

Transfer Effects in the Production of Non-Referential Verb Phrases by Heritage Speakers of Chinese

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1. Introduction

1.1. L1-L2 Relationship

Previous studies on bilingualism have focused on the more salient effects of the first language (L1) on the second language (L2). This study looks at the effects of the L2 on the L1 by comparing two language dominance groups in their production of non-referential verb phrases. Data from the two language dominance groups are compared, yielding an examination of the kinds of transfer effects that can arise, i.e., instances of inter-language influence due to contact between the two languages.

1.2. Non-Referential Verb Use: Typological Differences

In Chinese, a verb can be used transitively to yield a generic activity reading. For example, the sentence in (1) yields an intransitive, generic activity reading, in which the action of singing is not applied to any one specific song. In contrast, the English equivalent of (1), presented in (2), contains the verb *sing* in an intransitive frame. I assume that the verb in (2) selects a non-referring null object as its complement, and treat both (1) and (2) as cases of non-referential verb use, in which the verb takes a non-referential, non-specific direct object complement.

(1) Lisi zai chang ge
Lisi PROG sing song
'Lisi is singing'

(2) Lisi is singing

There are two crucial differences between English and Chinese that give rise to different non-referential verb constructions in the two languages. First, Chinese has overt generic bare nouns, as in (1), while English does not. The second difference is that in Chinese, only one constituent may be pronounced following the verb, such that if an adverbial phrase is used in addition to the bare noun in (2), the sentence becomes ungrammatical. Huang (1982) formalized this as follows:

(3) Phrase Structure Constraint (PSC) (Huang 1982)
Within a given sentence in Chinese, the head (the verb or VP) may branch to the left only once, and only on the lowest level of expansion.

According to (3) and the thematic hierarchy in (4) (Huang 1991), there is only room for one postverbal complement, and in Chinese, direct object NPs and manner adverbials compete for the same slot.

(4) Agent > Experiencer > Ref. theme > Goal, Ind. Object > Obliques (Non-ref. theme, Manner, etc)

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There are at least four constructions that represent non-referential verb use in Chinese, three of which are grammatical in allowing only one postverbal complement. The first is the verb copying construction, in which two copies of the verb are pronounced¹, as in (5).

- (5) ta pao bu pao de hen kuai
 he run step run DE very fast
 'He runs very fast'

Another way to use the verb in a non-referential context (i.e., without a referential direct object complement) is through the use of a null object², which yields the same interpretation as that in (5):

- (6) ta pao de hen kuai
 he run DE very fast
 'He runs very fast'

The third variant of non-referential verb use is the object fronting construction, as in (7), and appears to work better with some verbs than with others; it is not used very frequently.

- (7) ta ge chang de hen hao
 he song sing DE very good
 'He sings very well'

Finally, the double-complement variant in (8) is judged to be unacceptable by most native speakers of Mandarin Chinese; the sentence violates the constraints in (3) and (4) in that both constituents are simultaneously occupying a single postverbal complement position.

- (8) *ta pao bu de hen kuai
 he run step DE very fast
 'He runs very fast'

In contrast to the Chinese data, English only has a subset of the non-referential constructions that are possible in Chinese. The first is the null object construction, as in (2), and, when an adverbial is used in addition to an overt object NP, the form in (9) is used³.

- (9) He sings songs very well

1.3. Hypotheses

Because of the above differences between English and Chinese, it is interesting to look at the bilingual acquisition of Chinese non-referential constructions. In particular, we look at data from English-dominant heritage speakers, who in theory have access to the non-referential verb constructions of English as well as those of Chinese. We hypothesize that the English-dominant speakers will behave differently, due to the influence of their more dominant English on their less dominant Chinese, and in particular, because English only has a subset of the non-referential constructions that are possible in Chinese. We expect that the Chinese-dominant native speaker controls will produce the three grammatical variants, with the verb copying and null object variants

¹ I do not go into the details of how the verb copying construction is derived here. In brief, the verb is analyzed as merging with the adverbial phrase and then copying via sideward movement (Nunes 2004). The new verb copy subsequently merges with the generic object, and the newly created VP adjoins to the original VP. See Cheng (2007) for the analysis, and Tieu (2008a) for how the analysis can be applied to the other variants of non-referential verb use.

² The theoretical assumption that a null object is present in (6) is not crucial to the present discussion.

