

**COMPREHENSION OF ELIDED PHRASES IN KOREAN AND ENGLISH:
VP-ELLIPSIS, NULL OBJECT CONSTRUCTIONS, AND *ONE*-SUBSTITUTION**

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To my parents,
Taewook Kim and Cheolja Lee,
with love

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ABSTRACT

The purpose of this study is to experimentally investigate the comprehension of elided phrases in Korean and English, focusing on the patterns exemplified below.

(1) Korean

a. VP-ellipsis:

Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to-yey-yo
Sungki-NOM blue bag-ACC buy-PST-DECL-POL Sunhuy-also-be-POL
'Sungki bought a blue bag. Sunhuy did too.'

b. Null object construction:

Sungki-ka phalan kabang-ul sa-ss-e-yo.
Sungki-NOM blue bag-ACC buy-PST-DECL-POL
Sunhuy-to sa-ss-e-yo.
Sunhuy-also buy-PST-DECL-POL
'(lit.) Sungki bought a blue bag. Sunhuy bought too.'

(2) English

a. VP-ellipsis:

John bought a blue bag. Mary did too.

b. *One*-substitution:

John bought a blue bag. Mary bought one too.

The results of this study reveal that Korean L1 speakers interpreted Korean VP-ellipsis by taking the entire VP in the first clause to be the antecedent of the elided VP in the second clause. For the null object construction, they comprehended the null argument in the second clause with the help of the antecedent clause rather than contextual information.

With respect to recovery of adverbial modifiers, when an antecedent clause contained a modifier phrase denoting manner, reason, time, or location, Korean L1 speakers recovered the modifier phrase at the elided site in VP-ellipsis regardless of modifier type. For the null object construction, many of them recovered temporal and

locative modifier phrases as null arguments in the second clause, whereas they tended not to recover manner and reason modifier phrases in the second clause.

Similarly, Korean L2 learners of English and English L1 speakers interpreted English VP-ellipsis by reconstructing the entire VP of the first clause at the elided site in the second clause. In addition, they interpreted the pronoun *one* in English *one*-substitution, as in (2b), as referring to the higher N' (i.e., *blue bag*), rather than the lower N' (i.e., *bag*).

Parallel to the recovery of modifier phrases in Korean VP-ellipsis and the null object construction, Korean L2 learners of English and English L1 speakers showed the same interpretive preference patterns in recovering manner, reason, locative, and temporal modifier phrases in English VP-ellipsis and *one*-substitution.

The results of this study provide empirical evidence that VP-ellipsis is different from the null object construction. Moreover, based on comprehenders' different recovery patterns of modifier phrases in the null object construction and *one*-substitution patterns, I suggest that the recovery of modifier phrases is sensitive to the verb's event structure (Davidson 1980), independent of syntactic structure.

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LIST OF ABBREVIATIONS

ACC	Accusative case particle
CL	Classifier
DECL	Declarative sentence-type suffix
GEN	Genitive particle
NOM	Nominative case particle
POL	Polite speech level, suffix, or particle
PST	Past tense suffix
TOP	Topic particle

CHAPTER 1

INTRODUCTION

1.1 General objectives of the dissertation

Speakers often omit material that has been mentioned in the previous discourse when listeners can easily retrieve what is omitted, as in (1):

- (1) English
 - a. John ate an apple and Bill did too.
 - b. John ate an apple and Bill ~~ate an apple~~ too.

The second conjunct in (1a) is phonetically presented as *Bill did too*, but it is interpreted as ‘Bill ate an apple too.’ In (1b), the verb phrase *ate an apple* appears in both the first and the second conjuncts, but for the sake of economy of communication, such phrases are often omitted from the second conjunct, creating what is called Verb Phrase Ellipsis (henceforth VP-ellipsis).

Interestingly, not all languages have VP-ellipsis (Lobeck, 1995). Moreover, languages that do allow it vary in terms of type of VP-ellipsis. For example, in English, auxiliary verbs (2a) and copular verbs (2b) can license VP-ellipsis by replacing repeated VPs.

- (2) VP-ellipsis in English
 - a. John has worked for this company and Tom has ~~worked for this company~~ too.
 - b. Mary is going to leave but Jane isn’t ~~going to leave~~.

In Irish, Hebrew, and Portuguese, however, either auxiliaries (3) or main verbs (4) can license VP-ellipsis (Goldberg, 2005; Santos, 2009).

- (3) VP-ellipsis licensed by an auxiliary in European Portuguese (example 1 in Santos, 2009)
 - Speaker A: A Eva tinha dada o livro à tia de manhã
the Eva had given the book to+the aunt PREP morning
‘Eva had given the book to her aunt in the morning.’

Speaker B: Mas a Ana não tinha [-].
but the Ana NEG had
'But Ana didn't.'

[-] = dada o livro à tia de manhã
given the book to+the aunt PREP morning

(4) VP-ellipsis licensed by a main verb in European Portuguese (example 2 in Santos, 2009)¹

Speaker A: A Eva deu o livro à tia de manhã
the Eva gave the book to+the aunt PREP morning
'Eva gave the book to her aunt in the morning.'

Speaker B: Mas a Ana não deu [-].
but the Ana NEG gave
'But Ana didn't.'

[-] = o livro à tia de manhã
the book to+the aunt PREP morning

In Korean and Japanese, 'ha-support' (5a) and 'su/si-support' (6a), which correspond to 'do-support' in English, are infelicitous to license VP-ellipsis (indicated by the *).

Rather, copular verbs are used in Korean and Japanese VP-ellipsis constructions as in (5b) and (6b), respectively.

(5) Korean

a. *Chelswu-ka sakwa-lul mek-ess-e-yo.
Chelswu-NOM apple-ACC eat-PST-DECL-POL

Yenghuy-to ha-yss-e-yo.
Yenghuy-also do-PST-DECL-POL

'Chelswu ate an apple. Yenghuy did too.'

b. Chelswu-ka sakwa-lul mek-ess-e-yo. Yenghuy-to-yey-yo.
Chelswu-NOM apple-ACC eat-PST-DECL-POL Yenghuy-also-be-POL
'Chelswu ate an apple. Yenghuy did too.'

¹ According to Goldberg (2005), VP-ellipsis (VPE) licensed by a main verb is called V-stranding VPE. Although V-stranding VPE appears to be identical to the null object construction, V-stranding VPE is distinguished from the null object construction in that the former is obtained through V-to-I movement and the latter is not. The differences between V-stranding VPE and the null object construction are beyond the scope of this dissertation. For a more detailed explanation of these two constructions, see Goldberg (2005) and Santos (2009).

(6) Japanese

a. *Taroo-ga ringo-o tabe-ta. Hanako-mo si-ta.
Taroo-NOM apple-ACC eat-PAST Hanako-also do-PAST.
'Taroo ate an apple. Hanako did too.'

b. Taroo-ga ringo-o tabe-ta. Hanako-mo-da.
Taroo-NOM apple-ACC eat-PAST Hanako-also-be.
'Taroo ate an apple. Hanako did too.'

In the case of Korean, *be*-support VP-ellipsis is often called “pseudo VP-ellipsis” (Kim & Sohn, 1998) because it behaves somewhat differently from *do*-support VP-ellipsis in English. (Nonetheless, I call the *be*-support VP-ellipsis construction “Korean VP-ellipsis” in this study.)

In the linguistic literature, the null object construction has been compared with VP-ellipsis in that both constructions show somewhat similar interpretation patterns. Hence, a number of studies have extensively examined whether the null object construction, as in (7), can be considered comparable to VP-ellipsis (Goldberg, 2005; Hoji, 1997, 1998; Huang, 1991; S. Kim, 1999; Lee, 2005; Li, 2002; Otani & Whitman, 1991; Pan, 2002; Park, 1997; Xu, 2003; and many others).

(7) Korean

Chelswu-ka sakwa-lul mek-ess-e. Yenghuy-to sakwa-lul mek-ess-e.
Chelswu-NOM apple-ACC eat-PST-DECL Yenghuy-also apple-ACC eat-PST-DECL
'Chelswu ate apples. Yenghuy ate apples, too.'

Although many previous theoretical studies have identified similarities and differences between VP-ellipsis and the null object construction, very few experimental studies have examined these two constructions. This study aims to bridge the gap between linguistic theory and real-world language comprehension by investigating whether results of psycholinguistic experiments support the existing theoretical arguments. In particular, this research project explores how people comprehend sentences containing covert

material, focusing on how arguments are reconstructed at the elided site in VP-ellipsis and the null object construction.

Another purpose of this study is to investigate to what extent syntactic, semantic, and pragmatic constraints affect Korean speakers' comprehension of VP-ellipsis and the null object construction. To address this concern, I tested the recovery of manner, reason, temporal, and locative modifier phrases in each construction. The recovery of modifier phrases in elliptical constructions has been addressed in previous work in support of a difference between VP-ellipsis and the null object construction (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003). That is, when an antecedent clause contains a manner or a reason modifier phrase, the meaning of the modifier is not recovered at the elided site in the null object construction, as illustrated in (8a). By contrast, when an antecedent clause contains a temporal or a locative modifier phrase, the meaning of the modifier is recovered in the null object construction, as in (8b), even though it is not overtly expressed in the second clause.

(8) Null object construction in Korean

a. Chelswu-ka sakwa-lul ppalli mek-ess-e-yo.
Chelswu-NOM apple-ACC quickly eat-PST-DECL-POL

Yenghuy-to mek-ess-e-yo.
Yenghuy-also eat-PST-DECL-POL

‘Chelswu ate an apple quickly. Yenghuy ate [an apple] too.’

b. Chelswu-ka sakwa-lul hakkyo-eyse mek-ess-e-yo.
Chelswu-NOM apple-ACC school-at eat-PST-DECL-POL

Yenghuy-to mek-ess-e-yo.
Yenghuy-also eat-PST-DECL-POL

‘Chelswu ate an apple at school. Yenghuy ate [an apple at school] too.’

However, when an antecedent clause in a VP-ellipsis pattern contains a modifier phrase denoting an action's manner, reason, time, or location, its meaning is recovered regardless of modifier type, as exemplified in (9):

(9) VP-ellipsis in Korean

a. Chelswu-ka sakwa-lul ppalli mek-ess-e-yo. Yenghuy-to-yey-yo.
Chelswu-NOM apple-ACC quickly eat-PST-DECL-POL Yenghuy-also-be-POL
'Chelswu ate an apple quickly. Yenghuy did [eat an apple quickly] too.'

b. Chelswu-ka sakwa-lul hakkyo-eyse mek-ess-e-yo.
Chelswu-NOM apple-ACC school-at eat-PST-DECL-POL
Yenghuy-to-yey-yo.
Yenghuy-also-be-POL

'Chelswu ate an apple at school. Yenghuy did [eat an apple at school] too.'

Since no explanation for this difference in modifier recovery has been provided to date, this study initiates the empirical investigation of the recovery of various types of modifier phrases in VP-ellipsis and the null object construction.

Parallel to VP-ellipsis and the null object construction in Korean, this study also examines the interpretation of English VP-ellipsis (e.g., *John bought a blue bag. Mary did too.*) and *one*-substitution (e.g., *John bought a blue bag. Mary bought one, too*) by Korean second language (L2) learners of English and native speakers (L1) of English. Because Korean VP-ellipsis is considered syntactically different from English VP-ellipsis, I am interested in testing English VP-ellipsis to examine the differences or similarities in how Korean L2 learners of English use syntactic, semantic, and pragmatic information to comprehend VP-ellipsis and *one*-substitution.

In the experiments testing Korean elliptical constructions, I employed VP-ellipsis and the null object construction, while in the experiments testing English constructions, I used VP-ellipsis and *one*-substitution since English does not allow null object

constructions. Null object constructions and *one*-substitution are different in form but share a common property in that they are both anaphoric expressions that require comprehenders to have the ability to identify an antecedent in relation to syntactic, semantic, and pragmatic factors.

The main purposes of this study, then, are as follows: (i) via experimental evidence, to illustrate the properties of VP-ellipsis and the null object construction that have been theoretically argued; (ii) to investigate to what extent syntactic, semantic, and pragmatic information play a role in comprehending VP-ellipsis and the null object construction in Korean; and (iii) to explore the different properties of VP-ellipsis and *one*-substitution by observing Korean L2 learners' and English L1 speakers' comprehension of each construction – how do they deal with syntactic, semantic, and pragmatic information to resolve the ambiguity of each construction?

1.2 Framework of the dissertation

For the study reported in this dissertation, I adopted the notions of deep and surface anaphora as defined by Hankamer and Sag (1976). Hankamer and Sag's study offers a general theoretical explanation of anaphoric expressions. Under the assumption that interpretations of VP-ellipsis and the null object construction are obtained via the syntax and discourse relations between the antecedents and missing elements, these constructions are considered a type of anaphora. *One*-substitution can also be understood through discourse and situational contexts. Following the distinction made by Hankamer and Sag, this study classifies VP-ellipsis as surface anaphora and the null object construction and *one*-substitution as deep anaphora, and it examines the properties of

each construction. In other words, VP-ellipsis requires a particular syntactic constituent as antecedent (surface anaphora), whereas no such requirement holds for the null object construction and *one*-substitution because they can be understood with discourse and pragmatic information (deep anaphora).

Taking this distinction into consideration, this study makes an effort to delineate the characteristics of VP-ellipsis, the null object construction, and *one*-substitution. In order to achieve the purposes mentioned in the previous section, I conducted experiments employing a Truth Value Judgment Task (Crain & Thornton 1998; TVJT) in the form of a written questionnaire. The TVJT has been used in many studies on children's language acquisition because this method is suitable for drawing out young children's knowledge of constraints on grammar and meanings (Foley, del Prado, Barbier, & Lust, 2003; Matsuo, 2007; Santos, 2009; Thornton & Wexler, 1999; and many others). Through young children's responses, researchers can infer how they interpret target sentences. In addition, this experimental method helps us to assess comprehenders' sensitivity to syntactic, semantic, and discourse/pragmatic information as they understand sentences. I designed the experiments for this study with these advantages in mind. Since this study tests adult speakers' comprehension, I simplified the experimental procedures by using a written questionnaire form of a TVJT.

1.3 Organization of the dissertation

In this chapter, I briefly addressed the main purposes of this study and introduced the theoretical and methodological approach that I employed. I now provide an overview of the chapters that follow.

In Chapter 2, I review the theoretical background of VP-ellipsis, the null object construction, and *one*-substitution. In particular, in relation to the distinction between deep and surface anaphora (Hankamer & Sag, 1976), I illustrate the properties of each construction. In addition, I introduce some different perspectives on the nature of VP-ellipsis.

Through an experiment with Korean speakers, Chapter 3 explores which elements are elided in VP-ellipsis and the null object construction. This chapter consists of two main sections. In the first section, I introduce two opposed theoretical stances on VP-ellipsis and the null object construction. In the second section, I present Experiment 1, which was conducted to investigate the properties of missing constituents in VP-ellipsis and the null object construction through adult Korean speakers' comprehension.

In Chapter 4, I discuss the different reconstruction patterns of modifier phrases in VP-ellipsis and the null object construction, based on Davidson's (1980) account of verbs' event structure. In the first part of the chapter, I provide an overview of previous studies dealing with the fact that manner, reason, temporal, and locative modifiers appear to be reconstructed in different ways, depending on the type of elliptical constructions. In the second part, I present a study consisting of two sub-experiments (Experiments 2a and 2b), which explore recovery of modifier phrases in VP-ellipsis and the null object construction. Specifically, Experiment 2a tested native Korean speakers' comprehension of elliptical constructions with regard to recovery of manner and locative modifiers. Using the same method, Experiment 2b explored recovery of reason and temporal modifiers in elliptical constructions by native Korean adult speakers.

Chapter 5 focuses on the characteristics of VP-ellipsis and *one*-substitution in English through investigation of the comprehension of each construction by Korean L2 learners of English and native English speakers. In the first section of this chapter, I review previous studies on L2 learners' comprehension of English VP-ellipsis. I then present two experiments (Experiments 3 and 4) investigating the interpretation of VP-ellipsis and *one*-substitution by English L1 speakers and Korean L2 learners. Specifically, Experiment 3 explores interpretations of null arguments in VP-ellipsis and of the pronoun *one* in *one*-substitution. In tandem with Experiment 2, Experiment 4 tests the recovery of modifier phrases in VP-ellipsis and *one*-substitution in English. Like Experiment 2, Experiment 4 consists of two sub-experiments: Experiment 4a examines recovery of manner and locative modifier phrases in each construction, and Experiment 4b tests recovery of reason and temporal modifier phrases in the same constructions.

Finally, taking the results of all of the experiments together, Chapter 6 provides a general discussion of the research and discusses implications for future research. I conclude the dissertation with some final remarks.

CHAPTER 2

THEORETICAL BACKGROUND

2.1 Deep and surface anaphora

A notable distinction between anaphoric expressions was made by Hankamer and Sag (1976), who propose that there are two different types of anaphoric expressions – deep anaphora and surface anaphora. The major difference between the two is that surface anaphora requires a syntactically parallel antecedent at a surface level, whereas deep anaphora does not require such parallelism in its antecedent because it is pragmatically controlled. Consider the following examples in (1) (non-linguistic contexts shown in square brackets):

- (1) a. Surface anaphora (example 5 in Hankamer & Sag, 1976)
Hankamer: I'm going to stuff this ball through this hoop.
Sag: It's not clear that you'll be able to.
- b. Deep anaphora (example 4 in Hankamer & Sag, 1976)
[Hankamer attempts to stuff a 9-inch ball through a 6-inch hoop]
Sag: It's not clear that you'll be able to do it.

The example in (1a) illustrates surface anaphora, in which an elided element is interpreted with reference to a syntactically parallel antecedent namely, the VP *stuff this ball through this hoop* in the preceding sentence. In contrast, the example in (1b) presents a pro-form *do it* as deep anaphora, whose meaning can be recovered from the relevant discourse context without the help of a linguistic antecedent. Given the situational context, the deep anaphora can be interpreted with the help of pragmatics alone.

Unlike deep anaphora, surface anaphora, as exemplified in (2), is infelicitous when under pragmatic control only. Without a linguistic antecedent, the meaning of

constructions involving surface anaphora cannot be recovered solely from the pragmatically controlled context.

- (2) Surface anaphora (example 3 in Hankamer & Sag, 1976)
[Hankamer attempts to stuff a 9-inch ball through a 6-inch hoop]
Sag: *It's not clear that you'll be able to.

Now, let us take a look at the examples in (3), which illustrate another type of deep anaphora:

- (3) (Example 65 in Hankamer & Sag, 1976)
a. The oats had to be taken down to the bin, so Bill did it.
b. *The oats had to be taken down to the bin, so Bill did.

In (3a), the antecedent clause contains a passive VP, which is not syntactically consistent with the second clause. Despite the different surface forms, because the deep anaphora is produced at a deep structure level, its meaning can be obtained with the aid of semantic and discourse information. That is, it is not obligatory for deep anaphora to be linked with a syntactically parallel linguistic antecedent. By contrast, the active surface anaphora, as in (3b), cannot tolerate a passive antecedent. The surface anaphora in (3b) may have an underlying form such as *The oats had to be taken down to the bin, so Bill took the oats down to the bin*. Unlike the deep anaphora in (3a), the surface anaphora in (3b) is considered ungrammatical because the elided element is not parallel with that of the antecedent.

In the following sections, I elaborate further the theoretical approaches to VP-ellipsis, the null object construction, and *one*-substitution, considering the different characteristics of deep and surface anaphora. Following the classification of Hankamer and Sag (1976) and Sag and Hankamer (1984), I review the findings which show that

VP-ellipsis is surface anaphora, whereas null object constructions and *one*-substitution are instances of deep anaphora.

2.2 VP-ellipsis

Hankamer and Sag (1976) classified VP-ellipsis as surface anaphora because it requires a linguistic antecedent. As illustrated in (4a) and (4b), VP-ellipsis cannot be interpreted without a linguistic antecedent. In addition, it cannot be pragmatically controlled. Furthermore, VP-ellipsis must be accompanied by a linguistic antecedent that is syntactically parallel with the elided VP in the second clause, as in (4c):

- (4) VP-ellipsis
- a. *Bill did too.
 - b. Mary [observing John reading a book, sitting on a couch]:
*Bill did too.
 - c. John read a book and Bill did [_{VP} ~~read a book~~] too.

Over several decades, a number of linguists extensively investigated VP-ellipsis to account for the structural constraints involved in the relationship between the antecedent and the elided VP, as well as for the ambiguity of certain elided VPs (Fiengo & May, 1994; Hardt, 1999; Johnson, 2001; Kehler, 2000; Sag, 1976; Tomioka, 1997; Williams, 1977; and many others). In previous linguistic literature, a number of theoretical approaches have been proposed, and a variety of sentence structures have been tested. Although there are many different perspectives on the resolution of VP-ellipsis, linguists have posited two positions in general – the syntactic approach and the semantic/discourse approach. I discuss each approach in the following sections.

2.2.1 Syntactic approach to VP-ellipsis

According to the early syntactic approach, VP-ellipsis requires a syntactically identical antecedent. Consider the sentences in (5):

- (5) a. John likes bananas and Bill likes bananas too.
- b. John likes bananas and Bill does too.

In example (5a), the VP in the first clause is repeated in the second clause. Since the VPs in the first and the second clauses are structurally identical, the VP in the second clause is omitted, as in (5b), by applying the syntactic deletion rule (Hankamer & Sag, 1976).

However, this explanation faced some problems. In (5a), the VP in the second clause is exactly the same as the VP in the first clause. Therefore, it is possible to omit the repeated VP in the second clause under syntactic identity. But consider the examples in (6):

- (6) a. John likes bananas, and I do [_{VP} like bananas] too.
- b. John played piano, but Bill couldn't [_{VP} play piano].

In (6), the VPs in the first and the second clauses are not identical. In (6a), the VP in the first clause contains the third person present marker ‘-s’ (‘likes bananas’), but the VP in the second clause does not. In (6b), the VP in the first clause contains the past tense marker ‘-ed’ (‘played piano’), but the VP in the second clause takes the basic verb form (‘play piano’) because of the presence of the auxiliary verb *could*. Under syntactic identity at the surface level, it is impossible to construct VP-ellipsis as in (6a) and (6b) because of the morphological discrepancy between the antecedent VPs and the elided VPs in the second clause. However, despite the inflectional differences in (6a) and the tense differences in (6b), there is no doubt that these VP-ellipsis constructions are acceptable.

There is another type of sentence, as in example (7), which cannot be explained under syntactic identity at the surface level. The sentence in (7a) is ambiguous because the second clause can be interpreted as ‘Mary likes John’s teacher’ as in (7b) or ‘Mary likes her own teacher’ as in (7c). However, if syntactic identity at the surface level is required for surface anaphora, how can we explain an interpretation like (7c)?

- (7) a. John likes his teacher, and Mary does [VP e] too.
- b. John likes his teacher, and Mary does [VP ~~likes his teacher~~] too.
- c. John likes his teacher, and Mary does [VP ~~likes her teacher~~] too.

Consequently, syntactic identity at a surface level of representation is not adequate to explain the properties of surface anaphora.

Hence, “LF copying” was proposed as an alternative explanation to account for examples like (7a), which yield multiple interpretations (Fiengo & May, 1994; Sag, 1976; Sag & Hankamer, 1984; Williams, 1977; and many others). According to the LF copying approach, the elided VP is reconstructed by a process of copying the verb phrase from the first clause and reconstructing it at the elided site in the second clause at the LF (logical form) level. Consider a sentence containing a pronoun that is ambiguous, as in (8), which leads to several possible interpretations:

- (8) a. John likes his teacher and Bill does too.
- b. John_i likes his_i teacher and Bill_j likes his_j teacher too.
- c. John_i likes his_i teacher and Bill_j likes his_i teacher too.
- d. John_i likes his_k teacher and Bill_j likes his_k teacher too.
- e. *John_i likes his_k teacher and Bill_j likes his_m teacher too.

In example (8a), the auxiliary verb *does* replaces the elided verb phrase in the second clause. This verb phrase can be interpreted in several different ways, depending on the coindexing relation between the phrase’s pronoun and its referent.

For instance, the second clause, *Bill does too*, can mean ‘Bill likes his own teacher’ as in (8b), which is traditionally called the “sloppy reading.” The sloppy reading is also known as the “bound variable” interpretation because a pronoun is treated as a variable bound to a local subject NP by the lambda (λ) operator. Example (9) illustrates the derivational procedure of the elided VP, resulting in the sloppy reading:

- (9) a. John_i [_{VP} likes his_i teacher], and Bill does [_{VP} e] too.
 b. John_i [λx [x likes x 's teacher]], and Bill does [_{VP} e] too.
 c. John_i [λx [x likes x 's teacher]], and Bill_j [λx [x likes x 's teacher]] too.
 d. ‘John likes John’s teacher, and Bill likes Bill’s teacher.’

On the other hand, sentence (8a) can also be interpreted as either ‘Bill likes John’s teacher’ as in (8c), or ‘John likes a third person’s teacher and Bill likes the same person’s teacher’ as in (8d). The interpretations in (8c) and (8d) are both called “strict readings.” Sentence (8c) illustrates the typical strict reading, which is often referred to as the “coreferential interpretation,” while (8d) is the “deictic interpretation.” Examples (10) and (11) show two derivational procedures for sentence (8), resulting in the coreferential interpretation and the deictic interpretation, respectively:

- (10) a. John [_{VP} likes his teacher], and Bill does [_{VP} e] too.
 b. John_i [λx [x likes his_i teacher]], and Bill_j does [_{VP} e], too.
 c. John_i [λx [x likes his_i teacher]], and Bill_j [λx [x likes his_i teacher]], too.
 d. ‘John likes John’s teacher, and Bill likes John’s teacher.’
- (11) a. John [_{VP} likes his teacher], and Bill does [_{VP} e] too.
 b. John_i [λx [x likes his_k teacher]], and Bill_j does [_{VP} e], too.
 c. John_i [λx [x likes his_k teacher]], and Bill_j [λx [x likes his_k teacher]] too.
 d. ‘John likes a third person’s teacher, and Bill likes the same person’s teacher.’

In both the coreferential interpretation (10c) and the deictic interpretation (11c), the pronouns in the first clause and the second clause refer to the same referent. In contrast to (10c), the pronoun in (11c), ‘his_k,’ has a referent that can only be known from the

discourse context rather than from the sentence itself. Finally, the interpretation offered in (8e), called “free reference,” is grammatically impossible.

Now let us consider VP-ellipsis whose antecedent contains a reflexive pronoun, as in (12a). This example is also ambiguous because it can be interpreted in two different ways.

- (12) a. John blamed himself and Bill did too.
- b. John_i blamed John_i and Bill_j blamed Bill_j too.
- c. John_i blamed John_i and Bill_j blamed John_i too.

In (12a), the VP in the antecedent sentence contains a reflexive pronoun, *himself*, which is c-commanded by the subject NP, *John*, and the second clause can be interpreted as ‘Bill blamed himself too’ via the process of copying the VP of the antecedent sentence. Therefore, the reflexive pronoun in the second clause is also bound to the local subject NP, *Bill*, resulting in the sloppy reading as shown in (13):

- (13) a. John [_{VP} blamed himself], and Bill did [_{VP} e] too.
- b. John_i [λx [x blamed x_i]], and Bill_j did [_{VP} e] too.
- c. John_i [λx [x blamed x_i]], and Bill_j [λx [x blamed x_j]] too.
- d. ‘John blamed himself, and Bill blamed himself.’

However, another problem arises with this example, as shown in (14). Example (12a) can have the strict reading as in (12c), but it seems difficult to obtain the interpretation ‘Bill blamed John too’ using the lambda operator because the reflexive pronoun, *himself*, cannot be coindexed with *John*, which violates Principle A of the Binding Theory as presented in (14):

- (14) a. John [_{VP} blamed himself], and Bill did [_{VP} e] too.
- b. John_i [λx [x blamed himself_i]], and Bill_j did [_{VP} e] too.
- c. John_i [λx [x blamed himself_i]], and Bill_j [λx [x blamed himself_i]] too.
- d. *‘John_i blamed himself_i, and Bill_j blamed himself_i.’

The LF representation of VP-ellipsis was proposed to supplement the account of surface anaphora but is not yet enough to explain the characteristics of VP-ellipsis, such as the strict reading exemplified in (14). How can we explain the interpretations of VP-ellipsis that are not acceptable under the syntactic level of representation? In the following section, I will introduce a semantic approach to VP-ellipsis that gives some other ways to resolve the ambiguity of VP-ellipsis interpretations.

2.2.2 Semantic approach to VP-ellipsis

The semantic approach focuses on resolving VP-ellipsis at a semantic level of representation (Dalrymple, Stuart, Shieber, & Pereira, 1991; Hardt, 1999; Kehler, 2000; among others). In the semantic approach, VP-ellipsis is treated as a pro-form. Like a pronoun, VP-ellipsis is considered as having no internal structure. Unlike the syntactic approach, the semantic approach does not take syntactic reconstruction at the elided VP site into consideration. According to the semantic approach, VP-ellipsis does not require a syntactic antecedent, but only a semantic antecedent, which is associated with the meaning of the elided VP. Thus, this approach proposes that VP-ellipsis is interpreted in relation to a semantic antecedent at a semantic level of representation, claiming that parallel syntactic structures are not required between the antecedent and VP-ellipsis.

Using the semantic perspective, Hardt (1999, 2003) explains the ambiguity of VP-ellipsis by introducing the concept of the “discourse center,” which refers to “the most prominent entity currently under discussion” (2003, p. 110). The discourse center can have two possibilities in discourse contexts – a “center continuation” and a “center shift.” Hardt (1999) defines these notions as follows:

- (15) (from Hardt, 1999, p. 192)
- a. Center continuation: the center remains the same
 - b. Center shift: the center changes

Taking these notions into consideration, then, let us look at the example in (16):

- (16) a. John likes his teacher, and Bill does [_{VP} e] too.
b. John likes his teacher, and Bill does [_{VP} like John's teacher] too.
c. John likes his teacher, and Bill does [_{VP} like Bill's teacher] too.

In this case, the strict reading, as in (16b), is an instance of center continuation, and the sloppy reading, as in (16c), is an instance of center shift. In other words, the strict reading in (16b) is obtained when the discourse center (i.e., John) does not change in the discourse context, whereas the sloppy reading in (16c) is available when the discourse center undergoes center shift, from 'John' to 'Bill,' in the context.

Kehler (2000) supports the claim that the interpretation of VP-ellipsis is resolved by combining syntactic relations between antecedents and the anaphoric expressions and coherence relations in discourse contexts (e.g., cause-effect relations, resemblance relations, and contiguity relations). Consider the examples in (17):

- (17) (examples 34 and 39 in Kehler, 2000)
- a. *This problem was looked into by John, and Bob did too. [looked into the problem]
 - b. This problem was looked into by John, even though Bob already had. [looked into the problem]

Example (17a) is considered ungrammatical in a syntactic account because of the different voice between the antecedent clause and the second clause. But this sentence can be made felicitous by adjusting the coherence relationship between the first and the second clauses, as in (17b). Although example (17b) does not have syntactic parallelism, the meaning of the elided verb phrase can be easily retrieved on the basis of semantic coherence.

However, the semantic approach is not sufficient to explain VP-ellipsis in general since semantic coherence rules are limited to particular situations, so it is hard to generally apply the semantic approach to the resolution of VP-ellipsis. In addition, some psycholinguistic studies have demonstrated that the syntactic structure of an antecedent has more effect in processing VP-ellipsis than semantic information does (Arregui, Clifton, Frazier, & Moulton, 2006; Mauener, Tanenhuas, & Carlson, 1995a). According to Arregui et al. (2006), comprehenders accepted VP-ellipsis with a syntactically parallel antecedent more often than VP-ellipsis with an antecedent that does not syntactically match the elided constituent. For example, they tested VP-ellipsis with a syntactically different antecedent, as in (18a) to (18d):

- (18) (example 9 in Arregui et al., 2006)
- a. None of the astronomers saw the comet, but John did.
 - b. Seeing the comet was nearly impossible, but John did.
 - c. The comet was nearly impossible to see, but John did.
 - d. The comet was nearly unseeable, but John did.

In acceptability judgments, comprehenders accepted sentences like (18a) through (18d), 82.8%, 66.1%, 42.9%, and 17.1% of the time, respectively. Based on the results of five online and offline judgment experiments, Arregui et al. claimed that the syntactic structure of the antecedent affects comprehenders' acceptability of VP-ellipsis and processing difficulty. That is, comprehenders showed lower acceptability and more difficulty in processing VP-ellipsis when its antecedent did not syntactically match the elided constituent, even though they accepted VP-ellipsis with the syntactically non-parallel antecedents more or less by repairing the antecedent's grammar.

2.3 The null object construction

Early linguistic literature on the null object construction analyzed the construction in Japanese and Chinese via an operation of V-to-Infl raising (Huang, 1987, 1991; Otani & Whitman, 1991). This analysis was derived from the LF interpretive rules proposed by Williams (1977) to explain interpretations of VP-ellipsis. Following Williams' analysis, Otani and Whitman applied the LF interpretive rules directly to the null object construction in Japanese, as in (19), to account for how the null object construction yields the strict and the sloppy reading, as presented in (20):

(19) Japanese (example 4 in Otani & Whitman, 1991)

John-wa zibun-no tegami-o sute-ta. Mary-mo [e] sute-ta.
John-NOM self-GEN letter-ACC discard-PERF Mary-also discard-PERF
'John threw out self's letter. Mary also threw out (John's letter).'
'John threw out self's letter. Mary also threw out (self's letter).'

(20) Verb-raising hypothesis (example 11 in Otani & Whitman, 1991)

a. V-Raising Derivation

John-wa [_{VP} [_{NP} zibun-no tegami-o] [_V sute]] -ta.
Mary-mo [_{VP} [_{NP} e] [_V sute-]] -ta.

b. V-Raising (S-Structure)

John-wa [_{VP} [_{NP} zibun-no tegami-o] t_V] [_V sute-]-ta.
Mary-mo [_{VP} [_{NP} e] t_V] [_V sute-]-ta.

c. Derived VP Rule (LF)

John-wa [λx [_{VP} x [_{NP} zibun-no tegami-o] t_V]] [_V sute-]-ta.
Mary-mo [_{VP} [_{NP} e] t_V] [_V sute-]-ta.

d. Reflexive Rule (LF)

John-wa [λx [_{VP} x [_{NP} x -no tegami-o] t_V]] [_V sute-]-ta.
Mary-mo [_{VP} [_{NP} e] t_V] [_V sute-]-ta.

e. VP Rule (LF)

John-wa [λx [_{VP} x [_{NP} x -no tegami-o] t_V]] [_V sute-]-ta.
Mary-mo [λx [_{VP} x [_{NP} x -no tegami-o] t_V]] [_V sute-]-ta.

In regard to the V-to-Infl raising analysis of the null object construction, Hoji (1998) argued that null object constructions cannot be analyzed in the same way as VP-

ellipsis. Instead, based on the distinction made by Hankamer and Sag (1976), Hoji (2003) showed that the null object construction is a type of deep anaphora in that the null element in the null object construction can be pragmatically controlled without a linguistic antecedent, as shown in (21):

- (21) Japanese
John [observing Mary washing a car]:
Bill-mo [NP e] arrata.
Bill-also [NP e] washed
'Bill washed ____, too.'

Although it does not have an antecedent sentence, the null object construction in (21) is acceptable. Unlike VP-ellipsis, comprehenders can fully understand what the null element refers to given the situational context. Thus, Hoji claimed that the null object construction is not like VP-ellipsis and is better characterized as deep anaphora because the meaning of the null element can be resolved by the relation it has with its antecedent in the discourse and situational condition.

In this section, I briefly illustrated the properties of the null object construction as deep anaphora on the basis of the distinction made by Hankamer and Sag (1976). In later chapters, I continue discussion on the null object construction, elaborating on the different properties of the null object construction and VP-ellipsis (section 3.1 and section 4.1).

2.4 *One-substitution*

The anaphoric pronoun *one* is classified as deep anaphora because it does not require a linguistic antecedent (Hankamer & Sag, 1986; Sag & Hankamer, 1984). The

anaphoric relation between the pronoun *one* and its antecedent can be determined by the pragmatic context, as shown in (22):

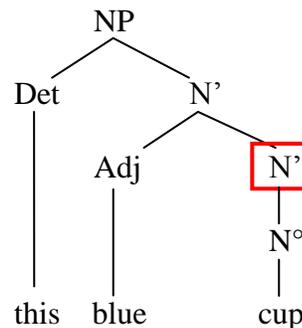
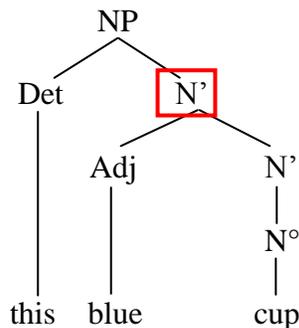
(22) (examples 34 and 35 in Hankamer & Sag, 1976)

- a. [Sag produces an apple]
Hankamer: Did you bring *one* for me?
- b. [Observing Max ride by on his camel]
Did you ever ride on the *one* Sue used to have?

