和语言使用的信息想要说明，请写在下面的表格中。

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Translation of the language use questionnaire for native Mandarin monolinguals

Dear participants,

Thank you very much for your participation in this language research. Tasks involved in the research are conducted anonymously.

This survey includes a sentence acceptability judgment test and a language use questionnaire. All information you provide will be absolutely confidential and will only be used for research purposes. Please note that you are free to leave the study at any point if you do not want to complete the test

Again, many thanks for your participation and support.

Best regards,

Wenting Xue (Master)
Norwegian University of Science and Technology

Language Use Questionnaire

1. Background Information

Gender:	Age:	Native language:	Dialect(-s):
Place of origin:		Highest level of education: ()	
Country	City	A. Primary/Elementary School	
Place of current residence:		B. Secondary/Middle or High school	
Country	City	C. College/University	

2. Previous Experiences with Foreign Languages

a. Apart from China, have you ever visited another country for a period of **a year or more**?
() A. Yes B. No

b. If YES, at what age did you move to that country? For approximately how long did you stay there? What was (were) the language (-s) that you used when you stayed in the country?

Country	Age when you moved to the country	Approximate duration of stay	Language (-s)

3. Foreign Language Learning

a. Apart from Mandarin Chinese, have you ever learned another language at home, in school, in other language learning institutions, or elsewhere? () A. Yes B. No

b. If YES, please evaluate your **current** proficiency level for the language:

A. Beginner Level; B. Intermediate Level; C. Advanced Level; D. Proficiency.

Language				
Proficiency level				

4. Information on Current Language Use

Please estimate the approximate percentages of the time (from 0% to 100%) per week on average that you currently use your native language and other foreign languages, including all situations, such as at home, in school, at work, playing computer games, watching TV programs, studying on your own, taking part in lessons, communicating with family members, friends and colleagues etc. Please start with your native language. Your percentages of the time for all languages should add up to 100%.

Language	Mandarin		
Percentage of the time			

5. Other Information

If there is any other information which you think might be important about your language background and language use, please comment in the box below.

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Appendix 5: Language use questionnaire for Mandarin Chinese-English bilinguals

Translation of the language use questionnaire for Mandarin Chinese-English bilinguals is followed after the Chinese version.

您好！非常感谢您能在百忙之中抽出宝贵的时间参与本次语言研究。此次研究涉及到的调查和测试均采用匿名方式。

这个项目包括了两次测试：第一次测试主要包括汉语句子的可接受性判断测试和语言使用问卷；第二次测试会在两周后进行，主要包括英语句子的可接受性判断测试和英语水平测试。您在两次测试中填写的所有信息将会被严格保密，并且将只用于个人的论文分析。如果您在填写测试卷的过程中不想继续进行本次测试，您可以随时放弃继续填写。

衷心地感谢您能完成整个测试！祝您一切顺利！

薛文婷（硕士）
挪威科技大学

汉英双语者语言可接受性判断测试

昵称：

[请设置一个您自己喜欢的昵称。这个昵称仅被用在这个项目的两次测试中，从而确保作者可以把您的本次测试数据和下一次测试数据对应。]

语言使用问卷

1. 背景信息

性别：	年龄：	母语：	方言：
出生地： 国家 城市		最高教育学历：（ ） A. 小学 B. 初中或高中 C. 大学	
现居住地： 国家 城市			
请填写您刚来到现在这个国家时的年龄： _____			
请填写您居住到现在这个国家多久了： _____			

2. 接触外语的经历

a. 请问除了中国和现居住国家，您是否曾经还在其它国家居住 **1 年或者多于 1 年**？（ ）

A. 居住过 B. 没有居住过

b. 如果您在**其他国家居住过**，请问您在几岁时去那（几）个国家的？大约住了多久？您在那个国家居住期间主要使用哪（几）种语言学习和交流？

国家名称	去那个国家时的年龄	居住时长	使用的语言 (可以是多种)

3. 外语学习经历

a. 请问英语是您的第二语言吗? () A. 是 B. 不是

(如果不是, 您就不再需要继续参与这个研究了。非常感谢您的参与和支持。祝您一切顺利!)

b. 如果英语是您的第二语言, 请问您是从几岁开始学习英语的? 您学了几年英语? 请估计您在学英语时**平均每周**自学和课堂上学习英语 (听、说、读、写) 的总时间占您一周所有时间的百分比 (从 0% 到 100%)。