³ The status of indefinite NPs in English is not crucial to the present discussion, but I assume that overt NPs in English are more specified than the generic objects of the Chinese kind, such that in sentences like (9), the English NP object can occupy SpecVP, so that if the main verb undergoes standard head movement, we end up with the possible order Verb+Object+Adverb (which is illicit in Chinese). See Tieu (2008b) for further discussion.

being the most frequently produced⁴. While we expect the English-dominant speakers to also produce the three grammatical variants, we expect that compared to the native speaker controls, they will produce more of the null object and double-complement variants, which are the only two that are available in English.

To test these hypotheses, non-referential verb data were collected from five English-dominant heritage speakers of Mandarin Chinese. These data were then compared with data from twenty-two native speaker controls, to determine what differences exist, and whether these differences might be accounted for in the context of bilingual and heritage acquisition.

2. Experiment

2.1. Participants

The Chinese-dominant participants of the study were twenty-two Chinese students, studying at the Guangdong University of Foreign Studies in Guangzhou, China. The English-dominant participants were five Canadian-born Chinese students, studying at the University of Toronto in Canada. All speakers learned Mandarin as their L1 and were introduced to English as a second language between the ages of five to seven. For the Toronto speakers, English became the dominant language; for the Guangzhou speakers, Mandarin remained the dominant language, and English was only used in English class at school. Language dominance was qualitatively determined based on spontaneous speech samples, self-evaluation, and self-assessed amount of Chinese use.

2.2. Methodology

There were a total of five tasks in the experiment. All tasks but one were conducted in Chinese, and all answers were given in Chinese and recorded for analysis. Task IV was conducted in English, and was set up as more of a metalinguistic activity in which speakers provided what they believed to be sentences that would be uttered in certain hypothetical situations.

2.2.1. Task I: Eliciting Spontaneous Verb Use

The first part of the experiment was designed to elicit spontaneous verb use, as well as to obtain a sample of spontaneous speech by the participant, providing us with a qualitative sample of the participant's proficiency in the language.

Table 1: Task I Stimuli. Eliciting spontaneous verb use

	Chinese	English
Introduction	我想了解中国人喜欢参加的活动。	I would like to know what activities the Chinese like to partake in.
Question 1	孩子夏天常做什么?	What do children do in the summertime?
Question 2	中国人一般怎么去上班? 用什么交通工具?	How do people usually get to work?
Question 3	孩子一般怎么去上学?	How do children usually get to school?
Question 4	中国人早上常做什么? 下午一般做什么? 晚上一般做什么?	What do people usually do in the mornings? Afternoons? Evenings?
Question 5	中国人喜欢什么艺术?	What art forms do the Chinese enjoy?
Question 6	请告诉我: 你每天都做什么.	Please describe to me what you do in a typical day.

2.2.2. Task II: Picture Task

The next part of the experiment was designed to elicit the use of verbs that are commonly used with generic bare nouns in non-referential contexts. Participants were shown pictures of cartoon

⁴ I do not consider here the possible influence of the Chinese-dominant native speakers' knowledge of English on their Chinese; these speakers acted solely as a control in this experiment. Monolingual Chinese data would likely tell us whether there is such an influence; I leave this aside for future work.

characters engaged in a particular activity, as in Figure 1, and asked to construct a simple sentence to describe what the character is doing. The prompts and expected answers are given in Table 2⁵.



Figure 1: Picture Task: *du shu* 'read book'

Table 2: Task II Stimuli. Picture task

	Chinese	English
Prompt	图画中/里的人物在做什么?	What is the person in the picture doing?
Answer	他在...	He is...
Question 1	做饭	cooking
Question 2	开车/开汽车	driving a bus
Question 3	开出租车	driving a taxi
Question 4	跳舞	dancing
Question 5	唱歌	singing
Question 6	跑步	running
Question 7	写/写字	writing
Question 8	上课/教书/讲课	teaching
Question 9	画画	painting
Question 10	读报纸	reading a newspaper
Question 11	划船	driving a boat
Question 12	(使)用电脑	using the computer
Question 13	滑冰	skating
Question 14	吃饭	eating
Question 15	学习	studying
Question 16	耳语	whispering
Question 17	走路	walking
Question 18	骑(自行)车	riding a bike
Question 19	读书	reading
Question 20	开火车	driving a train
Question 21	开车	driving

2.2.3. Task III: Preverbal Control

The third task allowed us to elicit preverbal constituents in order to determine, in the event that speakers were dropping the bare noun or verb copying in sentences with an additional postverbal constituent, whether they were doing so indiscriminately, or in adherence to the Phrase Structure Constraint. In other words, this task allowed us to compare any effects of pre- and post-verbal constituents on generic bare noun use. If the Phrase Structure Constraint and restrictions of the thematic hierarchy of Chinese are in fact related to the availability of a single complement position following any one verb copy, the pronunciation of preverbal constituents should not trigger dropping of the bare noun or verb copying.