However, when the anaphoric pronoun *one* does have a linguistic antecedent, it is not always clear what *one* substitutes for. Let us consider the sentence *Look at this blue cup. Now, look at another one.* In this sentence, the anaphoric pronoun *one* can substitute for the higher N' (i.e., *blue cup*) as in (23a), or for the lower N' (i.e., *cup*) as in (23b):

(23) a. Anaphoric to the higher N'

b. Anaphoric to the lower N'



Example (24), another illustration of the anaphoric pronoun *one*, is an excerpt from a conversation between a parent (P) and a 20-month-old child (C):

(24) (Callanan & Sabbagh, 2004, as cited in Akhtar et al., 2004, p. 143)

- P: There's fishes on the wall. Fishes on the wall, fishes in the bag.
- C: Bag.
- P: Bag.
- C: (walks over and gets a toy out of bag) Eee go-go eee. Eee. Fis.
- P: A very big fish. A whale.
- C: Ohh! Buh? (hands mother the whale)
- P: Thank you.
- C: (gets another toy and brings it to mother) Bih? Fis?
- P: There's another *one*. It looks like a shark.

In (24), it is unclear whether *one* refers to ‘*big fish*’ or just ‘*fish*.’ Yet considering the discourse context, it seems more appropriate that the pronoun *one* in this case is anaphoric to the category of the higher N’ (i.e., ‘*big fish*’), not to the category of the lower N’ (i.e., ‘*fish*’). In this example, the anaphoric relation between the pronoun *one* and its antecedent can be resolved with the help of the pragmatic and discourse context.

Of course, in a sentence like ‘*John kicked a blue ball and Bill kicked a green one,*’ it is clear that the pronoun *one* is anaphoric to the lower N’ (i.e., ‘*ball*’). However, as already explained, *one*-substitution often brings about ambiguity. Therefore, as reviewed above, the matter of whether the pronoun *one* in *one*-substitution refers to the category of the lower N’ or the category of the higher N’ has to be considered with relation to the semantic and discourse context information as well as to linguistic antecedents.

CHAPTER 3

RECONSTRUCTION OF NULL ARGUMENTS IN VP-ELLIPSIS AND THE NULL OBJECT CONSTRUCTIONS IN KOREAN

3.1 Previous studies on VP-ellipsis and null object constructions

A number of studies have extensively examined the linguistic properties of VP-ellipsis, as in (1a), and the null object construction, as in (1b), in order to elucidate similarities and differences between these constructions (Hoji, 1997, 1998; Huang, 1987, 1991; S. Kim, 1999; Lee, 2005; Li, 2002; Otani & Whitman, 1991; Pan, 2002; Xu, 2003, and many others).

(1) a. VP-ellipsis (English)

John ate an apple and Bill did too.

b. Null object construction (Korean)

Chelswu-ka sakwa-lul mek-ess-e. (Kuliko) Yenghuy-to mek-ess-e.
Chelswu-NOM apple-ACC eat-PST-DECL (And) Yenghuy-also eat-PST-DECL
'(lit.) Chelswu ate an apple. And Yenghuy ate too.'

Huang (1991) and Otani and Whitman (1991) claim that the null object construction in Chinese, Japanese, and Korean corresponds structurally to VP-ellipsis in English because both constructions can yield a sloppy reading and a strict reading, as in (2b) and (2c), respectively.

(2) English

a. John met his friend and Bill did too.

b. John_i met his_i friend and Bill_j met his_j friend too. (sloppy reading)

c. John_i met his_i friend and Bill_j met his_i friend too. (strict reading)

Like the VP-ellipsis construction illustrated in (2), the Korean null object construction can also yield multiple interpretations when its antecedent clause contains a pronoun. In example (3), the second clause *Yengho-to mann-ass-e* '(lit.)Yengho met too'

can mean ‘Yengho met his own friend’ (3b), which is the sloppy reading. It can also mean ‘Yengho met Chelswu’s friend’ (3c), which is the strict reading.

(3) Korean

a. Chelswu-ka ku-uy chinku-lul mann-ass-e.
 Chelswu-NOM he-GEN friend-ACC meet-PST-DECL

(kuliko) Yengho-to mann-ass-e.

(And) Yengho-also meet-PST-DECL

‘(lit.) Chelswu met his friend. And Yengho met too.’

b. Chelswu_i met his_i friend and Yengho_j met his_j friend too. (sloppy reading)

c. Chelswu_i met his_i friend and Yengho_j met his_i friend too. (strict reading)

As exemplified in (2) and (3), when the antecedent clause contains a pronoun, both VP-ellipsis and the null object construction result in two interpretations – the strict reading and the sloppy reading. Thus, this similarity supports the argument that the Japanese null object construction is similar to English VP-ellipsis.

Huang (1987, 1991) and Otani and Whitman (1991) also note locality effects for sloppy identity, arguing that the null object construction and VP-ellipsis both display the same restriction on the locality of the sloppy reading in the second clause. In (4a), for example, the second clause, *Mary knew that Bill did too*, can be interpreted as ‘Mary knew that Bill saw his own mom,’ as in (4b), or ‘Mary knew that Bill saw John’s mom,’ as in (4c). However, the nonlocal sloppy reading ‘Mary knew that Bill saw Mary’s mom,’ as in (4d), is impossible.

(4) English (example 33 in Huang, 1991)

a. John saw his mother, and Mary knew that Bill did, too.

b. John_i saw his_i mother, and Mary_k knew that Bill_j saw his_j mom.

c. John_i saw his_i mother, and Mary_k knew that Bill_j saw his_i mom.

d. *John_i saw his_i mother, and Mary_k knew that Bill_j saw her_k mom.

Similarly, the null object construction (5a) allows the local variable sloppy reading (5b) and the strict reading (5c), but it does not permit a nonlocal sloppy reading (5d):

(5) Chinese (example 34 in Huang, 1991)

- a. John kanjian-le tade mama, Mary zhidao Bill ye kanjian-le.
John see-PERF his mother Mary know Bill also see-PERF
'(lit.) John saw his mother, and Mary knew that Bill saw, too.'
- b. John_i saw his_i mother, and Mary_k knew that Bill_j saw his_j mom.
- c. John_i saw his_i mother, and Mary_k knew that Bill_j saw his_i mom.
- d. *John_i saw his_i mother, and Mary_k knew that Bill_j saw her_k mom.

To sum up, Huang (1987, 1991) and Otani and Whitman (1991) claim that null object constructions are like VP-ellipsis in English in two respects: the availability of the sloppy reading and the locality effects on the sloppy reading.

Arguing against previous analyses of the two constructions, Hoji (1998) observes that null object constructions in Japanese and VP-ellipsis in English cannot be considered comparable due to the unavailability of the sloppy reading in Japanese. Consider examples (6) and (7):

(6) Japanese (example 12 in Hoji, 1998)

- a. John_i-wa zibun(zisin)_i-o nagusameta.
John-TOP self-ACC consoled
'John_i consoled himself_i.'
- b. Bill-mo nagusameta.
Bill-also consoled
'Bill consoled too.'
- c. *Bill_j-mo zibun(zisin)_j-o nagusameta
Bill-also self-ACC consoled
'Bill_j consoled himself_j too.'

(7) English (example 13 in Hoji, 1998)

- a. John consoled himself.
- b. Bill did too.

If the null object construction corresponds to VP-ellipsis, it should allow the same sloppy reading as VP-ellipsis does. In example (6a), the reflexive pronoun *zibun(zisin)* 'self' obligatorily refers to the subject of its containing clause, yielding the meaning 'John

consoled himself.’ If the null object construction corresponds to VP-ellipsis, the phonetic string *Bill-mo nagusameta* ‘Bill consoled too’ in (6b) should yield the sloppy reading, *Bill-mo zibun(zisin)-o nagusameta* ‘Bill consoled himself, too’ as in (6c). However, the null object construction in Japanese (6b) cannot yield this interpretation. In contrast to this Japanese example, English VP-ellipsis, *Bill did too* in (7b), allows the sloppy reading ‘Bill consoled himself, too.’ Thus, the unavailability of this reading in Japanese leads Hoji (1998) to claim that the null object construction cannot be analyzed as corresponding to VP-ellipsis.

Turning to locality effects on the sloppy reading, Hoji (1998) disputes the claim made by Huang (1987, 1991) and Otani and Whitman (1991) that the null object construction exhibits the same restrictions on locality effects as does VP-ellipsis. In example (8b), the sentence *Mary-wa Bill-mo suisensita to omotteita* ‘(lit.) Mary thought Bill recommended too’ can mean ‘Mary thought that Bill recommended John’s student,’ as in (8b(i)), or ‘Mary thought that Bill recommended his own student,’ as in (8b(ii)). (Note that *ec* stands for “empty category.”) However, it cannot mean ‘Mary thought that Bill recommended Mary’s student,’ as in (8b(iii)): this reading is ruled out by Principle A of the Binding Principle.

(8) Japanese (example 8 in Hoji, 1998)

a. John-wa zibun-no gakusei-o suisensita.
 John-TOP self-GEN student-ACC recommended
 ‘John_i recommended self’s_i student.’

b. Mary-wa [Bill-mo *ec* suisensita to] omotteita.
 Mary-TOP Bill-also recommended that thought
 ‘Mary thought [that Bill recommended *ec*, too.]’

- (i) ‘Mary_k thought that Bill_j recommended self’s_i student.’
- (ii) ‘Mary_k thought that Bill_j recommended self’s_j student.’
- (iii) ‘*Mary_k thought that Bill_j recommended self’s_k student.’

However, Hoji (1998) argues that, unlike (8b), example (9b) can yield a nonlocal sloppy reading, such as ‘Mary thought that Bill recommended Mary’s student,’ by replacing the particle *mo* ‘also’ with the nominative marker *ga* in the embedded clause, given a context such as the following:

John and Mary have been competing with each other in placing their students for good teaching positions. Ordinarily, whenever John recommended John’s student for a position, Mary also recommends Mary’s student for the same position. Now, Bill, Mary’s colleague, who used to be her student, does various things for Mary. He sometimes even recommends Mary’s students on behalf of Mary, so that Mary does not have to do anything. (Hoji, 1998, p. 137)

(9) Japanese (example 8 in Hoji, 1998)

a. John-wa zibun-no gakusei-o suisensita.
 John-TOP self-GEN student-ACC recommended
 ‘John_i recommended self^o_{s_i} student.’

b. Mary-wa [Bill-ga *ec* suisensita to] omotteita.
 Mary-TOP Bill-NOM recommended that thought
 ‘Mary thought [that Bill recommended *ec*, too].’

- (i) ‘Mary_k thought that Bill_j recommended self^o_{s_i} student.’
- (ii) ‘Mary_k thought that Bill_j recommended self^o_{s_j} student.’
- (iii) ‘Mary_k thought that Bill_j recommended self^o_{s_k} student.’

In contrast to the null object construction in Japanese, it is not possible to remove the locality effect on the sloppy reading in English VP-ellipsis, even when *too* in the second clause is eliminated, as in (10):

(10) English

- a. John_i recommended his_i student.
- b. Mary thought that Bill did.
 ‘Mary_k thought that Bill_j recommended his_i student.’
 ‘Mary_k thought that Bill_j recommended his_j student.’
 ‘*Mary_k thought that Bill_j recommended her_k student.’

Based on the different interpretations related to locality, Hoji (1998) suggests that the locality effects observed in the sloppy readings in (10) result from the properties of VP-

ellipsis. For the null object constructions, however, locality effects are caused by the presence of *mo* ‘too’ rather than by the properties of the null object construction itself.

Taken together, these differences in the availability of the local and nonlocal sloppy readings lead Hoji (1998) to challenge the conclusion that the null object construction can be analyzed structurally in the same way as VP-ellipsis.

3.2 Reconstruction of null arguments in elliptical constructions

With regard to the differences between VP-ellipsis and null object constructions, Hoji (1998) proposes that in each construction, syntactically different elements from antecedent clauses are recovered at the elided site in the second clause. In VP-ellipsis, a whole VP from the antecedent clause is reconstructed at the elided site in the second clause, whereas in null object constructions, only a head noun is reconstructed at the elided site. Consider examples (11) and (12):

(11) English (example 41 in Hoji, 1998)

- a. John washed his (own) car.
- b. Everyone else did too.

(12) Japanese (example 35 in Hoji, 1998)

- a. John-ga zibun-no kuruma-o aratta
John-NOM self-GEN car-ACC washed
‘John washed self’s car.’

- b. John igai-no subete-no hito-mo (minna) *ec* aratta.
John except-GEN all-GEN person-also (all) washed
‘Everyone other than John also washed *ec*.’

In English, the second sentence (11b) can be interpreted as ‘Everyone else washed John’s car’ (the strict reading) or ‘Everyone else washed his own car’ (the sloppy reading). In Japanese, the second sentence (12b) can have the same interpretations as in the English VP-ellipsis (11b). In addition, unlike the English example, the sentence (12b) can even

mean that everyone other than John washed any car. That is, (12b) can be interpreted as ‘Everyone else also washed a car.’ In Japanese, the noun ‘car’ can mean ‘a car,’ ‘the car,’ ‘cars,’ and ‘the cars,’ ‘his car,’ and so on, depending on the discourse situation. Thus, Hoji (1998) proposes that in the Japanese null object construction, only a head noun is recovered from the antecedent at the elided site, and then its content, such as an indefinite or definite meaning, is supplied by the discourse context. So, he calls this recovered head noun a ‘supplied N head.’ That is, in (12b), the head noun *kuruma* ‘car’ is reconstructed in the second clause, and then a definite meaning, such as ‘his car,’ or an indefinite meaning, such as ‘a car,’ is determined depending on the discourse context.

Based on Hoji’s (1998) account of null arguments in elliptical constructions, Matsuo (2007) conducted an experiment to investigate how young English-speaking children (mean age 5;8) and Japanese-speaking children (mean age 5;4) interpret elided phrases in VP-ellipsis and null object constructions. English-speaking and Japanese-speaking adults also participated as a control group. Since Japanese does not have a construction equivalent to VP-ellipsis in English, Matsuo compared English VP-ellipsis with null object constructions in Japanese. She made use of four different contexts: (i) a strict reading context, (ii) a sloppy reading context, (iii) a color-mismatch reading context, and (iv) an object-mismatch reading context. In the color-mismatch reading context, two main characters perform the same action, on objects of the same kind but of different colors (e.g., *Mr. Bear found a blue fish and Mr. Tiger did [~~find a red fish~~] too*). In an object-mismatch reading context, two main characters perform the same action, but on different objects (e.g., *The cow ate some asparagus and the elephant did [~~eat some carrots~~] too*).

The results of Matsuo's study reveal that Japanese-speaking adults accepted the null object construction in the color-mismatch reading context 36% of the time, suggesting that in more than a third of their responses, they took the null argument to correspond to just the head noun in the antecedent clause. In contrast, they allowed the null object construction in the object-mismatch reading context, where the heads themselves differ, only 9.1% of the time.

Japanese-speaking children accepted the color-mismatch reading context over 70% of the time and the object-mismatch reading context approximately 52% of the time. This indicates that they allowed the null object to correspond either to just the head in the antecedent clause (70%) or to a previously mentioned referent in the context but not in the antecedent clause (52%).

For VP-ellipsis, English-speaking adults did not allow either the color-mismatch reading context or the object-mismatch reading context. This result straightforwardly shows that English-speaking adults did not allow any object NPs in VP-ellipsis other than the object NP in the antecedent clause. In contrast, English-speaking children rejected the color-mismatch reading context and the object-mismatch reading context approximately 70% and 73% of the time, respectively. In other words, English-speaking children accepted VP-ellipsis around 30% of the time in the color-mismatch and the object-mismatch context conditions. Although Matsuo concluded that English-speaking children comprehended VP-ellipsis with no difficulty and that they showed adult-like interpretation patterns, it seems that some children had different interpretation patterns from those of English-speaking adults. Unfortunately, Matsuo did not report the results comparing the responses of English-speaking adults and children, but it would be

informative to further investigate English-speaking children's comprehension of null elements in VP-ellipsis.

The findings of Matsuo's study show crosslinguistic differences between English VP-ellipsis and Japanese null object constructions. In support of Hoji's (1998) claim that Japanese null object constructions are not equivalent to English VP-ellipsis, Matsuo concludes that Japanese speakers allow null complements to be interpreted in a variety of ways, including as nonspecific objects and indefinite objects.

3.3 The present study: Research questions for Experiment 1

To date, many psycholinguistic researchers have conducted experiments to investigate adult speakers' comprehension of VP-ellipsis (Frazier & Clifton, 2000, 2005, 2006; Konietzko & Winkler, 2010; Martin & McElree, 2008; Shapiro & Hestvik, 1995; Shapiro, Hestvik, Lesan, & Garcia, 2003; Tanenhaus & Carlson, 1990, and many others), but not many experimental studies have been conducted on comprehension of null object constructions by children and adults. In this respect, Matsuo's 2007 study is noteworthy in that she investigated comprehension of two different elliptical constructions by children as well as adults across two languages.

However, Matsuo's study has methodological shortcomings that seem to have affected the results. First, she did not consider a 'plausible denial' or a 'plausible assent' in each context. Although she claimed that she had considered plausible denial, she did not adequately manipulate the experimental contexts. Let us look at one example of context in (13):

(13) Sloppy reading context (example 13 in Matsuo, 2007)

Scenario: One day, Cookie Monster and Mike were playing together. Cookie Monster had a big cookie in his hand and when he got hungry from playing, he had a bite of his cookie. Mike got envious of Cookie Monster's cookie so he went home to ask his mom if he could have his own cookie, too. Mike's mother baked a cookie for him. Since Mike had an orange shirt on, Mike's mother put an orange star on his cookie to match his shirt. After that, Mike returned to play more with Cookie Monster and they ate their own cookies.

Target sentence: Cookie Monster ate his cookie and Mike did, too.

Plausible deniability is necessary when we test children's syntactic and pragmatic knowledge. Since children are often unwilling to answer 'No,' they are more likely to answer 'Yes' to target sentences regardless of sentence type. To prevent children's 'yes-bias' responses, we need to make each context plausibly true or false. Unlike Matsuo's explanation of the experimental design, however, the contexts do not allow for plausible deniability. That is, the contexts do not offer two possibilities inducing participants to answer either 'TRUE' or 'FALSE.' Consequently, the results show near ceiling effects in the sloppy and the strict reading contexts. In addition, children may have been influenced by a 'yes-bias' effect in the color-mismatch and the object-mismatch context conditions because they are reluctant to answer 'No' to the target sentences.

A second methodological flaw is that only 10 Japanese-speaking adults participated as a control group in Matsuo's study. The results from the Japanese-speaking adult group are therefore not convincing due to the small number of participants.

Taking these matters into consideration, Experiment 1 was carefully designed to explore similarities and differences between VP-ellipsis and null object constructions by comparing Korean adult speakers' comprehension of null arguments in these elliptical constructions. Unlike Matsuo's study, the current study focused on a single language group of subjects. The research questions for Experiment 1 are as follows:

- a. What is elided in the null object constructions? What do native Korean speakers reconstruct from the antecedent clause at the elided position in null object constructions?
- b. In terms of the reconstruction of null arguments, what are the similarities and differences in how native Korean speakers comprehend VP-ellipsis and null object constructions?
- c. How do syntactic and pragmatic factors affect the reconstruction of null arguments in VP-ellipsis and null object constructions?

3.4 Experiment 1

3.4.1 Method

3.4.1.1 Participants

Sixty-five native Korean adult speakers participated in this study. They were all college students, recruited from a university located in Seoul, South Korea. They were randomly divided into two groups. Thirty-three participants were tested on VP-ellipsis and 32 participants on null object constructions. The age range of the first group was 18;1 to 22;10 (mean age 19;8), and the second group ranged from 18;3 to 23;1 (mean age 20;3). Out of 65 participants, data from three participants in the first group and two participants in the second group were excluded from the analysis. These five participants performed poorly on filler items, with accuracy rates lower than 80%. Thus, data from 30 participants in each group were analyzed in Experiment 1. Most participants had not lived in any foreign countries, but two had lived in China for three years. Before starting the experiment, all participants signed a consent form.

3.4.1.2 Procedure

A paper-and-pencil questionnaire was employed. Each participant was given a booklet testing either VP-ellipsis or null object constructions. Thirty-three participants were given booklets for VP-ellipsis and 32 for null object constructions. Participants were asked to carefully read each short story and then to judge whether a statement presented at the end of each story was correct by marking ‘TRUE’ or ‘FALSE’ on the questionnaire sheet. ‘TRUE’ indicated that the statement matched the story, and ‘FALSE,’ that it did not. When the participants submitted their questionnaire booklets, I randomly selected some of them to ask about their interpretations of elided phrases. Participants were tested in two different mid-sized classrooms. It took about 15 to 20 minutes for them to complete all procedures.

3.4.1.3 Material

The statements at the end of the stories belonged to one of two types of target sentences: VP-ellipsis, as in (14a), or null object constructions, as in (14b).

(14) a. VP-ellipsis

Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to-yey-yo.
Sungki-NOM bag-ACC buy-PST-DECL-POL Sunhuy-also-be-POL
‘Sungki bought a bag. Sunhuy did too.’

b. Null object construction

Sungki-ka kabang-ul sa-ss-e-yo.
Sungki-NOM bag-ACC buy-PST-DECL-POL
Sunhuy-to sa-ss-e-yo.
Sunhuy-also buy-PST-DECL-POL
‘(lit.) Sungki bought a bag. Sunhuy bought too.’

Each target sentence consisted of two clauses. The first clause described one main character’s action. In the second clause, either the verb phrase was elided, creating VP-

ellipsis, as in (14a), or the object NP was elided, creating a null object construction, as in (14b). In Experiment 1, the polite ending form *yey-yo* ‘to be’ was used in VP-ellipsis, whereas in the null object construction, the verb used in the first clause was repeated in the second clause.

To test these target sentences, I created three types of story context: (i) a full-match context, (ii) a color-mismatch context, and (iii) an object-mismatch context. In the full-match context, two main characters perform the same action with the same objects. In the color-mismatch context, two main characters perform the same action with the same kind of object, but the objects are of different colors. In the object-mismatch context, two main characters perform the same action, but they handle totally different objects. For example, in the full-match context, each of two characters buys his/her own bag. In the color-mismatch context, one character buys a blue bag and the other buys a white bag. In the object-mismatch context, one character buys a bag and the other buys a wallet.

A total of 12 experimental items (i.e., four items per condition) were tested along with 16 filler items. Fillers consisted of bi-clausal sentences containing either the Korean anaphor *caki* or *caki-casin*, as in (15) to examine Korean speakers’ preference for local versus long-distance binding interpretations.

- (15) Minswu-nun Yengho-ka caki/cakicasin-ul pinanhay-ss-ta-ko
 Minswu-TOC Yengho-NOM self-ACC blame-PST-DECL-COMP
 malhay-ss-ta.
 say-PST-DECL
 ‘Minswu said that Yengho blamed him/himself.’

All the contexts were created to satisfy the condition of plausible deniability. In any given context, for example, two outcomes were always considered: one corresponding to a ‘TRUE’ answer and the other to a ‘FALSE’ answer.

Consider the following examples of each context with target sentences:

<The full-match context>

Context story (English translation):

Sungki, Mina, and Sunhuy went on a trip to Hawaii. On the last day of their trip, they went shopping in Waikiki to buy some souvenirs. In a shop, Sungki found a bag with Hawaiian pictures on it. He liked the bag, and he bought it as a souvenir although it was expensive. After looking around, Mina bought a mug with a picture of a hula dancer on it. Then, Sunhuy said, “I like your bag and your mug. What am I going to buy? A bag or a mug?” After thinking, Sunhuy decided to buy a mug. **[first possible outcome]** When she was about to buy a mug, Sungki said to her, “Wait, Sunhuy. I think it would be dangerous if it were to break.” So, Sunhuy changed her mind and she bought a bag with a Hawaiian picture to be safe. **[alternative outcome]**

Target sentences:

a. VP-ellipsis

Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to-yey-yo.
 Sungki-NOM bag-ACC buy-PST-DECL-POL Sunhuy-also-be-POL
 ‘Sungki bought a bag. Sunhuy did too.’

b. Null object construction

Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST-DECL-POL Sunhuy-also buy-PST-DECL-POL
 ‘(lit.) Sungki bought a bag. Sunhuy bought too.’

In the full-match context condition, a target response to both VP-ellipsis and the null object construction is ‘TRUE,’ although the context was constructed to draw out an answer, either ‘TRUE’ or ‘FALSE,’ from participants. If they think that Sunhuy bought a mug, then they would consider the target VP-ellipsis and null object construction false. On the other hand, if they think that Sunhuy bought a bag, they would consider the target sentences true.

<The color-mismatch context>

Context story (English translation):

Sungki, Mina, and Sunhuy went shopping at a department store. Looking around in the store, Sungki found a bag that he wanted to buy. However, the bag was available in various colors. Since Sungki liked blue, he bought a blue bag. Mina found a blue hat that was on sale at 50% off and she bought it. Then, Sunhuy said, “Wow, your bag and your hat look very cool. Am I going to buy a bag or a hat?” After thinking, Sunhuy decided to buy a bag. **[first possible outcome]** When Sunhuy picked up a blue bag, Sungki said to her, “Wait. Don’t buy a blue bag. It is boring if you buy the same bag as me.” So Sunhuy bought a white bag. **[alternative outcome]**

Target sentences:

a. VP-ellipsis

Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to-yey-yo.
Sungki-NOM blue bag-ACC buy-PST-DECL-POL Sunhuy-also-be-POL
‘Sungki bought a blue bag. Sunhuy did too.’

b. Null object construction

Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to sa-ss-e-yo.
Sungki-NOM blue bag-ACC buy-PST-DECL-POL Sunhuy-also buy-PST-DECL-POL
‘(lit.) Sungki bought a blue bag. Sunhuy bought too.’

The color-mismatch context condition was also designed to have two possibilities that participants could answer either ‘TRUE’ or ‘FALSE.’ If they care about the fact that Sunhuy bought a bag, regardless of the color of the bag, then they would consider the target VP-ellipsis and null object construction true. Or, if they think that Sunhuy bought a white bag, they would consider the target VP-ellipsis and null object construction false. That is, depending on their interpretation of VP-ellipsis and null object construction, they had the option of denying or confirming either possibility.

<The object-mismatch context>

Context story (English translation):

Sungki, Mina, and Sunhuy went shopping at a department store. Looking around in the store, Sungki found a bag that he wanted to buy. Although it was expensive, he bought the bag. Mina also looked around the store and she found a wallet that she liked. So she bought it. Then, Sunhuy said, “I like your bag and your wallet. I want to buy one. Umm... then, am I going to buy a bag or a wallet?” After thinking, Sunhuy decided to buy a bag. **[first possible outcome]** When Sunhuy picked up a bag, Sungki said, “It is a new item for this season, so it is expensive.” Changing her mind, Sunhuy bought a wallet, which was on sale at 50% off. **[alternative outcome]**

Target sentences:

a. VP-ellipsis

Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to-yey-yo.
 Sungki-NOM bag-ACC buy-PST-DECL-POL Sunhuy-also-be-POL
 ‘Sungki bought a bag. Sunhuy did too.’

b. Null object construction

Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST-DECL-POL Sunhuy-also buy-PST-DECL-POL
 ‘(lit.) Sungki bought a bag. Sunhuy bought too.’

Likewise, in the object-mismatch context condition, participants would answer, depending on their reconstruction of the elided phrase. For example, they would answer ‘TRUE’ to the target VP-ellipsis and null object construction if they think that Sunhuy bought a bag. But, they would answer ‘FALSE’ to the target sentences if they think that Sunhuy bought a wallet.

3.4.2 Predictions

I predicted that Korean participants’ responses to the target sentences would be as presented in table 3.1:

Table 3.1 Predictions of null argument reconstruction in Korean VP-ellipsis and null object constructions

Contexts	VP-ellipsis	Null object construction
Full-match	TRUE	TRUE
Color-mismatch	FALSE	TRUE/FALSE
Object-mismatch	FALSE	FALSE

In the case of VP-ellipsis in the full-match context, the target answer is ‘TRUE’ if participants reconstruct the whole VP from the antecedent clause at the elided site in the second clause, via a processing of reconstruction. This is illustrated in (16): the target VP-ellipsis, such as *Sunhuy-to-yey-yo* ‘Sunhuy did too,’ is interpreted as ‘Sunhuy bought

a bag too.’ Therefore, the reconstructed sentence will be considered true because the two main characters in the context performed the same action.

(16) a. Sungki-ka kabang-ul sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST-DECL-POL
 ‘Sungki bought a bag.’

b. Sunhuy-to-yey-yo.
 Sunhuy-also-be-POL
 ‘Sunhuy did too.’

→ Sunhuy-to [VP kabang-ul sa-ss-e-yo]-yey-yo
 Sunhuy-also [VP bag-ACC buy-PST-DECL-POL]-be-POL
 ‘Sunhuy did [VP buy a bag] too.’

By contrast, in the case of VP-ellipsis in the color-mismatch context, I expect that the target answer will be ‘FALSE.’ That is, if the whole VP from the antecedent clause is reconstructed at the elided site in the second clause via a processing of reconstruction, then participants will consider the second clause false because the reconstructed phrase does not match the story in terms of the color of the objects that the two characters deal with. This reconstruction is illustrated in (17).

(17) a. Sungki-ka phalan kabang-ul sa-ss-e-yo.
 Sungki-NOM blue bag-ACC buy-PST-DECL-POL
 ‘Sungki bought a blue bag.’

b. Sunhuy-to-yey-yo.
 Sunhuy-also-be-POL
 ‘Sunhuy did too.’

→ Sunhuy-to [VP phalan kabang-ul sa-ss-e-yo]-yey-yo
 Sunhuy-also [VP blue bag-ACC buy-PST-DECL-POL]-be-POL
 ‘Sunhuy did [VP buy a blue bag] too.’

In (17), the second clause, *Sunhuy-to-yey-yo* ‘Sunhuy did too,’ is interpreted as ‘Sunhuy bought a blue bag too’ with the help of the antecedent sentence. However, since this reconstructed sentence does not correctly describe the context story with regard to the

- (19) a. Sungki-ka kabang-ul sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST- DECL-POL
 ‘Sungki bought a bag.’
- b. Sunhuy-to sa-ss-e-yo.
 Sunhuy-also buy-PST- DECL-POL
 (lit.) ‘Sunhuy bought too.’
- ➔ Sunhuy-to [kabang-ul] sa-ss-e-yo.
 Sunhuy-also [bag-ACC] buy-PST- DECL-POL
 ‘Sunhuy bought [bag] too.’

In the case of the color-mismatch context, participants will consider the target null object construction true if they take the null argument to correspond to the head noun of the object (e.g., *kabang* ‘bag’) in the antecedent clause, as in (20).

- (20) a. Sungki-ka phalan kabang-ul sa-ss-e-yo.
 Sungki-NOM blue bag-ACC buy-PST- DECL-POL
 ‘Sungki bought a blue bag’
- b. Sunhuy-to sa-ss-e-yo.
 Sunhuy-also buy-PST- DECL-POL
 (lit.) ‘Sunhuy bought too’
- ➔ Sunhuy-to [kabang-ul] sa-ss-e-yo.
 Sunhuy-also [bag-ACC] buy-PST- DECL-POL
 ‘Sunhuy bought [bag] too.’

Although the two main characters in the story deal with objects of different colors, participants may understand the null object construction by reconstructing the null argument as just the head noun of the object in the antecedent clause. As a result, the target sentence will be considered true, as long as two main characters perform an action with the same type of object regardless of the color of the objects.

However, we cannot exclude the possibility that participants will reconstruct the object noun with a modifier (e.g., *phalan kabang* ‘blue bag’) from the first clause at the elided site in the second clause, as in (21). In this case, the target answer will be ‘FALSE’

because the reconstructed sentence does not correctly describe the context story, in which each character bought a bag of different colors.

(21) a. Sungki-ka phalan kabang-ul sa-ss-e-yo.
 Sungki-NOM blue bag-ACC buy-PST- DECL-POL
 ‘Sungki bought a blue bag’

b. Sunhuy-to sa-ss-e-yo.
 Sunhuy-also buy-PST- DECL-POL
 (lit.) ‘Sunhuy bought too’

→ Sunhuy-to [phalan kabang-ul] sa-ss-e-yo.
 Sunhuy-also [blue bag-ACC] buy-PST- DECL-POL
 ‘Sunhuy bought [blue bag] too.’

Finally, in the object-mismatch context, I predict that the target sentences will be considered false if the object noun from the antecedent clause is reconstructed at the elided site in the second clause. In this case, the reconstructed sentence does not correspond to the context of the story in terms of the type of the object that the two main characters buy. In (22), for example, the object noun *kabang* ‘bag’ in the first clause is used to interpret the null argument at the elided site in the second clause. However, Sunhuy bought a wallet, not a bag, so I expect participants to answer ‘FALSE’ to the target sentences.

(22) a. Sungki-ka kabang-ul sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST- DECL-POL
 ‘Sungki bought a bag’

b. Sunhuy-to sa-ss-e-yo.
 Sunhuy-also buy-PST- DECL-POL
 (lit.) ‘Sunhuy bought too’

→ Sunhuy-to [kabang-ul] sa-ss-e-yo.
 Sunhuy-also [bag-ACC] buy-PST- DECL-POL
 ‘Sunhuy bought [bag] too.’

3.4.3 Results

Out of 65 participants, I excluded five from the data analysis due to their low accuracy rates on filler items. Thus, in Experiment 1, the data from a total of 60 participants were analyzed: 30 participants for VP-ellipsis and 30 for null object constructions. The dependent variable was the percentage of ‘TRUE’ responses to VP-ellipsis and the null object construction in each context condition. Table 3.2 summarizes the results of Experiment 1.

Table 3.2 Mean proportion of ‘YES’ responses to target sentences in Experiment 1

	VP-ellipsis	Null object construction
Full-match context	98.3% (<i>SD</i> = 6.34)	98.3% (<i>SD</i> = 6.34)
Color-mismatch context	0.8% (<i>SD</i> = 4.56)	6.6% (<i>SD</i> = 14.58)
Object-mismatch context	2.5% (<i>SD</i> = 7.62)	1.66% (<i>SD</i> = 6.34)

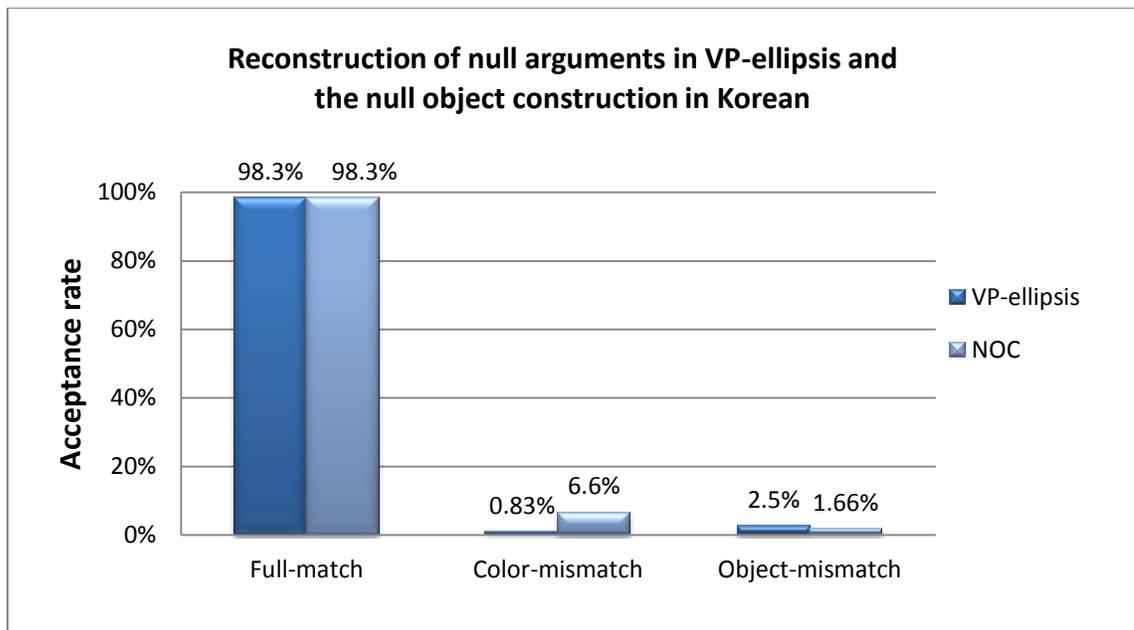


Figure 3.1 Korean L1 speakers’ responses to VP-ellipsis and the null object construction in Experiment 1

As shown in figure 3.1, the results reveal that, overall, Korean adult speakers comprehended VP-ellipsis and null object constructions without any significant difference between the two structures. Looking at the results in detail, Korean participants accepted VP-ellipsis (e.g., *Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to-yey-yo.* ‘Sungki bought a bag. Sunhuy did too.’) in the full-match context condition 98.3% ($SD = 6.34$) of the time, indicating that they gave ‘TRUE’ responses to most target sentences. By contrast, they accepted VP-ellipsis (e.g., *Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to-yey-yo.* ‘Sungki bought a blue bag. Sunhuy did too.’) in the color-mismatch and VP-ellipsis in the object-mismatch context conditions only 0.83% ($SD = 4.56$) and 2.5% ($SD = 7.62$) of the time, respectively. That is, most Korean speakers gave ‘FALSE’ responses to VP-ellipsis in the color-mismatch and the object-mismatch context conditions.

