

EXPLORING THE DEGREE OF NATIVE-LIKENESS IN BILINGUAL ACQUISITION:  
SECOND AND HERITAGE LANGUAGE ACQUISITION OF KOREAN CASE-ELLIPSIS

BY

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DISSERTATION

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## ABSTRACT

The primary objective of this dissertation is to investigate how early and late bilinguals attain implicit knowledge of Korean case ellipsis (CE) that necessitates integration of multiple types of information and poses many learnability problems for the learners. The present research examines similarities and differences between the different types of bilinguals as well as between monolingual and bilingual populations. An oral picture description task and a written forced-choice elicitation task are developed to investigate how different populations employ the relevant factors in Korean CE and if certain types of cues are more accessible than others.

The results reveal qualitative differences in the underlying linguistic knowledge of early vs. late bilinguals with heritage language learners (i.e., early bilinguals) achieving a higher level of mastery than second language learners (i.e., late bilinguals) in both oral and written tasks. It seems possible for heritage language learners to attain implicit knowledge of Korean CE, and parallels can be drawn between these learners and monolingual children. Second language learners, on the other hand, showed divergent and variable patterns in judgment and production, which question their ability to acquire the phenomenon. The results underline the importance of age, context, and mode of acquisition in bilingual acquisition as the learners showed a tendency to depend on factors/cues that are more readily available to them in their respective context and mode of acquisition. The effects of task and structural priming are also discussed. On the basis of these findings, it is concluded that different types of bilinguals process and acquire the phenomenon of Korean CE differently, and that bilingual difficulty does not lie in particular domains but is more computational in nature with learners failing to effectively incorporate multiple levels of information in a native-like manner.

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# CHAPTER 1

## INTRODUCTION

Understanding the nature of linguistic knowledge is at the heart of linguistic theory, and examining the differences between monolingual and bilingual acquisition is very relevant to this overall aim. The uniform success in monolingual acquisition has often been compared to the variable levels of mastery in bilingual acquisition, and many have investigated the challenges of bilingualism that result in linguistic representations that are different from those of monolinguals (Meisel, 1997; Bley-Vroman, 1989; Sorace & Serratrice, 2009; Montrul, 2009 among others). By investigating the areas of difficulty in bilingualism, many have tried to examine whether or not such difficulty can be fully overcome in ultimate attainment or if bilinguals can only reach “near-native-likeness” at best (Abrahamsson & Hyltenstam, 2009; Sorace, 2003). This dissertation examines the linguistic competence of early and late bilingual learners regarding a phenomenon that requires integration of multiple types of information and investigates how implicit knowledge is acquired under different linguistic contexts.

The specific phenomenon of investigation is case ellipsis (CE, henceforth) in Korean that is regulated by highly complex and abstract linguistic and non-linguistic<sup>1</sup> principles. Korean CE, which refers to the omission of case-markers on nominals, is seemingly optional and occurs primarily in informal casual speech. For example, the nominative case (*-ka/-i*) on subjects and accusative case (*-lul/-ul*) on objects can be dropped in certain contexts<sup>2</sup> without resulting in ungrammaticality as seen in (1).

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<sup>1</sup> While non-linguistic factors like formality of context also affect CE, the present paper will concern itself with linguistic factors only.

<sup>2</sup> See Chapter 2 for detailed explanation of these contexts.

- (1) a. Na-*ka*      pap-*ul*      an-mek-e  
           I-NOM      food-ACC      not-eat-DECL<sup>3</sup>
- b. Na-∅      pap-*ul*      an-mek-e  
           I- ∅      food-ACC      not-eat-DECL
- c. Na-*ka*      pap- ∅      an-mek-e  
           I-NOM      food- ∅      not-eat-DECL
- d. Na-∅      pap- ∅      an-mek-e  
           I- ∅      food- ∅      not-eat-DECL
- ‘I don’t want to eat’

Native speakers have knowledge of when to omit and when not to omit case in Korean and agree on the contexts of suppliance and ellipsis, but we suspect that Korean CE would be difficult for the learners because a) it involves the interaction of syntactic, semantic, and discourse principles and requires integration of contextual information with structural information (Lee H-J, 2006a; Kwon & Zribi-Hertz, 2008), b) it forms gradient statistical preferences in native judgments (Lee H-J, 2006b, 2008) while lacking an explicit unified characterization even by native speakers of Korean, c) it poses a problem in form-meaning mapping for the learner, as the alternating presence or absence of case-markers “in the presence of the same meaning except for subtle aspects of pragmatics makes the form meaning link even harder to establish” (DeKeyser, 2005, p.8), and d) it is not subject to explicit instruction despite variable input. In light of such challenges, the present study seeks to contribute to linguistic theories in bilingual acquisition by using a tenable framework of Korean CE to examine how different types of bilinguals acquire