开始学习英语的年龄	大约学习了多久	平均每周学习英语的时间占一周所有时间的百分比
		(如果您在不同阶段 (例如, 高中、大学) 学习英语所占的百分比有很大差别, 请您分别具体列出) _____ _____ _____

c. 请问除了汉语和英语, 您是否还学过其他的语言, 包括在家、学校、语言学习机构、或者其它地方? () A. 学过 B. 没学过

d. 如果您还学过**其他语言**, 请您评估一下**现在**您的这几种语言的熟练程度, 可分为: A. 初级水平; B. 中级水平; C. 高级水平; D. 非常流利。

语言名称				
熟练程度				

4. 语言使用情况

请估计您居住到**现在这个国家后**平均每周分别使用母语和其它外语所用时间 (包括您在家、学校、单位和其他日常生活中的学习、工作和娱乐的各个方面, 比如玩电脑游戏、看电视节目、看电影, 自学或者参与课堂学习, 与家人、朋友、老师、同学以及同事的交流) 占您所有时间的百分比 (从 0% 到 100%)。请在下表中从母语开始依次列出。请注意您列出的所有语言的百分比的总和应为 100%。

语言名称	汉语	英语			
语言的使用时间所占的百分比					

5. 其它信息

如果您认为您还有其它有关语言背景和语言使用的信息想要说明, 请写在下面的表格中。

--

Translation of the language use questionnaire for Mandarin Chinese-English bilinguals

Dear participants,

Thank you very much for your participation in this language research project. Tasks involved in the research are conducted anonymously.

This project consists of two surveys: in the first survey, a Chinese sentence acceptability judgment task and a language use questionnaire are included; in the second survey, an English sentence acceptability judgment task and an English proficiency task are involved. All information you provide will be absolutely confidential and will only be used for research purposes. Please note that you are free to leave the study at any point if you do not want to complete the test

Again, many thanks for your participation and support.

Best regards,

Wenting Xue (Master)
Norwegian University of Science and Technology

Nickname:

[Please set a nickname. It is only used to connect your two surveys' results.]

Language Use Questionnaire

1. Background Information

Gender:	Age:	Native language:	Dialect(-s):
Place of origin: Country City		Highest level of education: () A. Primary/Elementary School	
Place of current residence: Country City		B. Secondary/Middle or High school C. College/University	
Age of immigration to the country of current residence: _____			
Duration of stay in the country of current residence: _____			

2. Previous Experiences with Foreign Languages

a. Apart from China and the country of your current residence, have you ever moved to another country for a period of **a year or more**? () A. Yes B. No

b. If YES, at what age did you move to that country? For approximately how long did you stay there? What was (were) the language (-s) that you used when you stayed in the country?

Country	Age when you moved to the country	Approximate duration of stay	Language (-s)

3. Foreign Language Learning

a. Is English your second language? () A. Yes B. No

(If NO, then you do not need to continue the test. Thanks for your participation.)

b. If YES, please specify the age at which you started learning English, and the number of years that you have learned English. Please estimate the approximate percentage of the time (from 0% to 100%) **per week on average** that you were exposed to English (including listening, speaking, reading, and writing) both on your own and from language classes.

Age of initial exposure to English	Duration of exposure	Percentage of exposure time per week on average
		<i>(If the percentage differed significantly at different stages (e.g., Secondary/Middle or High school, University), please specify respectively.)</i> <hr/> <hr/> <hr/>

c. Apart from Mandarin Chinese and English, have you ever learned another language at home, in school, in other language learning institutions, or elsewhere? ()

A. Yes B. No

d. If YES, please evaluate your **current** proficiency level for the language:

A. Beginner Level; B. Intermediate Level; C. Advanced Level; D. Proficiency.

Language				
Proficiency level				

4. Information for Current Language Use

Please estimate the approximate percentages of the time (from 0% to 100%) per week on average that you currently use your native language and other foreign languages **after you moved to the country of your current residence**, including all situations, such as at home, in school, at work, playing computer games, watching TV programs, studying on your own, taking part in lessons, communicating with family members, friends and colleagues etc. Please start with your native language. Your percentages of the time for all languages should add up to 100%.