In the null object construction, Korean speakers showed the same acceptance tendency as in VP-ellipsis conditions. That is, they accepted the null object construction (e.g., *Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to sa-ss-e-yo.* ‘Sungki bought a bag. Sunhuy bought too.’) in the full-match context condition 98.3% ($SD = 6.34$) of the time, which means that they answered ‘TRUE’ to most target sentences. However, they rarely accept the null object constructions (e.g., *Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to sa-ss-e-yo.* ‘Sungki bought a blue bag. Sunhuy bought too.’) in the color-mismatch context condition or the null object construction in the object-mismatch context condition. They gave ‘TRUE’ responses to null object constructions 6.6% ($SD = 14.58$) of the time in the color-mismatch context condition and 1.66% ($SD = 6.34$) of the time in the object-mismatch context condition.

3.4.4 Discussion of Experiment 1

In Experiment 1, Korean adult speakers showed no significant difference in acceptance rates of VP-ellipsis and null object constructions in either condition. This result raises questions with respect to Korean speakers' comprehension of different elliptical constructions. First, what are the syntactic features of missing elements in VP-ellipsis and the null object construction? What arguments did Korean speakers reconstruct at the elided site in each construction? Second, how do the results of this study compare with those of previous studies? And finally, even if the acceptance rates of VP-ellipsis are similar to those of the null object construction across the context conditions, was the interpretation of these two constructions affected by the same constraints? How did Korean speakers make use of syntactic and pragmatic information in comprehending each elliptical construction?

Looking at the results in detail, we see that most Korean speakers answered 'TRUE' to VP-ellipsis in the full-match context condition, as predicted. This suggests that they reconstructed the entire verb phrase from the first clause at the elided site in the second clause via reconstruction, as in (23):

- (23) Sungki-ka kabang-ul sa-ss-e-yo.
Sungki-NOM bag-ACC buy-PST-DECL-POL
Sunhuy-to [_{VP} kabang-ul sa-ss-e-yo]-yey-yo.
Sunhuy-also [_{VP} bag-ACC buy-PST-DECL-POL]-be-POL
'Sungki bought a bag. Sunhuy did [_{VP} buy a bag] too.'

The reconstructed sentence, *Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to kabang-ul sa-ss-e-yo* 'Sungki bought a bag. Sunhuy bought a bag too,' matches the context story, in which two characters each bought a bag of their own. Therefore, participants considered the target sentence true.

By contrast, most participants answered ‘FALSE’ to VP-ellipsis in the color-mismatch context condition. In this case, they appear to have comprehended VP-ellipsis by reconstructing the verb phrase with the help of the antecedent clause, as in (24). However, their reconstructed sentence, *Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to phalan kabang-ul sa-ss-e-yo* ‘Sungki bought a blue bag. Sunhuy bought a blue bag too,’ did not match the story with respect to the colors of the objects since in the context story, Sunhuy bought a white bag.

- (24) Sungki-ka phalan kabang-ul sa-ss-e-yo.
 Sungki-NOM blue bag-ACC buy-PST- DECL-POL
 Sunhuy-to [_{VP} phalan kabang-ul sa-ss-e-yo]-yey-yo.
 Sunhuy-also [_{VP} blue bag-ACC buy-PST-DECL-POL]-be-POL
 ‘Sungki bought a blue bag. Sunhuy did [_{VP} buy a blue bag] too.’

Likewise, in the object-mismatch context condition, Korean speakers appear to have reconstructed the entire verb phrase from the first clause at the elided site in the second clause, as in (25). The reconstructed sentence, *Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to kabang-ul sa-ss-e-yo* ‘Sungki bought a bag. Sunhuy bought a bag too,’ indicated that the two characters bought the same kind of object, but in the context story, they did not. Thus, most participants considered the target VP-ellipsis sentence in the object-mismatch context condition false.

- (25) Sungki-ka kabang-ul sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST- DECL-POL
 Sunhuy-to [_{VP} kabang-ul sa-ss-e-yo]-yey-yo.
 Sunhuy-also [_{VP} bag-ACC buy-PST- DECL-POL]-be-POL
 ‘Sungki bought a bag. Sunhuy did [_{VP} buy a bag] too.’

Next, let us consider Korean speakers’ comprehension of null object constructions. The participants showed a high acceptance rate for target sentences in the full-match context condition. That is, most participants answered ‘TRUE’ to the null object

construction in the full-match context condition. This implies that they interpreted the target sentence, as in (26), as *Sungki-ka kabang-ul sa-ss-e-yo. Sunhuy-to kabang-ul sa-ss-e-yo* ‘Sungki bought a bag. Sunhuy bought a bag too,’ which matched the context story.

- (26) Sungki-ka kabang-ul sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST- DECL-POL
 Sunhuy-to [kabang-ul] sa-ss-e-yo.
 Sunhuy-also [bag-ACC] buy-PST- DECL-POL
 ‘Sungki bought a bag. Sunhuy bought [bag] too.’

However, with this result, it is difficult to determine whether participants understood the null object in the second clause with the aid of the antecedent sentence or the context story. That is, this result cannot distinguish whether participants obeyed syntactic parallelism or used contextual information to comprehend null arguments in the null object construction.

For the color-mismatch context condition, I made two predictions regarding how Korean speakers would comprehend the target sentences when the objects in the story were different colors. On the one hand, if they reconstruct the object noun with the modifier from the first clause at the elided site in the second clause, they would consider the target sentence false. On the other hand, if they reconstruct only the head noun from the first clause, they would accept the target sentence as true, regardless of the colors of the objects that the two characters acted upon. As we observed the results, most participants answered ‘FALSE’ to the target sentences in the color-mismatch context condition, indicating that they reconstructed the object noun including the modifier from the first clause at the elided site in the second clause, as in (27). This analysis was supported by the interviews with participants, who said that they comprehended *phalan*

kabang ‘blue bag’ as a null argument in the second clause rather than the head noun alone (e.g., *kabang* ‘bag’).

- (27) Sungki-ka phalan kabang-ul sa-ss-e-yo.
 Sungki-NOM blue bag-ACC buy-PST- DECL-POL
 Sunhuy-to [phalan kabang-ul] sa-ss-e-yo.
 Sunhuy-also [blue bag-ACC] buy-PST- DECL-POL
 ‘Sungki bought a blue bag. Sunhuy bought [blue bag] too.’

Finally, in the object-mismatch context condition, most participants answered ‘FALSE’ to the null object construction. This result too indicates that they understood the null argument in the second clauses with the help of the object noun in the antecedent clause, as in (28). Thus, the reconstructed object noun (e.g., *kabang* ‘bag’) in the second clause did not match the context of the story in terms of the type of objects (e.g., *cikap* ‘wallet’) that the two characters handled.

- (28) Sungki-ka kabang-ul sa-ss-e-yo.
 Sungki-NOM bag-ACC buy-PST- DECL-POL
 Sunhuy-to [kabang-ul] sa-ss-e-yo.
 Sunhuy-also [bag-ACC] buy-PST- DECL-POL
 ‘Sungki bought a bag. Sunhuy bought [bag] too.’

As explained above, the Korean-speaking participants showed no significant differences in acceptance rates for VP-ellipsis and null object constructions in any of the three conditions. However, this study presents several noteworthy results.

First, although it was not revealed quantitatively, the reconstruction of elided phrases in VP-ellipsis and the null object construction was qualitatively different. In other words, comprehenders are required to reconstruct an entire VP to understand the elided site in VP-ellipsis, whereas they need to reconstruct just an elided object NP in the null object construction. Thus, the elided phrase in VP-ellipsis is syntactically different from that in the null object construction.

In fact, the questionnaire method obtains only participants' final decision on the target sentence, so it is difficult to know what makes them judge a target sentence to be true or false. To overcome this methodological shortcoming, I randomly chose several participants and questioned them in an attempt to uncover more about how they understood the elided phrases. As expected, participants answered that they rephrased VP-ellipsis with the help of the antecedent sentence. The VP that they reconstructed at the elided site in the second clause was the same as the VP in the antecedent clause. In the case of null object constructions, they rephrased the second clause by reconstructing the object noun of the first clause at the elided site.

Second, we notice that the results from the color-mismatch context condition differ from those of Matsuo's 2007 study. In the current study, Korean speakers comprehended the object noun including the adjective modifier in the first clause as the antecedent of the null argument in the null object construction in the color-mismatch context condition. That is, they did not take the null argument to correspond to just the head noun, without its modifier.

In contrast, Matsuo found that Japanese-speaking adults accepted null object constructions in the color-mismatch context 36% of the time, which was significantly different from English speakers' acceptance rate for VP-ellipsis in the same context condition. That is, some Japanese speakers allowed sentences like *The bear found a blue fish and the tiger found \emptyset , too*, even though the tiger found a pink fish, not a blue fish. However, English speakers did not allow sentences like *The bear found a blue fish and the tiger did [VP ~~find a pink fish~~], too*.

Based on the different comprehension patterns of the two groups, Matsuo claimed that Japanese speakers allow just the bare noun of the object NP in the first clause as the antecedent for the null object in the second clause (e.g., *The bear found a blue fish and the tiger found* [_N ~~fish~~], *too*). However, because of the small number of participants in her study, the results cannot be used to generalize with confidence Japanese speakers' comprehension of null arguments in the null object constructions. In addition, Matsuo employed a flawed TVJT, which may have caused a different result pattern from that of the current study. Thus, in order to obtain generalizable knowledge of null object constructions, further investigation is needed on how Japanese speakers comprehend null arguments in elliptical constructions.

The findings from Experiment 1 leave at least one question unanswered. According to previous studies, the reconstruction of null arguments in VP-ellipsis is more constrained by syntax, whereas the reconstruction of null arguments in null object constructions is more influenced by discourse contexts and pragmatics (Hoji, 2003; Hankamer and Sag, 1976; Oku, 1998). However, the results of Experiment 1 suggest that null arguments in both VP-ellipsis and the null object construction are reconstructed by means of a syntactic parallelism constraint rather than contextual information. In the case of null object constructions, if participants had placed more weight on contextual information than on syntactic parallelism, they would have answered 'TRUE' to the target sentences in the color-mismatch context condition and the object-mismatch context condition. However, they appear to have understood null arguments with the help of the antecedent sentence, not context information.

Further investigation is needed to demonstrate to what extent comprehenders consider syntactic, semantic, and pragmatic constraints in interpreting elided arguments. Therefore, I conducted the study reported in the next chapter to learn more about how syntactic constraints and semantic and contextual information affect comprehenders' understanding of null arguments in VP-ellipsis and null object constructions.

CHAPTER 4

**RECONSTRUCTION OF MODIFIERS IN KOREAN VP-ELLIPSIS AND
THE NULL OBJECT CONSTRUCTION**

4.1 Previous studies

Previous studies have shown that when an antecedent clause contains an adverbial modifier, VP-ellipsis and null object constructions have different interpretative patterns in terms of the reconstruction of null elements at the elided site in the second clause (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003). In null object constructions, manner and reason modifiers in the first clause are not recovered at the elided site in the second clause, whereas temporal and locative modifiers are. In VP-ellipsis, by contrast, the first clause’s modifiers denoting an action’s manner, reason, time, and location are all recovered at the elided site (see table 4.1).

Table 4.1 Recovery of modifiers in VP-ellipsis and null object constructions

Type of modifier	VP-ellipsis	Null object construction
Manner / Reason	Recovered	Not recovered
Time / Location	Recovered	Recovered

In the case of manner modifiers, for example, VP-ellipsis in (1b) is felicitous only if both Chelswu and Yenghuy ate apples quickly. In contrast, the null object construction (1c) is felicitous not only when both Yenghuy and Chelswu ate apples quickly, but also when Yenghuy ate apples slowly.

(1) Korean

- a. Chelswu-ka sakwa-lul ppalli mek-ess-e-yo.
 Chelswu-NOM apple-ACC quickly eat-PST- DECL-POL
 ‘Chelswu ate apples quickly.’

- b. Yenghuy-to-yey-yo (VP-ellipsis)
 Yenghuy-also-be-POL
 ‘Yenghuy did, too.’
- c. Yenghuy-to mek-ess-e-yo (null object construction)
 Yenghuy-also eat-PST-DECL-POL
 ‘(lit.) Yenghuy ate, too.’

For temporal modifiers, VP-ellipsis in (2b) is acceptable only if both Chelswu and Yenghuy ate apples last night. The null object construction (2c) is also possible only if both Chelswu and Yenghuy ate apples last night. However, unlike the manner modifiers, the null object construction is infelicitous if Yenghuy ate apples at a time other than last night.

(2) Korean

- a. Chelswu-ka sakwa-lul ecespam-ey mek-ess-e-yo.
 Chelswu-NOM apple-ACC last night-ADV eat-PST-DECL-POL
 ‘Chelswu ate apples last night.’
- b. Yenghuy-to-yey-yo (VP-ellipsis)
 Yenghuy-also-be-POL
 ‘Yenghuy did, too’
- c. Yenghuy-to mek-ess-e-yo (null object construction)
 Yenghuy-also eat-PST-DECL-POL
 ‘(lit.) Yenghuy ate, too’

With respect to modifier recovery, Xu (2003) provided Chinese elliptical construction examples suggesting that Chinese VP-ellipsis is equivalent to English VP-ellipsis, whereas Chinese null object constructions are not. Consider the example in (3):

(3) Chinese (example 8 in Xu, 2003)

- a. John hui zixide shua ya, Peter ye hui.
 John will carefully brush teeth Peter also will
 ‘John will brush his teeth carefully and Peter will too.’
- b. John will brush his teeth carefully and Peter will [_{VP} brush his teeth carefully] too.

In Chinese VP-ellipsis, the copular verb *shi* ‘to be’ and some modal verbs, such as *hui* ‘will,’ as seen in (3a), can be used to replace a verb phrase in the second clause. In (3a), the second clause *Peter ye hui* ‘Peter also will’ is interpreted as ‘Peter will brush his teeth carefully too’ as in (3b), although the modifier *zixide* ‘carefully’ does not appear in the second clause. That is, the modifier is phonetically null in the second clause in VP-ellipsis, but the entire VP, including the modifier phrase, is recovered from the first clause when readers/hearers comprehend the elided site in the second clause.

As for the Chinese null object construction in (4), the modifier *zixide* ‘carefully’ in the first clause does not appear in the second clause. Unlike in VP-ellipsis, however, the manner modifier is not obligatorily recovered in the second clause in the null object construction. In (4b), only the head noun, *ya* ‘teeth,’ is necessarily reconstructed in the second clause; the modifier phrase is not. As a result, the manner of Peter’s brushing in (4a) remains unspecified: it can be interpreted as ‘Peter will brush his teeth carefully’ or as ‘Peter will brush his teeth carelessly.’

(4) Chinese (example 9 in Xu, 2003)

- a. John *zixide* shua-le ya, Peter ye shua-le.
John carefully brushed teeth Peter also brushed
‘(lit.) John carefully brushed his teeth and Peter brushed too.’
- b. John brushed his teeth carefully and Peter brushed [_{NP} ~~teeth~~] too.

In order to describe the manner of the second character’s action clearly, the manner modifier of the first clause must be repeated in the second clause, as in (5). Otherwise, the manner modifier’s meaning is not included in the second clause.

(5) Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.

Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL

Pongseni-to caymiss-key ilk-ess-e-yo.

Pongseni-also interesting- ADV read-PST- DECL-POL

‘Caysek read a book with interest. Pongsen read [a book] with interest, too.’

These differences between VP-ellipsis and the null object construction in terms of modifier recovery led Xu (2003) to conclude that Chinese VP-ellipsis is syntactically comparable to English VP-ellipsis, whereas Chinese null object constructions are structurally different from English VP-ellipsis. Consequently, null object constructions cannot correspond to VP-ellipsis.

In a later study, Cheung (2008) compared VP-ellipsis and null object constructions in Cantonese. Under the assumption that VP-ellipsis and null object constructions are syntactically different in Cantonese, Cheung experimentally examined Cantonese-speaking children's understanding of VP-ellipsis and null object constructions in terms of manner modifier recovery, using a TVJT. Twenty-four Cantonese-speaking children (aged 3;11 to 6;9) were recruited in Hong Kong to participate in this study. Seven Cantonese-speaking adults (aged 20 to 36) also participated as a control group.

The results show that both the Cantonese-speaking children and adults understood that the recovery of manner modifiers in the second clause is obligatory in VP-ellipsis (e.g., *Eeyore drew a picture slowly. Winnie the Pooh did [_{VP} draw a picture slowly] too*). In the null object construction, however, the children recovered the manner modifiers inconsistently because they were not completely certain of their choice between 'correct' and 'incorrect' due to ambiguity between the modifier recovered reading in (6a) and the modifier non-recovered reading in (6b).

(6) Cantonese (example 9 in Cheung, 2008)

a. Modifier recovered reading

Winnie the Pooh forcefully blew four balloons. Eeyore also blew [~~four balloons~~ forcefully].

b. Modifier non-recovered reading

Winnie the Pooh forcefully blew four balloons. Eeyore also blew [~~four balloons~~].

Cheung carefully designed experimental conditions by including contexts for which the correct answer is ‘no.’ However, there were only two test items in each condition. In addition, as Cheung noted, one test item in a null object construction condition was problematic in that its target sentence was contextually less relevant to a given context story. Therefore, some participants answered ‘no’ to the target sentence that was supposed to have a ‘yes’ response. Due to these unexpected responses, the results of the study are unclear and unreliable. Unfortunately, Cheung cannot clearly explain how syntactic constraint and pragmatic information were related to the Cantonese-speaking participants’ comprehension of VP-ellipsis and null object constructions.

4.2 The present study: Research questions for Experiment 2

VP-ellipsis and the null object construction are a type of anaphora in that comprehenders must recover missing elements at the elided site from the antecedent sentence using syntactic constraints and semantic and contextual information. Experiment 1, described in the previous chapter, revealed that different elements were reconstructed when participants interpreted VP-ellipsis and the null object construction. However, the results of Experiment 1 could not determine the extent to which syntactic constraints and contexts affected participants’ understanding of these constructions.

Hence, I conducted Experiment 2 to illuminate the different properties of VP-ellipsis and the null object construction by exploring the effects of syntactic constraints and semantic and contextual information on participants’ understanding of these structures. In particular, Experiment 2 investigated similarities and differences in how

modifiers denoting the manner, reason, time, and location of the action are recovered in the second clause, depending on the elliptical construction type.

According to Davidson (1980), temporal and locative modifiers count as event arguments of action verbs. Davidson (1980) explains that the use of action verbs implies the existence of events and therefore involves event arguments. That is, action verbs take an extra argument position for event arguments ranging over actions. In particular, locative and temporal modifiers are considered event arguments and are a part of predicates that involve events. Consider the following:

- (7) (example 17 in Davidson, 1980, p.117)
- a. Shem kicked Shaun.
 - b. $(\exists x)$ (Kicked (Shem, Shaun, x)).

The verb *kicked* in (7a) takes two arguments, *Shem* and *Shaun*. In Davidson's analysis, however, this sentence has an additional position for an event argument, x , as presented in (7b). That is, the verb *kicked* takes three obligatory arguments—two are realized on the surface and one is implicit. The implicit argument is related to space-time locations or situations. Davidson proposes the event argument position in action sentences to account for the implication that an event x —in this case, the kicking of Shaun by Shem—took place at some point in time and place. That is, the event is accompanied by an implicit quantified event variable ranging over actions.

Previous studies on elliptical constructions (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003) have described the recovery of modifier phrases in VP-ellipsis and null object constructions with the aim of demonstrating the differences between the two constructions. However, no studies have clearly explained modifier recovery. Thus, in this chapter, I will first report on two sub-experiments conducted to outline the

differences between VP-ellipsis and the null object construction with regard to recovery of different types of modifiers. Then, based on Davidson's (1980) account, I will suggest an explanation for the various ways in which modifiers are recovered depending on the types of modifiers and elliptical constructions.

I conducted two sub-experiments to test (a) recovery of manner and locative modifiers in VP-ellipsis and null object constructions, and (b) recovery of reason and temporal modifiers in VP-ellipsis and null object constructions. The specific research questions for Experiment 2 are as follows:

- a. If the antecedent clause contains a modifier phrase denoting manner, reason, time, and location of an action, do native Korean speakers recover modifier phrases from the antecedent in VP-ellipsis?
- b. If the antecedent clause contains a modifier phrase denoting manner, reason, time, and location of an action, how do native Korean speakers recover different types of adverbial modifiers in the null object construction?
- c. What are the similarities or differences in recovering different types of modifier phrases in VP-ellipsis and null object constructions?
- d. How do syntactic, semantic, and contextual information affect Korean speakers' reconstruction of modifier phrases in VP-ellipsis and null object constructions?

4.3 Experiment 2a

Experiment 2a was conducted to explore how Korean adult speakers recover manner and locative modifiers in VP-ellipsis and null object constructions. Consider the sentences in (8) and (9):

- (8) a. John ate a hamburger quickly. Mary did too.
 b. John ate a hamburger quickly. Mary did [eat a hamburger quickly] too.
 c. John ate a hamburger quickly. Mary did [eat a hamburger] too.
- (9) a. John ate a hamburger at school. Mary did too.
 b. John ate a hamburger at school. Mary did [eat a hamburger at school] too.
 c. John ate a hamburger at school. Mary did [eat a hamburger] too.

In VP-ellipsis, as in (8a) and (9a), the first clauses contain the manner modifier ‘quickly’ and the locative modifier ‘at school,’ respectively. These modifiers are elided in the second clauses. How do people interpret the elided phrases in the second clauses in (8a) and (9a)? In principle, the modifier recovered readings, as in (8b) and (9b), are more likely to be acceptable than the modifier non-recovered readings, as in (8c) and (9c) because VP-ellipsis is understood via reconstruction of the entire VP.

How about null object constructions in Korean? In their antecedent clauses, examples (10a) and (11b) contain the manner modifier *ppalli* ‘quickly’ and the locative modifier *hakkyo-eyse* ‘at school,’ respectively.

- (10) Korean
- a. John-i haympeke-lul ppalli mek-ess-e. Mary-to mek-ess-e.
 John-NOM hamburger-ACC quickly eat-PST-DECL Mary-also eat-PST-DECL
 ‘(lit.) John ate a hamburger quickly. Mary ate too.
- b. John ate a hamburger quickly. Mary ate [a hamburger quickly] too.
 c. John ate a hamburger quickly. Mary ate [a hamburger] too.
- (11) a. John-i haympeke-lul hakkyo-eyse mek-ess-e.
 John-NOM hamburger-ACC school-at eat-PST-DECL
 Mary-to mek-ess-e.
 Mary-also eat-PST-DECL
 ‘(lit.) John ate a hamburger at school. Mary ate too.
- b. John ate a hamburger at school. Mary ate [a hamburger at school] too.
 c. John ate a hamburger at school. Mary ate [a hamburger] too.

According to previous studies (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003), for the null object construction with a manner modifier, as in (10a), both the

modifier recovered reading (10b) and the modifier non-recovered reading (10c) are likely to be acceptable as possible interpretations. On the other hand, for the null object construction with a locative modifier, as in (11a), the modifier recovered reading (11b) is more likely to be acceptable as a possible interpretation than the modifier non-recovered reading (11c).

Why do null object constructions have different reconstructed interpretations depending on the modifier type? To account for this phenomenon, I first conducted an experiment to test Korean speakers' interpretation of elliptical constructions containing either a manner or a locative modifier in its antecedent clause.

4.3.1 Method

4.3.1.1 Participants

A total of 63 native Korean adult speakers participated in the experiment. All were college students recruited from universities in Seoul, South Korea. They were randomly divided into two different groups. Thirty-two participants (mean age 20;7) were tested on VP-ellipsis and 31 participants (mean age 19;1) on null object constructions. Among these participants, three were excluded for data analysis because their accuracy rates on filler items were below 80%. In Experiment 2a, 60 participants' data were analyzed. Participants in each group were tested at the same time, and no one participated in other experiments. All participants signed a consent form before starting the experiment.

4.3.1.2 Procedure

A paper-and-pencil questionnaire was employed. For Experiment 2a, I prepared two different questionnaire booklets, one for VP-ellipsis and the other for the null object construction. All participants were tested with one of two questionnaires. After receiving a booklet, they were asked to read each short story carefully, judge whether a statement presented at the end of the story was correct, and mark the statement ‘TRUE’ or ‘FALSE’ on the questionnaire sheet. When participants marked the ‘TRUE’ column, it indicated that the statement matched the story. If the ‘FALSE’ column was marked, it indicated that the statement did not match the story. When participants submitted their questionnaire sheet, I randomly selected some of them and asked them to explain their answers. Participants were tested in mid-sized classrooms with a capacity of 30 to 40 people. It took about 20 to 25 minutes for participants to complete all procedures.

4.3.1.3 Material

Using a between-subjects design, two questionnaire tests were created: (i) recovery of manner and locative modifier phrases in VP-ellipsis, and (ii) recovery of manner and locative modifier phrases in null object constructions. To test a target sentence, two different story contexts—a parallel context and a non-parallel context—were constructed (see table 4.2).

Table 4.2 Experimental conditions for each questionnaire

Questionnaire	Type of target sentence	Type of modifier	Context
Questionnaire (i)	VP-ellipsis	Manner/Location	Parallel context
			Non-parallel context
Questionnaire (ii)	Null object construction	Manner/Location	Parallel context
			Non-parallel context

Each target item consisted of two sentences. The first sentence included a modifier phrase, which was located between the direct object and the verb. In the second sentence, either the verb phrase or the direct object was elided, creating VP-ellipsis (12a) or the null object construction (12b):

(12) a. VP-ellipsis

Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL
 Pongseni-to-yey-yo.
 Pongseni-also-be-POL

‘Caysek read a book with interest. Pongsen did too.’

b. Null object construction

Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL

‘Caysek read a book with interest. Pongsen read too.’

In VP-ellipsis, the polite ending form *yey-yo* ‘to be’ was used. In the null object construction, the verb used in the first clause was repeated in the second clause. All sentence constituents (i.e., subject, object, and verb), except modifiers, were controlled by using the same ones across all sub-experiments.

I used two different storylines—a parallel context condition and a non-parallel context condition. In the story that tests recovery of manner modifiers, for instance, two main characters behave in the same manner in the parallel context condition, whereas in the non-parallel context condition, they perform the same action but in different manners. In the story that tests recovery of locative modifiers, two main characters perform the same action in the same place in the parallel context condition, but in different places in the non-parallel context condition.

The following are examples of manner modifier recovery contexts and locative modifier recovery contexts with target VP-ellipsis and null object construction sentences:

<Manner modifier recovery contexts>

1. Parallel context condition

Context story (English translation):

This semester, Caysek is taking an introduction to linguistics course. He had never thought about how language changes and how languages are different or similar. However, while taking a linguistics course, he has come to know more about language. So he borrowed a book on linguistics from a library and read it. It was very interesting. Pongsen is taking the same course unwillingly because it is a required course. She did not have much knowledge about linguistics, so she expected the course to be boring. Contrary to her expectation, she became interested in linguistics. To study more about linguistics, Pongsen borrowed a book on linguistics and read it with a lot of excitement.

2. Non-parallel context condition

Context story (English translation):

This semester, Caysek is taking a language acquisition course. He had never thought about how babies acquire their language, how people produce sounds, and so on. However, while taking the course, he became interested in languages. So Caysek borrowed a book on language acquisition and read it. It was very interesting. Pongsen is taking the same course. For a final project, she had to submit a paper after reading Steven Pinker's *Language Instinct*. It seemed to be an introductory book, but it was boring for Pongsen to read the book. However, since she had to write a paper, she managed to read it to the end.

Target sentences:

a. VP-ellipsis

Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL

Pongseni-to-yey-yo.
Pongseni-also-be-POL

‘Caysek read a book with interest. Pongsen did too.’

b. Null object construction

Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL

Pongseni-to ilk-ess-e-yo.
Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book with interest. Pongsen read too.’

<Locative modifier recovery contexts>

1. Parallel context condition

Context story (English translation):

Caysek usually studied at a library. However, the weather was beautiful today, so Caysek went to the park and read the book *Jane Eyre*, which he would discuss next week in his 19th-century English literature class. Pongsen had a presentation in class next week, so she was going to prepare her presentation at home. However, she heard that her mom's friends were coming to visit at her house this afternoon, so she decided to go to school to study. But when she went out, the weather was so good that Pongsen went to the park near her house, bringing the book *The Dubliners*. Sitting on a bench under a tree, she read the book that she would present.

2. Non-parallel context condition

Context story (English translation):

Caysek usually studied at the library but the weather was very good today, so he went to the park and read the book *The Great Gatsby*, which he would discuss in his 20th-century English literature class. It was good for him to change his place of study. Pongsen heard that Caysek was going to read a book at the park, and she thought that it would be very nice to read a book in the park with Caysek. However, she had to prepare for her presentation, and she needed to use a computer. So she went to a café and read *The Great Gatsby* there, while preparing her presentation handout.

Target sentences:

a. VP-ellipsis

Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
Cayseki-NOM book-ACC park-in read-PST-DECL-POL

Pongseni-to-yey-yo.
Pongseni-also-be-POL

‘Caysek read a book in the park. Pongsen did too.’

b. Null object construction

Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
Cayseki-NOM book-ACC park-in read-PST-DECL-POL

Pongseni-to ilk-ess-e-yo.
Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book in the park. Pongsen read too.’

In each of four conditions (2 modifier types × 2 context conditions), four tokens were created. In total, there were 16 experimental items with 16 filler items in each

questionnaire. For the filler items, I used the same contexts as in Experiment 1, but I manipulated the target sentences by switching *caki* to *cakicasin* and vice versa.

4.3.2 Predictions

As shown in table 4.3, I predicted that participants would answer differently depending on modifier types, sentence types, and context conditions:

Table 4.3 Predictions of manner and locative modifier recovery in Korean VP-ellipsis and null object constructions

Modifier type	Sentence type	Context condition	Predicted answer
Manner	VP-ellipsis	Parallel	TRUE
		Non-parallel	FALSE
	Null object construction	Parallel	TRUE
		Non-parallel	TRUE
Location	VP-ellipsis	Parallel	TRUE
		Non-parallel	FALSE
	Null object construction	Parallel	TRUE
		Non-parallel	FALSE

a. Condition 1: Manner, VP-ellipsis, Parallel context

The target sentence, as in (13a), should be considered true in the parallel context condition because, via reconstruction, the entire VP including the manner modifier from the first clause will be recovered at the elided site in the second clause, as shown in (13b), which correctly describes two characters' actions.

- (13) a. Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL
 Pongseni-to-yey-yo.
 Pongseni-also-be-POL
 'Caysek read a book with interest. Pongsen did too.'

- b. Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL
 Pongseni-to [_{VP}chayk-ul caymiss-key ilk-ess-e-yo]-yey-yo.
 Pongseni-also [_{VP}book-ACC interesting-ADV read-PST-DECL-POL]-be-POL

‘(lit.) Caysek read a book with interest. Pongsen did [_{VP}read a book with interest] too.’

b. Condition 2: Manner, VP-ellipsis, Non-parallel context

In contrast, the target sentence, as in (13a), should be considered false in the non-parallel context condition. As in Condition 1, an entire VP including a manner modifier will be recovered from the first clause at the elided site in the second clause, via reconstruction, but the reconstructed sentence (13b) does not correctly describe the second character’s different manner of the action.

c. Condition 3: Manner, Null object construction, Parallel context

The target sentence, as in (14), should be considered true in the parallel context condition, regardless of whether a manner modifier is recovered at the elided site in the second clause or not. Since two main characters perform the same action, both the manner modifier recovered reading (14a) and the manner modifier non-recovered reading (14b) will be acceptable as possible interpretations.

- (14) Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book with interest. Pongsen read too.’

- a. Caysek read a book with interest. Pongsen read [a book with interest] too.
 b. Caysek read a book with interest. Pongsen read [a book] too.

d. Condition 4: Manner, Null object construction, Non-parallel context

The target sentence, as in (14), will be considered true in the non-parallel context condition if the manner modifier is not recovered at the elided site in the second clause,

as in ‘Caysek read a book with interest. Pongsen read [a book] too.’ Although two characters performed actions in different ways, their actions were the same. Therefore, participants will allow the manner modifier non-recovered reading (14b).

By contrast, if a manner modifier is recovered at the elided site in the second clause, as in ‘Caysek read a book with interest. Pongsen read [a book with interest] too,’ then the target sentence will be considered false because the modifier recovered reading, as in (13a), does not describe the second character’s manner of the action correctly.

However, it is expected that the manner modifier is unlikely to be recovered in the second clause because manner modifiers carry information peripheral to the discourse, so a position for a manner modifier is rarely generated by a verb. Therefore, participants will prefer the modifier non-recovered reading (14b) to the modifier recovered-reading (14a) and, in this condition, they will answer ‘TRUE’ to the target sentence more often than ‘FALSE.’

e. Condition 5: Location, VP-ellipsis, Parallel context

The target sentence in (15a) will be considered true in the parallel context condition because an entire VP including a locative modifier from the first clause is recovered at the elided site in the second clause via reconstruction, and the reconstructed sentence (15b) describes the context story correctly.

- (15) a. Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
Cayseki-NOM book-ACC park-in read-PST-DECL-POL
Pongseni-to-yey-yo.
Pongseni-also-be-POL
‘Caysek read a book in the park. Pongsen did too.’

- b. Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
 Cayseki-NOM book-ACC park-in read-PST-DECL-POL
 Pongseni-to [chayk-ul kongwen-eyse ilk-ess-e-yo]-yey-yo.
 Pongseni-also [book-ACC park-in read-PST-DECL-POL]-be-POL
 ‘Caysek read a book in the park. Pongsen did [read a book in the park] too.’

f. Condition 6: Location, VP-ellipsis, Non-parallel context

The target sentence in (15a) will be considered false in the non-parallel context condition because, via reconstruction, an entire VP including a locative modifier from the first clause is recovered at the elided site in the second clause, and the reconstructed sentence (15b) does not correctly describe the place where the second character performs the action.

g. Condition 7: Location, Null object construction, Parallel context

The target sentence, as in (16), will be considered true in the parallel context condition, regardless of whether participants have the locative modifier recovered reading in (16a) or the locative modifier non-recovered reading in (16b). Since two characters performed the same action at the same place, both readings can be acceptable as possible interpretations.

- (16) Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
 Cayseki-NOM book-ACC park-in read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book in the park. Pongsen read too.’

- a. Caysek read a book in the park. Pongsen read [a book in the park] too.
 b. Caysek read a book in the park. Pongsen read [a book] too.

h. Condition 8: Location, Null object construction, Non-parallel context

The target sentence, as in (16), will be considered false in the non-parallel context condition if an object NP along with a locative modifier is recovered at the elided site in

the second clause. According to the context, two characters performed the same actions in different places, but the modifier recovered reading (16b) does not correctly describe the place where the second character performs the action.

On the other hand, the target sentence can be considered true in the same context condition if the locative modifier *kongwen-eyse* ‘in the park’ is not recovered at the elided site in the second clause. Then, participants will allow the reconstructed sentence, as in (16b), as a possible interpretation, regardless of the different places where two characters perform the actions.

Although these two possibilities exist for Condition 8, locative modifiers are likely to be recovered at the elided site in the second clause because verbs, in particular, action verbs generate a position for event argument ranging over actions (Davidson, 1980). Therefore, participants will answer ‘FALSE’ to the target sentence because they will have the locative modifier recovered reading, as in (16a), rather than the modifier non-recovered reading, as in (16b).

4.3.3 Results

The data analysis is based on participants’ acceptance rates of VP-ellipsis and null object constructions in each condition. Out of 63 participants, three were excluded because of their poor performance on the filler items, with accuracy rates lower than 80%. Thus, data from 60 participants were analyzed in Experiment 2a: 30 participants for VP-ellipsis and 30 for null object constructions. The dependent measure was the percentage of participants’ ‘TRUE’ responses to VP-ellipsis and null object constructions in each condition. Table 4.4 summarizes the results of Experiment 2a.