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<sup>3</sup> Abbreviations: NOM—nominative, ACC—accusative, DECL—declarative

the phenomenon in comparison to each other as well as the monolinguals. Examining whether bilinguals can attain implicit knowledge of a seemingly “optional” linguistic phenomenon that involves the interaction of multiple types of information and is seemingly variable in the input will lend deeper understanding of the differences between monolingual and bilingual acquisition.

### 1.1 EARLY VS. LATE BILINGUALISM

It is widely known that bilingual speakers are far from homogeneous in their linguistic competence as well as backgrounds, and comparing different types of bilinguals has been one of the central issues in bilingual acquisition. Adult second language (L2) learners (i.e., late bilinguals) who start learning the target language after puberty have been studied extensively in previous research and were found to exhibit persistent difficulty with certain areas of grammar such as phonology and inflectional morphology while displaying quite advanced competence in other domains (White, 1986; Schwartz and Sprouse, 1994, 1997; Brown, 1998; Ioup, 2008; Lardiere, 2007 among others). More recently, heritage speakers, unbalanced early bilinguals whose first language (L1) is not fully acquired in childhood (Cummins, 2000; Valdés 2000) have been gaining much attention in the field of second language acquisition (SLA) and linguistic theory (Benmamoun, Montrul, & Polinsky 2010). Heritage speakers are early bilinguals of ethnic minority languages who are usually exposed to the heritage language (HL) in early childhood but who become strongly dominant in the majority language of the wider speech community. While early exposure to the HL enables heritage speakers to develop basic linguistic competence in the target language, they are vulnerable to both incomplete acquisition and attrition<sup>4</sup> in certain

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<sup>4</sup> According to Montrul (2008), “incomplete acquisition” refers to the state where many aspects of grammar do not reach full development due to the lack of exposure to optimal input conditions during childhood. As for “L1 attrition”, Silva-Corvalan’s (1994) describes it as the loss of L1 features after the language has been completely

grammatical domains such as inflectional morphology and complex syntax due to interrupted exposure and insufficient input during childhood (Anderson, 1999; Bolonyai, 2007; O’Grady et al., 2001; Polinsky, 2008a, b). HL acquisition resembles L1 acquisition as early exposure to naturalistic input leads to the development of basic linguistic competence, but it also resembles L2 acquisition as the subsequent reduced input conditions of “interrupted acquisition” (Montrul, 2002, 2008) result in the failure to develop native-like competence in the target language. In light of such similarities and differences between L2 and HL acquisition, many studies have compared the two bilingual populations in order to understand how age of onset of bilingualism and other experiential factors contribute to the development of a second language. While some have found that HL acquisition exhibits similar linguistic features and developmental characteristics of incomplete L2 acquisition (Montrul, 2007, 2008; Polinsky, 2006; Merino 1983; Silva-Corvalán, 2003), others have shown that heritage speakers possess more native-like knowledge in certain linguistic domains like phonology (Au et al., 2002, 2008; Knightly et al. 2003) and morphosyntax (Montrul, Foote & Perpinan, 2008; Montrul, 2010). Moreover, Montrul (2009) observes that early and late bilinguals have different advantages depending on the type of task (written vs. oral) and knowledge (explicit vs. implicit). The results of Montrul et al. (2008) and Bowles (2011) indicate that L2 learners are more accurate than heritage speakers on untimed written tasks that test explicit metalinguistic knowledge while heritage speakers are more accurate than the L2 learners on time-sensitive oral narrative tasks that measure more automatic and implicit knowledge. Such task and knowledge effects reflect the differences in contexts of acquisition and type of input by the two groups of bilinguals: L2 learners usually receive formal instruction in a classroom setting whereas heritage speakers receive naturalistic aural input at

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acquired. L1 attrition is often accompanied by the predominant use and development of the L2 system and the lack of exposure to and use of the L1.

home with little or no literacy and schooling. As Montrul (2009) puts it, different contexts of acquisition seem to “impinge upon how language is attended to, internalized, practiced, and more efficiently processed from naturalistic input” (24).