⁵ While only a third of the English items in Table 2 consist of verbs with overt objects, all the equivalent verbs in Chinese are generally used with overt objects (in the same non-referential contexts).

Table 3: Task III Stimuli. Preverbal control

	Chinese	English
Prompt	他在做什么? 请完成下列句子. 他在...做什么.	Please tell me where the person is and what he is doing. (S)he is <u>location</u> doing <u>action</u> .
Question 1	他在厨房做饭	in the kitchen cooking
Question 2	他在路上开车	on the road driving a bus
Question 3	他在路上开出租车	on the road driving a taxi
Question 4	她在舞台上跳舞	on the stage dancing
Question 5	她在舞台上唱歌	on the stage singing
Question 6	在体育馆跑步	at the gym running
Question 7	他在家写字	at home writing
Question 8	她在学校教书	at school teaching
Question 9	她在学校画画	at school painting
Question 10	在起居室读报纸	in the living room reading a newspaper
Question 11	他在海上划船	on the sea sailing a boat
Question 12	他在家用电脑	at home using the computer
Question 13	在体育馆滑冰	at the gym skating
Question 14	他在家吃饭	at home eating
Question 15	在图书馆学习	at the library studying
Question 16	他们在办公室小声说话	at the office whispering
Question 17	他在外面走路	outside walking
Question 18	在体育馆骑车	at the gym riding a bike
Question 19	她在学校读书	at school reading
Question 20	他在外面开火车	outside driving a train
Question 21	他在外面开车	outside driving

2.2.4. Task IV: Referential Null Objects

The fourth task was designed to elicit referential null objects for three particular verbs: *chi fan* ‘eat’, *kai che* ‘drive’, and *du shu* ‘read’. In all contexts, the referent was either deictically or pragmatically apparent from the given discourse context, or had been previously mentioned (and therefore had a linguistic antecedent in the preceding discourse context). This task was designed to confirm that generic bare nouns are indeed non-referring and therefore not used in referential contexts.

Table 4: Task IV Stimuli. Referential null objects

	English	Expected response
Prompt 1 (deictic referent)	“I want you to eat this piece of cake. I hold it out to you and say...?”	吃吧 <i>chi ba</i> ‘eat \emptyset ’ OR 吃蛋糕 <i>chi dangao</i> ‘eat the cake’
Prompt 2 (deictic referent)	“I want you to read this book. I hold it out to you and say...?”	读吧 <i>du ba</i> ‘read \emptyset ’ OR 读这本书吧 <i>du zhe ben shu ba</i> ‘read this book’
Prompt 3 (deictic referent)	“I’ve bought you a new car, and I want you to drive it. I point to the car and say...?”	开吧 <i>kai ba</i> ‘drive \emptyset ’
Prompt 4 (previous mention, linguistic antecedent)	“There was a cake on the table this morning. I leave and when I come back, the cake is gone. I look at my sister, who has cake crumbs all over her face. I ask her: “What happened to the cake?” What does she say?”	我吃了 <i>wo chi le</i> ‘I ate \emptyset ’ OR 我吃了蛋糕 <i>wo chi le dangao</i> ‘I ate the cake’
Prompt 5 (previous mention, linguistic antecedent)	“My dad has taken the car to work this morning. I wake up to find the car gone, and call him to find out where it is. I ask him: “What happened to the car?” What does he say?”	我开了去上班 <i>wo kai le qu shangban</i> ‘I drove \emptyset to work’
Prompt 6 (previous mention, linguistic antecedent)	“I want you to read a book, but you don’t want to because you’ve already read it. I hand the book to you and ask you to read it. What do you say?”	我已经读过了 <i>wo yijing du guo le</i> ‘I already read \emptyset ’

2.2.5. Task V: Phrase Structure Constraint

The purpose of this task was to elicit the use of a postverbal adverbial phrase, in order to determine whether speakers would violate the Phrase Structure Constraint and thematic hierarchy of Chinese by pronouncing the adverbial phrase immediately following an overt bare noun.