Table 4.4 Mean proportion of ‘YES’ responses to target sentences in Experiment 2a (manner – locative modifiers)

	Manner		Locative	
	Parallel context	Non-Parallel context	Parallel context	Non-Parallel context
VP-ellipsis	97.5% (<i>SD</i> = 7.63)	0% (<i>SD</i> = 0)	99.2% (<i>SD</i> = 4.56)	0.8% (<i>SD</i> = 4.56)
Null object construction	97.5% (<i>SD</i> = 10.06)	65.8% (<i>SD</i> = 39.66)	97.5% (<i>SD</i> = 7.63)	35.8% (<i>SD</i> = 41.36)

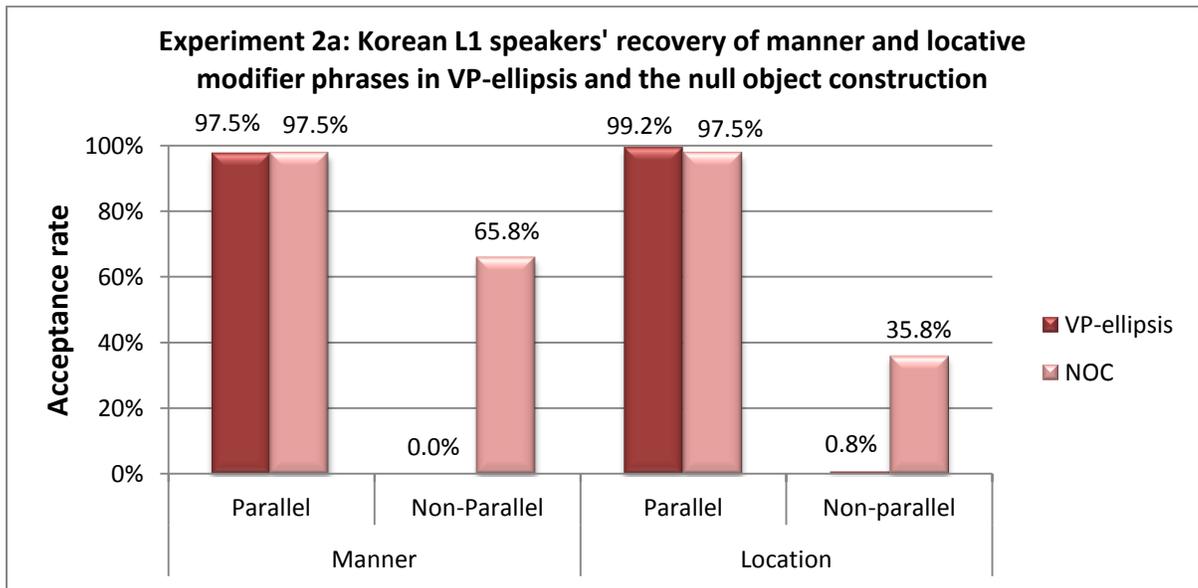


Figure 4.1 Recovery of manner and locative modifier phrases in VP-ellipsis and the null object construction by Korean L1 speakers in Experiment 2a

As shown in figure 4.1, the results overall reveal that Korean adult speakers recovered manner and locative modifier phrases differently, depending on the construction type and the context type. Let us look at the results of VP-ellipsis first. In the parallel context condition, participants answered ‘TRUE’ to VP-ellipsis containing a matching manner modifier phrase 97.5% (*SD* = 7.63) of the time. However, in the non-parallel context condition, they answered ‘FALSE’ to all the tokens. Participants showed the same reconstruction pattern in VP-ellipsis containing a locative modifier phrase. They answered ‘TRUE’ to VP-ellipsis containing a matching locative modifier phrase 99.2%

($SD = 4.56$) of the time in the parallel context condition, but they answered ‘TRUE’ to VP-ellipsis containing a mismatching locative modifier phrase only 0.8% ($SD = 4.56$) of the time in the non-parallel context condition.

Turning to the results of the null object construction, participants answered ‘TRUE’ to the null object construction containing a matching manner modifier phrase 97.5% ($SD = 10.06$) of the time in the parallel context condition, whereas they answered ‘TRUE’ to the null object construction containing a mismatching manner modifier phrase 65.8% ($SD = 39.66$) of the time in the non-parallel context condition. For the null object construction containing a matching locative modifier, they answered ‘TRUE’ to the target sentences 97.5% ($SD = 7.63$) of the time in the parallel context condition. However, they answered ‘TRUE’ to the null object construction containing a mismatching locative modifier phrase only 35.8% ($SD = 41.36$) of the time in the non-parallel context condition.

For more detailed analyses, the data were analyzed using a $2 \times 2 \times 2$ repeated measure ANOVA test in SPSS. There were two within-subjects factors, each with two levels: modifier type (manner modifier versus locative modifier) and context type (parallel context condition versus non-parallel context condition). In addition, there was one between-subjects factor with two levels: construction type (VP-ellipsis versus null object construction). As presented in table 4.5, the results revealed that there were significant main effects of the two factors: modifier ($F(1, 58) = 14.32, p < .001, \eta_p^2 = .198$) and context ($F(1, 58) = 412.7, p < .001, \eta_p^2 = .877$). That is, 19.8% of the within subjects variance is accounted for by Modifier and 87.7% of the variance is accounted for by Context. I also found significant two-way interactions between modifier and construction ($F(1, 58) = 20.00, p < .001, \eta_p^2 = .256$), between context and construction (F

(1, 58) = 51.86, $p < .001$, $\eta_p^2 = .472$), and between modifier and context ($F(1, 58) = 20.12$, $p < .001$, $\eta_p^2 = .258$). I observed a three-way interaction among modifier, context, and construction ($F(1, 58) = 18.01$, $p < .001$, $\eta_p^2 = .237$), which demonstrates that VP-ellipsis and the null object construction were treated differently by means of modifier type and context type.

Table 4.5 Tests of within-subjects contrasts in Experiment 2a

Source	df	F	Sig.	Partial Eta Squared
Modifier	1	14.322	.000	.198
Modifier × Construction	1	20.004	.000	.256
Error (Modifier)	58			
Context	1	412.701	.000	.877
Context × Construction	1	51.855	.000	.472
Error (Context)	58			
Modifier × Context	1	20.122	.000	.258
Modifier × Context × Construction	1	18.006	.000	.237
Error (Modifier × Context)	58			

Finally, let us consider the number of subjects who answered ‘TRUE’ to the null object construction containing a mismatching manner modifier phrase (e.g., *Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo. Pongseni-to ilk-ess-e-yo* ‘Caysek read a book with interest. Pongsen read too’), and the null object construction containing a mismatching locative modifier phrase (e.g., *Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo. Pongseni-to ilk-ess-e-yo* ‘Caysek read a book in the park. Pongsen read too’) in the non-parallel context condition.

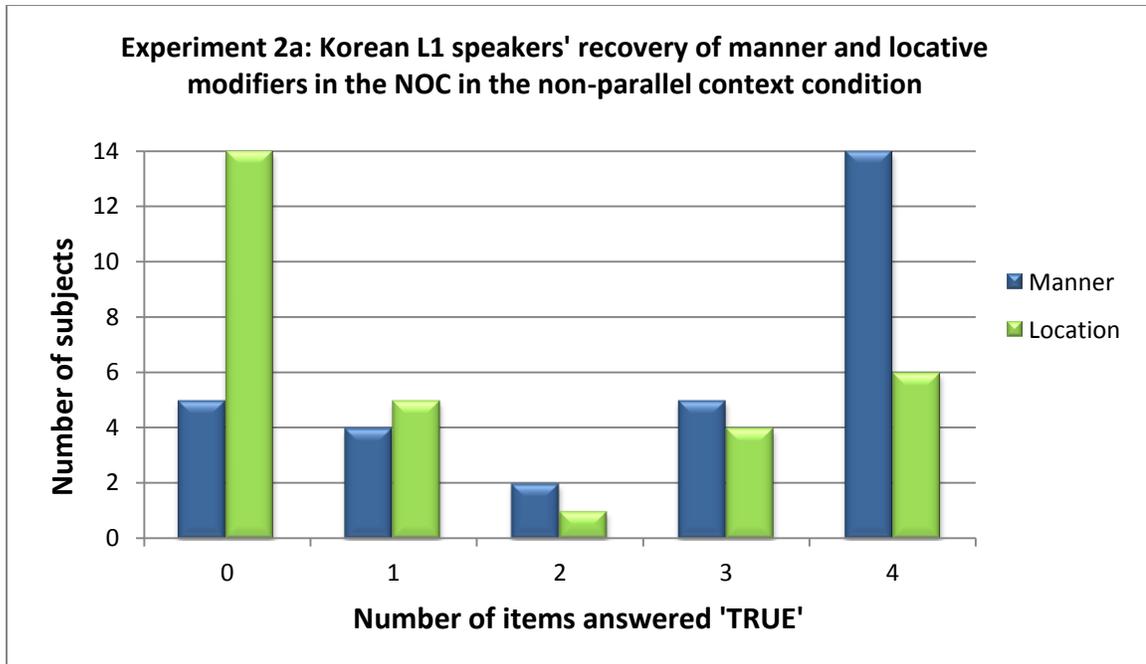


Figure 4.2 The number of Korean L1 speakers who answered ‘TRUE’ to the null object construction containing a manner or a locative modifier in the non-parallel context condition in Experiment 2a

Looking at the results of recovery of manner modifiers first, as shown in figure 4.2, 14 participants considered the null object construction with a mismatching manner modifier true, answering ‘TRUE’ to all four tokens in the non-parallel context condition. This means that they allowed the modifier non-recovered reading, tolerating different manners of action for the two characters. In the same condition, five participants answered ‘TRUE’ to three out of four tokens, two answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, four answered ‘TRUE’ to only one token. However, five answered ‘TRUE’ to none of the tokens in this condition.

The results of recovery of locative modifier phrase showed a remarkably different pattern. Fourteen participants did not allow the null object construction with a mismatching locative modifier phrase, answering ‘FALSE’ to all four tokens in the non-parallel context condition, in which the two characters performed the relevant action in

different places. In the same condition, five participants answered ‘FALSE’ to three out of four tokens, two answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, four answered ‘FALSE’ only to one token. However, six answered ‘TRUE’ to all the tokens in this condition.

4.3.4 Discussion of Experiment 2a

Overall, the results of Experiment 2a reveal that Korean speakers recovered manner and locative modifier phrases differently, depending on the type of construction and context. As predicted for VP-ellipsis in the parallel condition, most participants answered ‘TRUE’ to VP-ellipsis containing a matching manner modifier phrase, as in (17a), and VP-ellipsis containing a matching locative modifier phrase, as in (17b). By contrast, they answered ‘FALSE’ to VP-ellipsis containing a mismatching manner modifier phrase and VP-ellipsis containing a mismatching locative modifier phrase in the non-parallel context condition.

- (17) a. Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL

Pongseni-to-yey-yo.
 Pongseni-also-be-POL

‘Caysek read a book with interest. Pongsen did too.’

- b. Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
 Cayseki-NOM book-ACC park-in read-PST-DECL-POL

Pongseni-to-yey-yo.
 Pongseni-also-be-POL

‘Caysek read a book in the park. Pongsen did too.’

These results suggest that participants reconstructed the entire VP, including the manner modifier phrase and the locative modifier phrase, from the first clause at the elided site in the second clause, as shown in (18a) and (18b). Thus, they considered the target

sentences in the parallel context condition to be true because the reconstructed sentence correctly described the context story, in which the two characters performed the action in the same manner or at the same place. On the other hand, they considered the same target sentences in the non-parallel context condition to be false because the reconstructed sentence did not describe the second character's action correctly, in terms of either the manner or the location of the action.

(18) a. Recovery of a manner modifier phrase in VP-ellipsis

Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL

Pongseni-to [_{VP} chayk-ul caymiss-key ilk-ess-e-yo]-yey-yo.
 Pongseni-also [_{VP} book-ACC interesting-ADV read-PST-DECL-POL]-be-POL

‘(lit.) Caysek read a book with interest. Pongsen did [_{VP} read a book with interest] too.’

b. Recovery of a locative modifier phrase in VP-ellipsis

Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
 Cayseki-NOM book-ACC park-in read-PST-DECL-POL

Pongseni-to [_{VP} chayk-ul kongwen-eyse ilk-ess-e-yo]-yey-yo.
 Pongseni-also [_{VP} book-ACC park-in read-PST-DECL-POL]-be-POL

‘Caysek read a book in the park. Pongsen did [_{VP} read a book in the park] too.’

Similarly, most participants also showed very high acceptance rates for the null object constructions in the parallel context condition. They answered ‘TRUE’ to the null object constructions with a matching manner modifier phrase, as in (19a), and the null object construction containing a matching locative modifier phrase, as in (20a), 97.5% of the time for each construction.

- (19) Recovery of a manner modifier phrase in the null object construction
- a. Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo.
 Cayseki-NOM book-ACC interesting-ADV read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL
 ‘(lit.) Caysek read a book interestingly. Pongsen read too.’
- b. Caysek read a book with interest. Pongsen read [a book with interest] too.
 c. Caysek read a book with interest. Pongsen read [a book] too.
- (20) Recovery of a locative modifier phrase in the null object construction
- a. Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo.
 Cayseki-NOM book-ACC park-in read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL
 ‘(lit.) Caysek read a book in the park. Pongsen read too.’
- b. Caysek read a book in the park. Pongsen read [a book in the park] too.
 c. Caysek read a book in the park. Pongsen read [a book] too.

However, we are not sure whether participants’ answers came from the modifier recovered reading, as in (19b) and (20b), or the modifier non-recovered reading, as in (19c) and (20c), because in the parallel context condition, the interpretation of the target sentences would be the same (i.e., the answer would be ‘TRUE’) regardless of whether the modifier phrase was recovered.

For the null object construction in the non-parallel context condition, however, we can clearly observe whether participants recovered modifier phrases in the second clause. First, for the manner modifiers, as predicted, participants considered the null object construction with a mismatching manner modifier true 65.8% of the time in the non-parallel context condition despite the differences in manner. This implies that many participants interpreted the target sentence, as in (19a), as the modifier non-recovered reading: *Cayseki-ka chayk-ul caymiss-key ilk-ess-e-yo. Pongseni-to [chayk-ul] ilk-ess-e-*

yo ‘Caysek read a book with interest. Pongsen read [a book] too.’ That is, they did not recover the manner modifier as a null element in the second clause.

As for the locative modifiers, by contrast, participants considered the null object construction with a mismatching locative modifier true only 35.8% of the time in the non-parallel context condition. This indicates that many of them interpreted the target sentence, as in (20a), as the modifier recovered reading: *Cayseki-ka chayk-ul kongwen-eyse ilk-ess-e-yo. Pongseni-to [chayk-ul kongwen-eyse] ilk-ess-e-yo* ‘Caysek read a book in the park. Pongsen read [a book in the park] too.’ That is, Korean L1 speakers understood the elided site in the second clause by reconstructing the object NP and the locative modifier from the first clause. Thus, many participants answered ‘FALSE’ to the null object construction with a mismatching locative modifier in the non-parallel context condition because they found that the reconstructed sentence did not match the context story in terms of the location where the two characters performed.

These reconstruction patterns are supported by the interviews with participants. After the experiment, I randomly interviewed several participants and asked them how they interpreted the elided position in the second clause. Some participants had difficulty explaining their answers to the null object constructions with mismatching manner and locative modifier phrases in the non-parallel context conditions because there is no grammatically clear distinction between the modifier recovery reading and the modifier non-recovered reading. When I questioned participants who answered ‘TRUE’ to the null object constructions with a mismatching manner modifier phrase in the non-parallel context condition, they explained that they considered the statements true as long as two characters performed the same actions, regardless of the manner of action. On the other

hand, many participants explained that they answered ‘FALSE’ to the null object constructions containing a mismatching locative modifier phrase in the non-parallel context condition because two characters acted at different places and that the target sentence did not correctly describe the context story in terms of the place of the action. Thus, participants tolerated the null object construction despite the two characters’ different manners of actions, but they did not accept the null object construction if the actions were in different locations.

To summarize, in VP-ellipsis, manner and locative modifiers, along with other VP-internal constituents, are elided in the second clause, and the meanings of all elided constituents were recovered together, following the syntactic parallelism constraint. However, two different modifier recovery patterns emerged in the null object construction. For most participants, the recovery of the manner modifier at the elided site in the second clause was optional, but the locative modifier was obligatorily recovered from the first clause at the elided site in the second clause via reconstruction.

Why did Korean L1 speakers recover manner and locative modifier phrases in the null object construction differently? Based on Davidson’s account (1980), I propose that the locative modifier of the first clause was recovered at the elided site in the second clause because it is an event argument of verbs. That is, locative modifiers are considered event arguments, which are additional arguments projected by verbs denoting events. Some verbs, such as action verbs, are likely to project an argument place for a locative modifier as part of the verb’s meaning. Indeed, the locative modifiers are recovered at the elided site in the second clause because locative modifiers are semantically related to the events denoted by the verbs. I will provide further explanations of event arguments such

as locative and temporal modifiers in the general discussion of Experiments 2a and 2b (Section 4.5).

4.4 Experiment 2b

In line with the recovery of manner and locative modifiers in Experiment 2a, Experiment 2b was conducted to explore Korean adult speakers' reconstruction of reason and temporal modifier phrases in VP-ellipsis and the null object construction. Consider the sentences in (21) and (22):

- (21) a. John read a book because of his assignment. Mary did too.
 - b. John read a book because of his assignment.
Mary did [read a book because of his assignment] too.
 - c. John read a book because of his assignment. Mary did [read a book] too.

- (22) a. John read a book last night. Mary did too.
 - b. John read a book last night. Mary did [read a book last night] too.
 - c. John read a book last night. Mary did [read a book] too.

In (21a) and (22a), the second clauses involve VP-ellipsis whose antecedent clauses contain a reason modifier and a temporal modifier phrase, respectively. How do people interpret the second clauses? Do they have a modifier recovered reading, in which the modifier in the antecedent clause is recovered at the elided site in the second clause, as shown in (21b) and (22b)? Or do they have a modifier non-recovered reading, in which the modifier in the antecedent clause is not recovered at the elided site in the second clause, as in (21c) and (22c)?

The same questions can be asked about null object constructions. As examined in Experiment 2a, a null object construction whose antecedent clause contains a modifier is ambiguous. Consider the following examples, in which the antecedent clauses contain the

reason modifier *sukcey-ttaymwuney* ‘because of the assignment’ in (23a) and the temporal modifier *ecey* ‘yesterday’ in (24a):

- (23) a. Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo.
 Cayseki-NOM book-ACC assignment-because of read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book because of the assignment. Pongsen read too.’

- b. Caysek read a book because of the assignment. Pongsen read [a book because of the assignment] too.
 c. Caysek read a book because of the assignment. Pongsen read [a book] too.

- (24) a. Ceyseki-ka chayk-ul ecey ilk-ess-e-yo.
 Cayseki-NOM book-ACC yesterday read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book yesterday. Pongsen read too.’

- b. Caysek read a book yesterday. Pongsen read [a book yesterday] too.
 c. Caysek read a book yesterday. Pongsen read [a book] too.

These two examples can have either modifier recovered readings, as in (23b) and (24b), or modifier non-recovered readings, as in (23c) and (24c). However, it is not obvious which readings comprehenders will choose as a possible interpretation because syntactic, semantic, and pragmatic factors all play important roles in the processing of null arguments in the null object construction.

Hence, in Experiment 2b, I conducted two sub-experiments in order to uncover the recovery patterns of modifiers in different elliptical constructions. Like Experiment 2a, which examined the recovery of manner and locative modifiers, Experiment 2b will show what elements are reconstructed in VP-ellipsis and the null object construction when the antecedent clause includes a reason or a temporal modifier phrase.

4.4.1 Method

4.4.1.1 Participants

A total of 65 college students participated in Experiment 2b. They were recruited from universities in Seoul, South Korea. They were randomly divided into two groups, with 32 participants in one group (mean age 21;9) and 33 in the other (mean age 21;2). They did not participate in other experiments. The first group was tested on VP-ellipsis and the second group on the null object construction. Among these participants, five were excluded from the data analysis because their accuracy rates on filler items were below 80%. In each group, 30 participants' data were analyzed. All participants signed a consent form before starting the experiment.

4.4.1.2 Procedure

As in Experiment 2a, a paper-and-pencil questionnaire was used in Experiment 2b. Each participant received an individual questionnaire booklet that concerned either VP-ellipsis containing reason and temporal modifiers or null object constructions containing reason and temporal modifiers. The process was the same as in Experiment 2a. When participants submitted their questionnaires, some of them were interviewed individually. They were asked to explain how they interpreted elided positions in each construction and what made them consider the target sentences to be true or false. It took about 20 to 25 minutes for participants to complete all procedures.

4.4.1.3 Material

Using a between-subjects design, two questionnaire tests were created: one for recovery of reason and temporal modifier phrases in VP-ellipsis, and the other for recovery of reason and temporal modifier phrases in null object construction. As in Experiment 2a, two different contexts—a parallel context and a non-parallel context—were constructed in Experiment 2b (see table 4.6).

Table 4.6 Experimental conditions for each questionnaire in Experiment 2b

Questionnaire	Type of target sentence	Type of modifier	Context
Questionnaire (i)	VP-ellipsis	Reason / Time	Parallel context
			Non-parallel context
Questionnaire (ii)	Null object construction	Reason / Time	Parallel context
			Non-parallel context

The sentence structures were identical to those used in Experiment 2a. That is, each target item consisted of two sentences, with a modifier phrase between the direct object and the verb in the first clause and an elided phrase in the second clause. In VP-ellipsis, the polite ending form *yey-yo* ‘to be’ was used. In the null object construction, the verb used in the first clause was repeated in the second clause.

With respect to context, I used two different storylines, a parallel context condition and a non-parallel context condition. In the stories that test recovery of reason modifiers, two main characters perform the same action motivated by the same reason in the parallel context condition, whereas in the non-parallel context condition, they perform the same action but for different reasons. In the stories that test recovery of temporal modifiers, two main characters perform the same action at the same time in the parallel context condition; in the non-parallel context condition, they perform the same action at different times. Here are examples of reason modifier recovery contexts and temporal

modifier recovery contexts, followed by target VP-ellipsis and null object construction sentences:

<Reason modifier recovery contexts>

1. Parallel context condition

Context story (English translation):

Caysek and Pongsen took the Renaissance literature course. It was not easy to understand Renaissance literature because it was written in old style English. To write his term paper, Caysek had to read John Milton's *Paradise Lost*. It was very long and boring, but he read the book in order to write his paper. Long before, Pongsen had wanted to read *Paradise Lost* to broaden her knowledge of English literature. So she tried several times to read it, but she gave up every time. However, this time she finally finished reading it in order to do her term paper assignment.

2. Non-parallel context condition

Context story (English translation):

Caysek took the 20th-century English literature course, and it was not easy to understand modern English literature. To write his term paper, Caysek had to read James Joyce's *A Portrait of the Artist as a Young Man*. It was very difficult and boring, but he read the book in order to do the paper. Pongsen was sitting in on the course, so she did not need to submit a term paper. However, she liked reading books, so she read *A Portrait of the Artist as a Young Man* to expand her knowledge of English literature.

Target sentences:

a. VP-ellipsis

Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo.
Cayseki-NOM book-ACC assignment-because of read-PST-DECL-POL

Pongseni-to-yey-yo.
Pongseni-also-be-POL

'Caysek read a book because of the assignment. Pongsen did too.'

b. Null object construction

Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo.
Cayseki-NOM book-ACC assignment-because of read-PST-DECL-POL

Pongseni-to ilk-ess-e-yo.
Pongseni-also read-PST-DECL-POL

'(lit.) Caysek read a book because of the assignment. Pongsen read too.'

<Temporal modifier recovery contexts>

1. Parallel context condition

Context story (English translation):

Caysek and Pongsen had to write a journal entry after reading the book *Pride and Prejudice*. Caysek didn't want to do his homework because he didn't like reading. However, the due date was close, so Caysek finally read it yesterday. Pongsen looked at the book and it seemed to be long and boring. So she decided to watch a movie called *Pride and Prejudice*, and then write the journal entry. However, she found out after she watched it that the movie was quite different from the original story. For her homework, she had no choice but to read the book, so she read it all day yesterday.

2. Non-parallel context condition

Context story (English translation):

Caysek and Pongsen were going to make a presentation in class about the novel *The Scarlet Letter*. Because they were going to prepare for the presentation today, Caysek read the book yesterday. Pongsen usually reads books very quickly, so she planned to read *The Scarlet Letter* one day before their meeting. However, she had a problem with her car yesterday. She was busy fixing her car all day yesterday and had no time to read the book. So she got up early and began to read the book this morning. She finished reading it before she met Caysek.

Target sentences:

a. VP-ellipsis

Ceyseki-ka chayk-ul ecey ilk-ess-e-yo. Pongseni-to-yey-yo.
Cayseki-NOM book-ACC yesterday read-PST-DECL-POL Pongseni-also-be-POL
'Caysek read a book yesterday. Pongsen did too.'

b. Null object construction

Ceyseki-ka chayk-ul ecey ilk-ess-e-yo.
Cayseki-NOM book-ACC yesterday read-PST-DECL-POL

Pongseni-to ilk-ess-e-yo.
Pongseni-also read-PST-DECL-POL

'(lit.) Caysek read a book yesterday. Pongsen read too.'

Four tokens were created in each condition. A total of 32 items were tested in each questionnaire: 16 experimental items and 16 filler items. The filler items were the same ones used in Experiment 2a.

4.4.2 Predictions

For Experiment 2b, I made predictions as shown in table 4.7. Like the recovery of manner and locative modifiers in Experiment 2a, I expected that reason and temporal modifiers would be recovered in different ways, depending on elliptical constructions and context conditions. Based on previous studies that provide examples of different recovery of adverbial modifiers in elliptical constructions (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003), I predicted that reason modifiers would have the same reconstruction patterns as the manner modifiers in Experiment 2a (not recovered) and that temporal modifiers would have the same reconstruction patterns as the locative modifiers in Experiment 2a (recovered).

Table 4.7 Predictions of reason and temporal modifier recovery in Korean VP-ellipsis and the null object construction

Modifier type	Sentence type	Context condition	Predicted answer
Manner	VP-ellipsis	Parallel	TRUE
		Non-parallel	FALSE
	Null object construction	Parallel	TRUE
		Non-parallel	TRUE
Location	VP-ellipsis	Parallel	TRUE
		Non-parallel	FALSE
	Null object construction	Parallel	TRUE
		Non-parallel	FALSE

Here, I will omit detailed predictions for each condition since the predictions for the recovery of reason and temporal modifiers are the same as those for manner and locative modifiers, respectively.

4.4.3 Results

For data analysis, the percentage of participants' 'TRUE' responses to VP-ellipsis and null object constructions in each condition was used as a dependent measure. In Experiment 2b, the data of 60 participants were analyzed: 30 participants for VP-ellipsis and the other 30 participants for the null object construction. Table 4.8 summarizes the results of Experiment 2b.

Table 4.8 Mean proportion of 'YES' responses to target sentences in Experiment 2b (reason – temporal modifier)

	Reason		Temporal	
	Parallel context	Non-Parallel context	Parallel context	Non-Parallel context
VP-ellipsis	96.7% (<i>SD</i> = 8.64)	1.6% (<i>SD</i> = 6.34)	97.5% (<i>SD</i> = 7.63)	0.8% (<i>SD</i> = 4.56)
Null object construction	96.7% (<i>SD</i> = 8.64)	70.0% (<i>SD</i> = 38.51)	95.8% (<i>SD</i> = 9.48)	33.3% (<i>SD</i> = 36.16)

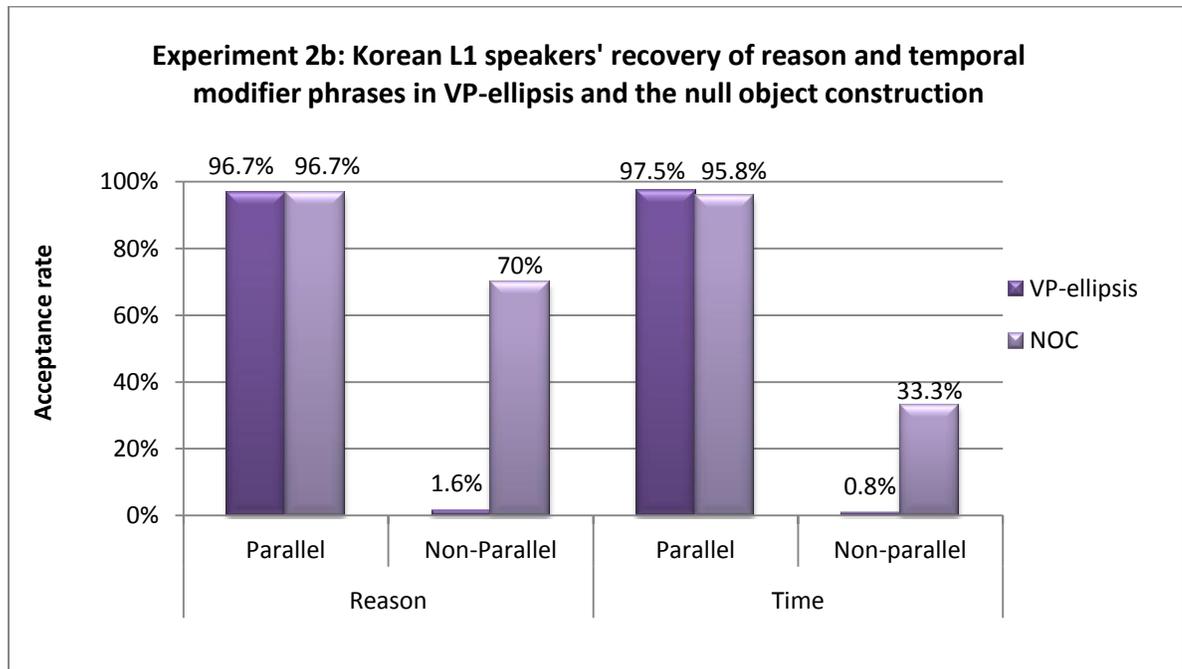


Figure 4.3 Recovery of reason and temporal modifier phrases in VP-ellipsis and the null object construction by Korean L1 speakers in Experiment 2b

As shown in figure 4.3, Korean adult speakers recovered reason and temporal modifier phrases differently, depending on the construction type and the context type. Looking at the results of VP-ellipsis first, participants answered ‘TRUE’ to VP-ellipsis containing a matching reason modifier phrase (e.g., *Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo. Pongseni-to-yey-yo.* ‘Caysek read a book because of the assignment. Pongsen did too.’) 96.7% ($SD = 8.64$) of the time in the parallel context condition. However, they answered ‘TRUE’ to VP-ellipsis containing a mismatching reason modifier phrase only 1.6% ($SD = 6.34$) of the time in the non-parallel context condition. Similarly, they answered ‘TRUE’ to VP-ellipsis containing a matching temporal modifier (e.g., *Ceyseki-ka chayk-ul ecey ilk-ess-e-yo. Pongseni-to-yey-yo.* ‘Caysek read a book yesterday. Pongsen did too.’) 97.5% ($SD = 7.63$) of the time in the parallel context condition, but they answered ‘TRUE’ to VP-ellipsis containing a mismatching temporal modifier phrase only 0.8% ($SD = 4.56$) of the time in the non-parallel context condition.

As for the null object construction, Korean L1 speakers answered ‘TRUE’ to the null object construction containing a matching reason modifier phrase (e.g., *Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo. Pongseni-to ilk-ess-e-yo.* ‘(lit.) Caysek read a book because of the assignment. Pongsen read too.’) 96.7% ($SD = 8.64$) of the time in the parallel context condition, and they also answered ‘TRUE’ to the null object construction containing a mismatching reason modifier phrase 70% ($SD = 38.51$) of the time in the non-parallel context condition. Also, they answered ‘TRUE’ to the null object construction containing a matching temporal modifier (e.g., *Ceyseki-ka chayk-ul ecey ilk-ess-e-yo. Pongseni-to ilk-ess-e-yo.* ‘(lit.) Caysek read a book yesterday. Pongsen read

too.'). 95.8% ($SD = 9.48$) of the time in the parallel context condition, whereas they answered 'TRUE' to the null object construction containing a mismatching temporal modifier phase 33.3% ($SD = 36.16$) of the time in the non-parallel context condition.

The data were analyzed using a $2 \times 2 \times 2$ repeated measure ANOVA test. There were two within-subjects factors, each with two levels: modifier (reason modifier versus temporal modifier), and context (parallel context condition versus non-parallel context condition). In addition, there was one between-subjects factor with two levels: construction type (VP-ellipsis versus null object constructions).

Table 4.9 Tests of within-subjects contrasts in Experiment 2b

Source	df	F	Sig.	Partial Eta Squared
Modifier	1	43.022	.000	.426
Modifier \times Construction	1	43.022	.000	.426
Error (Modifier)	58			
Context	1	548.825	.000	.904
Context \times Construction	1	73.111	.000	.558
Error (Context)	58			
Modifier \times Context	1	24.706	.000	.299
Modifier \times Context \times Construction	1	20.509	.000	.261
Error (Modifier \times Context)	58			

As presented in table 4.9, I found significant main effects of the two factors: modifier ($F(1, 58) = 43.02, p < .001, \eta_p^2 = .426$) and context ($F(1, 58) = 548.86, p < .001, \eta_p^2 = .904$), which indicates that 42.6% of the within subjects variance is accounted for by Modifier and 90.4% of the variance is accounted for by Context. There were significant two-way interactions between modifier and construction ($F(1, 58) = 43.02, p < .001, \eta_p^2 = .426$), between context and construction ($F(1, 58) = 73.11, p < .001, \eta_p^2 = .558$), and

between modifier and context ($F(1, 58) = 24.706, p < .001, \eta_p^2 = .299$). I also found a three-way interaction effect among modifier, context, and construction ($F(1, 58) = 20.51, p < .001, \eta_p^2 = .261$), which indicates that modifier type and context type affected comprehension of VP-ellipsis and null object constructions.

In addition, I analyzed the number of subjects who answered ‘TRUE’ to the null object construction containing a mismatching reason modifier phrase (e.g., *Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo. Pongseni-to ilk-ess-e-yo.* ‘(lit.) Caysek read a book because of the assignment. Pongsen read too.’) or the null object construction containing a mismatching temporal modifier phrase (e.g., *Ceyseki-ka chayk-ul ecey ilk-ess-e-yo. Pongseni-to ilk-ess-e-yo.* ‘(lit.) Caysek read a book yesterday. Pongsen read too.’) in the non-parallel context condition. As presented in figure 4.4, participants responded to the null object constructions in the non-parallel context condition differently, depending on the modifier type.

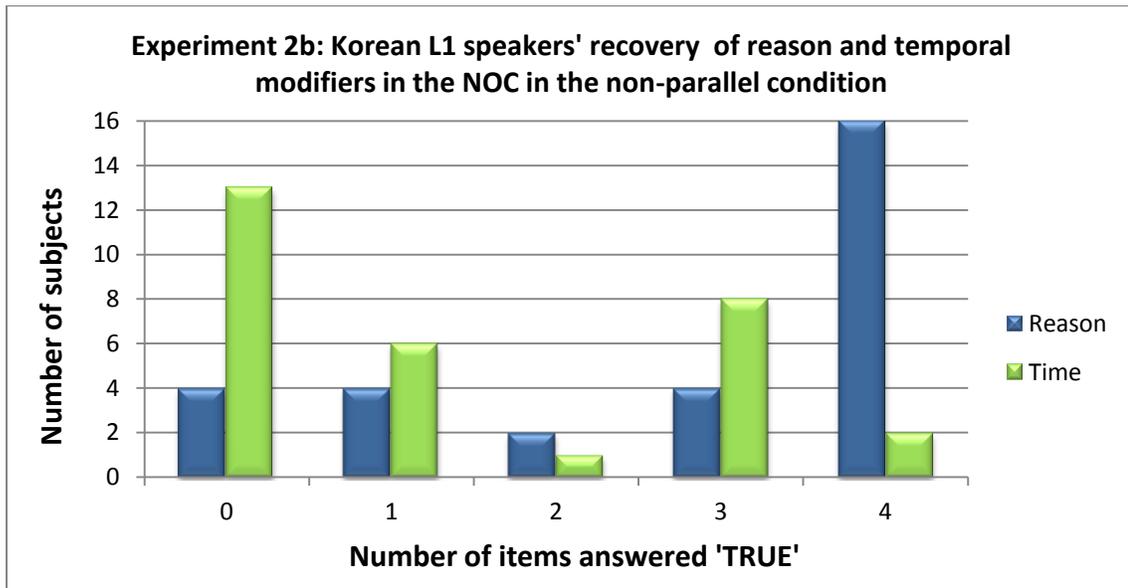


Figure 4.4 The number of Korean L1 speakers who answered ‘TRUE’ to the null object construction containing a reason or a temporal modifier in the non-parallel context condition in Experiment 2b

With respect to the null object construction with a mismatching reason modifier phrase, 16 participants answered ‘TRUE’ to all four tokens in the non-parallel context condition, which means that they had the modifier non-recovered reading for all tokens in this condition. In this same condition, four participants answered ‘TRUE’ to three out of four tokens, two answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, four accepted only one token. However, four participants answered ‘FALSE’ to all four tokens of the null object construction with a mismatching reason modifier.

By contrast, for the null object construction with a mismatching temporal modifier, 13 participants answered ‘FALSE’ to all four tokens in the non-parallel context condition, suggesting that they had the modifier recovered reading for all tokens in this condition. In this same condition, six participants answered ‘FALSE’ to three tokens out of four, and one answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens. However, some participants allowed the null object construction with a mismatching temporal modifier phrase in the non-parallel context condition: eight participants answered ‘TRUE’ to three tokens out of four, and two participants answered ‘TRUE’ to all four tokens.