Language	Mandarin	English			
Percentage of the time					

5. Other Information

If there is any other information which you think might be important about your language background and language use, please comment in the box below.

Appendix 6: Results of English monolinguals in English AJT through a Kruskal-Wallis

H test

Group	English sentence type	N	Mean Rank	Test statistic (H)	Df	Asymp. Sig. (2-tailed)
English CG	Coercion sentences	35	47.53	2.733	2	<i>P</i> = 0.255
	Non-coercion sentences	35	52.04			
	Coercion exceptions	35	59.43			
	Total	105				

a. Kruskal-Wallis H Test

b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Appendix 7: Results of Mandarin Chinese-English bilinguals in English AJT through Kruskal-Wallis H tests

Group	English sentence type	N	Mean Rank	Test statistic (H)	Df	Asymp. Sig. (2-tailed)
EG	Coercion sentences	29	32.00	12.763	2	<i>P</i> = 0.002
	Non-coercion sentences	29	44.34			
	Coercion exceptions	29	55.66			
	Total	87				

English sentence type	Std. test statistic (H)	Asymp. Sig. (2-tailed)
Coercion sentences	-1.864	<i>P</i> = 0.062
Non-coercion sentences		
Coercion sentences	-3.571	<i>P</i> = 0.000
Coercion exceptions		
Non-coercion sentences	-1.708	<i>P</i> = 0.088
Coercion exceptions		

a. Kruskal-Wallis H Test

Appendix 8: Results of Mandarin Chinese-English bilinguals and English monolinguals in English AJT through Mann-Whitney U tests

English sentence type	Group	N	Mean Rank	Test statistic (U)	z	Asymp. Sig. (2-tailed)
Coercion sentences	EG	29	24.45	741.000	3.154	<i>P</i> = 0.002
	English CG	35	39.17			
	Total	64				

a. Mann-Whitney U Test

English sentence type	Group	N	Mean Rank	Test statistic (U)	z	Asymp. Sig. (2-tailed)
Non-coercion sentences	EG	29	28.05	636.500	1.744	<i>P</i> = 0.081
	English CG	35	36.19			
	Total	64				

a. Mann-Whitney U Test

English sentence type	Group	N	Mean Rank	Mann-Whitney U	z	Asymp. Sig. (2-tailed)
Coercion exceptions	EG	29	30.40	568.500	0.834	<i>P</i> = 0.404
	English CG	35	34.24			
	Total	64				

a. Mann-Whitney U Test

Appendix 9: Results of Mandarin monolinguals in Mandarin AJT through Kruskal-Wallis H tests

Group	Mandarin sentence type	N	Mean Rank	Test statistic (H)	Df	Asymp. Sig. (2-tailed)
Mandarin CG	Coercion sentences	34	17.50	78.153	2	<i>P</i> = 0.000
	Non-coercion sentences	34	57.01			
	Coercion exceptions	34	79.99			
	Total	102				

Mandarin sentence type	Std. test statistic (H)	Asymp. Sig. (2-tailed)
Coercion sentences	-5.526	<i>P</i> = 0.000
Non-coercion sentences		
Coercion sentences	-8.739	<i>P</i> = 0.000
Coercion exceptions		
Non-coercion sentences	-3.213	<i>P</i> = 0.001
Coercion exceptions		

a. Kruskal Wallis Test

Appendix 10: Results of Mandarin Chinese-English bilinguals in Mandarin AJT through Kruskal-Wallis H tests

Group	Mandarin sentence type	N	Mean Rank	Test statistic (H)	Df	Asymp. Sig. (2-tailed)
EG	Coercion sentences	29	16.41	58.790	2	<i>P</i> = 0.000
	Non-coercion sentences	29	49.38			
	Coercion exceptions	29	66.21			
	Total	87				

Mandarin sentence type	Std. test statistic (H)	Asymp. Sig. (2-tailed)
Coercion sentences Non-coercion sentences	-4.990	<i>P</i> = 0.000
Coercion sentences Coercion exceptions	-7.537	<i>P</i> = 0.000
Non-coercion sentences Coercion exceptions	-2.547	<i>P</i> = 0.011

a. Kruskal Wallis Test

Appendix 11: Results of Mandarin Chinese-English bilinguals and Mandarin monolinguals in Mandarin AJT through Mann-Whitney U tests