Table 5: Task V Stimuli. Phrase Structure Constraint

	Chinese	English
Prompt	请用下列词语来描述这个图画。	Use an adverb to describe the manner in which the person is doing the action. He <u>action</u> very <u>manner</u> .
Question 1	请用下列词语来描述这个图画。	cooks very well
Question 2	开车开得很快	drives very fast
Question 3	开车开得很快	drives very fast
Question 4	跳舞跳得很好	dances very well
Question 5	唱歌唱得很好	sings very well
Question 6	跑步跑得很快	runs very fast
Question 7	写字写得很快/打字打得很快	writes very well / types very fast
Question 8	教书教得很好	teaches very well
Question 9	画画画得很好	paints very well
Question 10	读书读得很慢	reads very slowly
Question 11	画画画得很好	sails very well
Question 12	读书读得很慢	types very fast
Question 13	滑冰滑得很好	skates very well
Question 14	吃饭吃得很快	eats very quickly
Question 15	学习学得很好	studies very well
Question 16	说话说得很轻	speaks very softly
Question 17	走路走得很慢	walks very slowly
Question 18	骑马骑得很快	rides very fast
Question 19	读书读得很慢	reads very slowly
Question 20	开车开得很快	drives very fast
Question 21	开车开得很快	drives very fast

3. Results

3.1. Task I Results: Eliciting Spontaneous Verb Use

The first part of the experiment was comprised of a set of six questions designed to elicit spontaneous speech, including the use of activity readings of verbs. The Chinese-dominant and English-dominant speakers were able to answer the questions, though the Chinese-dominant speakers' responses were more complex and volunteered more information. However, both groups used the expected verbs, such as *chang ge* 'sing', *tiao wu* 'dance', *hua hua* 'paint', etc. for Question 5 ("What art forms do the Chinese enjoy?") and *kai che* 'drive', *qi dan che* 'ride bike', and *zuo busi* 'take bus' for Question 2 ("How do people usually get to work?").

The results of this section were used to get a qualitative sample of the participants' proficiency in the language and to gauge their ability to answer questions in an interview format. These measures were purely qualitative, but allowed us to confirm that the speakers from Guangzhou were indeed dominant in Chinese, while the Toronto speakers were dominant in English. The participants were also asked to answer the same questions from Task I in English; this qualitative comparison allowed us to confirm their language dominance. The speech samples collected for Task I confirmed the self-assessed proficiency for all speakers.

3.2. Task II Results: Picture Task

For the second task of the experiment, participants were shown pictures of cartoon characters engaged in various activities and asked to say what each character was doing. Because no other postverbal constituent was required, we expected speakers to pronounce the generic bare noun

postverbally. Given our theoretical assumptions, there are two possible answers – one involves the use of the bare noun, the other involves the use of a null bare noun. The results were as follows:

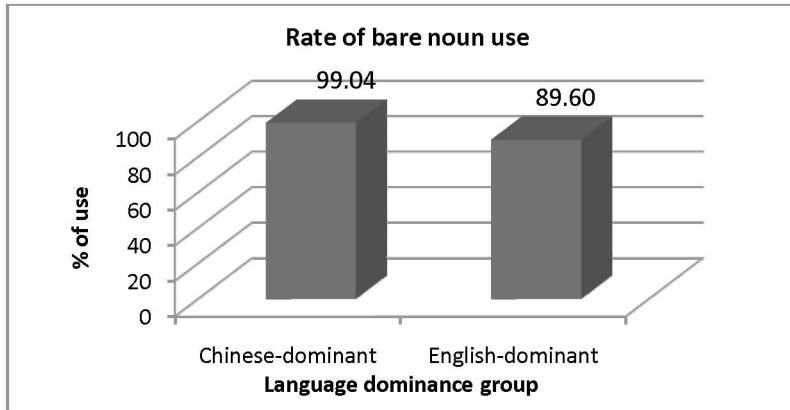


Figure 2. Task II: Postverbal bare noun use. (The Chinese-dominant data contained 418 tokens; the English-dominant data contained 202 tokens.)

Both groups used the overt bare noun in almost all their responses, but the English-dominant heritage speakers used the overt bare noun about 10% less than the Chinese-dominant speakers. This is most likely due to a transfer effect from English; the English equivalents to the answers contain null objects.

One other point of interest is that within the group of Chinese-dominant speakers, two verbs did not show 100% overt bare noun use: *zou* ‘walk’ (12 bare nouns out of a possible 14) and *pao* ‘run’ (18 bare nouns out of a possible 19). The English-dominant speakers showed similar trends; while they used the generic bare nouns more often than not, the verbs *zou* ‘walk’ and *pao* ‘run’ showed less generic bare noun use than the other verbs. This may have to do with the relative freedom of the verb to appear with different objects. While a verb like *chi* ‘eat’ can appear with any number of objects, the verbs *pao* ‘run’ and *zou* ‘walk’ generally only take their generic bare nouns (*bu* ‘step’ and *lu* ‘road’, respectively); otherwise, they appear with null objects.