All in all, the results of Experiment 2b are quite similar to those of Experiment 2a in three respects: (i) Overall, the results of Experiment 2b show the same acceptance patterns in responding to VP-ellipsis and null object constructions across the conditions as those of Experiment 2a show. (ii) In Experiment 2a, participants’ responses show no significant differences between VP-ellipsis containing a manner modifier and VP-ellipsis containing a locative modifier. Likewise, within the same context conditions in Experiment 2b, responses show no significant differences between VP-ellipsis containing

a reason modifier and VP-ellipsis containing a temporal modifier. (iii) In Experiment 2a, the acceptance rate of the null object construction containing a manner modifier was significantly higher than that of the null object construction containing a locative modifier in the non-parallel context condition. The same pattern was observed in Experiment 2b, where the acceptance rate of the null object construction containing a reason modifier was significantly different from that of the null object construction containing a temporal modifier in the non-parallel context condition. Taking the results of Experiments 2a and 2b together, it appears that participants treated manner and reason modifiers in one way, and locative and temporal modifiers in another way in the null object construction. In particular, the latter were more likely to be reconstructed at the elided site in the elliptical construction than the former.

4.4.4 Discussion of Experiment 2b

In line with Experiment 2a, Experiment 2b was conducted to investigate Korean L1 speakers' reconstruction of reason and temporal modifier phrases in VP-ellipsis and the null object construction. Interestingly, as predicted, the results of Experiment 2b were very similar to those of Experiment 2a.

Looking at the detailed results in the parallel context condition, most Korean speakers answered 'TRUE' to VP-ellipsis containing a matching reason modifier, as in (25), and VP-ellipsis containing a matching temporal modifier, as in (26).

(25) Recovery of the reason modifier phrase in VP-ellipsis

Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo.
Cayseki-NOM book-ACC assignment-because of read-PST-DECL-POL

Pongseni-to [_{VP} chayk-ul sukcey-ttaymwuney ilk-ess-e-yo]-yey-yo.
Pongseni-also [_{VP} book-ACC assignment-because of read-PST-DECL-POL]-be-POL

‘Caysek read a book because of the assignment. Pongsen did [_{VP} read a book because of the assignment] too.’

(26) Recovery of the temporal modifier phrase in VP-ellipsis

Cayseki-ka chayk-ul ecey ilk-ess-e-yo.
Cayseki-NOM book-ACC yesterday read-PST-DECL-POL

Pongseni-to [_{VP} chayk-ul ecey ilk-ess-e-yo]-yey-yo.
Pongseni-also [_{VP} book-ACC yesterday read-PST-DECL-POL]-be-POL

‘Caysek read a book yesterday. Pongsen did [_{VP} read a book yesterday] too.’

By contrast, they answered ‘FALSE’ to VP-ellipsis containing a mismatching reason modifier phrase or a mismatching temporal modifier phrase in the non-parallel context condition. In other words, they considered the target sentences in the parallel context condition to be true because the reconstructed sentences correctly described the context stories, in which two characters performed the actions motivated by the same reason or at the same time. In contrast, they considered the target sentences in the non-parallel context condition to be false because the reconstructed sentences did not match the context stories, in which two characters performed actions motivated by different reasons or at different times.

For the null object construction, participants answered in various ways, depending on modifier and context types. In the parallel context condition, they showed very high acceptance rates for the null object constructions containing a matching reason modifier phrase and the null object construction containing a matching temporal modifier phrase. However, in this case, it is not clear whether participants recovered the modifier phrase from the first clause at the elided site in the second clause because both the modifier

recovered reading, as in (27b), and the modifier non-recovered reading, as in (27c), would produce the same answer, ‘TRUE,’ in the parallel context condition.

(27) Recovery of the reason modifier phrase in the null object construction

- a. Ceyseki-ka chayk-ul sukcey-ttaymwuney ilk-ess-e-yo.
 Cayseki-NOM book-ACC assignment-because of read-PST-DECL-POL
 Pongseni-to ilk-ess-e-yo.
 Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book because of the assignment. Pongsen read too.’

- b. Caysek read a book because of the assignment. Pongsen read [a book because of the assignment] too.
 c. Caysek read a book because of the assignment. Pongsen read [a book] too.

Interestingly, in the non-parallel context condition, participants answered ‘TRUE’ to the null object construction with a mismatching reason modifier phrase, as in (27a), 70% of the time, suggesting that many participants adopted the modifier non-recovered reading, as in (27c). That is, they answered ‘TRUE’ to the target sentences as long as two characters performed the same action even though their actions were for different reasons. By contrast, participants answered ‘TRUE’ to the null object construction with a mismatching temporal modifier, as in (28a), only 33.3% of the time in the non-parallel context condition.² This indicates that many participants preferred the temporal modifier recovered reading (28b) to the temporal modifier non-recovered reading (28c). Thus, they answered ‘FALSE’ to the target sentence because the reconstructed sentence did not

² In Experiment 2b, I tested four different temporal phrases – *ecey* ‘yesterday,’ *ecey pamey* ‘last night,’ *caknyeney* ‘last year,’ and *cinan taley* ‘last month.’ In future study, it would be interesting to investigate whether Korean speakers recover temporal adverbs such as *akka* ‘a while ago,’ *pangkum* ‘a moment ago,’ and *mak* ‘just’ in null object constructions:

- (i) Chelswu-ka chayk-ul akka sa-ss-e-yo. Yenghuy-to sa-ss-e-yo
 Chelswu-NOM book-ACC a while ago buy-PST-DECL-POL Yenghuy-also buy-PST-DECL-POL
 ‘(lit.) Chelswu bought a book a while ago. Yenghuy bought too.’

For example (i), it is predicted that Korean speakers will allow the target null object construction if both Chelswu and Yenghuy bought a book a while ago. By contrast, if the two characters each bought a book at different times, it is expected that Korean speakers will be more likely to answer ‘FALSE’ to the target sentence. Interestingly, Ho-min Sohn (personal communication) suggests that the latter interpretation may well be possible in these patterns.

match the context story, in which two characters performed the same action at different times.

(28) Recovery of the temporal modifier phrase in the null object construction

a. Ceyseki-ka chayk-ul ecey ilk-ess-e-yo.
Cayseki-NOM book-ACC yesterday read-PST-DECL-POL

Pongseni-to ilk-ess-e-yo.
Pongseni-also read-PST-DECL-POL

‘(lit.) Caysek read a book yesterday. Pongsen read too.’

b. Caysek read a book yesterday. Pongsen read [a book yesterday] too.

c. Caysek read a book yesterday. Pongsen read [a book] too.

As with Experiment 2a, the results of Experiment 2b reveal that participants reconstructed different elements at the elided site in VP-ellipsis and the null object construction when the antecedent clause included a reason or a temporal modifier phrase. Hence, the question that I asked in Experiment 2a is raised here again: why did Korean speakers recover adverbial modifiers in VP-ellipsis and the null object construction differently? As briefly explained in Experiment 2a, I suggest that participants comprehended VP-ellipsis via the syntactic parallelism constraint. Thus, they recovered the entire VP, including modifier phrases, of the first clause at the elided site in the second clause. However, in the null object construction, participants recovered reason and temporal modifier phrases differentially. On the one hand, the reason modifier phrase is not obligatorily recovered at the elided site in the second clause because the reason modifier carries information peripheral to discourse. On the other hand, temporal modifiers are recovered in the null object construction, suggesting that comprehenders treated them as a part of the verb’s event structure, like other arguments. With regard to this point, I will provide more discussion in the following general discussion, based on the results of Experiments 2a and 2b.

4.5 General discussion of Experiments 2a and 2b

Experiments 2a and 2b were conducted to investigate the recovery of manner, reason, locative, and temporal modifiers in VP-ellipsis and the null object construction. Interestingly, the results of these experiments show significant differences in reconstructing the modifier phrases in VP-ellipsis and the null object construction.

Turning back to the results of VP-ellipsis in Experiments 2a and 2b, the adverbial modifier phrases of the first clause were recovered at the elided site in the second clause regardless of the modifier type. That is, participants understood the elided elements in the second clause by reconstructing the entire VP, including the modifier phrase, of the first clause by means of syntactic parallelism. As a result, participants considered VP-ellipsis with a matching modifier phrase in the parallel context condition true and VP-ellipsis with a mismatching modifier phrase in the non-parallel context condition false.

How about the null object construction? Let us first consider the results of null object constructions with manner and reason modifier phrases. Experiments 2a and 2b show that it was not obligatory for manner and reason modifiers to be recovered at the elided site in the null object construction. Many participants had modifier non-recovered readings and answered 'TRUE' to the null object construction not only in the parallel context condition but also in the non-parallel context condition. That is, they allowed target sentences as long as the two characters performed the same actions, regardless of the manner of or the reason for their actions.

As for null object constructions with locative and temporal modifier phrases, unlike manner and reason modifier phrases, many participants comprehended the null object construction by recovering locative and temporal modifiers at the elided site in the

second clause. Therefore, they answered ‘TRUE’ to the null object construction containing a matching locative or a matching temporal modifier phrase in the parallel context condition but rejected the null object construction containing a mismatching locative or a mismatching temporal modifier phrase in the non-parallel context condition.

Why did participants comprehend temporal/locative modifiers and manner/reason modifiers in different ways in null object constructions? As explained earlier in this chapter, Davidson (1980) proposed that a verb’s event structure includes extra positions for event arguments, such as temporal and locative modifiers. These arguments are explicitly or implicitly expressed by means of an action verb’s semantic information. Thus, the results of Experiments 2a and 2b provide empirical evidence for Davidson’s proposal. That is, verbs, particularly action verbs, generate time and locative argument positions by virtue of the fact that the events they denote occur at particular points/periods of time and at particular points in space. This aligns well with the fact that many verbs (e.g., *place*, *put*, *dash*, etc.) denote events that require overt location arguments. That is, in terms of an action verb’s semantics, a time phrase and location phrase are always present, either covertly or overtly. Where they are covert, as in the null object construction, they can be retrieved contextually, with the help of something that was mentioned in the previous discourse.

In contrast, manner and reason adverbial positions are not obligatory, presumably because information about an event’s manner and reason is more peripheral to an event’s conceptual structure than information about its time and location. As a result, null manner and reason adverbial phrases are unlikely to be generated and comprehenders will

generally make no effort to retrieve them from the antecedent phrase in the null object constructions.

In a nutshell, the results of Experiments 2a and 2b suggest that, on the one hand, comprehension of VP-ellipsis is more syntax-based language processing because comprehenders reconstruct null elements with the help of the antecedent sentence structure. On the other hand, the recovery of modifier phrases in the null object construction is related to semantic and contextual information. According to previous studies (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003), the fact that manner, reason, locative, and temporal modifier phrases are recovered in various ways in VP-ellipsis and the null object construction plays a crucial role in demonstrating the differences between these two constructions.

However, the modifier reconstruction patterns in the null object construction that emerged in Experiments 2a and 2b raise the question of whether these patterns are caused by the properties of the null object construction itself or by some other factor(s) related to the recovery of adverbial modifiers. That is, while previous studies use the recovery of different modifier phrases to provide evidence that null object constructions do not correspond to VP-ellipsis, this phenomenon may be more related to verbs' event structure than to the properties of the null object construction per se. With reference to this question, I will further investigate the recovery of different modifier phrases using English VP-ellipsis and *one*-substitution in Experiment 4.

CHAPTER 5
COMPREHENSION OF VP-ELLIPSIS AND ONE-SUBSTITUTION
IN L2 ENGLISH

5.1 Previous studies on elliptical constructions in L2 acquisition

Relative to the number of theoretical studies on elliptical constructions, there are few experimental studies on elliptical constructions in L2 acquisition (Duffield & Matsuo, 2001, 2002, 2009; Duffield, Matsuo & Roberts, 2009; Ying, 2003, 2005). Ying (2003, 2005) investigated one of the most notable aspects of VP-ellipsis, namely the “sloppy reading” (the bound-variable interpretation) in (1b) and the “strict reading” (the coreferential interpretation) in (1c):

- (1) a. John defended himself and Bill did too.
b. John_i defended himself_i and Bill_j did [defend himself_j] too.
c. John_i defended himself_i and Bill_j did [defend him_i] too.

He examined how Chinese-speaking L2 learners of English interpret VP-ellipsis containing a reflexive pronoun in the antecedent clause as in (1a), in comparison with native English speakers’ interpretations. Through two experiments, Ying found that both the intermediate and advanced Chinese-speaking learners of English preferred sloppy readings to strict readings, as did native speakers of English. His study also showed that Chinese-speaking L2 learners preferred strict readings when they interpreted target sentences with coreference-biased contexts as in (2), reflecting L2 learners’ sensitivity to context effects.

- (2) John defended himself and Bill did too.
Bill was a good friend of John.

Overall, Ying's studies established L2 learners' ability to compute the relation between syntactic structure and discourse information in comprehending ambiguous sentences.

Duffield and Matsuo conducted a series of investigations (2001, 2002, 2009) into L2 learners' sensitivity to parallelism effects in VP-ellipsis as in (3a) and VP-anaphora as in (3b) on the basis of Hankamer and Sag's (1976) traditional account of syntactic parallelism.

(3) English (example 15 in Duffield & Matsuo, 2009)

a. Someone took the wood out to the shed last night. Tom told us that Sally did.

b. Someone took the wood out to the shed last night. Tom told us that Sally did it.

According to Hankamer and Sag's (1976) distinction between VP-ellipsis and VP-anaphora, the former requires a syntactic antecedent on the surface, but the latter does not carry this restriction because the intended interpretation of *do it* can be derived from the discourse context. In addition, they observe that VP-ellipsis depends on the syntactic parallelism constraint and VP-anaphora does not. However, Hankamer and Sag's syntactic account of parallelism constraints on VP-ellipsis and VP-anaphora has been undermined by Duffield and Matsuo's experimental studies.

Duffield and Matsuo (2001) investigated whether L2 learners of English with different L1 backgrounds (i.e., Dutch, Japanese, and Spanish) were able to distinguish between VP-ellipsis and VP-anaphora even though their L1 does not permit VP-ellipsis as English does. Using the online sentence completion task developed by Tanenhaus and Carlson (1990), they tested L2 learners' sensitivity to the parallelism constraints in active versus passive contrast as in (4) and in verbal versus nominal contrast as in (5):

- (4) Example set (example 14 in Duffield & Matsuo, 2001)
- a. Active antecedent, VP-ellipsis/VP-anaphora
Someone took the wood out to the shed last night.
Tom told us that Sally did. / Tom told us that Sally did it.
 - b. Passive antecedent, VP-ellipsis/VP-anaphora
The wood was taken out to the shed last night.
Tom told us that Sally did. / Tom told us that Sally did it.
- (5) Example set (examples 1 & 2 in Duffield & Matsuo, 2009)
- a. Verbal antecedent, VP-ellipsis/VP-anaphora
It annoyed Sally if anyone mentioned her sister's name.
Tom did, out of spite. / Tom did it, out of spite.
 - b. Nominal antecedent, VP-ellipsis/VP-anaphora
The mention of her sister's name annoyed Sally.
Tom did, out of spite. / Tom did it, out of spite.

In example (4a), VP-ellipsis and VP-anaphora have a syntactically parallel antecedent clause. Thus, we would expect both VP-ellipsis and VP-anaphora to be highly accepted. By contrast, in example (4b), VP-ellipsis and VP-anaphora have a syntactically non-parallel antecedent clause: the antecedent clause contains a passive VP, but the second clause, for both VP-ellipsis and VP-anaphora, has an active verb form. In this case, VP-ellipsis is less likely to be acceptable than VP-anaphora because VP-ellipsis is sensitive to syntactic parallelism between the antecedent and the elided VP, but VP-anaphora is not. Similarly, VP-ellipsis and VP-anaphora have an antecedent with syntactically parallel structure in (5a) (i.e., verbal antecedent) and with syntactically non-parallel structure in (5b) (i.e., nominal antecedent). In this case, both VP-ellipsis and VP-anaphora in (5a) are acceptable because the antecedent clause is syntactically parallel to the elided VP in the second clause. However, in (5b), VP-ellipsis is unlikely to be acceptable because its antecedent is a nominalized form (i.e., *the mention of her sister's name*), which is syntactically non-parallel to the elided VP in the second clause. By contrast, VP-anaphora

in (5b) is still likely to be acceptable even though syntactic parallelism does not exist between the antecedent and the elided VP.

Despite the unavailability of VP-ellipsis in their L1, the results of this study revealed that Dutch and Japanese L2 learners of English could distinguish VP-ellipsis from VP-anaphora in terms of parallelism constraints. Dutch and Japanese participants accepted VP-ellipsis and VP-anaphora with an active or a verbal antecedent more often than they accepted those with a passive or a nominal antecedent. However, Spanish participants did not accept VP-ellipsis regardless of syntactic parallelism although they were advanced learners of English. Spanish participants' lack of sensitivity to parallelism constraints may be caused by L1 transfer. Given the fact that neither Dutch nor Spanish allow VP-ellipsis, the different results between Dutch and Spanish participants' responses invoke learnability issues – either 'Full Access' or 'No Access' (Schwartz & Sprouse, 1996).

Significantly, in the Duffield and Matsuo (2001) study, the L2 learners, with the exception of the Spanish L2 learners, generally exhibited the same patterns in distinguishing between VP-ellipsis and VP-anaphora as did native speakers of English, but Duffield and Matsuo provide no statistical analyses for between-group differences. Based on the graph patterns, it is not clear whether the L2 learners' data indicate native-like judgments. In addition, the researchers did not provide any further explanation of how L2 learners acquire their sensitivity to the parallelism constraint if it is not transferred from their L1.

Taking into consideration the lack of explanation in their previous study, Duffield and Matsuo (2009) reanalyzed the data obtained from the same groups of L2 learners of

English (i.e., advanced Dutch, Spanish, and Japanese L2 learners), comparing their data with those of native speakers of English. The results of their statistical analyses revealed several important findings. First, Spanish and Japanese L2 learners in general showed low acceptability rates for VP-ellipsis, which were significantly different from the rates of native speakers of English and Dutch L2 learners.

Second, unlike Spanish and Japanese learners, Dutch L2 learners performed as successfully as native speakers did. From this result, Duffield and Matsuo suggested that L2 learners can acquire native-like sensitivity to parallelism effects irrespective of the syntactic properties of their L1.

Third, they also claimed that parallelism effects are involved not only in syntactic factors but also semantic and pragmatic factors. That is, neither native speakers of English nor L2 learners categorically rejected VP-ellipsis constructions with syntactically non-parallel antecedents (i.e., passive antecedent and nominal antecedent conditions). They did, however, exhibit higher acceptability rates for VP-anaphora with parallel antecedents than for VP-anaphora with non-parallel antecedents.

Thus, these findings shed light on the properties of VP-anaphors that are related to the interaction between syntax and discourse. Based on these results, Duffield and Matsuo concluded that parallelism constraints affected comprehension of VP-ellipsis as well as VP-anaphora. Contrary to Hankamer and Sag's account, both L2 learners and native speakers of English accepted VP-anaphora in the parallel constructions (i.e., active antecedent and verbal antecedent conditions) at higher rates than VP-anaphora in the non-parallel constructions (i.e., passive antecedent and nominal antecedent conditions). This suggests that VP-anaphora is also constrained by structural parallelism.

As a follow-up to Duffield and Matsuo's previous studies (2001, 2009), Duffield, Matsuo, and Roberts (2009) reported the results from on-line and off-line experiments comparing native speakers and Dutch L2 learners' sensitivity to parallelism in elliptical constructions. In Duffield and Matsuo's previous studies, some advanced L2 learners of English (e.g., Dutch-speaking learners) showed native-like sensitivity to parallelism constraints in VP-ellipsis and VP-anaphora. Interestingly, Duffield, Matsuo, and Roberts (2009) found a qualitative difference between the data of native English speakers and L2 learners. That is, syntactic structure (e.g., active-passive or verbal-nominal) was found to be a significant factor for native speakers of English in judging the acceptability of VP-ellipsis and VP-anaphora, whereas in both online and offline experiments, non-structural factors (e.g., finite/nonfinite) played a significantly different role in Dutch-speaking L2 learners' judgments.

These qualitatively different acceptability patterns by native speakers and L2 learners were also observed in Duffield and Matsuo's 2002 study, in which they explored the comprehension of VP-ellipsis and VP-anaphora with parallel and non-parallel antecedents in native speakers of English and Dutch L2 learners with the help of online and offline experiments. They found that the finiteness of verbs significantly affected the L2 learners' judgments. Thus, Dutch L2 learners accepted non-finite VP-ellipsis (6a) and non-finite VP-anaphora in (6b) at a significantly higher rate, compared to native English speakers' responses to these constructions.

- (6) (example from 1 in Duffield & Matsuo, 2002)
- a. Someone had to put out the garbage. But I didn't want to.
 - b. Someone had to put out the garbage. But I didn't want to do it.

This study indicates that while Dutch L2 learners' performance was comparable to that of native speakers, their comprehension patterns were different and were affected by varying factors involved in the parallelism effects.

In sum, this series of studies by Duffield and Matsuo suggested that L2 processing is quantitatively similar to but qualitatively different from L1 processing, not because L2 learners have poor or deficient competence but because they are sensitive to different factors. In addition, the results of their studies demonstrate that syntactic parallelism affects both surface anaphora (e.g., VP-ellipsis) and deep anaphora (e.g., VP-anaphora), in contrast to Hankamer and Sag's proposal.

5.2 The present study

Extending earlier work on elliptical constructions in the field of L2 acquisition and processing, in this chapter I investigate how Korean L2 learners comprehend English VP-ellipsis and *one*-substitution. Specifically, I observed L2 learners' interpretations of two different anaphoric expressions, focusing on what elements are elided in VP-ellipsis and what the pronoun *one* is anaphoric to. As Garnham (2001) points out, Hankamer and Sag (1976) classified deep and surface anaphora based on their linguistic intuitions without providing experimental evidence. Thus, this study aims to examine how surface anaphora, such as VP-ellipsis, and deep anaphora, such as *one*-substitution, are comprehended by Korean L2 learners and native English speakers.

With respect to VP-ellipsis, Korean and English use '*be*-support' and '*do*-support,' respectively, to substitute a VP in the second clause. Considering this difference between the two languages, Experiments 3 and 4 tested whether Korean L2 learners of English

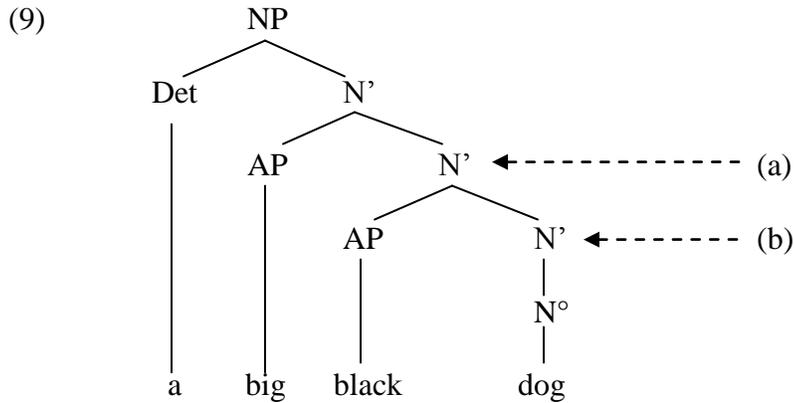
successfully determine which elements are elided in English VP-ellipsis. These two experiments also tested *one*-substitution. Unlike Korean, English does not allow null object constructions. Rather than use null arguments, English substitutes pronouns for previously mentioned entities. Thus, to avoid repetition of the same expression, Korean and English have different types of anaphoric expressions. Although null object constructions and *one*-substitution are different in form, *one*-substitution is tested in this study because, like the null object construction, its comprehension requires a syntactically matching antecedent and discourse coherence relations. Hence, the properties of *one*-substitution make it possible for us to learn whether the comprehenders draw on knowledge of syntactic structure and discourse information appropriately when interpreting the target sentences.

I begin with a brief illustration of the linguistic properties of *one*-substitution, which can be used to refer to an entity mentioned in the previous discourse context. In (7), for example, the pronoun *one* refers to ‘student,’ and it is used to avoid repeating the same phrase.

- (7) (example 66 (b) in Radford, 1988, p. 186)
This student works harder than that *one*.

Although in this case it is not difficult to find the antecedent of the pronoun *one*, the referent of *one* is not always so obvious. In (8), for example, the interpretation of anaphoric *one* is ambiguous, and researchers have investigated whether anaphoric *one* takes the lower N’ or the higher N’ as its antecedent (Baker, 1978; Gualmini, 2007; Lidz, Waxman & Freedman, 2003; Lidz & Waxman, 2004).

- (8) (example 2 in Radford, 1988, p. 221)
Jane has a big black dog, and Jean has a small *one*.



- a. Jane has a big black dog, and Jean has a small black dog. [*one* = black dog]
b. Jane has a big black dog, and Jean has a small dog. [*one* = dog]

In example (8), the pronoun *one* can be interpreted as ‘black dog’ as in (9a) or just ‘dog’ as in (9b).

5.3 Research questions for Experiment 3

How do Korean L2 learners of English and native English speakers interpret VP-ellipsis and the pronoun *one*? To interpret the referent of the anaphoric expression, they must consider syntactic, semantic, and pragmatic factors. The research questions of Experiment 3 are as follows:

- a. How do comprehenders use syntactic constraints and contextual information to understand elided phrases in VP-ellipsis?
- b. How do comprehenders interpret anaphoric *one* in *one*-substitution?
- c. How similarly or differently do Korean L2 learners of English and native English speakers comprehend VP-ellipsis and *one*-substitution?

5.4 Experiment 3

5.4.1 Method

5.4.1.1 Participants

A total of 63 Korean-speaking L2 learners of English participated in Experiment 3. They were all college students recruited from universities in Seoul, South Korea. They were randomly divided into two groups of 31 participants (mean age 20;2) and 32 participants (mean age 21;8). The first group was tested on VP-ellipsis and the second group on *one*-substitution. No one participated in other experiments.

All Korean L2 learners of English took a cloze test devised by Brown (1980) (see Appendix G for details). Of the 63 participants, one participant in the first group and two in the second group were excluded from the data analysis because their accuracy rates on filler items were lower than 80%. Therefore, data from 30 participants in each group were analyzed.

Sixty English native speakers also participated in this experiment as a control group. They were all college students recruited from the University of Hawai'i at Mānoa, in the United States, and were divided into two groups, each with 30 participant (mean age 21;6 and 20;4). Thirty participants were tested on VP-ellipsis and the other 30 on *one*-substitution.

Before starting the experiment, all the participants signed a consent form. All the Korean L2 learners of English were paid ₩5,000 (KRW) and all the English native speakers received course credit as compensation. Table 5.1 summarizes the participants' background information.

Table 5.1 Summary of Experiment 3 participants' background information

	Korean L2 learners of English		Native speakers of English	
	VP-ellipsis	<i>One</i> -substitution	VP-ellipsis	<i>One</i> -substitution
Age range (<i>SD</i>)	18;6 – 26;3 (1.39)	18;4 – 26;10 (1.94)	18;4 – 27;3 (1.96)	18;5 – 24;3 (1.34)
Mean age	20;2	21;8	21;6	20;4
Mean length of learning English (<i>SD</i>)	11;3 (2.37)	12;4 (1.91)	N/A	N/A
Cloze test score				
Mean	21.6	23.6		
Range	2 - 48	4 - 45	N/A	N/A
(<i>SD</i>)	(10.16)	(8.08)		

5.4.1.2 Procedure

A paper-and-pencil questionnaire was employed. Each participant was given a booklet testing either VP-ellipsis or *one*-substitution. Participants were asked to read short stories carefully and then to judge whether a statement presented at the end of each story was correct by marking either 'TRUE' or 'FALSE' on the questionnaire sheet. Marking the 'True' column indicated that the statement matched the context story; marking the 'False' column indicated that the statement did not match the context story. For this experiment, all the Korean L2 participants and English native speakers were tested individually in a small, quiet room. After completing the questionnaire, Korean L2 learners of English were tested on a cloze test, with no time limit. It took approximately 25 minutes for the L2 participants to complete the questionnaire and 15 minutes for the English L1 participants. The Korean L2 participants spent another 15 to 30 minutes completing the cloze test.

5.4.1.3 Material

There were two types of target sentences: VP-ellipsis (e.g., *John bought a bag. Mary did too.*) and *one*-substitution (e.g., *John bought a bag. Mary bought one too.*). To examine comprehenders' understanding of these two constructions, three different story contexts – the full-match context, the color-mismatch context, and the object-mismatch context – were created. All the context stories were the same as those used in Experiment 1, but they were presented in English. In the full-match context, for instance, two main characters performed the same action with the same kind of objects. In the color-mismatch context, two main characters performed the same action with the same kind of objects, but the objects were different in color. In the object-mismatch context, two main characters performed the same action, but they handled two different kinds of objects. Each story was followed by an experimental sentence, which involved either VP-ellipsis or *one*-substitution. These two constructions were tested separately, using a between-subjects design. Here are examples of each context with target sentences.

<The full-match context>

Context story:

John, Sue, and Mary went on a trip to Hawaii. On the last day of their trip, they went shopping in Waikiki to buy some souvenirs. In a shop, John found a bag with Hawaiian pictures on it. He liked the bag, and he bought it as a souvenir although it was expensive. After looking around, Sue bought a mug with a picture of a hula dancer on it. Then, Mary said, "I like your bag and your mug. What am I going to buy? A bag or a mug?" After thinking, Mary decided to buy a mug. When she was about to buy a mug, John said to her, "Wait, Mary. I think it would be dangerous if it were to break." So, Mary changed her mind and she bought a bag with a Hawaiian picture to be safe.

Target sentences:

- a. VP-ellipsis
John bought a bag. Mary did too.
- b. *One*-substitution
John bought a bag. Mary bought one too.

<The color-mismatch context>

Context story:

John, Sue, and Mary went shopping at a department store. Looking around in the store, John found a bag that he wanted to buy. However, the bag was available in various colors. Since John liked blue, he bought a blue bag. Sue found a blue hat that was on sale at 50% off and she bought it. Then, Mary said, “Wow, your bag and your hat look very cool. Am I going to buy a bag or a hat?” After thinking, Mary decided to buy a bag. When Mary picked up a blue bag, John said to her, “Wait. Don’t buy a blue bag. It is boring if you buy the same bag as me.” So Mary bought a white bag.

Target sentences:

- a. VP-ellipsis
John bought a blue bag. Mary did too.
- b. *One*-substitution
John bought a blue bag. Mary bought one too.

<The object-mismatch context>

Context story :

John, Sue, and Mary went shopping at a department store. Looking around in the store, John found a bag that he wanted to buy. Although it was expensive, he bought the bag. Sue also looked around the store and she found a wallet that she liked. So she bought it. Then, Mary said, “I like your bag and your wallet. I want to buy one. Umm... then, am I going to buy a bag or a wallet?” After thinking, Mary decided to buy a bag. When Mary picked up a bag, John said, “It is a new item for this season, so it is expensive.” Changing her mind, Mary bought a wallet, which was on sale at 50% off.

Target sentences:

- a. VP-ellipsis
John bought a bag. Mary did too.
- b. *One*-substitution
John bought a bag. Mary bought one too.

Four tokens for each context were tested with either VP-ellipsis or *one*-substitution. Each questionnaire contained 12 target sentences and 16 fillers. Experiment 3 contained the same filler sentences (e.g., *John said that Bill blamed himself/him.*) and contexts that were tested in Experiment 1, and all the trials were translated into English.

5.4.2 Results

The data were analyzed based on participants' answers to target statements. The dependent measure was the percentage of 'TRUE' responses to target sentences. Overall, Korean L2 speakers of English comprehended VP-ellipsis and *one*-substitution as native English speakers did. However, there was some difference between Korean L2 speakers and English L1 speakers in comprehending *one*-substitution in the color-mismatch context condition. The result of Experiment 3 is summarized in Table 5.2.

Table 5.2 Mean proportion of 'YES' responses to target sentences in Experiment 3

	Korean L2 learners		English L1 speakers	
	VP-ellipsis	<i>One</i> -substitution	VP-ellipsis	<i>One</i> -substitution
Full-match context	97.5% (<i>SD</i> = 7.63)	97.5% (<i>SD</i> = 7.63)	99.2% (<i>SD</i> = 4.56)	99.2% (<i>SD</i> = 4.56)
Color-mismatch context	0% (<i>SD</i> = 0)	22.5% (<i>SD</i> = 37.9)	0.8% (<i>SD</i> = 4.56)	0.8% (<i>SD</i> = 4.56)
Object-mismatch context	0% (<i>SD</i> = 0)	7.5% (14.9)	1.7% (<i>SD</i> = 6.34)	0.8% (<i>SD</i> = 4.56)

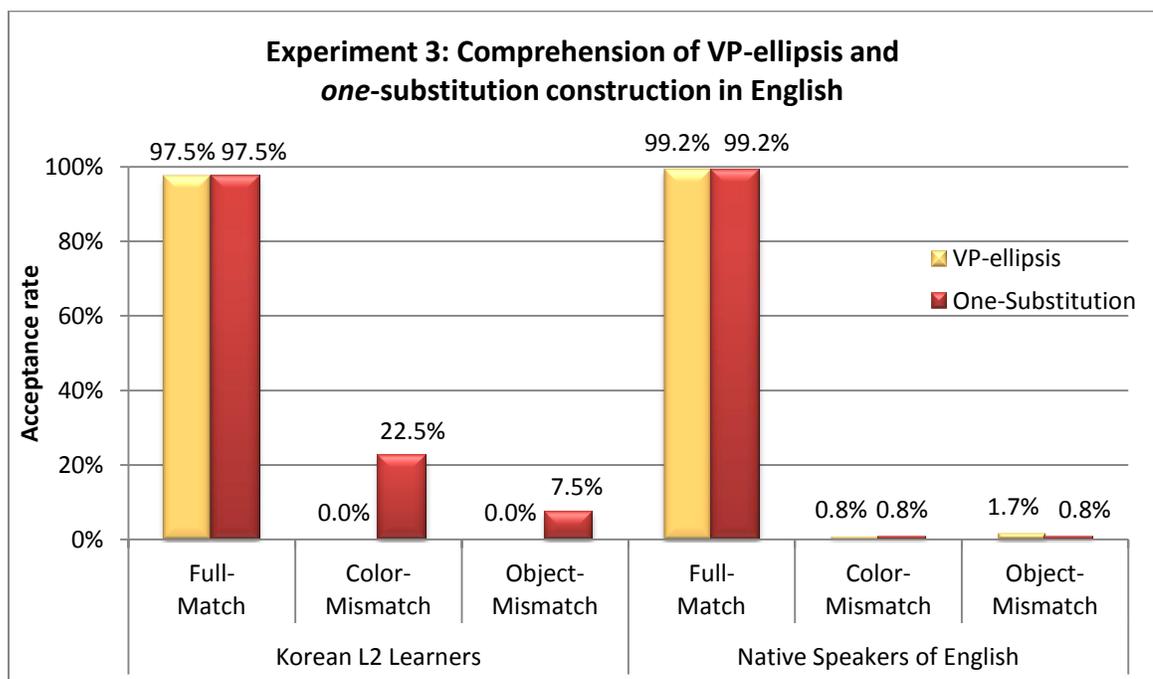


Figure 5.1 Comprehension of VP-ellipsis and *one*-substitution by Korean L2 speakers and English L1 speakers in Experiment 3

As presented in figure 5.1, Korean L2 speakers of English accepted both VP-ellipsis and *one*-substitution 97.5% ($SD = 7.63$, for both constructions) of the time in the full-match context condition. In the color-mismatch context condition, they did not allow VP-ellipsis at all. However, they allowed *one*-substitution 22.5% ($SD = 37.9$) of the time by answering ‘TRUE’ to the target sentences. In the object-mismatch context condition, they did not allow VP-ellipsis at all, but they accepted *one*-substitution 7.5% ($SD = 14.9$) of the time.

English L1 speakers accepted both VP-ellipsis and *one*-substitution 99.2% ($SD = 4.56$) of the time in the full-match context condition. By contrast, they rejected VP-ellipsis and *one*-substitution in both the color-mismatch context and the object-mismatch context conditions, answering ‘FALSE’ to most target sentences. As a result, in the color-mismatch condition, the acceptance rates of VP-ellipsis and *one*-substitution were only 0.83% ($SD = 4.56$) for each construction. In the object-mismatch context condition, the acceptance rates of VP-ellipsis and *one*-substitution were 1.7% ($SD = 6.34$) and 0.83% ($SD = 4.56$), respectively.