Mandarin sentence type	Group	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (2-tailed)
Coercion sentences	EG	29	48.93	2.000	-6.780	<i>P</i> = 0.000
	Mandarin CG	34	17.56			
	Total	63				

a. Mann-Whitney U Test

Mandarin sentence type	Group	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (2-tailed)
Non-coercion sentences	EG	29	30.97	523.000	0.416	<i>P</i> = 0.677
	Mandarin CG	34	32.88			
	Total	63				

a. Mann-Whitney U Test

Mandarin sentence type	Group	N	Mean Rank	Test statistic (U)	z	Asymp. Sig. (2-tailed)
Coercion exceptions	EG	29	31.12	518.500	0.379	<i>P</i> = 0.705
	Mandarin CG	34	32.75			
	Total	63				

a. Mann-Whitney U Test

Appendix 12: Results of subgroups of Mandarin Chinese-English bilinguals with respect to length of residence in Mandarin AJT through Kruskal-Wallis H tests

Mandarin sentence type	Length of residence	N	Mean Rank	Test statistic (H)	Df	Asymp. Sig. (1-tailed)
Coercion sentences	5-10 years	16	13.50	4.047	2	<i>P</i> = 0.066
	11-20 years	9	14.17			
	21-30 years	4	22.88			
	Total	29				

a. Kruskal-Wallis H Test

b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Mandarin sentence type	Length of residence	N	Mean Rank	Test statistic (H)	Df	Asymp. Sig. (2-tailed)
Non-coercion sentences	5-10 years	16	14.44	0.195	2	<i>P</i> = 0.907
	11-20 years	9	15.39			
	21-30 years	4	16.38			
	Total	29				

a. Kruskal-Wallis H Test

b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Mandarin sentence type	Length of residence	N	Mean Rank	Test statistic (H)	Df	Asymp. Sig. (2-tailed)
Coercion exceptions	5-10 years	16	16.69	2.092	2	<i>P</i> = 0.351
	11-20 years	9	13.94			
	21-30 years	4	10.63			
	Total	29				

a. Kruskal-Wallis H Test

b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Appendix 13: Results of subgroups of Mandarin Chinese-English bilinguals with respect to amount of English exposure in Mandarin AJT through Mann-Whitney U tests

Mandarin sentence type	Amount of English exposure	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (1-tailed)
Coercion sentences	≤70%	16	14.09	118.500	0.639	<i>P</i> = 0.2615
	>70%	13	16.12			
	Total	29				

a. Mann-Whitney U Test

Mandarin sentence type	Amount of English exposure	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (2-tailed)
Non-coercion sentences	≤70%	16	16.62	78.000	-1.148	<i>P</i> = 0.251
	>70%	13	13.00			
	Total	29				

a. Mann-Whitney U Test

Mandarin sentence type	Amount of English exposure	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (2-tailed)
Coercion exceptions	≤70%	16	16.88	74.000	-1.409	<i>P</i> = 0.159
	>70%	13	12.69			
	Total	29				

a. Mann-Whitney U Test

Appendix 14: Results of subgroups of Mandarin Chinese-English bilinguals with respect to English proficiency in Mandarin AJT through Mann-Whitney U tests

Mandarin sentence type	English proficiency	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (1-tailed)
Coercion sentences	Advanced	21	13.26	120.500	1.791	$P = 0.0365$
	Proficient	8	19.56			
	Total	29				