3.3. Task III Results: Preverbal Control

This task allowed us to compare constructions which had preverbal prepositional and adverbial phrases with constructions which had similar constituents postverbally. The results show that so long as the additional constituent is preverbal, the generic bare noun is used; that is, the Phrase Structure Constraint prohibiting the realization of both the generic bare noun and a postverbal manner adverbial phrase is indeed specific to the postverbal complement position. The answers were as expected; the prepositions and adverbs were placed before the verb, and the generic bare noun after, as seen below.

- (10) ta zai chufang zuo fan
 he in kitchen make food
 ‘He is in the kitchen cooking’
- (11) ta zai lushang kai che
 he on road drive car
 ‘He is on the road driving’

The results also matched the picture task results for both the Chinese-dominant and English-dominant speakers. The Chinese-dominant speakers consistently used the generic bare noun in both Task II and Task III. While the English-dominant speakers were less consistent in their use of the generic bare noun in Task II overall (about 10% less than the Chinese-dominant speakers), they were also consistent between Task II and Task III; that is, if an English-dominant speaker used the generic bare noun in Task II, he also used it in Task III. This allows us to conclude that so long as there is no other constituent following the verb, the generic bare noun is used. Therefore, only postverbal constituents affect generic bare noun use.

3.4. Task IV Results: Referential Null Objects

The purpose of this section was to confirm that generic bare nouns are not used in referential contexts, i.e., that the use of null referential objects is restricted to discourse contexts in which there is a specific, definite referent to be found. The responses were as expected; attested object forms given by the speakers included referential null objects, pronouns, and lexical NPs. This confirms that when speakers refer to a specific object (i.e. use a verb referentially), they do not use the generic bare noun.

3.5. Task V Results: Phrase Structure Constraint

3.5.1. Chinese-Dominant Results

Of the four variants of non-referential verb use introduced in Section 1.2, the most widely used variant was the verb copying construction. The second most frequently used option was the null object variant. Third was the object fronting construction, and finally, least frequently used was the supposedly illicit double-complement construction. Generally speaking, Chinese-dominant speakers exploited the options they had to avoid pronouncing two constituents after the verb.

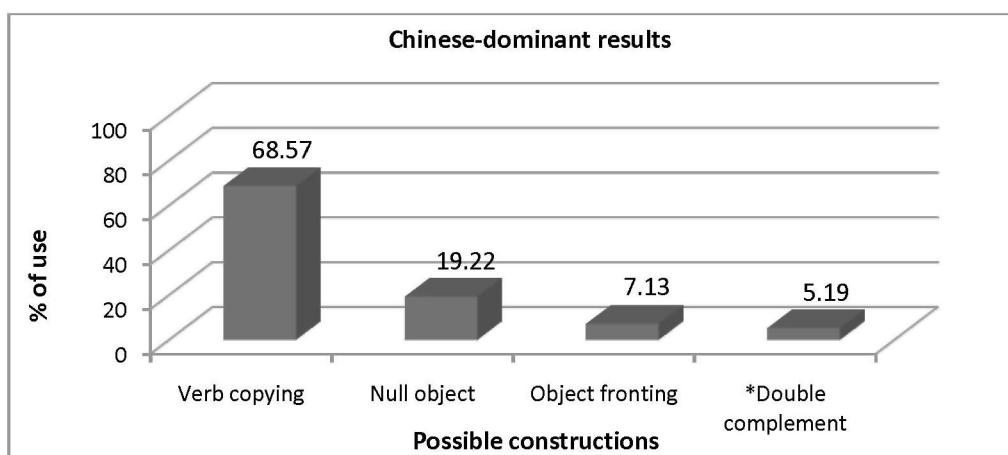


Figure 3. Chinese-dominant preferences by construction

The lower rate of object fronting confirms that this construction is not commonly used. The object fronting construction might be analyzed as similar to the topicalization of referential objects. Given that the constructions in this task were elicited through the use of pictures, some of which included images of potential objects, it is possible that the speakers who used the object fronting construction were in fact producing referential constructions, i.e., referring to the objects in the pictures as referential.

Finally, it is surprising that about 5% of the speakers used the supposedly illicit double-complement construction. While the number is small, it may be attributed to two things. First, dialectal differences might explain why some speakers produced this construction while others did not; second, these constructions might be influenced by English, a possibility that is impossible to rule out given that all speakers had access to English. This possibility might be explored using monolingual data.

3.5.2. English-Dominant Results

The heritage speakers produced only two of the four variants, as seen in Figure 4.