For the statistical analysis, the percentages of ‘TRUE’ responses to the target sentences in the color-mismatch context condition were analyzed using a 2×2 univariate ANOVA test. There were two between-subjects factors, each with two levels: construction type (VP-ellipsis versus *one*-substitution) and language group (Korean L2 learners of English versus native speakers of English). As presented in table 5.3, the results revealed that there was the main effects of the construction ($F(1, 116) = 10.27, p = .002, \eta_p^2 = .081$) and the language group ($F(1, 116) = 8.8, p = .004, \eta_p^2 = .071$). There was also a significant two-way interaction between construction and language group (F

(1, 116) = 10.27, $p = .002$, $\eta_p^2 = .081$). However, the results indicate that only 7.1% and 8.1% of the between subjects variance is accounted for by Language Group and Construction, respectively.

Table 5.3 Tests of between-subjects effects in Experiment 3 (Color-mismatch context)

Source	df	F	Sig.	Partial Eta Squared
Language Group	1	8.8	.004	.071
Construction	1	10.27	.002	.081
Language Group \times Construction	1	10.27	.002	.081
Error	116			
Corrected Total	119			

For clarification, I present in figure 5.2 the distribution of Korean L2 learners of English who accepted *one*-substitution in the color-mismatch context condition:

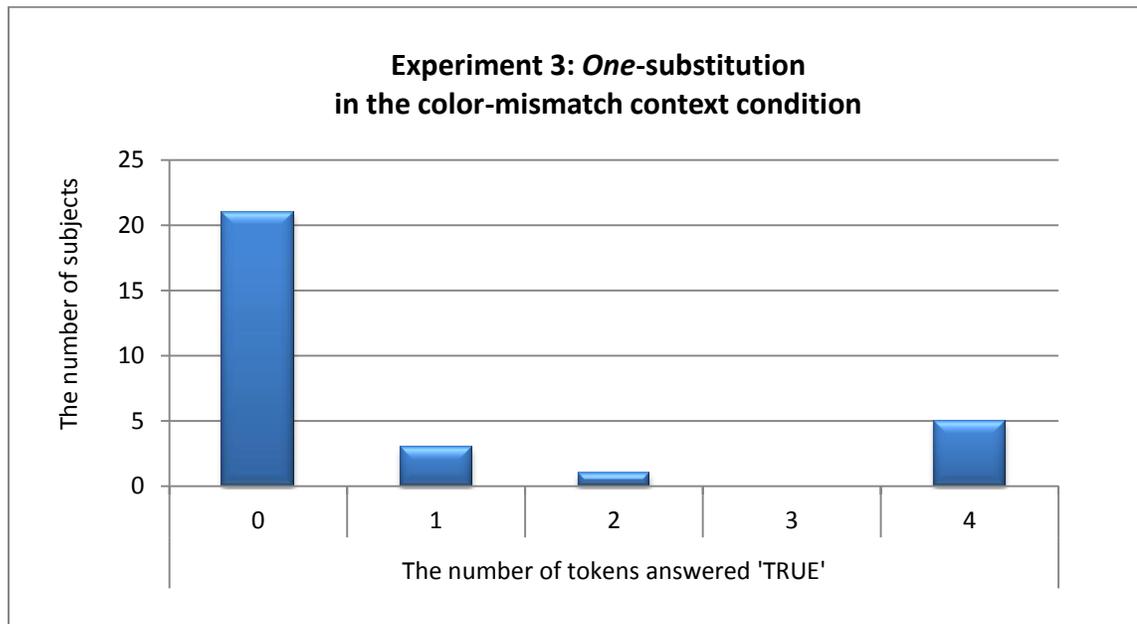


Figure 5.2 The number of Korean L2 learners of English who answered ‘TRUE’ to *one*-substitution in the color-mismatch context condition in Experiment 3

Out of 30 Korean L2 learners of English, five participants answered ‘TRUE’ to all four *one*-substitution tokens in the color-mismatch context condition. One participant

answered ‘TRUE’ to two *one*-substitution tokens, and three participants accepted one token. However, 21 participants allowed none of the tokens in this condition, answering ‘FALSE’ to all target *one*-substitution sentences.

5.4.3 Discussion of Experiment 3

Experiment 3 was conducted to explore the properties of VP-ellipsis and *one*-substitution through English L1 and L2 speakers’ comprehension of these constructions. From the perspective of L2 acquisition, Experiment 3 tested L2 comprehension of VP-ellipsis and *one*-substitution in order to examine, by comparison with English native speakers’ comprehension, whether Korean L2 learners of English are able to interpret these anaphoric expressions appropriately using syntactic constraints and contextual information. The overall results suggest two findings. First, Korean L2 learners understood VP-ellipsis and *one*-substitution with the help of the syntactically parallel antecedent. Second, most Korean L2 learners comprehended the two anaphoric expressions as native English speakers did. I will now explain how the results of Experiment 3 support these findings.

In the full-match context condition, native English speakers and Korean L2 speakers of English had very high acceptance rates for both VP-ellipsis and *one*-substitution, answering ‘TRUE’ to almost all of the target sentences. In contrast, most Korean L2 learners of English and English native speakers answered ‘FALSE’ to both VP-ellipsis and *one*-substitution pattern in the object-mismatch context condition. These results suggest that they comprehended VP-ellipsis by taking the VP in the first clause to be the antecedent of the elided VP in the second clause, as in (10):

- (10) a. John bought a bag. Mary did too.
b. John bought a bag. Mary did [_{VP} buy a bag] too.

As for *one*-substitution, they understood the pronoun *one* as referring to the N' 'bag' in the antecedent as in (11):

- (11) a. John bought a bag. Mary bought one too.
b. John bought a bag. Mary bought [bag] too.

In other words, in the full-match context condition, participants realized that the reconstructed VP in (10b) matched the context story, in which two characters each bought a bag. Thus, they answered 'TRUE' to the target sentence. They also answered 'TRUE' to the target *one*-substitution as in (11a) in the full-match context condition because the two characters in the context acted on the same kind of object and the pronoun *one* thus refers straightforwardly to the object noun in the first clause. Both Korean L2 learners and English native speakers therefore showed the same pattern of interpretation in the full-match context condition.

In the object-mismatch context condition, however, most participants answered 'FALSE' to VP-ellipsis as in (10a) because the target sentences did not describe the second character's performance correctly. Similarly, they did not allow *one*-substitution as in (11a), answering 'FALSE' because they noticed that the second character bought a wallet, not a bag, in the context story. Thus, they considered both the VP-ellipsis and *one*-substitution target sentences false due to the mismatch between the reconstructed sentence and the context story with respect to the type of object that the second character handled. In this context condition, a few Korean L2 learners of English accepted *one*-substitution by answering 'TRUE' to the target sentences, yet most Korean L2 learners and native English speakers did not allow VP-ellipsis or *one*-substitution, answering

‘FALSE’ to the target sentences. Based on participants’ responses to target sentences in the full-match and the object-mismatch context conditions, I suggest that they understood VP-ellipsis by reference to the VP in the first clause, and they understood *one*-substitution by reference to the object noun in the first clause.

In the color-mismatch context condition, Korean L2 learners of English and native English speakers did not allow VP-ellipsis, answering ‘FALSE’ to the target sentences. This result suggests that participants reconstructed the VP of the first clause at the elided site in the second clause (e.g., *John bought a blue bag. Mary did* [_{VP} *buy a blue bag*] *too.*), but then found that the reconstructed sentence did not match the context story in terms of the color of the object that the second character handled. Thus, they rejected the target VP-ellipsis constructions in the color-mismatch context condition.

How about *one*-substitution in the color-mismatch context condition? Most participants also answered ‘FALSE’ to the target *one*-substitution construction as in (12a) because Mary bought a white bag rather than a blue bag in the context story. This result implies that participants understood the pronoun *one* in the second clause as referring to ‘blue bag’ as in (12b). However, five Korean L2 learners of English answered ‘TRUE’ to all the target sentences in this condition, which suggests that they interpreted the pronoun *one* in the second clause as ‘bag’ as in (12c). Thus, they accepted *one*-substitution, regardless of the different colors of the objects that two characters handled.

- (12) a. John bought a blue bag. Mary bought *one* too.
- b. John bought a blue bag. Mary bought [blue bag] too.
- c. John bought a blue bag. Mary bought [bag] too.

That is, the participants who answered ‘TRUE’ to *one*-substitution in the color-mismatch context condition considered the pronoun *one* to be anaphoric to the lower N’, ‘bag.’

Even some advanced L2 learners who received high scores on the cloze test understood the pronoun *one* as referring to the lower N' although English native speakers and most Korean L2 learners understood *one* as anaphoric to the higher N', 'blue bag.'

An important issue that arises here has to do with why the Korean-speaker L2 learners are as successful as they are at interpreting English *one*-substitution, and why at least a small percentage of Korean participants deviate from the English norm. A particularly important Korean pattern in this regard is the one exemplified in (13), noted by William O'Grady.

(13) John-un twu kwen-uy kkaman sayk-uy chayk-ul sa-ss-e-yo.
John-TOP two CL-GEN black color-GEN book-ACC buy-PST-DECL-POL
'John bought two black books'

Na-to han kwen-ul sa-ss-e-yo. / Na-to hana sa-ss-e-yo.
I-also one CL-ACC buy-PST-DECL-POL / I-also one buy-PST-DECL-POL
'I bought one, too.'

→ a. Na-to kkaman sayk-uy chayk han kwen-ul sa-ss-e-yo.
I-also black color-GEN book one CL-ACC buy-PST-DECL-POL
'I bought one black book, too.'

b. Na-to chayk han kwen-ul sa-ss-e-yo.
I-also book one CL-ACC buy-PST-DECL-POL
'I bought one book, too.'

In (13), the second clause can be interpreted as either (13a) or (13b). That is, the object noun with the modifier (e.g., *kkaman sayk-uy chayk* 'black books') or just the object noun (e.g., *chayk* 'book') in the first clause can be the antecedent of the elided phrase in the second clause. However, Korean L1 speakers are more likely to prefer the former interpretation to the latter one. That, at least, is the conclusion that I draw from informal discussion with various native Korean speakers. Hence, Korean L2 learners might interpret the pronoun *one* in English as they did in Korean.

According to Hankamer and Sag's (1967) distinction, *one*-substitution is characterized as deep anaphora. Thus, if participants comprehended *one*-substitution on the basis of the context story, they might answer 'TRUE' to the target sentences by interpreting the pronoun *one* as referring to 'white bag' in the color-mismatch context condition and 'wallet' in the object-mismatch context condition. But the results of Experiment 3 did not support this analysis. Rather, L1 English speakers and most Korean L2 learners understood the higher N' in the first clause as the antecedent of the pronoun *one*, suggesting that they interpreted the pronoun *one* with the help of the antecedent's syntactic structure and semantic information more than contextual information.

In conclusion, the results of Experiment 3 provide several important findings. First, although Korean and English VP-ellipsis are syntactically different, Korean L2 learners of English understood VP-ellipsis without any difficulty, comprehending the elided phrase in the second clause as English L1 speakers did. That is, using a parallelism constraint, both language groups reconstructed the entire VP from the first clause at the elided site in the second clause. Second, they interpreted *one*-substitution with the help of the syntactic structure and the meaning of the antecedent sentence. In addition, they tended to interpret the pronoun *one* as anaphoric to the higher N' rather than to the lower N' when the pronoun could potentially have two interpretations. Finally, with respect to L2 acquisition, although some Korean L2 learners showed a different interpretation pattern by interpreting the pronoun *one* as referring to the lower N' in the color-mismatch context condition, most Korean L2 learners of English and English native speakers comprehended both VP-ellipsis and *one*-substitution similarly.

5.5 Research questions for Experiment 4

In line with Experiment 3, I conducted another experiment using VP-ellipsis and *one*-substitution to test Korean L2 learners' knowledge of syntactic, semantic, and pragmatic constraints. In the previous chapter, I reported how Korean adult speakers recovered the implicit manner, reason, temporal, and locative modifiers in VP-ellipsis and the null object construction in Korean (Experiment 2). Interestingly, the results of Experiment 2 show that Korean speakers recovered modifier phrases in similar ways in VP-ellipsis regardless of the modifier type, whereas in the null object construction, they recovered locative and temporal modifiers differently from manner and reason modifiers. I suggest that this difference in modifier recovery in the null object construction reflects information in the verb's event structure, which includes obligatory time and location arguments rather than from the properties of the null object construction per se.

To test this suggestion, I conducted Experiment 4, which consisted of two sub-experiments, to investigate the reconstruction of different types of modifiers in VP-ellipsis and *one*-substitution in English by Korean L2 learners of English and native speakers of English. Experiment 4a is therefore parallel with Experiment 2a, which investigated the recovery of modifier phrases in Korean VP-ellipsis and the null object construction.

In the case of *one*-substitution, the pronoun is interpreted with the help of an antecedent N'— e.g., *bag* in cases such as *John bought a bag yesterday. Mary bought one too*. Nonetheless, we can still ask whether other sorts of information, especially information relating to adverbial modifiers, is also recovered under these circumstances. In particular, we can ask whether temporal and locative modifiers are more likely than

manner and reason modifiers to be recovered in English *one*-substitution, as they were in the case of the Korean null object constructions investigated in Experiment 2. If this is the case, we would have further support for the idea that the recovery of modifier phrases is sensitive to the verb's event structure, independent of syntax-based anaphora. The research questions of Experiment 4 are as follows:

- a. Do comprehenders recover modifier phrases from the antecedent clause when interpreting VP-ellipsis?
- b. How similarly or differently do comprehenders recover the different types of modifier phrases from the antecedent clause in the second clause in *one*-substitution?
- c. Do Korean L2 learners of English recover manner, reason, locative, and temporal modifiers in VP-ellipsis and *one*-substitution as native speakers of English do?
- d. With respect to recovery of the different types of modifiers, do Korean L2 learners of English show patterns of interpretation in English VP-ellipsis and *one*-substitution similar to those of Korean speakers in recovering manner, reason, locative, and temporal modifier phrases in Korean VP-ellipsis and null object constructions?

5.6 Experiment 4a

Experiment 4a was conducted to examine how English L1 speakers and Korean L2 learners of English recover manner and locative modifiers, using VP-ellipsis and *one*-substitution in English. Specifically, Experiment 4a focused on the following questions:

- (i) If the antecedent clause contains a manner or a locative modifier phrase, what elements are reconstructed in VP-ellipsis?;
- (ii) For *one*-substitution, if the antecedent

clause contains a manner or a locative modifier phrase, do comprehenders recover the modifiers in the second clause? If so, do they recover manner and locative modifiers in the same way or in a different way?

5.6.1 Method

5.6.1.1 Participants

Sixty-three Korean-speaking L2 learners of English participated in Experiment 4a. They were all college students recruited from universities in Seoul, South Korea. They were divided into two groups with 32 participants in one group (mean age 22;0) and 31 in the other (mean age 23;2). The first group was tested on reconstruction of manner and location modifiers in VP-ellipsis, and the second group on reconstruction of manner and location modifiers in *one*-substitution. Of these 63 participants, three were removed from the data analysis because their accuracy rate on filler items was below 80%. Sixty Korean-speaking L2 learners of English were left for the data analysis.

Sixty-four English native speakers participated in this experiment as a control group. They were all college students recruited from the University of Hawai'i at Mānoa, in the United States. Like the Korean L2 participants, the English L1 speakers were also divided into two groups. Thirty-two participants (mean age 22;8) were tested on reconstruction of manner and location modifiers in VP-ellipsis, and the other 32 (mean age 20;7) were tested on reconstruction of manner and location modifiers in *one*-substitution. Of the 64 English L1 speakers, four were removed from the data analysis because their accuracy rate on filler items was below 80%.

Before starting the experiment, all the participants signed a consent form. All the Korean L2 learners of English were paid ₩5,000 (KRW) and all the English native speakers received course credit as compensation. Table 5.4 presents the summary of participants' background information.

Table 5.4 Summary of participants' background information

	Korean L2 learners of English		Native speakers of English	
	VP-ellipsis	<i>One</i> -substitution	VP-ellipsis	<i>One</i> -substitution
Age range (<i>SD</i>)	19;3 – 27;7 (1.58)	19;3 – 29;9 (3.14)	18;5 – 30;9 (3.32)	18;7 – 25;8 (1.59)
Mean age	22;0	23;2	22;8	20;7
Mean length of learning English (year) (<i>SD</i>)	11;6 (2.44)	12;6 (2.42)	N/A	N/A
Cloze test score				
Mean	24.67	26.73	N/A	N/A
Range	8 – 38	7 – 43	N/A	N/A
(<i>SD</i>)	(9.4)	(11.19)		

5.6.1.2 Procedure

A paper-and-pencil questionnaire was employed. Each participant was given an individual booklet, testing either VP-ellipsis or *one*-substitution. Participants were asked to read short stories carefully and then judge whether a statement presented at the end of each story was correct by marking 'TRUE' or 'FALSE' on the questionnaire sheet. Marking the 'TRUE' column indicated that the statement matched the context story; marking the 'FALSE' column indicated that the statement did not match the context story. For this experiment, all the Korean L2 participants and English native speakers were tested individually in a small, quiet room. After completing the questionnaire, Korean-speaking L2 learners of English were tested on a cloze test devised by Brown (1980) with

no time limit. It took approximately 30 to 35 minutes for the Korean L2 participants to complete the questionnaire and 20 to 25 minutes for the English L1 participants. The Korean L2 participants spent another 15 to 30 minutes completing the cloze test.

5.6.1.3 Material

Experiment 4a involved the same two types of target sentences as in Experiment 3 – VP-ellipsis and *one*-substitution. Each target sentence consisted of two clauses. In each construction, the first clause described one character’s action and contained a modifier phrase. In the second clause, either the verb phrase was elided, creating VP-ellipsis, or the NP in the object position was substituted with the indefinite pronoun *one*, creating *one*-substitution. In both constructions, the modifier phrase was elided from the second clause.

To test these constructions, two different questionnaire tests were designed as presented in table 5.5 – one was for recovery of a manner or a location modifier phrase in VP-ellipsis, and the other for recovery of a manner or a location modifier phrase in *one*-substitution.

Table 5.5 Experimental conditions for each questionnaire for Experiment 4a

Questionnaire	Type of target sentence	Type of modifier	Context
Questionnaire (i)	VP-ellipsis	Manner / Location	Parallel context
			Non-parallel context
Questionnaire (ii)	<i>One</i> -substitution	Manner / Location	Parallel context
			Non-parallel context

With respect to the story context, all the experimental contexts were the same as in Experiment 2a, with parallel and non-parallel conditions, but they were presented in

English. Here are the examples of manner modifier recovery contexts and locative modifier recovery contexts with target VP-ellipsis and *one*-substitution:

<Manner modifier recovery contexts>

1. Parallel condition

Context story:

Last semester, Paul took an introductory linguistics course. While he was taking the course, he became interested in what language was. To learn more about languages, he borrowed a book from the library and read it carefully. Sarah took a linguistics course, too. For a final project, she had to write a term paper, so she borrowed a book on general linguistics to find a paper topic. At first, she thought that she could easily find an interesting topic, and she just looked over the introduction of the book. However, she realized that it was not easy to choose a topic. So, she began to read it carefully to find her topic.

2. Non-parallel condition

Context story:

Last semester, Paul took a linguistics course. While he was taking the course, he became interested in how languages have changed. To learn more about historical linguistics, he borrowed a book from the library and read it carefully. Sarah took a linguistics course, too. For a final project, she had to submit a paper after reading Steven Pinker's *Language Instinct*. It seemed to be an introductory book. To write her paper, Sarah tried to read sentence-by-sentence at first. However, it was not easy for her to understand the book. She finally read it to the end, but she skipped many parts that she could not understand.

Target sentences:

- a. VP-ellipsis
Paul read a book carefully. Sarah did too.

- b. *One*-substitution
Paul read a book carefully. Sarah read one too.

<Locative modifier recovery contexts>

1. Parallel condition

Context story:

It was beautiful today, so Paul went to the park and read the book, *Jane Eyre*, which he would discuss next week in his "Nineteenth Century English Novels" class. Sarah had a presentation in class next week, so she was going to prepare her presentation at home. However, she heard that her mom's friends were coming to visit at her house this afternoon, so she decided to go to school to study. However, when she went out, the weather was so good today that Sarah went to the park near her house, bringing the book *The Dubliners*. Sitting on a bench under a tree, she read the book that she would present.

2. Non-parallel condition

Context story:

Paul usually studied at the library but the weather was very good today, so he went to the park and read the book *The Great Gatsby*, which he would discuss in his “Twentieth Century English Novels” class. It was good for him to change his place of study. Sarah heard that Paul was going to read a book at the park, and she thought that it would be very nice to read a book in the park with Paul. However, she had to prepare for her presentation, and she needed to use a computer. So, she went to a café and read *The Great Gatsby* there, while preparing her presentation handout.

Target sentences:

- a. VP-ellipsis
Paul read a book in the park. Sarah did too.
- b. *One*-substitution
Paul read a book in the park. Sarah read one too.

Four tokens for each condition were created. In total, 16 experimental sentences and 16 filler items were used in each questionnaire. The same filler contexts used in Experiment 3 were included in Experiment 4a. For the filler sentences, I manipulated the sentences containing the pronoun *him* or *her* by switching the pronoun with the reflexive *himself* or *herself* and vice versa.

5.6.2 Results

I analyzed the data collected from 60 Korean L2 learners of English: 30 participants for VP-ellipsis and the other 30 participants for *one*-substitution. Sixty English native speakers’ data were analyzed as well: 30 participants for VP-ellipsis and the other 30 participants for *one*-substitution. For data analysis, the mean proportion of participants’ ‘TRUE’ responses to target sentences was considered as a dependent measure. Table 5.6 summarizes the results of English L1 speakers in Experiment 4a.

Table 5.6 Mean proportion of ‘YES’ responses to target sentences in Experiment 4a (English L1 speakers: manner–locative)

	Manner		Locative	
	Parallel context	Non-Parallel context	Parallel context	Non-Parallel context
VP-ellipsis	98.3% (<i>SD</i> = 6.34)	2.5% (<i>SD</i> = 10.06)	99.2% (<i>SD</i> = 4.56)	0% (<i>SD</i> = 0)
<i>One</i> -substitution	99.2% (<i>SD</i> = 4.56)	59.2% (<i>SD</i> = 41.77)	100% (<i>SD</i> = 0)	47.5% (<i>SD</i> = 40.65)

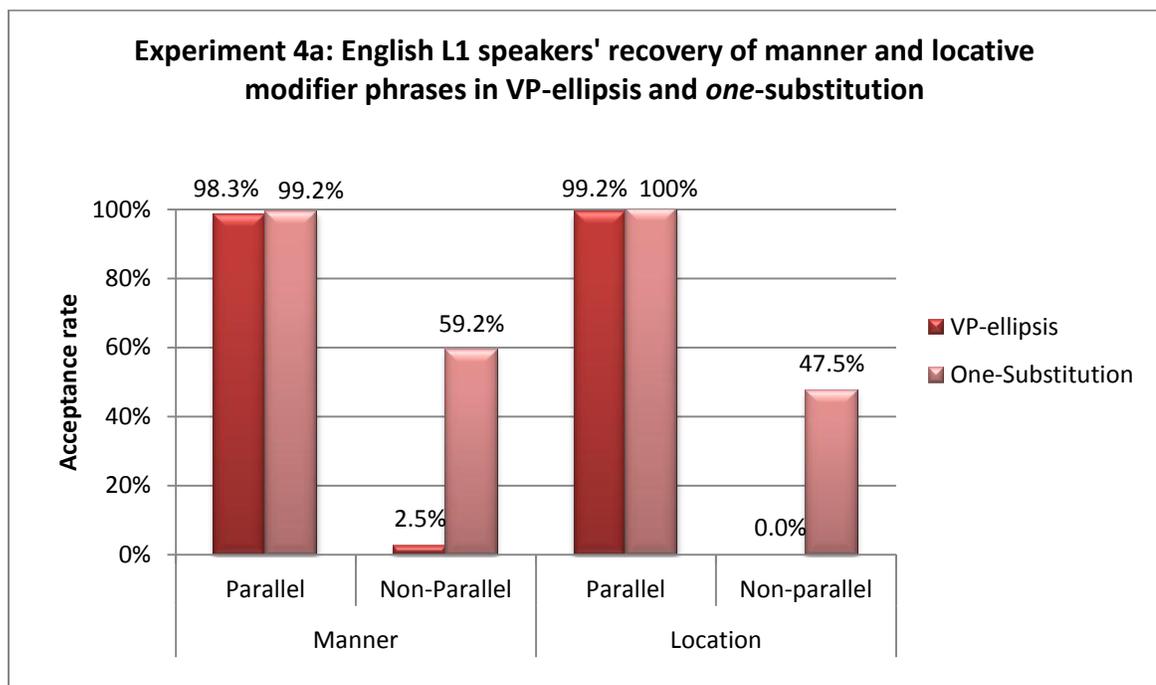


Figure 5.3 Recovery of manner and locative modifier phrases in VP-ellipsis and *one*-substitution by English L1 speakers in Experiment 4a

As shown in figure 5.3, the results revealed that English native speakers recovered the manner and the locative modifiers differently, depending on the construction type and the context type. To begin with, in the parallel context condition, English native speakers answered ‘TRUE’ to the target VP-ellipsis containing a matching manner modifier phrase (e.g., *Paul read a book carefully. Sarah did too.*) and *one*-substitution containing a matching manner modifier phrase (e.g., *Paul read a book carefully. Sarah read one too.*) 98.3% (*SD* = 6.34) and 99.2% (*SD* = 4.56) of the time, respectively. They also showed

very high acceptance rates for VP-ellipsis containing a matching locative modifier phrase (e.g., *Paul read a book in the park. Sarah did too.*) and for *one*-substitution containing a matching locative modifier phrase (e.g., *Paul read a book in the park. Sarah read one too.*): 99.2% ($SD = 4.56$) and 100% of the time, respectively.

In the non-parallel context condition, English native speakers almost always answered ‘FALSE’ to the target VP-ellipsis containing a mismatching manner modifier phrase (e.g., *Paul read a book carefully. Sarah did too.*). However, some of them answered ‘TRUE’ to *one*-substitution containing a mismatching manner modifier phrase (e.g., *Paul read a book carefully. Sarah read one too.*). The acceptance rates for VP-ellipsis and *one*-substitution were 2.5% ($SD = 10.06$) and 59.2% ($SD = 41.77$) of the time, respectively. Similarly, in the non-parallel context condition, English native speakers never allowed VP-ellipsis containing a mismatching locative modifier phrase (e.g., *Paul read a book in the park. Sarah did too*), answering ‘FALSE’ to all the tokens. However, they answered ‘TRUE’ to *one*-substitution containing a mismatching locative modifier phrase (e.g., *Paul read a book in the park. Sarah read one too.*) 47.5% ($SD = 40.65$) of the time in the non-parallel context condition.

Like English native speakers, Korean L2 learners of English also recovered the manner and the locative modifier phrases differently in VP-ellipsis and *one*-substitution. Table 5.7 summarizes the results of Korean L2 learners in Experiment 4a.

Table 5.7 Mean proportion of ‘YES’ responses to target sentences in Experiment 4a (Korean L2 learners: manner–locative)

	Manner		Locative	
	Parallel context	Non-Parallel context	Parallel context	Non-Parallel context
VP-ellipsis	95.0% (<i>SD</i> = 10.17)	3.3% (<i>SD</i> = 8.64)	97.5% (<i>SD</i> = 7.63)	0.8% (<i>SD</i> = 4.56)
<i>One</i> -substitution	97.5% (<i>SD</i> = 7.63)	71.7% (<i>SD</i> = 34.57)	96.7% (<i>SD</i> = 10.85)	52.5% (<i>SD</i> = 41.18)

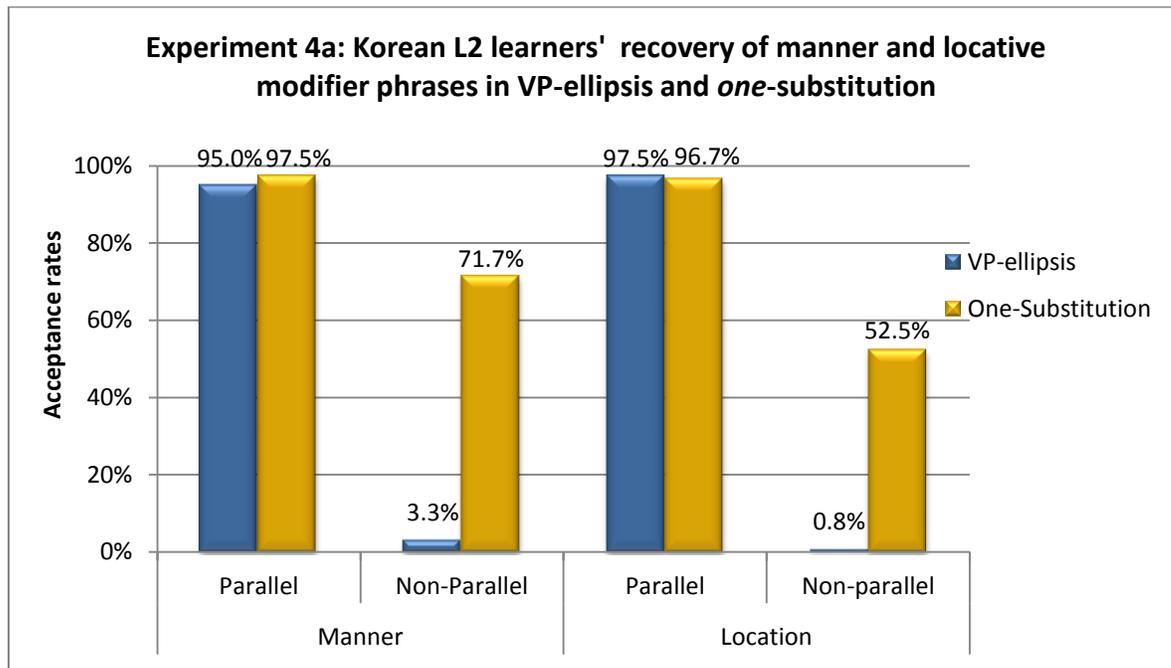


Figure 5.4 Recovery of manner and locative modifier phrases in VP-ellipsis and *one*-substitution by Korean L2 learners of English in Experiment 4a

As presented in figure 5.4, in the parallel context condition, Korean L2 learners answered ‘TRUE’ to VP-ellipsis containing a matching manner modifier phrase 95.0% (*SD* = 10.17) of the time and to *one*-substitution containing a matching manner modifier phrase 97.5% (*SD* = 7.63) of the time. Similarly, they answered ‘TRUE’ to VP-ellipsis containing a matching locative modifier phrase and to *one*-substitution containing a matching locative modifier phrase 97.5% (*SD* = 7.63) and 96.7% (*SD* = 10.85) of the time, respectively.

In the non-parallel context condition, Korean L2 learners seldom allowed VP-ellipsis containing a mismatching manner modifier phrase, answering ‘FALSE’ to almost all the tokens, whereas many of them answered ‘TRUE’ to *one*-substitution containing a mismatching manner modifier phrase. The acceptance rates in VP-ellipsis and *one*-substitution were 3.3% ($SD = 8.64$) and 71.7% ($SD = 34.57$) of the time, respectively. They also answered ‘FALSE’ to almost all target VP-ellipsis containing a mismatching locative modifier, but they answered ‘TRUE’ to *one*-substitution containing a mismatching locative modifier 52.5% ($SD = 41.18$) of the time.

Using a 2×2 repeated ANOVA test, I compared *one*-substitution containing a mismatching manner modifier phrase and *one*-substitution containing a mismatching locative modifier phrase in the non-parallel context condition according to language group (English L1 speakers vs. Korean L2 learners of English) and modifier type (manner vs. location). The result revealed a significant main effect of modifier type ($F(1, 58) = 14.89, p < 0.01, \eta_p^2 = .204$). However, there was no interaction between modifier type and language group, which demonstrates that the two language groups, English L1 speakers and Korean L2 learners of English, did not behave differently with respect to modifier type.

Finally, to better understand participants’ responses to *one*-substitution in relation to modifier type, I analyzed the number of subjects who answered ‘TRUE’ to *one*-substitution containing a mismatching manner modifier (e.g., *Paul read a book carefully. Sarah read one too.*) and *one*-substitution containing a mismatching locative modifier (e.g., *Paul read a book in the park. Sarah read one too.*) in the non-parallel context conditions.

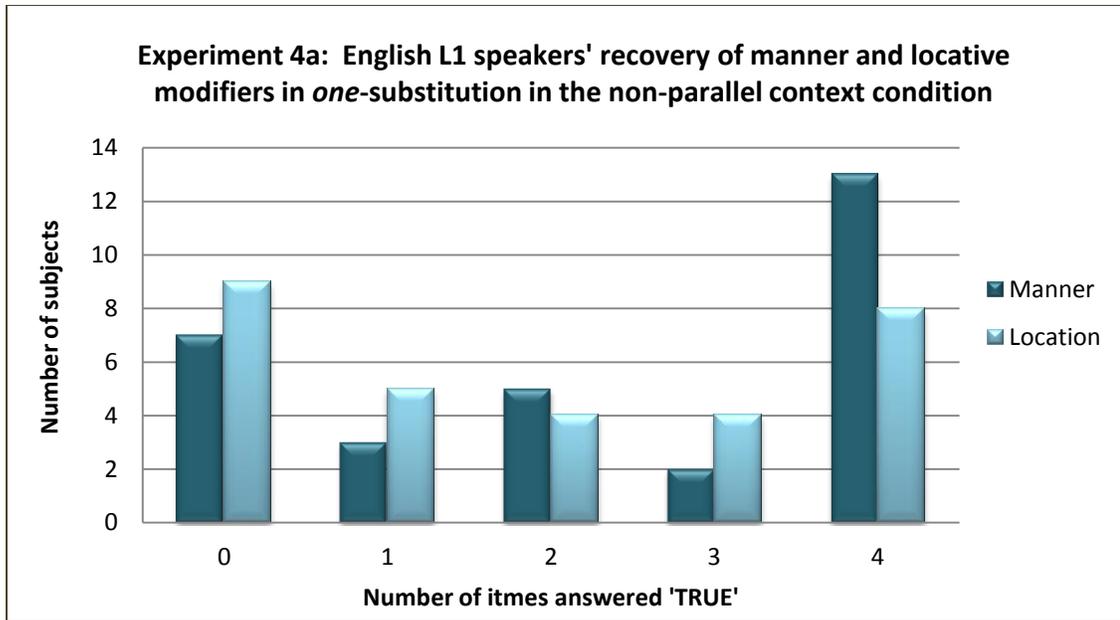


Figure 5.5 The number of English speakers who answered ‘TRUE’ to *one*-substitution containing a manner or a locative modifier in the non-parallel context condition in Experiment 4a

Looking at the results for manner modifiers by the English L1 speakers first, as presented in figure 5.5, 13 participants answered ‘TRUE’ to all four tokens in the non-parallel context condition. Two participants answered ‘TRUE’ to three out of four tokens, five answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and three answered ‘TRUE’ to only one token. However, six did not answer ‘TRUE’ to any of the tokens in this condition.

In the case of locative modifiers in *one*-substitution, eight English speakers answered ‘TRUE’ to all the tokens in the non-parallel context condition. Four answered ‘TRUE’ to three tokens out of four, four answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and five answered ‘TRUE’ to only one token. However, nine did not allow any token in this condition, answering ‘FALSE’ to all the tokens.

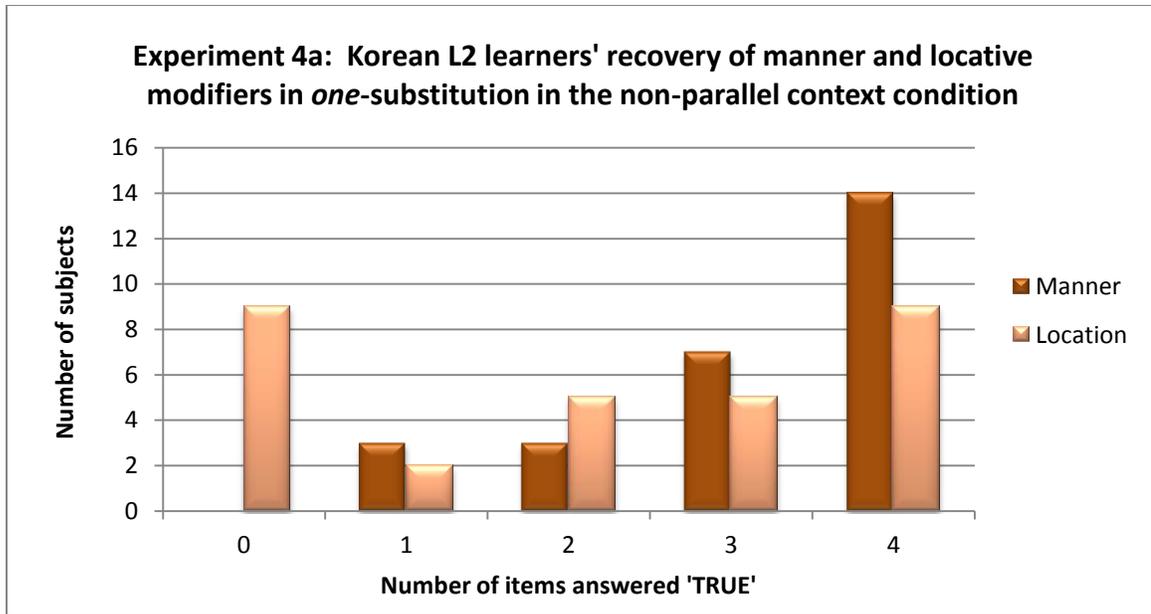


Figure 5.6 The number of Korean L2 learners of English who answered ‘TRUE’ to *one*-substitution containing a manner or a locative modifier in the non-parallel context condition in Experiment 4a

As for Korean L2 learners of English, as presented in figure 5.6, 14 participants answered ‘TRUE’ to all the *one*-substitution tokens containing a mismatching manner modifier in the non-parallel context condition. Seven answered ‘TRUE’ to three tokens out of four, three answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and three answered ‘TRUE’ to only one token. No one completely disallowed a mismatching manner modifier in *one*-substitution in the non-parallel context condition.