a. Mann-Whitney U Test

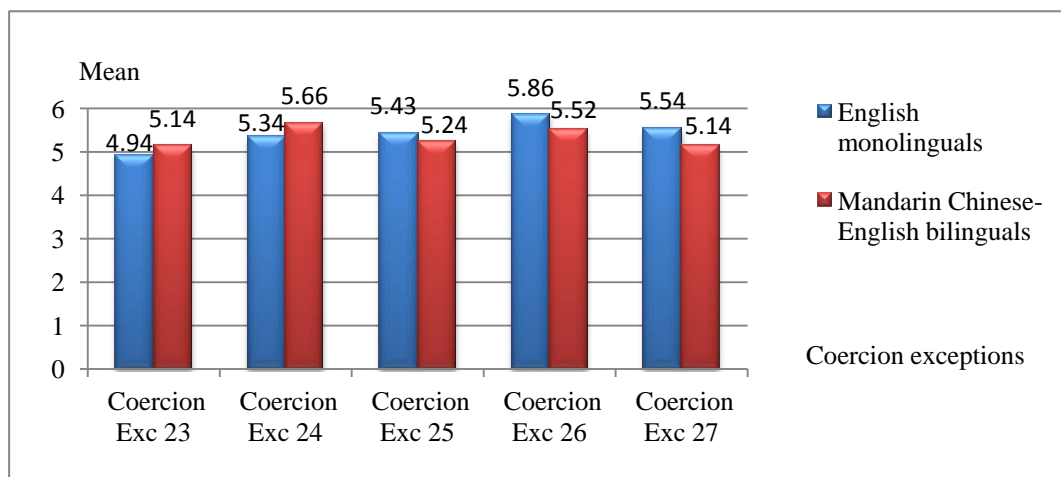
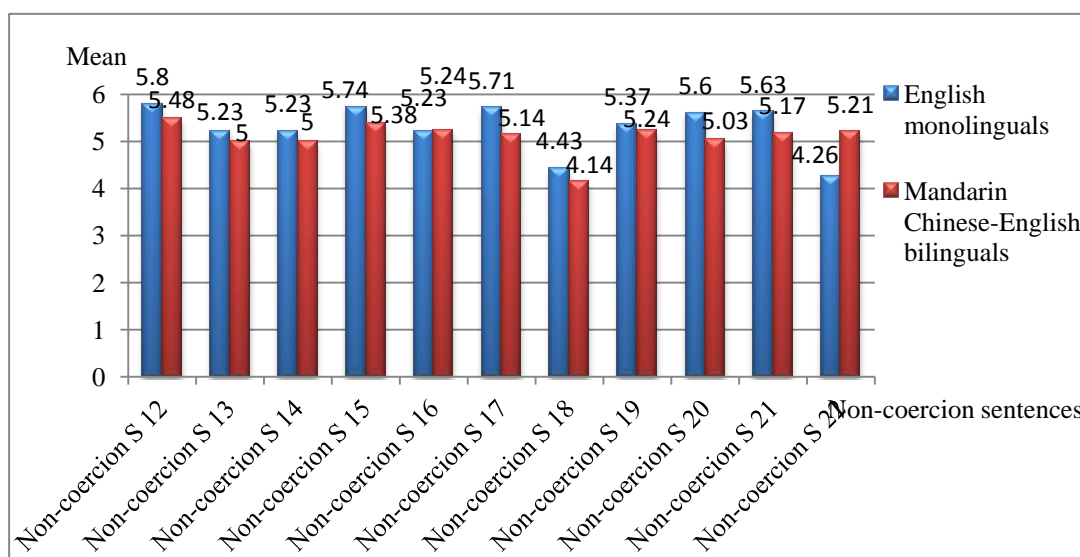
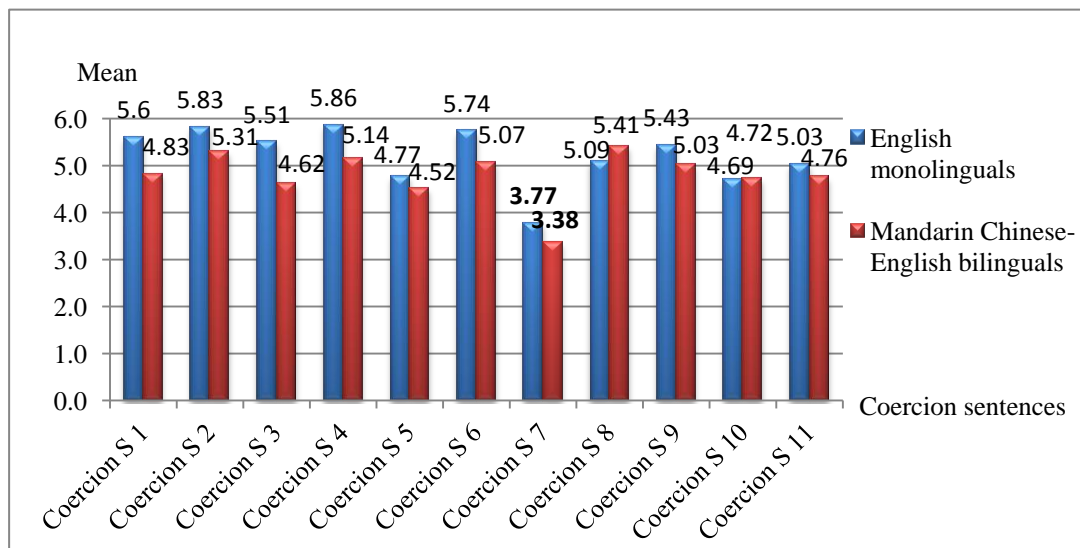
Mandarin sentence type	English proficiency	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (2-tailed)
Non-coercion sentences	Advanced	21	14.14	102.000	0.884	$P = 0.377$
	Proficient	8	17.25			
	Total	29				