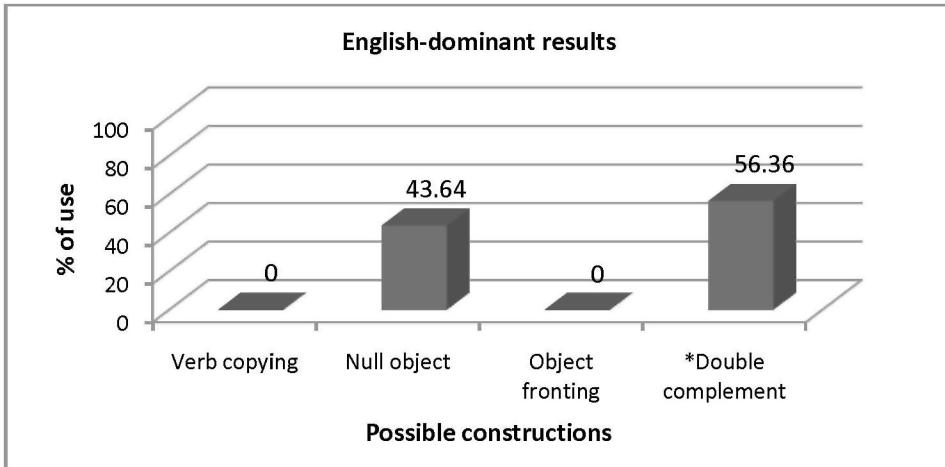


Figure 4. English-dominant preferences by construction

Perhaps surprisingly, none of the heritage speakers produced the verb copying construction for any of the verbs in the task. Less surprising is the lack of object fronting, given that it is so infrequently used by the Chinese-dominant native speakers, and the possibility that it may be a referential construction.

3.5.3. Comparing Across Language Dominance Groups

What we can see from the English-dominant and Chinese-dominant results is that the two groups do not perform similarly at all in their production of non-referential verb constructions. As visualized in Figure 5, there is a great deal of disparity between the two groups.

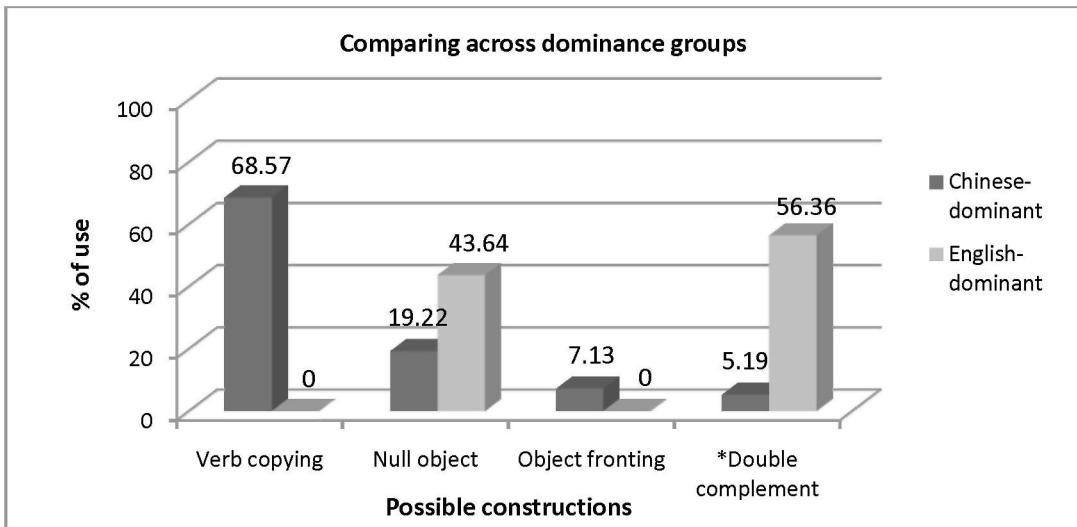


Figure 5. Results across language dominance groups

The differences between the two data sets are not completely surprising, and can be accounted for by appealing to the syntactic differences between the two languages, as discussed in section 4.3.

4. Discussion

4.1. Native Speaker Data

Using the Chinese-dominant data as a baseline for how native speakers produce non-referential verb constructions, we see that the grammatical variants of non-referential verb use are indeed the most highly attested. The speakers produce the four possible variants predicted by the syntactic

analysis, with the most frequently used constructions being the verb copying construction and the null object variant. Crucially, in cases where there is an additional postverbal constituent, speakers tend not to violate the Phrase Structure Constraint; they copy the verb or they use the null object rather than the overt bare noun. The fact that pronouncing preverbal constituents does not trigger verb copying suggests that verb copying does in fact occur because the bare noun and the postverbal adverb are, according to the thematic hierarchy, both selected as complements of the verb; in other words, only the postverbal complement position is relevant when verb copying is triggered.