For a mismatched locative modifier phrase in *one*-substitution, nine Korean L2 learners of English answered ‘TRUE’ to all the tokens in the non-parallel context condition. Five answered ‘TRUE’ to three tokens, five answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and two answered ‘TRUE’ to only one token. However, nine disallowed all tokens, answering ‘FALSE’ to all the target sentences in this condition.

5.6.3 Discussion of Experiment 4a

Experiment 4a was conducted to investigate the recovery of manner and locative modifier phrases in VP-ellipsis and *one*-substitution via the interpretations of Korean L2 learners of English and English L1 speakers. Interestingly, this study reveals that these two language groups each recovered manner and locative modifiers in different ways, depending on the construction type and the context type.

For manner and locative modifier phrases in VP-ellipsis, as in (14a) and (15a), both native speakers of English and Korean L2 learners of English tended to answer ‘TRUE’ to the target VP-ellipsis sentences in the parallel context condition and ‘FALSE’ to the same target sentences in the non-parallel context condition.

(14) VP-ellipsis with a manner modifier

- a. Paul read a book carefully. Sarah did too.
- b. Paul read a book carefully. Sarah did [_{VP} read a book carefully] too.

(15) VP-ellipsis with a locative modifier

- a. Paul read a book in the park. Sarah did too.
- b. Paul read a book in the park. Sarah did [_{VP} read a book in the park] too.

These results suggest that they comprehended the target VP-ellipsis sentences with the help of the syntactic parallelism constraint. That is, as in (14b) and (15b), they took the entire VP in the first clause, including the modifier phrase, to be the antecedent of the elided VP in the second clause. Therefore, they considered the target sentence true in the parallel context condition, in which two characters performed the action in the same manner or in the same place. By contrast, they considered the same target sentences false in the non-parallel context condition, in which two characters performed the action in different manners or at different places.

For manner and locative modifier phrases in *one*-substitution, as in (16a) and (17b), both English native speakers and Korean L2 learners of English answered ‘TRUE’ to the target sentences in the parallel context condition. However, because both the modifier recovered reading and the modifier non-recovered reading yield the same answer, ‘TRUE,’ in the parallel context condition, it is not certain whether they recovered the modifier.

(16) *One*-substitution with a manner modifier phrase

- a. Paul read a book carefully. Sarah read one too.
- b. Paul read a book carefully. Sarah read [a book carefully] too.
- c. Paul read a book carefully. Sarah read [a book] too.

(17) *One*-substitution with a locative modifier phrase

- a. Paul read a book in the park. Sarah read one too.
- b. Paul read a book in the park. Sarah read [a book in the park] too.
- c. Paul read a book in the park. Sarah read [a book] too.

By contrast, in the non-parallel context condition, we can clearly observe whether they reconstructed the modifier in the second clause. Even though *one* is sensitive only to N’ in the preceding clauses, there is evidence of attempts to recover adverbial modifiers as well. Crucially, these attempts focused on the reconstruction of locative modifiers, but not their manner counterparts. Thus, despite the difference in the manners of actions, participants answered ‘TRUE’ to a mismatching manner modifier phrase in *one*-substitution in the non-parallel context condition with a high acceptance rate (i.e., 59.2% for English L1 speakers and 71.7% for Korean L2 learners). By contrast, their acceptance rates for a mismatching locative modifier phrase in *one*-substitution in the non-parallel context condition were significantly lower than the acceptance rates of a manner modifier phrase in *one*-substitution in the non-parallel context condition. English L1 speakers and

Korean L2 learners allowed the target sentences in this condition 47.5% and 52.5 % of the time, respectively.

As observed in Experiment 2a, the results of Experiment 4a provide interesting information about the recovery of modifier phrases. In particular, all that was required of participants with respect to *one*-substitution was to find the antecedent of the pronoun *one*. Nevertheless, they often recovered the locative modifier phrases in the second clause, whereas they tended not to recover the manner modifier. In that sense, the modifier phrases recovery patterns for *one*-substitution are very similar to those for the Korean null object construction in Experiment 2a. The results of Experiment 4a therefore suggest that the differential recovery of manner and locative modifier phrases does not result from the property of the null object construction per se.

Why, then, did participants recover the locative modifiers in the second clause in *one*-substitution? And why did they *not* recover the manner modifier phrase in the second clause? As explained earlier regarding the recovery of modifier phrases in the null object construction in Experiment 2a, the recovery of locative modifier phrases in *one*-substitution can also be traced to verbs' semantics. That is, the event structure of action verbs includes temporal and locative argument positions as suggested by Davidson (1980). These arguments can be presented either explicitly or implicitly in sentences. In the case of Experiment 4a, for example, locative modifiers do not appear in the second clause, but their interpretation was recovered by virtue of the verbs' semantic properties and information that was mentioned in the previous discourse. In some sense, implicit arguments are anaphoric because they are unexpressed, with their meaning being reconstructed with the help of context (Maunder, Tanenhaus, & Carlson, 1995b). In

contrast to the locative modifiers, manner modifiers were not retrieved in the second clause when participants interpreted *one*-substitution. Higginbotham (1985) proposes that not only temporal and locative modifier phrases but also manner modifiers semantically function as predicates of events in the logical form. But the results of Experiment 4a suggest that locative modifiers are semantically more crucial to the event structure of verbs than are manner modifiers, because comprehenders reconstruct unexpressed locative modifier phrases more frequently than manner modifier phrases as a part of predicates in sentences. I return to this point in the general discussion section, taking the results of the recovery of reason and temporal modifier phrases in Experiment 4b together.

5.7 Experiment 4b

Experiment 4b was conducted to examine how Korean L2 learners of English and English native speakers recover reason and temporal modifiers, using VP-ellipsis and *one*-substitution. In particular, Experiment 4b focused on the following questions: (i) If the antecedent clause contains a reason or a temporal modifier phrase, what elements are reconstructed in VP-ellipsis? (ii) For *one*-substitution, if the antecedent clause contains a reason or a temporal modifier phrase, do comprehenders recover the modifiers in the second clause? If so, do they recover reason and temporal modifiers in the same way or in a different way?

5.7.1 Method

5.7.1.2 Participants

Sixty-three Korean-speaking L2 learners of English participated in Experiment 4b. They were all college students recruited from universities in Seoul, South Korea. They were randomly divided into two groups with 30 participants in one group (mean age 21;7) and 33 in the other (mean age 20;9). The first group was tested on reconstruction of reason and time modifiers in VP-ellipsis, and the second group on reconstruction of reason and time modifiers in *one*-substitution. Of these participants, three were removed from the data analysis because their accuracy rates on filler items were below 80%. Sixty Korean-speaking L2 learners of English were left for the data analysis.

Sixty-seven English native speakers participated in this experiment as a control group. They were all college students recruited from the University of Hawai‘i at Mānoa, in the United States. Like the Korean L2 participants, the English L1 speakers were also divided into two groups. Thirty-four participants (mean age 20;5) were tested on reconstruction of reason and time modifiers in VP-ellipsis, and 33 participants (mean age 21;3) were tested on reconstruction of reason and time modifiers in *one*-substitution. Of the 67 English L1 speakers, seven were removed from the data analysis because their accuracy rates on filler items were below 80%.

Before starting the experiment, all the participants signed a consent form. All the Korean L2 learners of English were paid ₩5,000 (KRW) and all the English native speakers received course credit as compensation. Table 5.8 presents the summary of participants' background information.

Table 5.8 Summary of Experiment 4b participants' background information

	Korean L2 learners of English		Native speakers of English	
	VP-ellipsis	<i>One</i> -substitution	VP-ellipsis	<i>One</i> -substitution
Age range (SD)	18;9 – 26;10 (1.87)	18;5 – 28;4 (2.36)	17;6 – 23;11 (1.37)	18;5 – 28;10 (2.17)
Mean age	21;7	20;9	20;5	21;3
Mean length of learning English (year) (SD)	12;8 (2.57)	11;2 (2.71)	N/A	N/A
Cloze test score				
Mean	25.4	24.2		
Range	5 – 41	3 – 47	N/A	N/A
(SD)	(10.07)	(11.24)		

5.7.1.2 Procedure

The procedure in Experiment 4b was the same as in Experiment 4a. Thirty Korean L2 learners of English and 34 English L1 speakers were tested on VP-ellipsis containing a reason or a temporal modifier phrase, and 34 Korean L2 learners and 33 English L1 speakers were tested on *one*-substitution containing a reason or a temporal modifier phrase.

5.7.1.3 Material

As in Experiment 4a, there were two types of target sentences in Experiment 4b – VP-ellipsis and *one*-substitution, both of which contained a reason or a temporal modifier phrase in the first clause. In the second clause, either the verb phrase was elided, creating VP-ellipsis, or the noun phrase in the object position was substituted with the indefinite pronoun *one*, creating *one*-substitution. In both constructions, the modifier phrase was elided from the second clause.

To test these constructions, two different questionnaire tests were designed as shown in table 5.9 – one was for recovery of reason and time modifier phrases in VP-ellipsis, and the other for recovery of reason and time modifier phrases in *one*-substitution. There were 16 experimental items with 16 filler items in each questionnaire.

Table 5.9 Experimental conditions for each questionnaire for Experiment 4b

Questionnaire	Type of target sentence	Type of modifier	Context
Questionnaire (i)	VP-ellipsis	Reason / Time	Parallel context
			Non-parallel context
Questionnaire (ii)	<i>One</i> -substitution	Reason / Time	Parallel context
			Non-parallel context

With respect to the story context, all the experimental contexts were the same as in Experiment 2b. Here are the examples of reason modifier recovery contexts and temporal modifier recovery contexts:

<Reason modifier recovery contexts>

1. Parallel condition

Context story:
 Paul and Rick took the “Renaissance Literature” course. It was not easy to understand Renaissance literature because it was written in Old English. To write his term paper, Paul had to read John Milton’s *Paradise Lost*. It was very long and boring, but he read the book in order to write his paper. Long before, Rick had wanted to read *Paradise Lost* to broaden his knowledge of English literature. So he tried several times to read it, but he gave up reading it every time. However, this time he finally finished reading it in order to do his term paper.

2. Non-parallel condition

Context story:
 Paul took the “Twentieth Century English Literature” course, and it was not easy to understand modern English literature. To write his term paper, Paul had to read James Joyce’s *A Portrait of the Artist as a Young Man*. It was very difficult and boring, but he read the book in order to do the paper. Rick was sitting in on the course, so he did not need to submit a term paper. However, he liked reading books, so he read *A Portrait of the Artist as a Young Man* to expand his knowledge of English literature.

Target sentences:

a. VP-ellipsis

Paul read a book because of his assignment. Rick did too.

b. *One*-substitution

Paul read a book because of his assignment. Rick read one too.

<Temporal modifier recovery contexts>

1. Parallel condition

Context story:

Paul and Sarah had to write a journal entry after reading the book *Pride and Prejudice*. Paul didn't want to do his homework because he didn't like reading. However, the due date was close, so Paul finally read it yesterday. Sarah looked at the book and it seemed to be long and boring. So she decided to watch a movie called *Pride and Prejudice*, and then write the journal entry. However, she found out after she watched it that the movie was quite different from the original story. For her homework, she had no choice but to read the book, so she read it all day yesterday.

2. Non-parallel condition

Context story:

Paul and Sarah were going to make a presentation in class about the novel, *The Scarlet Letter*. Because they were going to prepare for the presentation today, Paul read the book yesterday. Sarah usually read books very quickly, so she planned to read *The Scarlet Letter* one day before their meeting. However, she had a problem with her car yesterday. She was busy fixing her car all day yesterday and had no time to read the book. So, she got up early and began to read the book this morning. Finally, she finished reading it before she met Paul.

Target sentences:

a. VP-ellipsis

Paul read a book yesterday. Sarah did too.

b. *One*-substitution

Paul read a book yesterday. Sarah read one too.

5.7.2 Results

For data analysis, three out of 63 Korean L2 learners and seven out of 67 English native speakers were excluded in Experiment 4b. Data from 30 participants in each language group for VP-ellipsis and from the other 30 participants in each group for *one*-substitution were analyzed. As in Experiment 4a, the mean proportion of participants' 'TRUE' responses to the target sentences was considered as a dependent measure. Table 5.10 summarizes the results of English L1 speakers in Experiment 4b.

Table 5.10 Mean proportion of ‘YES’ responses to target sentences in Experiment 4b (English L1 speakers: reason–temporal)

	Reason		Temporal	
	Parallel context	Non-Parallel context	Parallel context	Non-Parallel context
VP-ellipsis	97.5% (<i>SD</i> = 7.63)	1.7% (<i>SD</i> = 6.34)	97.5% (<i>SD</i> = 7.63)	0% (<i>SD</i> = 0)
<i>One</i> -substitution	99.2% (<i>SD</i> = 4.56)	78.3% (<i>SD</i> = 32.65)	96.7% (<i>SD</i> = 8.64)	43.3% (<i>SD</i> = 40.43)

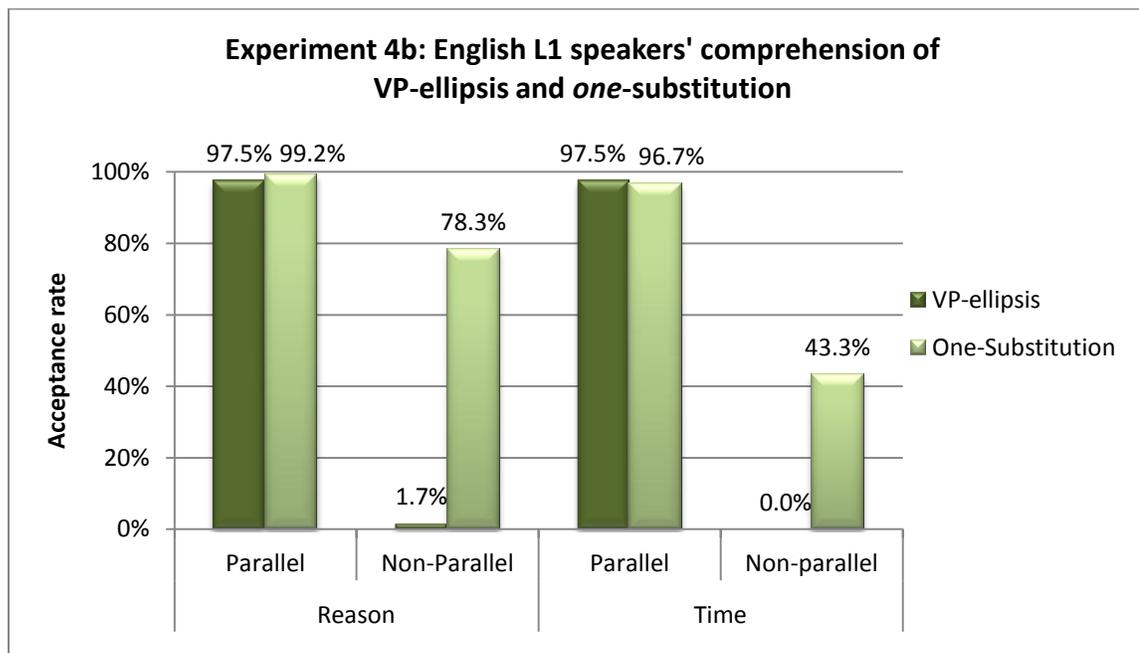


Figure 5.7 Recovery of reason and temporal modifier phrases in VP-ellipsis and *one*-substitution by English L1 speakers in Experiment 4b

Let us look at the English L1 speakers’ results first. As illustrated in figure 5.7, in the parallel context condition, English native speakers answered ‘TRUE’ 97.5% of the time to the target VP-ellipsis containing a matching reason modifier phrase (e.g., *Paul read a book because of his assignment. Rick did too.*). Moreover, they answered ‘TRUE’ 99.2% of the time to *one*-substitution containing a matching reason modifier phrase (e.g., *Paul read a book because of his assignment. Rick read one too.*). They responded similarly to VP-ellipsis containing a matching temporal modifier phrase (e.g., *Paul read*

a book yesterday. Rick did too.) and to *one*-substitution containing a matching temporal modifier phrase (e.g., *Paul read a book yesterday. Rick read one too.*), answering ‘TRUE’ 97.5% and 96.7% of the time, respectively.

In the non-parallel context condition, English native speakers answered differently depending on the construction type and the modifier type. As shown in figure 5.7, English L1 speakers almost never allowed VP-ellipsis containing a mismatching reason modifier phrase or VP-ellipsis containing a mismatching temporal modifier phrase, answering ‘FALSE’ to these constructions in the non-parallel context condition. By contrast, they answered ‘TRUE’ to *one*-substitution containing a mismatching reason modifier phrase 78.3% of the time and to *one*-substitution containing a mismatching temporal modifier phrase 43.3% of the time.

How did Korean L2 learners of English recover modifier phrases in VP-ellipsis and *one*-substitution in Experiment 4b? Table 5.11 summarizes the results of Korean L2 learners of English in Experiment 4b:

Table 5.11 Mean proportion of ‘YES’ responses to target sentences in Experiment 4b (Korean L2 learners: reason–temporal)

	Reason		Temporal	
	Parallel context	Non-Parallel context	Parallel context	Non-Parallel context
VP-ellipsis	100% (<i>SD</i> = 0)	5.0% (<i>SD</i> = 15.26)	100% (<i>SD</i> = 0)	1.7% (<i>SD</i> = 6.34)
<i>One</i> -substitution	100% (<i>SD</i> = 0)	74.2% (<i>SD</i> = 31.13)	100% (<i>SD</i> = 0)	57.5% (<i>SD</i> = 33.57)

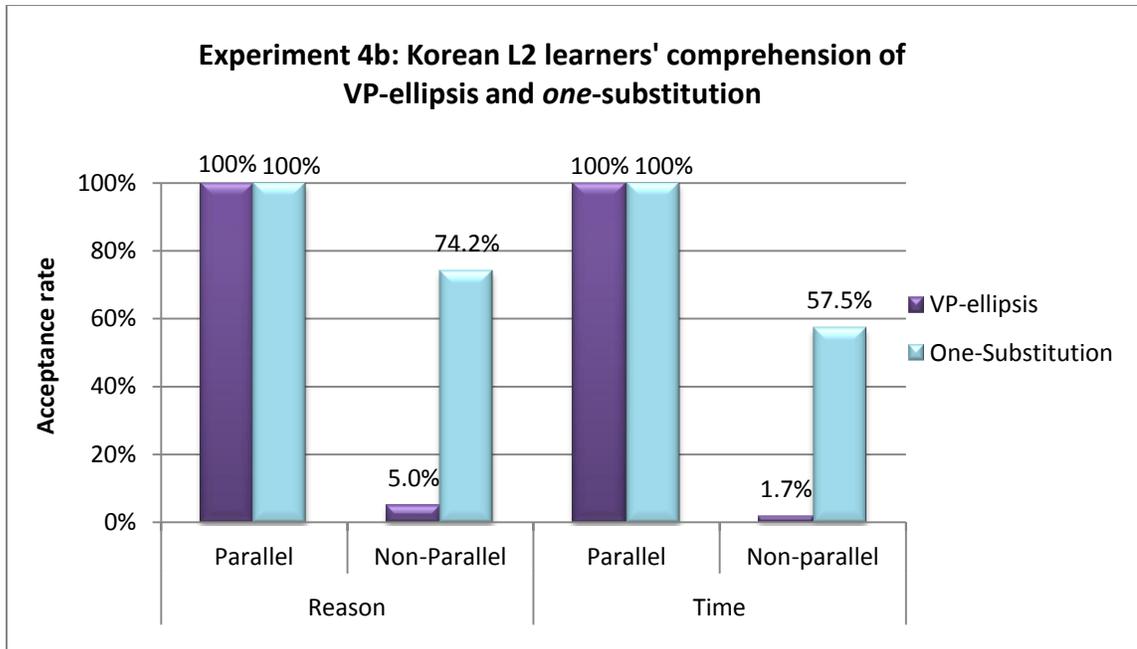


Figure 5.8 Recovery of reason and temporal modifier phrases in VP-ellipsis and *one*-substitution by Korean L2 learners of English in Experiment 4b

In the parallel context condition, Korean L2 learners of English answered ‘TRUE’ 100% of the time to VP-ellipsis containing a matching reason modifier phrase (e.g., *Paul read a book because of his assignment. Rick did too.*) as well as to *one*-substitution containing a matching reason modifier phrase (e.g., *Paul read a book because of his assignment. Rick read one too.*). They showed the same response patterns for the recovery of temporal modifier phrases in the parallel context condition, answering ‘TRUE’ 100% of the time to VP-ellipsis with a matching temporal modifier phrase (e.g., *Paul read a book yesterday. Rick did too.*) as well as to *one*-substitution with a matching temporal modifier phrase (e.g., *Paul read a book yesterday. Rick read one too.*).

By contrast, in the non-parallel context condition, most Korean L2 learners of English answered ‘FALSE’ to VP-ellipsis containing a mismatching reason modifier phrase and VP-ellipsis containing a mismatching temporal modifier phrase. The acceptance rates for these constructions were only 5.0% and 1.7%, respectively. However,

Korean L2 learners answered ‘TRUE’ to *one*-substitution containing a mismatching reason modifier phrase 74.2% of the time. They also answered ‘TRUE’ to *one*-substitution containing a mismatching temporal modifier phrase 57.5% of the time.

For the purposes of detailed data analysis, I compared the results of the English L1 speakers’ and the Korean L2 learners’ reconstruction of reason and temporal modifiers in *one*-substitution in the non-parallel context condition using a 2×2 repeated ANOVA test. I found a significant main effect of modifier type ($F(1, 58) = 35.09, p < 0.01, \eta_p^2 = .377$) and an interaction between modifier type and language group ($F(1, 58) = 4.42, p = 0.04, \eta_p^2 = .071$), but the interaction effect was marginal and the partial eta squared is very low. That is, the statistical results indicate that participants recovered reason and temporal modifier phrases differently in *one*-substitution in the non-parallel context condition, and the responses of the two language groups (i.e., English L1 speakers and Korean L2 learners of English) showed a slight difference.

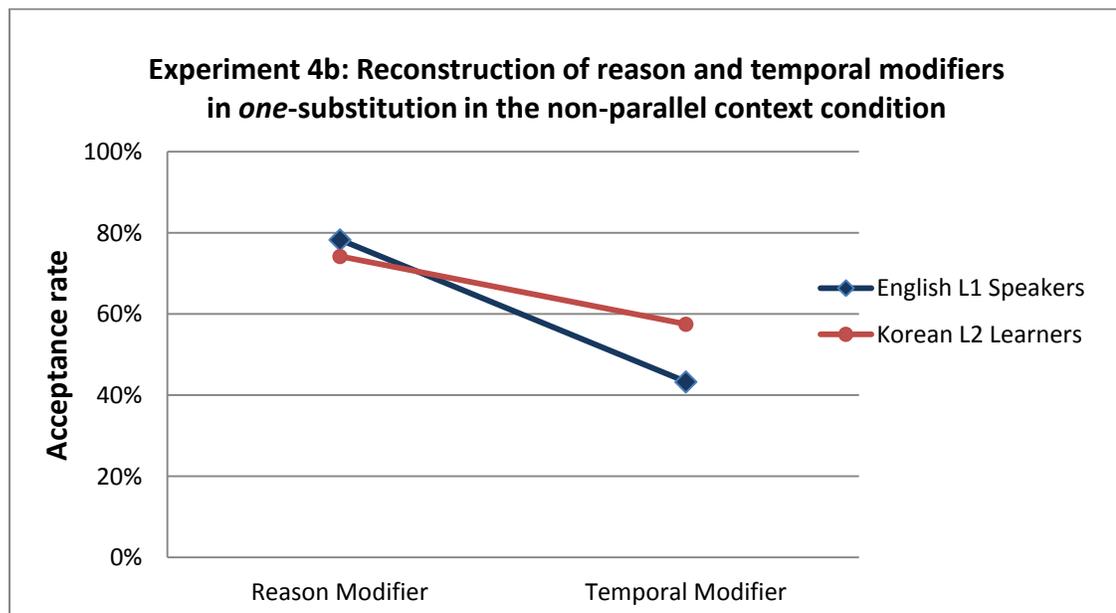


Figure 5.9 English L1 speakers’ and Korean L2 learners’ reconstruction of reason and temporal modifier phrases in *one*-substitution in the non-parallel context condition in Experiment 4b

Finally, I analyzed the number of subjects who answered ‘TRUE’ to *one*-substitution containing a mismatching reason modifier (e.g., *Paul read a book because of his assignment. Rick read one too.*) and *one*-substitution containing a mismatching temporal modifier (e.g., *Paul read a book yesterday. Rick read one too.*) in the non-parallel context condition. Figure 5.10 presents the results for English L1 speakers.

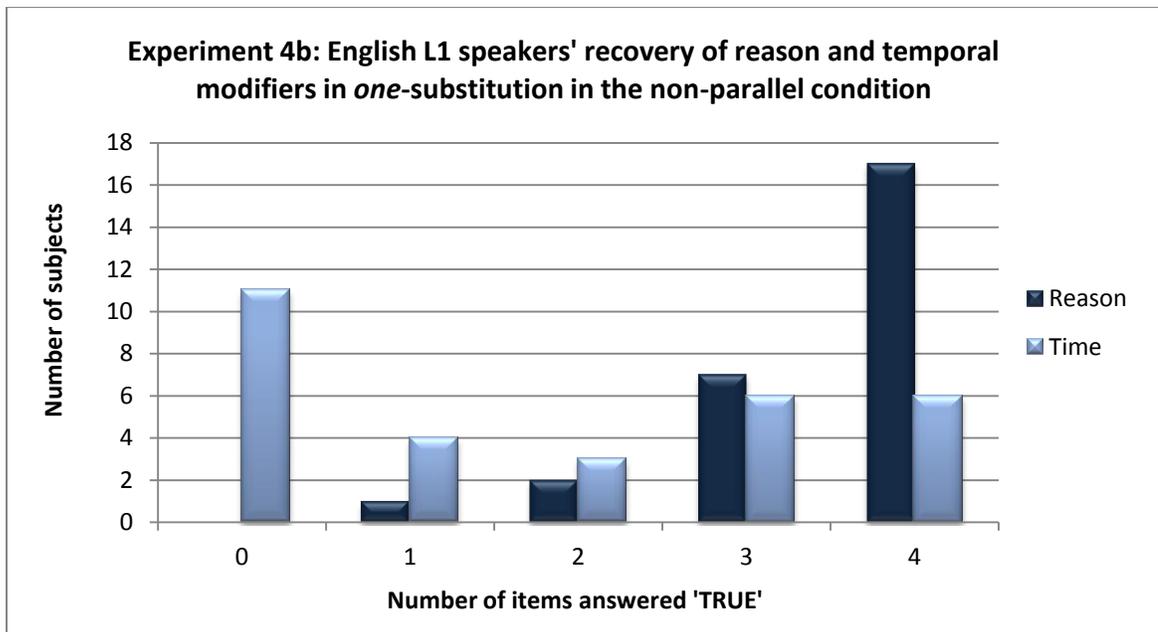


Figure 5.10 The number of English L1 speakers who answered ‘TRUE’ to *one*-substitution containing a reason or a temporal modifier in the non-parallel context condition in Experiment 4b

With respect to English L1 speakers’ recovery of reason modifiers in *one*-substitution in the non-parallel context condition, 17 participants answered ‘TRUE’ to all four tokens in the non-parallel context condition. Seven answered ‘TRUE’ to three out of four tokens, two answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and one answered ‘TRUE’ to only one token. No one answered ‘FALSE’ to all the tokens in this condition.

In the case of the recovery of temporal modifiers in *one*-substitution, six English L1 speakers answered ‘TRUE’ to four tokens in the non-parallel context condition. Another six answered ‘TRUE’ to three tokens out of four, three answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and four answered ‘TRUE’ to only one token. However, 11 participants answered ‘FALSE’ to all the tokens in this condition.

Figure 5.11 shows the Korean L2 learners’ recovery of reason modifiers in *one*-substitution.

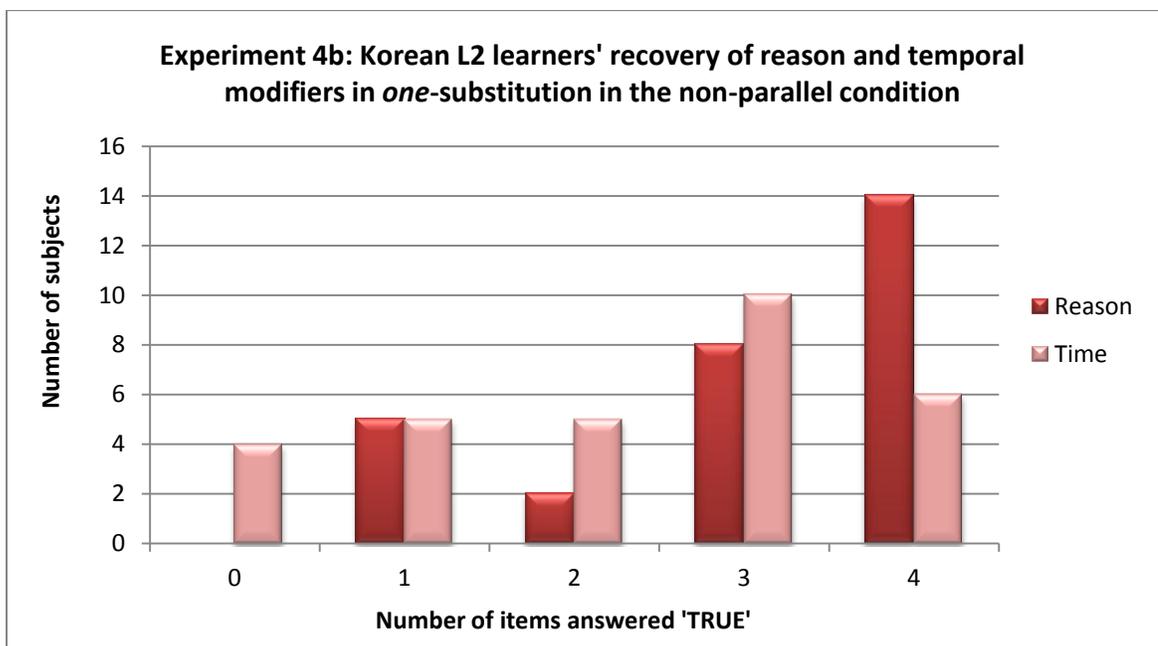


Figure 5.11 The number of Korean L2 learners of English who answered ‘TRUE’ to *one*-substitution containing a reason or a temporal modifier in the non-parallel context condition in Experiment 4b

Fourteen participants answered ‘TRUE’ to four tokens in the non-parallel context condition, eight answered ‘TRUE’ to three tokens out of four, two answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and five answered ‘TRUE’ to only one token. No one answered ‘FALSE’ to all four tokens in this condition.

For a mismatched temporal modifier phrase in *one*-substitution, six Korean L2 learners of English answered ‘TRUE’ to all four tokens in the non-parallel context condition. Ten answered ‘TRUE’ to three tokens, five answered ‘TRUE’ to two tokens and ‘FALSE’ to the other two tokens, and five answered ‘TRUE’ to only one token. Four did not accept any tokens in this condition, answering ‘FALSE’ to all four tokens.

5.7.3 Discussion of Experiment 4b

Experiment 4b explored English native speakers’ and Korean L2 learners’ reconstruction of reason and temporal modifier phrases in VP-ellipsis and *one*-substitution. Overall, the results of Experiment 4b were similar to those of Experiment 4a.

With respect to VP-ellipsis, both English native speakers and Korean L2 learners of English allowed VP-ellipsis containing a reason modifier phrase as in (18a) and a temporal modifier phrase as in (19a) in the parallel context condition with very high acceptance rates, answering ‘TRUE’ to most of the target sentences.

(18) VP-ellipsis with a reason modifier

- a. Paul read a book because of his assignment. Rick did too.
- b. Paul read a book because of his assignment. Rick did [_{VP} read a book because of his assignment] too.

(19) VP-ellipsis with a temporal modifier

- a. Paul read a book yesterday. Sarah did too.
- b. Paul read a book yesterday. Sarah did [_{VP} read a book yesterday] too.

However, they did not allow VP-ellipsis in the non-parallel context condition, answering ‘FALSE’ to most of those tokens. These results suggest that, with the help of the syntactic parallelism constraint, participants reconstructed the entire VP in the first clause, including the modifier phrase, at the elided site in the second clause, as in (18b) and (19b). Hence, they considered the target sentences in the parallel context condition

true because the reconstructed sentences correctly describe the context story, in which two characters perform the action for the same reason or at the same time. By contrast, participants considered the target sentences in the non-parallel context condition false because the reconstructed sentences do not match the context story, in which two characters perform the actions for different reasons or at different times.

In the case of *one*-substitution, English native speakers and Korean L2 learners of English showed similar interpretation patterns. In the parallel context condition, both groups answered ‘TRUE’ to *one*-substitution containing a reason modifier phrase, as in (20a), and to *one*-substitution containing a temporal modifier phrase, as in (21a). Again, as in Experiment 4a, it is not certain whether participants recovered modifiers since both the modifier recovered reading and the modifier non-recovered reading yield the same answer, ‘TRUE,’ in the parallel context condition.

- (20) a. Paul read a book because of his assignment. Rick read one too.
b. Paul read a book because of his assignment.
Rick read [a book because of his assignment] too.
c. Paul read a book because of his assignment. Rick read [a book] too.
- (21) a. Paul read a book yesterday. Rick read one too.
b. Paul read a book yesterday. Rick read [a book yesterday] too.
c. Paul read a book yesterday. Rick read [a book] too.

Interestingly, in the non-parallel context condition, both English native speakers and Korean L2 learners of English answered ‘TRUE’ to *one*-substitution containing a reason modifier phrase as in (20a) 78.3% and 74.2% of the time, respectively. However, they answered ‘TRUE’ to *one*-substitution containing a temporal modifier phrase as in (21a) only 43.3% and 57.5% of the time, respectively. These results suggest that participants reconstructed the reason and the temporal modifier phrases in different ways. Although the pronoun *one* refers only to an N’ in the antecedent clause, the results of

Experiment 4b provide evidence that participants attempted to recover temporal modifiers more often than they attempted to recover reason modifiers. Consequently, they frequently answered 'FALSE' to *one*-substitution with a temporal modifier phrase in the non-parallel context condition because the reconstructed sentence did not correctly describe the two characters' actions, which happened at different times. By contrast, many participants did not recover the reason modifier phrase in the second clause. Thus, they considered *one*-substitution with a reason modifier phrase true in the non-parallel context condition as long as two characters performed the same action, regardless of the reasons for the action.

Like manner and locative modifiers in Experiment 4a, reason and temporal modifiers are retrieved differently in VP-ellipsis and *one*-substitution. Thus, in line with the results of Experiment 4a, the different recovery of reason and temporal modifiers can be explained on the basis of Davidson's (1980) account. That is, action verbs take an additional argument position for a variable that ranges over events. On the one hand, event arguments are associated with the spatio-temporal location of an event. Therefore, locative and temporal modifiers are considered event arguments. They might not be expressed overtly, but their meanings are provided by semantic and pragmatic information, which is supported by the results of Experiment 4b. On the other hand, unlike temporal modifier phrases, reason modifier phrases are treated more like adjuncts than like arguments of verbs. In *one*-substitution, the reason modifiers are not semantically retrieved by verbs in the second clause when they are not overtly expressed, as in *Paul read a book because of his assignment. Rick read one too.* Thus, to clarify the

reason of the second character's action, the reason modifier phrase, *because of his assignment*, has to be expressed in the second clause.

In sum, the results of Experiment 4b suggest the following. First, participants' responses to target sentences indicate that participants interpreted VP-ellipsis by means of the linguistic antecedent. That is, they took the entire VP in the first clause, including modifier phrases, to be the antecedent of the elided VP in the second clause. Second, participants recovered reason and temporal modifiers in *one*-substitution in different ways, with attention to the verbs' event structure and contextual information. Finally, Korean L2 learners and English L1 speakers showed similar interpretive preferences for the recovery of modifiers in VP-ellipsis and *one*-substitution in that both groups recovered modifier phrases in VP-ellipsis regardless of the modifier type, whereas in *one*-substitution, they tended to recover temporal modifiers, but not reason modifiers.