a. Mann-Whitney U Test

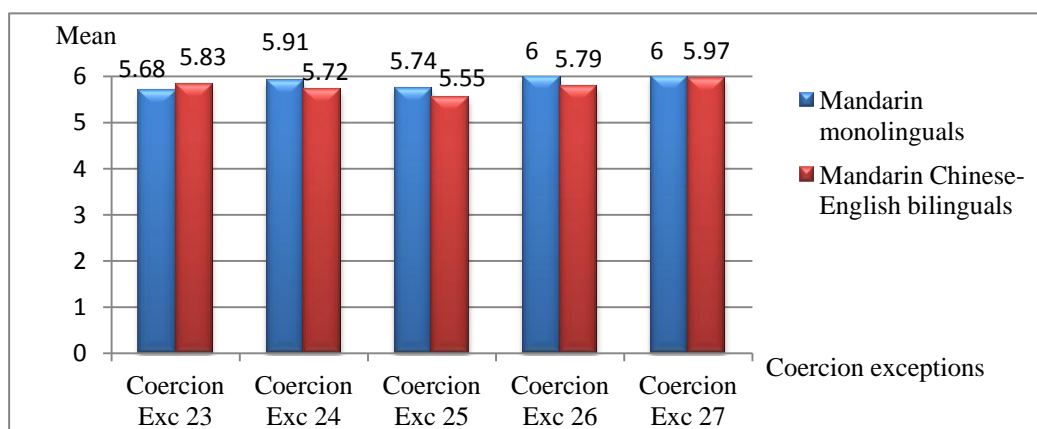
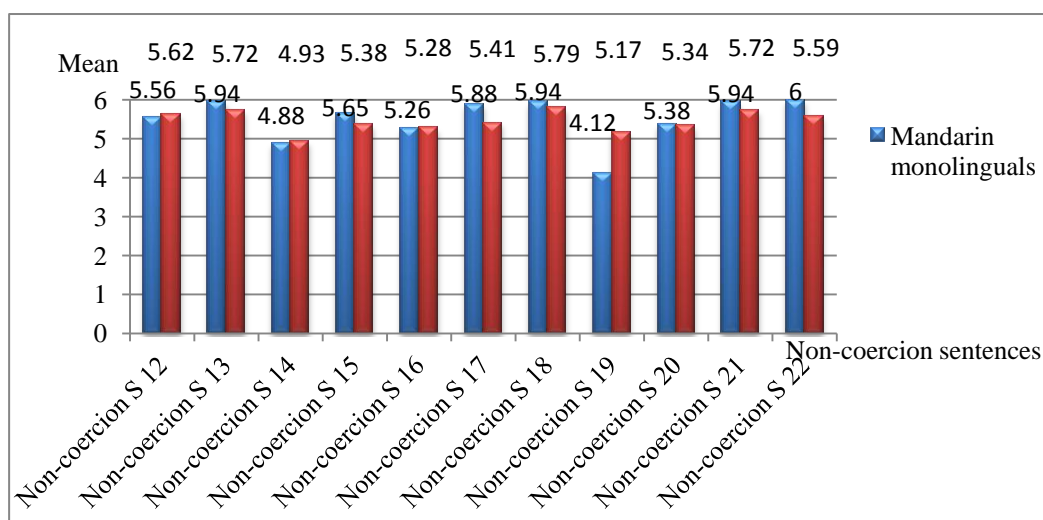
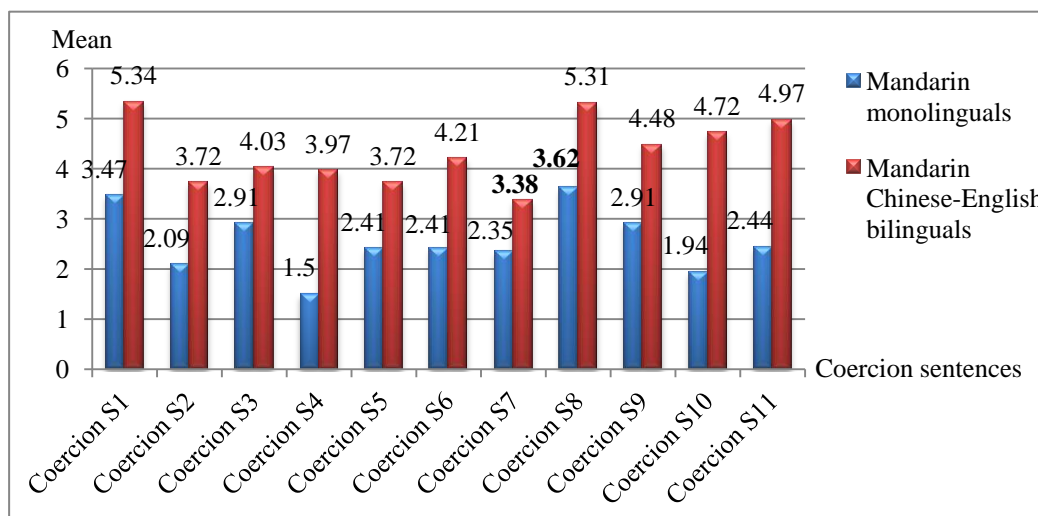
Mandarin sentence type	English proficiency	N	Mean Rank	Test statistic (U)	Z	Asymp. Sig. (2-tailed)
Coercion exceptions	Advanced	21	15.05	83.000	-0.052	$P = 0.958$
	Proficient	8	14.88			
	Total	29				