The small proportion of object fronting by native speakers seems to suggest that the fronted objects are analyzed as referential. Almost all of the speakers produced non-referential constructions for all the verbs tested; only a small percentage possibly interpreted the contexts as referential and fronted the object accordingly.

Finally, the fact that only 5% of the responses represented the ungrammatical variant in which two constituents follow the verb supports the proposal that native speakers generally find the construction unacceptable, as per the Phrase Structure Constraint and thematic hierarchy of Chinese.

4.2. *Heritage Speaker Data*

According to Montrul (2005), *heritage speaker* refers to an adult speaker who learned two languages simultaneously as a child, or learned his/her second language as a child, and was raised in a home where a non-English language was spoken. This speaker subsequently ends up speaking or understanding the heritage language, and is to some degree bilingual in the environment-dominant language and the heritage language (Montrul 2005:203, citing Valdés 2000:1). Given that the Toronto heritage speakers in this study had similar access to their L1 Chinese (e.g., amount of input and use from their primary caregivers) as the native speakers in China for the first five to seven years of life, it is interesting to look at the kinds of differences that exist between the non-referential verb constructions produced by the native speakers and the heritage speakers.

The heritage speakers only produced two of the four possible constructions. They either violated the Phrase Structure Constraint, pronouncing both constituents after the verb, or they produced the null object variant. Perhaps surprisingly, they did not produce the verb copying construction at all. Given the discrepancies between the two groups of speakers, it is clear that when it comes to non-referential verb use, heritage speakers do not perform as native speakers do. The next section discusses ways to account for and predict these differences.

4.3. *Syntactic Differences in Acquisition*

We have determined that in the non-referential constructions examined, Chinese allows one complement to be pronounced following the verb, while English appears to allow more than one postverbal constituent. Under one possible account, both English and Chinese treat the manner adverbials used in the experiment as the innermost complements of the verb. However, Chinese has generic bare nouns, while English does not. Furthermore, all themes (referential and non-referential) precede obliques (i.e., manner adverbials) in the thematic hierarchy proposed for English (Larson 1988), while only referential themes precede obliques in Chinese (Huang 1991). As a consequence of these two differences, verb copying occurs in Chinese (so that one complement follows each copy of the verb), but not in English.

If we take the crucial difference to be the fact that English lacks an overt generic bare noun, we are led to two possible accounts for the English-dominant heritage speaker data. First, the heritage speakers might simply be lexicalizing the verb-object compounds in Chinese; when English becomes the dominant language, they are aware of the generic bare nouns in Chinese, but simply memorize them and overgeneralize the use of these V-O compounds.

The second possibility pertains to the relative thematic hierarchies of the two languages in question. The crucial difference between the two hierarchies is the fact that the Chinese hierarchy makes a distinction between referential and non-referential themes, while English has only one position in the hierarchy for themes. Because of the distinction made in Chinese, we can never have a non-referential theme and an oblique phrase pronounced postverbally (after the same verb copy).

Based on this, we can propose that two factors interact to result in the English heritage speaker errors. First, we can assume transfer of the English thematic hierarchy; that is, for the heritage

speakers, it is the English thematic hierarchy that is used as a frame of reference when it comes to the relative position of thematic objects (in Chinese). Second, because English does not contain overt generic bare nouns, the heritage speakers treat the generic bare noun as they would any other definite NP in English; that is, there is no difference syntactically or semantically between the Chinese *ta zai du shu* ‘He is reading-book’ and the English *He is reading a book*. The Chinese verb copying construction in (12) might similarly be reanalyzed as the English equivalent in (13).

(12) ta du shu du de hen man
 he read book read DE very slow
 ‘He reads slowly’

(13) He reads [_{NP} books] slowly

In analyzing the English sentences, we refer to the English thematic hierarchy, which predicts that the theme be structurally higher than the oblique. In (13) for example, the NP *books* is in the Specifier of VP, and the verb undergoes standard movement; consequently, one copy of the verb is pronounced, followed by the NP and the adverbial phrase. This is the case for the English sentences. However, in analyzing the Chinese sentence *ta zai du shu* ‘He is reading-book’, the heritage speakers use the English thematic hierarchy as a frame of reference, and, because of the lack of generic bare nouns in English, reanalyze the Chinese bare noun as an NP that can occupy the Specifier of VP. These speakers consequently pronounce both the bare noun and the adverbial postverbally, just as they do in English. The fact that the heritage speakers appear to violate the Phrase Structure Constraint is therefore the result of two factors: transfer of the English thematic hierarchy, and reanalysis of the generic bare noun as a definite (non-generic) NP that can occupy the Specifier of VP.