5.8 General discussion of Experiment 3 and Experiment 4

The purpose of this chapter is to investigate the linguistic properties of VP-ellipsis and *one*-substitution through English L1 speakers' and Korean L2 learners' comprehension of these constructions. I also focused on whether temporal and locative modifiers are more likely than manner and reason modifiers to be recovered in English *one*-substitution, as they were in the Korean null object construction investigated in Experiment 2. Lastly, I examined whether Korean L2 learners of English have knowledge of the syntactic, semantic, and pragmatic constraints that determine the relation between the anaphoric expression and its antecedent; this was done through a comparison with

native English speakers' interpretive preference patterns. As reported in previous sections, the overall results of Experiments 3 and 4 reveal several findings.

First, VP-ellipsis is comprehended in English in the same way as it is in Korean. As expected, Korean L2 learners of English did not have difficulty understanding English VP-ellipsis, despite syntactic differences between Korean and English in the precise form of VP-ellipsis patterns. Experiments 3 and 4 were designed parallel to Experiments 1 and 2, and the results reveal that both Korean L2 learners of English and native English speakers interpreted English VP-ellipsis in the same manner as Korean L1 speakers did in Experiments 1 and 2. That is, they understood VP-ellipsis by taking the VP in the preceding clause as antecedent for the elided VP in the second clause, with the help of syntactic parallelism. In particular, the results of Experiments 2 and 4 demonstrate that both language groups comprehended the elided constituents in VP-ellipsis by reconstructing at the elided site in the second clause the entire VP, including modifier phrases regardless of modifier type, from the antecedent clause.

Second, comprehenders preferred to interpret the pronoun *one* as referring to the higher N' rather than to the lower N' if it had two possible interpretations.

(22) This bag is bigger than that *one*. (that *one* = that *bag*)

(23) John bought a blue bag. Mary bought *one* too. (*one* = *bag* or *blue bag*)

In (22), it is obvious that the pronoun *one* is anaphoric to the N' 'bag,' since there is no alternative. In (23), however, the pronoun *one*, in principle, can refer to either 'bag' or 'blue bag.' Nonetheless, most participants interpreted *one* as referring to 'blue bag' rather than just 'bag.'

Based on the results of Experiment 3, I suggest that comprehenders prefer to interpret the pronoun *one* as referring to the syntactically higher category rather than the lower one in the sentences like (23). Why would they have this preference? I suggest that comprehenders are likely to interpret the pronoun as referring to the syntactically higher category, which conveys semantically more specific information of the antecedent. In a similar vein, we can understand Korean L1 speakers' comprehension of the null object construction in the color-mismatch context condition (e.g., *Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to sa-ss-e-yo.* '(lit.) Sungki bought a blue bag. Sunhuy bought too.')

explored in Experiment 1. They comprehended the target sentence by taking *phalan kabang* 'blue bag' rather than *kabang* 'bag' in the first clause to be the antecedent of the elided phrase in the second clause. This suggests that comprehenders preferred to interpret the null argument as referring to the syntactically higher N' in the object position in the antecedent clause rather than the lower N' because the former carries more specific information and does not cause any ambiguity.

Third, as for the recovery of adverbial modifiers, the results of Experiment 4 show that locative and temporal modifiers were more frequently recovered than manner and reason modifiers in *one*-substitution, which is similar to the results of Korean native speakers' recovery of modifiers in the Korean null object construction in Experiment 2. Consequently, this result provides evidence of English native speakers' and Korean L2 learners' sensitivity to a verb's event structure. Moreover, this result supports the suggestion that the different recovery of adverbial modifiers is independent of the properties of the null object construction per se. Rather, the recovery of modifier phrases results from the verb's event structure.

Lastly, with respect to L2 acquisition, Korean L2 learners of English successfully resolved the ambiguity derived from elided material in VP-ellipsis and *one*-substitution, using syntactic, semantic, and contextual information. Although a few Korean L2 learners manifested different interpretive patterns by comprehending the pronoun *one* as referring to the lower N' rather than to the higher N' in *one*-substitution in Experiment 3, most of the Korean L2 learners comprehended the anaphoric expression, using their knowledge of syntactic and semantic information appropriately as English L1 speakers did. The results of Experiment 4 also show that both language groups had similar interpretation patterns in recovering modifier phrases in VP-ellipsis and *one*-substitution.

CHAPTER 6

CONCLUSION

The findings reported in this dissertation are based on four experiments that investigated how speakers comprehend VP-ellipsis and the null object construction in Korean, and VP-ellipsis and *one*-substitution in English. In order to bridge the gap between linguistic theories and real language comprehension, this study explored the properties of elided or substituted constituents in each construction. In the following sections, I will provide a summary of the major findings of each experiment and their implications with respect to language processing and L2 language acquisition; I will then discuss the contributions of my study. I conclude with several suggestions for future research and concluding remarks.

6.1 Summary of the major findings and implications

Drawing on Hankamer and Sag's (1976) distinction between deep and surface anaphora, Experiments 1 and 2 explored the characteristics of Korean VP-ellipsis and the null object construction through an analysis of Korean adult speakers' comprehension of these two constructions. Parallel to Experiments 1 and 2, Experiments 3 and 4 investigated the properties of English VP-ellipsis and *one*-substitution through Korean-speaking L2 learners' and English L1 speakers' comprehension. According to Hankamer and Sag's definition, VP-ellipsis is characterized as surface anaphora in that it requires a linguistic antecedent for its interpretation, whereas the null object construction and *one*-substitution are characterized as deep anaphora in that they can be understood solely with the aid of pragmatic and discourse information. In this section, I will summarize the

major findings of each experiment presented in this dissertation and suggest implications with regard to the interpretation of anaphoric expressions, implicit arguments, language processing, and language acquisition.

Experiments 1 and 2 were conducted to investigate which constituents are elided in VP-ellipsis and the null object construction, and how syntactic constraints and contextual information affect comprehenders' understanding of VP-ellipsis and the null object construction. In Experiment 1, I constructed context stories with three different conditions – full-match, color-mismatch, and object-mismatch context conditions – and sought to determine how syntactic constraints and contextual information affect comprehenders' interpretation of elided phrases in each of the two constructions. Experiment 1 yielded several significant findings.

First, comprehenders' responses to VP-ellipsis in each context condition indicated that they comprehended the elided phrase in the second clause by reconstructing the entire VP of the first clause. I base this conclusion on the fact that most Korean speakers had high acceptance rates for the target VP-ellipsis sentences in the full-match context, which describe two characters' performance on the same kind of objects. By contrast, they did not allow the target VP-ellipsis sentences in the color-mismatch and object-mismatch context conditions because they did not tolerate the discrepancy between the two characters' actions on objects of different colors or different types. This suggests that participants understand VP-ellipsis by reconstructing the entire VP from the first clause at the elided site in the second clause.

Second, Korean speakers considered the object N', not just the head noun, of the antecedent sentence as missing material in the null object construction. In the color-

mismatch context condition, in particular, they did not allow the target null object construction, such as *Sungki-ka phalan kabang-ul sa-ss-e-yo. Sunhuy-to sa-ss-yo.* ‘(lit.) Sungki bought a blue bag. Sunhuy bought too,’ because they considered *phalan kabang* ‘blue bag’ as the null argument in the second clause, not just *kabang* ‘bag.’ If they had understood the noun *kabang* ‘bag’ as the null object in the second clause, then they would have answered ‘TRUE’ to the target sentences in the color-mismatch context condition, but they did not.

Third, the results of Experiment 1 suggest that Korean speakers reconstructed the null argument in the null object construction using the syntactic structure and meaning of the object noun in the antecedent clause rather than contextual information. In Matsuo’s (2007) study, some adult Japanese speakers accepted null object constructions in the color-mismatch and object-mismatch context conditions. According to Matsuo, the object that the second character acted on might have been salient enough for Japanese speakers to influence the interpretation of the missing element. However, she questions what makes the NP mentioned in the context salient enough to be considered as a deep anaphor.

Unlike the results of Matsuo’s study, the results of the current study show that Korean speakers did not allow the null object construction in the color-mismatch and object-mismatch context conditions. In fact, there are two possible interpretive patterns for each target null object construction in the color-mismatch and the object-mismatch context conditions. One interpretation can be drawn from the antecedent sentence by using the antecedent clause’s syntactic structure and its meaning. The other interpretation can be obtained from the context story. The objects of different color or of different type that the two characters perform with are mentioned in the context stories. Therefore,

participants could have understood the elided phrase in the null object construction using the given context information. Moreover, the null object construction has been characterized as an instance of deep anaphora, so it is possible that null arguments are understood on the basis of contextual information. But the Korean speakers comprehended the elided phrase by taking the object N' of the first clause to be the null argument in the second clause rather than by using contextual information.

Experiment 2 was conducted to investigate VP-ellipsis and the null object construction in Korean with respect to the recovery of modifier phrases. The idea that modifier phrases denoting manner, reason, location, and time of actions are recovered differently in VP-ellipsis and the null object construction has been proposed in theoretical studies to explain the difference between the two constructions, but it had not yet been experimentally examined (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003). Thus, I tested how Korean speakers recover the different types of modifier phrases in VP-ellipsis and the null object construction. The results obtained from two sub-experiments reveal that in VP-ellipsis, modifiers denoting manner, reason, time, and location of the action in the first conjunct were all reconstructed at the elided site in the second clause. By contrast, in the null object construction, Korean speakers often recovered locative and temporal modifiers in the second clause, but manner and reason modifiers were less frequently reconstructed at the elided site in the second clause. However, although participants recovered manner and reason modifiers much less frequently than locative and temporal modifiers, they did not completely reject the recovered manner and reason readings. This suggests that Korean speakers did not categorically distinguish manner/reason from locative/temporal modifiers with respect to

the recovery of modifiers in the null object construction. Moreover, this result provides empirical evidence that null object constructions are not like VP-ellipsis because the two constructions have different interpretive patterns.

The results of Experiment 2 also imply that the elided phrases in VP-ellipsis were recovered with the help of a syntactic parallelism constraint and those in null object constructions with the help of semantic and contextual information. That is, for VP-ellipsis, the entire VP, including modifier phrases, is recovered from the first clause at the elided site in the second clause. In the null object construction, modifier phrases are recovered in the second clause by means of the verb's semantic interpretation and contextual information. For instance, locative and temporal modifiers are not overtly expressed in the second clause but their meanings are recovered when comprehenders understand the elided site in the null object construction. They are considered an implicit event argument, which is entailed by a verb and whose meaning is derived from the given context. Consequently, the null object construction is comprehended with the help of semantic and contextual information. Thus, the results of Experiment 2 reveal that Korean speakers comprehended null arguments in elliptical constructions by dealing with syntactic, semantic, and contextual information in different ways, depending on the construction being interpreted.

Parallel to Experiments 1 and 2, Experiments 3 and 4 explored the comprehension of VP-ellipsis and *one*-substitution in English by Korean L2 learners of English and native speakers of English. The primary purpose of Experiment 3 was to illuminate which elements from the first clause are reconstructed in VP-ellipsis and in *one*-substitution. Experiment 4 investigated recovery of modifier phrases in these constructions.

In analyzing the results of Experiment 3, I found that English VP-ellipsis was comprehended with the help of the syntactic structure of the antecedent, as was Korean VP-ellipsis in Experiment 1. Participants interpreted elided phrases by reconstructing the VP from the first clause at the elided site in the second clause. Similarly, for *one*-substitution, they understood the pronoun *one* as referring to the object in the antecedent clause rather than the object that was mentioned in the context story. If participants had interpreted *one*-substitution using the contextual information, they would have accepted target sentences in the color-mismatch and the object-mismatch context conditions, but they did not. It appears, then, that the antecedent clause affect comprehenders' interpretation of *one*-substitution more significantly than the contextual information.

In addition, the results of Experiment 3 demonstrate the comprehenders' interpretive preference patterns for *one*-substitution. In principle, the pronoun *one* can refer to the lower N' or the higher N' in a sentence like *John bought a blue bag and Mary bought one too*. Nonetheless, most Korean L2 learners and English L1 speakers preferred the higher N' interpretation (e.g., 'blue bag') to the lower N' interpretation (e.g., 'bag'). That is, comprehenders interpreted the pronoun *one* as referring to the object along with its modifier in the antecedent clause. This suggests that comprehenders understood the pronoun *one* by considering both the syntactic structure of the antecedent and the semantic properties of the object in the antecedent. Thus, they did not allow the lower N' interpretation in the color-mismatch condition, presumably because the object referred to by *one* had different semantic properties (i.e., color).

The results of Experiment 4 highlight differences in the way in which English L1 speakers' and Korean L2 learners recover modifier phrases in VP-ellipsis and *one*-

substitution. For VP-ellipsis, modifier phrases were recovered in the second clause regardless of the modifier type when participants comprehended target sentences. For *one*-substitution, many participants had readings that recovered the modifier in the second clause when the antecedent contained a locative or a temporal modifier phrase. In contrast, they had readings that did not involve recovery of the modifier in the second clause when the antecedent clause contained a manner or a reason modifier phrase. However, the participants did not categorically reject the manner and reason modifier recovered readings. As in the null object construction in Experiment 2, English L1 speakers and Korean L2 learners had a tendency in *one*-substitution to recover manner and reason modifiers less frequently compared to locative and temporal modifiers.

In addition, like the results of the null object construction in Experiment 2, the results of Experiment 4 suggest that the verb's semantic information played a role in reconstructing adverbial modifiers in *one*-substitution. Even though the pronoun *one* refers only to the noun mentioned in the previous discourse, many comprehenders recovered locative and temporal modifiers in *one*-substitution. Taking the results of Experiments 2 and 4 together, I suggest that recovery of modifier phrases is sensitive to the verb's event structure, independent of syntax-based anaphora.

6.2 Contributions of this study

The first notable point is that this study has examined the properties of VP-ellipsis and the null object construction apart from the binding relation. A number of researchers have investigated elliptical constructions, but many of them have focused mainly on the binding relation between an operator and a variable using these constructions, such as the

examination of strict and sloppy readings (for theoretical accounts, see Fiengo & May, 1994; S. Kim, 1999; for child L1 acquisition, see Foley, Claire, Zelmira Nunez del Prado, Isabella Barbier, & Barbara Lust, 2003; Guo, Fangfang, Claire Foley, Yu Chin Chien, Chi-Pang Chiang, & Barbara Lust, 1997; Matuso, 2007; Thornton & Wexler, 1999; for L1 adult speakers' processing, see Runner, Sussman, & Tanenhaus, 2006; Shapiro, Hestvik, Lesan, & Garcia, 2003; for L2 acquisition, see J.-H. Kim, 2007; Ying, 2003, 2005; and many others). That is, these previous studies have examined the interpretation of ellipsis when the antecedent sentence contains a pronoun or a reflexive in the object NP position (e.g., *John painted him/himself. And Bill did too.*). In this study, however, I was primarily interested in pursuing the fundamental issues through examining comprehenders' sentence interpretation: What is elided in VP-ellipsis? What is missing in the null object construction, which has often been compared with VP-ellipsis? And what are the differences between VP-ellipsis and the null object construction? While previous studies have utilized elliptical constructions as the means to elucidate the binding relation, the present study has set aside the binding issues and has focused mainly on the properties of the missing material in VP-ellipsis and the null object construction.

The second significant point is that this study has played a pioneering role in investigating Korean elliptical constructions experimentally. Recently, some researchers explored Korean VP-ellipsis with regard to processing (Ahn, An, Choi, Hwang, Jeon, & Kim, 2011), but there are still only a few experimental studies on Korean elliptical constructions. Moreover, this study provides further insights concerning the comprehension of elliptical constructions and anaphoric expressions. Although Matuso (2007) and Cheung (2008) examined VP-ellipsis and the null object construction in

Japanese and Cantonese, respectively, the results of these studies are not robust enough to generalize comprehenders' interpretive preference patterns because of the small number of participants. Thus, the results of this study are noteworthy because they can fill the data gaps in comprehension of these constructions.

Third, this study was designed to test various types of sentences with context stories, and the data was gathered from three different participant pools: Korean-speaking adults, Korean-speaking L2 learners of English, and English-speaking adults. In this way, the study provided information on comprehenders' general interpretive preference patterns for VP-ellipsis in Korean and English, for the null object constructions in Korean, and for *one*-substitution in English. I believe that this study will serve as the starting point for further research.

Finally, this study contributes to bridging the gap between linguistic theory and real language comprehension by providing empirical evidence that VP-ellipsis is not like the null object construction and that comprehenders preferred the higher N' interpretation to the lower N' interpretation in *one*-substitution when two interpretations were available. In particular, the most significant contribution of this study is the use of experimental results to account for the recovery of different modifier phrases in VP-ellipsis, the null object construction, and *one*-substitution. In addition, the results of this study demonstrate that VP-ellipsis is comprehended with the help of the syntactic antecedent, which supports Hankamer and Sag's (1976) account of surface anaphora. The results also shed light on how the syntactic antecedent and semantic and contextual information affect comprehenders' interpretation of the null object construction and *one*-substitution.

6.3 Suggestions for future research

The present study sought to verify the properties of VP-ellipsis, the null object construction, and *one*-substitution by conducting two sets of experiments with the aim of outlining Korean and English speakers' comprehension patterns. Although important findings and implications were uncovered, some issues need to be investigated further in order to provide more comprehensive information about covertly expressed phrases. In this section, I will discuss several suggestions for future research to advance our understanding in the fields of language processing and language acquisition.

First, this study tested recovery of manner, reason, locative, and temporal modifier phrases in VP-ellipsis and the null object construction in Korean because previous studies have predicted different recovery patterns of adverbial modifiers to distinguish VP-ellipsis from the null object construction (Goldberg, 2005; Li, 2002; Park, 1997; Santos, 2009; Xu, 2003). The results of this study provide experimental evidence that VP-ellipsis and the null object construction differ in terms of the reconstruction of implicit modifier phrases. The different patterns of modifier phrase reconstruction observed in the Korean null object construction were also found when participants comprehended modifier phrases in English *one*-substitution. Based on these results, I proposed that recovery of modifier phrases depends on the verb's event structure, not on the properties of the null object construction per se. This suggestion could be tested further by investigating whether comprehenders recover temporal and locative modifier phrases in the second clause in non-elliptical sentences such as the following.

- (1) a. John bought a bag yesterday. Mary bought a bag, too.
b. John bought a bag at the department store. Mary bought a bag, too.

If participants recover the time and locative phrases in the second clause in these patterns, just as they do in *one*-substitution patterns, we will have evidence that modifier reconstruction proceeds independently of other types of anaphora and is thus sensitive solely to event structure, as I propose.

Second, this study employed an offline experimental technique to obtain information about comprehenders' preferred interpretations. Offline methodologies have been used frequently in the fields of language acquisition and language processing (for a written questionnaire, see Frazier & Clifton, Jr., 2000, 2005; J.-H. Kim, 2007; for an act-out task, see Foley, Claire, Zelmira Nunez del Prado, Isabella Barbier, & Barbara Lust, 1997, 2003; Goodluck, 1996; Guo, Fangfang, Claire Foley, Yu Chin Chien, Chi-Pang Chiang, & Barbara Lust, 1996). However, such techniques have certain limitations. For example, they inform us of participants' judgments only after they process the input. These days, many psycholinguistic researchers use online experimental techniques, such as self-paced reading (Frazier & Clifton, Jr., 2000, 2005), eye-tracking (Runner, 2003), and cross-modal priming (Shapiro, Hestvik, Lesan, & Garcia, 2003). While offline methodologies are useful in that the results of experiments reflect participants' knowledge of certain linguistic and non-linguistic aspects, online methodologies enable the researchers to monitor how participants process a sequence of linguistic input in real time. I hope that future research investigates participants' real time processing using online methodologies in order to enhance our understanding of covertly expressed elements in sentences.

Third, in conjunction with adult speakers' comprehension of elliptical constructions and *one*-substitution, L1-speaking children's comprehension needs to be

investigated to help complete our understanding of the properties of missing or substituted elements. In addition, comprehension of elliptical constructions and *one*-substitution could lend detailed insight into children's mapping of syntactic, semantic, and pragmatic information. Since elliptical constructions and anaphoric expressions require comprehenders' knowledge of syntactic and pragmatic constraints to recover the meanings of covertly expressed elements from the antecedent, future research will illuminate how children develop and use that knowledge.

Finally, more investigation into the L2 acquisition of Korean is needed. Recently, there has been rapid growth in the number of language learners who study Korean as their second or foreign language. However, research on Korean as a second language (KSL) has a short history and is a largely unexplored field. To help us better understand Korean and to improve the chances of developmental success, we need to investigate how learners understand the target language, which features are distinctively different from their native language, what kinds of errors language learners make, and so on. Because Korean language learners in the classroom have a variety of nationalities and language backgrounds, it is difficult to teach them by comparing their native languages. Nevertheless, we need to constantly research the learning of Korean as a second or a foreign language.

6.4 Concluding remarks

To conclude, I have endeavored to account for the differences between VP-ellipsis and the null object construction in Korean, and between VP-ellipsis and *one*-substitution in English, through Korean and English speakers' interpretation of these

constructions. The findings of each experiment reported in this dissertation suggest that VP-ellipsis is different from the null object construction in Korean with respect to the properties of the null arguments. Also, VP-ellipsis and *one*-substitution in English have different interpretation patterns in terms of reference to the antecedent phrase. However, many questions remain unanswered regarding comprehenders' interpretation of covert elements in elliptical constructions and anaphoric expressions. Further investigation of elliptical constructions and anaphoric expressions will provide additional information about comprehenders' use of syntactic and semantic/pragmatic information and will shed broader light on language processing and language acquisition.

APPENDIX A

Test sentences used in Experiment 1

1. VP-ellipsis in the full-match and object-mismatch context conditions

승기가 가방을 샀어요. 선희도예요.
명수가 물고기를 잡았어요. 호동이기도예요.
경규가 자동차를 닦았어요. 태원이기도예요.
윤아가 케익을 만들었어요. 태연이기도예요.

2. VP-ellipsis in the color-mismatch context condition

승기가 파란 가방을 샀어요. 선희도예요.
명수가 노란 물고기를 잡았어요. 호동이기도예요.
경규가 검은 자동차를 닦았어요. 태원이기도예요.
소라가 노란 종이배를 만들었어요. 범수도예요.

3. Null object constructions in the full-match and object-mismatch context conditions

승기가 가방을 샀어요. 선희도 샀어요.
명수가 물고기를 잡았어요. 호동이기도 잡았어요.
경규가 자동차를 닦았어요. 태원기도 닦았어요.
윤아가 케익을 만들었어요. 태연기도 만들었어요.

4. Null object constructions in the color-mismatch context condition

승기가 파란 가방을 샀어요. 선희도 샀어요.
명수가 노란 물고기를 잡았어요. 호동기도 잡았어요.
경규가 검은 자동차를 닦았어요. 태원기도 닦았어요.
소라가 노란 종이배를 만들었어요. 범수도 만들었어요.

APPENDIX B

Test sentences used in Experiment 2

Experiment 2a

1. VP-ellipsis with manner modifiers

현빈이가 김밥을 빨리 먹었어요. 지원이도예요.
승현이가 영화를 재밌게 봤어요. 태희도예요.
선희가 에어컨을 싸게 팔았어요. 승기도예요.
재석이가 책을 재밌게 읽었어요. 봉선이도예요.

2. VP-ellipsis with locative modifiers

현빈이가 김밥을 학교에서 먹었어요. 지원이도예요.
승현이가 영화를 영화관에서 봤어요. 태희도예요.
선희가 에어컨을 바자회에서 팔았어요. 승기도예요.
재석이가 책을 공원에서 읽었어요. 봉선이도예요.

3. Null object constructions with manner modifiers

현빈이가 김밥을 빨리 먹었어요. 지원이도 먹었어요.
승현이가 영화를 재밌게 봤어요. 태희도 봤어요.
선희가 에어컨을 싸게 팔았어요. 승기도 팔았어요.
재석이가 책을 재밌게 읽었어요. 봉선이도 읽었어요.

4. Null object constructions with locative modifiers

현빈이가 김밥을 학교에서 먹었어요. 지원이도 먹었어요.
승현이가 영화를 영화관에서 봤어요. 태희도 봤어요.
선희가 에어컨을 바자회에서 팔았어요. 승기도 팔았어요.
재석이가 책을 공원에서 읽었어요. 봉선이도 읽었어요.

Experiment 2b

1. VP-ellipsis with reason modifiers

현빈이가 현미김밥을 건강때문에 먹었어요. 지원이도예요.
승현이가 영화를 영화평론때문에 봤어요. 태희도예요.
선희가 에어컨을 유지비때문에 팔았어요. 승기도예요.
재석이가 책을 숙제때문에 읽었어요. 봉선이도예요.

2. VP-ellipsis with temporal modifiers

현빈이가 피자를 어젯밤에 먹었어요. 지원이도예요.
승현이가 영화를 작년에 봤어요. 태희도예요.

선희가 에어컨을 지난달에 팔았어요. 승기도예요.
재석이가 책을 어제 읽었어요. 봉선이기도예요.

3. Null object constructions with reason modifiers

현빈이가 현미김밥을 건강때문에 먹었어요. 지원이도 먹었어요.
승헌이가 영화를 영화평론때문에 봤어요. 태희도 봤어요.
선희가 에어컨을 유지비때문에 팔았어요. 승기도 팔았어요.
재석이가 책을 숙제때문에 읽었어요. 봉선이도 읽었어요.

4. Null object constructions with temporal modifiers

현빈이가 피자를 어젯밤에 먹었어요. 지원이도 먹었어요.
승헌이가 영화를 작년에 봤어요. 태희도 봤어요.
선희가 에어컨을 지난달에 팔았어요. 승기도 팔았어요.
재석이가 책을 어제 읽었어요. 봉선이도 읽었어요.

APPENDIX C

Filler sentences used in Experiments 1 and 2

민수는 영호가 자기를 비난했다고 말했다.
수지는 영희가 자기를 비난했다고 말했다.
준호는 민구가 자기를 칭찬했다고 말했다.
영주는 민희가 자기를 칭찬했다고 말했다.
지원이는 경희가 자기를 자랑스러워했다고 말했다.
형기는 태호가 자기를 자랑스러워했다고 말했다.
수아는 진희가 자기를 미워했다고 말했다.
창수는 재호가 자기를 미워했다고 말했다.

민수는 영호가 자기자신을 비난했다고 말했다.
수지는 영희가 자기자신을 비난했다고 말했다.
준호는 민구가 자기자신을 칭찬했다고 말했다.
영주는 민희가 자기자신을 칭찬했다고 말했다.
지원이는 경희가 자기자신을 자랑스러워했다고 말했다.
형기는 태호가 자기자신을 자랑스러워했다고 말했다.
수아는 진희가 자기자신을 미워했다고 말했다.
창수는 재호가 자기자신을 미워했다고 말했다.

APPENDIX D

Test sentences used in Experiment 3

1. VP-ellipsis in the full-match and object-mismatch context conditions

John bought a bag. Mary did too.

Bill caught a fish. Jane did too.

Paul washed a car. Mike did too.

Anne made a cake. Lisa did too.

2. VP-ellipsis in the color-mismatch context condition

John bought a blue bag. Mary did too.

Bill caught a yellow fish. Jane did too.

Paul washed a black car. Mike did too.

Anne made a yellow paper boat. Lisa did too.

3. *One*-substitution in the full-match and object-mismatch context conditions

John bought a bag. Mary bought one too.

Bill caught a fish. Jane caught one too.

Paul washed a car. Mike washed one too.

Anne made a cake. Lisa made one too

4. *One*-substitution in the color-mismatch context condition

John bought a blue bag. Mary bought one too.

Bill caught a yellow fish. Jane caught one too.

Paul washed a black car. Mike washed one too.

Anne made a yellow paper boat. Lisa made one too.

APPENDIX E

Test sentences used in Experiment 4

Experiment 4a

1. VP-ellipsis with manner modifiers

John ate a hamburger quickly. Mary did too.
Mike watched a movie excitedly. Lisa did too.
Lisa sold an air conditioner cheaply. Peter did too.
Paul read a book carefully. Sarah did too.

2. VP-ellipsis with locative modifiers

John ate a hamburger at school. Mary did too.
Mike watched a movie in the movie theater. Lisa did too.
Lisa sold an air conditioner at a yard sale. Peter did too.
Paul read a book in the park. Sarah did too.

3. *One*-substitution with manner modifiers

John ate a hamburger quickly. Mary ate one too.
Mike watched a movie excitedly. Lisa watched one too.
Lisa sold an air conditioner cheaply. Peter sold one too.
Paul read a book carefully. Sarah read one too.

4. *One*-substitution with locative modifiers

John ate a hamburger at school. Mary ate one too.
Mike watched a movie in the movie theater. Lisa watched one too.
Lisa sold an air conditioner at a yard sale. Peter sold one too.
Paul read a book in the park. Sarah read one too.

Experiment 4b

1. VP-ellipsis with reason modifiers

John ate a hamburger because of a lack of time. Mary did too.
Mike watched a movie because of the good reviews. Lisa did too.
Lisa sold an air conditioner because of its high maintenance fee. Peter did too.
Paul read a book because of his assignment. Rick did too.

2. VP-ellipsis with temporal modifiers

John ate a hamburger last night. Mary did too.
Mike watched a movie last year. Lisa did too.
Lisa sold an air conditioner last month. Peter did too.
Paul read a book yesterday. Sarah did too.

3. *One-substitution with reason modifiers*

John ate a hamburger because of a lack of time. Mary ate one too.

Mike watched a movie because of the good reviews. Lisa watched one too.

Lisa sold an air conditioner because of its high maintenance fee. Peter sold one too.

Paul read a book because of his assignment. Rick read one too.

4. *One-substitution with temporal modifiers*

John ate a hamburger last night. Mary ate one too.

Mike watched a movie last year. Lisa watched one too.

Lisa sold an air conditioner last month. Peter sold one too.

Paul read a book yesterday. Sarah read one too.

APPENDIX F

Filler sentences used in Experiments 3 and 4

Tom said that Mike blamed himself.
Mary said that Lisa blamed herself.
David said that Paul praised himself.
Sarah said that Anne praised herself.
Jane said that Laura was proud of herself.
Sam said that Peter was proud of himself.
Linda said that Rachel hated herself.
James said that Paul hated himself.

Tom said that Mike blamed him.
Mary said that Lisa blamed her.
David said that Paul praised him.
Sarah said that Anne praised her.
Jane said that Laura was proud of her.
Sam said that Peter was proud of him.
Linda said that Rachel hated her.
James said that Paul hated him.

APPENDIX G

Cloze test

DIRECTIONS

1. Read the passage quickly to get the general meaning.
2. Write only one word in each blank next to the item number. Contractions are considered to be one word.
3. Check your answers.

EXAMPLE: The boy walked up the street. He stepped on a piece of ice.

He fell (1) down but he didn't hurt himself.

MAN AND HIS PROGRESS

Man is the only living creature that can make and use tools. He is the most teachable of living beings, earning the name of Homo sapiens. (1)_____ ever restless brain has used the (2)_____ and the wisdom of his ancestors (3)_____ improve his way of life. Since (4)_____ is able to walk and run (5)_____ his feet, his hands have always (6)_____ free to carry and to use (7)_____. Man's hands have served him well (8)_____ his life on earth. His development, (9)_____ can be divided into three major (10)_____, is marked by several different ways (11)_____ life.

Up to 10,000 years ago, (12) _____ human beings lived by hunting and (13)_____. They also picked berries and fruits, (14) _____ dug for various edible roots. Most (15)_____, the men were the hunters, and (16)_____ women acted as food gatherers. Since (17)_____ women were busy with the

children, (18)_____ men handled the tools. In a (19)_____ hand, a dead branch became a (20)_____ to knock down fruit or (21)_____ for tasty roots. Sometimes, an animal (22) _____ served as a club, and a (23)_____ piece of stone, fitting comfortably into (24)_____ hand, could be used to break (25)_____ or to throw at an animal. (26) _____stone was chipped against another until (27) _____ had a sharp edge. The primitive (28) _____ who first thought of putting a (29)_____ stone at the end of a (30)_____ made a brilliant discovery: he (31)_____ joined two things to make a (32)_____ useful tool, the spear. Flint, found (33)_____ many rocks, became a common cutting (34)_____ in the Paleolithic period of man's (35)_____. Since no wood or bone tools (36)_____ survived, we know of this man (37)_____ his stone implements, with which he (38)_____ kill animals, cut up the meat, (39)_____ scrape the skins, as well as (40) _____ pictures on the walls of the (41)_____ where he lived during the winter.

(42)_____ the warmer seasons, man wandered on (43)_____ steppes of Europe without a fixed (44) _____, always foraging for food. Perhaps the (45)_____ carried nuts and berries in shells (46)_____ skins or even in light, woven (47)_____. Wherever they camped, the primitive people (48)_____ fires by striking flint for sparks (49)_____ using dried seeds, moss, and rotten (50)_____ for tinder. With fires that he kindled himself, man could keep wild animals away and could cook those that he killed, as well as provide warmth and light for himself.

Answer Keys

Item No.	Target answer	Alternatives
1	his	our, man's, the
2	knowledge	ideas, skill, work, teaching, wit, experience(s), talent, ingenuity, intelligence, cunning, culture, examples, mistakes, skills, words, thought, accomplishments, power, hands, nature, technique, instinct, will, information
3	to	
4	man	he
5	on	with, using, upon
6	been	hung, felt, remained
7	tools	freely, implements, readily, them, objects, carefully, productively, creatively, conventionally, weapons, adequately, diligently, effectively, things
8	during	throughout, in, all, with, improving, for, through
9	which	however, often, also, since, that, conveniently, easily, historically, basically, thus
10	periods	groups, categories, parts, eras, stages, areas, sections, phases, topics, divisions, trends, steps, facets
11	of	for, towards, through, in
12	all	most, the, many, early, these, hungry, primitive, only
13	fishing	gathering, farming, killing, scrounging, scavenging, sleeping, trapping, foraging
14	and	often, some, the, ravenously
15	often	of, normally, always, trips, nights, important, times, emphatically
16	the	most, many, house, all, their, younger, older
17	the	most, many, often, all, married, these, primate, older
18	the	most, many, tough, constructive, primate, older, younger, all
19	man's	skilled, strong, learned, single, skillful, closed, big, empty, able, human('s), hunter's, person's, free, creative, right, needy, trained, deft, small, needed, coordinated
20	tool	club, pole, device, rod, stick, spear, instrument, weapon
21	dig	burrow, search, probe, excavate, test
22	bone	leg, horn, foot, tusk, tail, skull, had, arm, easily, hide
23	sharp	round, shaped, small, strong, chipped, fashioned, big, heavy, soft, rough, smooth, solid, sizeable, flat, thin, large, hard
24	the	one('s), man's, a, his
25	nuts	branches, wood, heads, bones, apart, trees, things, coconuts, down, bark, tinder, firewood, objects, food, sticks, shells, rocks, items, open, stone, ice, meat
26	one	the, softer, obsidian, shale, a, flat, hard, flint, glass, some, then, each, this
27	it	one, they, each

Item No.	Target answer	Alternatives
28	man	owner, being, person, human's, men, hunter, people, creature
29	sharp	small, sharpened, pointed, glass, lime, jagged, hard, large
30	stick	branch, log, rod, shaft, pole, bone, club
31	had	then, first, clumsily, tightly, tastefully, dexterously, cleverly, simply, double, securely, easily, soon, creatively, ingeniously, conveniently, would, suddenly, accidentally
32	very	portentously, modern, useful, tremendously, necessarily, good, long, bad, quite, hunter's, extremely, intelligent, most, incredibly, new
33	in	that, among, by, using, inside, amongst, within, on, all
34	tool	stone, device, material, instrument, practice, utensil, implement, edge, piece, method, item, object
35	development	history, evolution, life, existence, time, discoveries, age, exploration, era, ancestry
36	have	actually, apparently, ever
37	by	and, used, from, through, for, using, had, made
38	could	would, did
39	and	or, then, carefully, would, help, skillfully
40	draw	carve, paint, create, the, hang, drawing, painting, place, sketch, engrave, some
41	cave(s)	place(s), animals, room
42	in	during, and, with
43	the	plain, unknown, to, flat, high, various, dry, toward, through, stone, across, aimless, barren, long, in all, many
44	home	habitat, meal, income, weapons, diet, direction, destination, course, path, supplement, domain, place, camp, time, map, route, supply, lunch, plan destiny, location, pattern, knowledge, foundation, appetite
45	women	men, man, primitives, wanderers, people, human, woman, children, voyager, group, families, hunter
46	or	and, with, of, animal, in, like, using, on, their, animal's, covered
47	baskets	bags, cloth(s), sacks, pouches, garments, material, fabric, chests, nets, hides, blankets, clothes
48	made	started, lit, built, lighted, used, produced, began
49	and	then, while, by, or, occasionally, together, also
50	wood	branches, bark, lumber, tree(s), skin, dung, roots, grass, timber, forage, leaves

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