a. Mann-Whitney U Test

Appendix 15: Results of English individual sentences by Mandarin Chinese-English bilinguals and English monolinguals

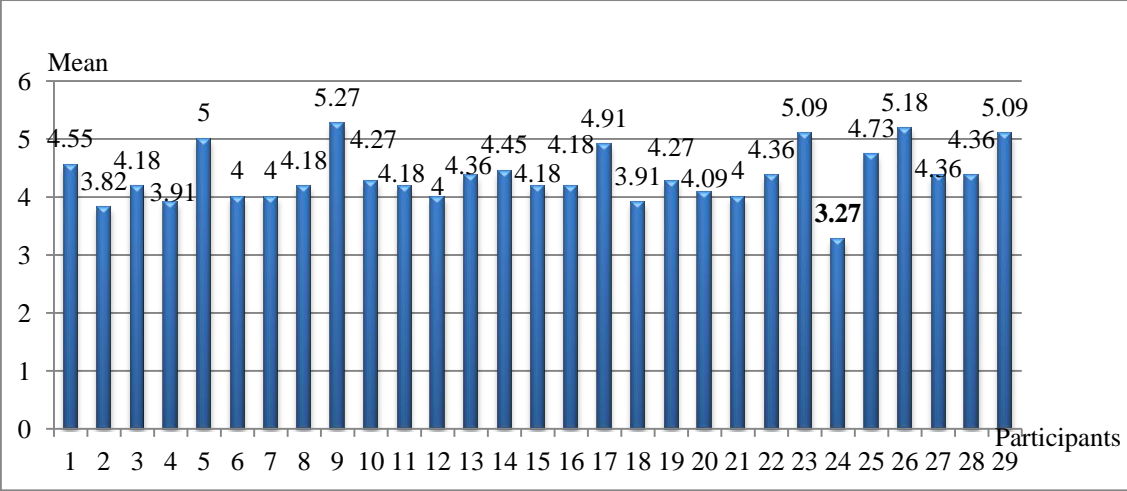


Appendix 16: Results of Mandarin individual sentences by Mandarin Chinese-English bilinguals and Mandarin monolinguals



Appendix 17: Bilingual individuals’ judgments on Mandarin coercion sentences (with respect to length of residence)

Bilingual individuals’ judgments on Mandarin ungrammatical coercion sentences



Note: 1-16 = participants with less than 10 years’ residence in the English environment;
 17-25 = participants with 11 to 20 years’ residence in the English environment;
 26-29 = participants with more than 20 years’ residence in the English environment.

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