4.4. Future Research: Other Issues in Acquisition

The results of this experiment give rise to interesting questions about heritage acquisition. While we might be able to account for the differences between the two language dominance groups by looking at the sources of the differences syntactically, we still need to understand how, through the acquisition process, heritage speakers end up performing so differently from the Chinese-dominant native speakers. There are three possibilities that need to be explored: language attrition or language loss, incomplete acquisition, and the complete acquisition of an emerging dialect. Further research is required to determine which of the possibilities is at the root of the divergent results of the experiment, but in this section I will discuss the key concepts and how they may eventually lead us to the answers.

One possible account for the differences in the heritage speaker data is L1 loss, defined by Seliger (1996) as “the temporary or permanent loss of language ability as reflected in a speaker’s performance or in his/her ability to make grammaticality judgments that would be consistent with native speaker monolinguals at the same age and stage of language development” (Seliger 1996:606, cited by Montrul 2005:200). The results of this study might in fact demonstrate the L1 loss of Canadian bilinguals who acquire Chinese as their first language but go on to master English as their dominant language. Montrul (2005) suggests that L1 loss in a bilingual context can be seen as the “flip side of the L2 acquisition coin”, a point that is poignant in the context of heritage speakers who by definition, grow up and learn their languages in an L2-dominant environment.

L1 attrition refers to the loss of linguistic ability after an L1 is acquired (Montrul 2005). Such a definition assumes that a linguistic system is acquired completely before the loss occurs, as in the case of adult first generation immigrants who learn the L2 as adults living in an L2 environment. To determine if the differences in the heritage speaker data can be attributed to L1 attrition, one thing we might do is look at child language data to see how five- to seven-year-olds produce non-referential verb constructions. If by the ages of five to seven, children produce verb copying constructions in the same way that the Chinese-dominant native speakers in this study did, this can be taken as indirect evidence that the English-dominant heritage speakers acquired the non-referential verb constructions of Chinese before exposure to English began, thereby supporting the L1 attrition hypothesis.

Another possible account for the differences in the heritage speaker data is incomplete or interrupted acquisition, affecting bilinguals who never fully acquire one of the languages they are exposed to as children. Montrul (2005) refers to these as either simultaneous bilinguals or early child

L2 learners who are exposed to the second or majority language early in childhood, but for whom the L2 later becomes the primary or dominant language. In cases of incomplete or interrupted acquisition, input and use in what used to be the primary language is either interrupted or significantly reduced, resulting in dominance in the second language (Montrul 2005). A study of L2 speaker data can help to pinpoint whether incomplete acquisition is the source of the differences in the heritage speaker data; if during the course of the acquisition process, L2 learners make the same kinds of errors that the heritage speakers do, it is possible that the heritage speakers never fully acquired the non-referential constructions of Chinese before exposure to English began.

Another enticing possibility that further complicates the situation is the complete acquisition of an emerging dialect; under this account, the heritage speakers fully acquired a dialect that experienced language change due to language contact with the dominant language of the environment; if this possibility is in fact the reality, what have generally been regarded as the errors or deficiencies in the language of heritage speakers may actually represent changes in the input language. That is, the errors are not actually errors, but the properties of an emerging dialect spoken by the caregivers of the tested speakers. In this case, we are witnessing not incomplete acquisition, nor language attrition, but rather the complete acquisition of a different (but fully grammatical) dialect. This possibility can be further explored in a future study, possibly using data from the parents and caregivers of would-be heritage speakers growing up in an L2-dominant environment.

5. Conclusion

This paper presented an experiment designed to elicit and analyze non-referential verb data in Chinese. We have found that Chinese-dominant native speakers can provide a baseline for how non-referential verb constructions are produced in Chinese, consistent with the theoretical predictions. Heritage speakers on the other hand appear to differ from the native speakers as a result of their L2 dominance. In producing non-referential verb constructions containing generic bare nouns and postverbal adverbial phrases, they appear to appeal to the English thematic hierarchy and to reanalyze the generic bare noun as a definite NP that can occupy the Specifier of VP. This leads to their production of the supposedly ungrammatical construction in which both constituents follow a single verb copy.

Finally, issues and questions related to heritage acquisition have been raised; future research may eventually determine whether the source of the heritage speaker differences is language attrition or loss, incomplete acquisition, or language change.

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