With such differences in mind, there has been a growing interest in how different types of bilinguals acquire linguistic phenomena involving the integration of syntactic, semantic, and discourse-pragmatic information in the computation of meaning (Sorace & Serratrice, 2009; Hopp, 2006, 2009). Both types of bilinguals were found to show persistent difficulty in such domains. Heritage speakers exhibited L1 attrition and developmental instability when they were required to integrate multiple types of information in linguistic phenomena like the production and interpretation of null and overt subjects (Tsimpli et al., 2004; Montrul, 2004), agreement morphology (Bolonyai, 2007), tense/aspect distinctions (Montrul, 2002, 2008), the use of clitics (Montrul, 2010), and differential object marking (Montrul, 2010, 2008) that require integration of syntax and pragmatics/discourse. Similarly, L2 learners were also found to exhibit difficulty in such linguistic phenomena despite possessing native-like grammatical representations and constraints (Slabakova & Montrul, 2002; Slabakova, 2007, 2008; Sorace & Keller, 2005; Sorace & Filiaci, 2006), and the acquisition of discourse/interpretative properties was found to be problematic even in L2 end state grammars of near-native speakers (Tsimpli & Sorace, 2006; Belletti et al., 2007; Lozano, 2006; Valenzuela, 2006).

While previous research highlights the challenges faced by heritage speakers and L2 learners when integrating multiple types of information, it is not entirely clear at present how similar or different the two types of bilinguals are in processing and acquiring such phenomena. Keating, VanPatten, and Jegerski (2011) found significant differences between the two bilingual groups in their judgments of anaphora resolution of null/overt subjects in Spanish which involves the

integration of syntactic and discourse-pragmatic properties. The authors conclude that the two types of bilinguals process and acquire the phenomenon differently, and that early exposure to the language does not necessarily lead to target-like behavior. More research is needed to further investigate the nature of such differences between the two bilingual groups, and thus the present dissertation will examine how bilinguals with different age, context, and mode of acquisition process and acquire Korean CE, another phenomenon that involves the interaction of syntactic, semantic, and discourse principles.

## 1.2 BILINGUAL ACQUISITION OF MULTIPLE TYPES OF INFORMATION

In recent years, there has been an increasing interest in how bilinguals acquire linguistic phenomena that straddle multiple levels (i.e., syntactic, semantic, and discourse-pragmatic) of linguistic analysis. Sorace and Filiaci's (2006) *Interface Hypothesis*, in particular, has been put forth to explain the variability found in bilingual acquisition of multiple types of information and has led many studies to examine this non-convergence in various linguistic phenomena (Sorace & Serratrice, 2009; Belletti, Bennati, and Sorace, 2007; Hopp, 2006, 2009 among others). A series of distinct modules (syntax, semantics, phonology, morphology) comprise the language faculty, and these modules are seen to be connected via "interfaces" (Jackendoff, 2002; Ramchand and Reiss, 2007). Tsimpli and Sorace (2006) distinguish "internal interfaces" that link modules within the language system itself (e.g., syntax-semantics, syntax-phonology, morphology-semantics etc.) from "external interfaces" in which the grammar interfaces with other aspects of cognitive domains such as discourse/pragmatics. The Interface Hypothesis claims that acquiring linguistic properties at the interfaces that require integration of multiple types of information is more challenging than acquiring properties within a specific module.

More specifically, this claim posits that external interfaces pose greater problems than internal interfaces and result in indeterminacy even for end-state adult L2 learners who have reached an advanced level of proficiency. Linguistic phenomena at the internal interfaces, on the other hand, are not seen to be problematic and can be completely acquired in ultimate attainment. These claims have since prompted numerous studies and have also been extended to other types of bilingualism such as early bilingual L1 acquisition and L1 attrition in heritage speakers (Sorace, 2011; White, 2011; Montrul, 2011 among others).

Much research has been conducted especially on the syntax-pragmatics/discourse interface to test the claims of the Interface Hypothesis. Interpretation of pronominal subjects in null subject languages by L2 learners in particular has been extensively investigated. Sorace & Filiaci (2006) examined how near-native speakers of L2 Italian use and interpret Italian pronominal subjects. In Italian, null subjects are strongly biased towards an antecedent in SpecIP whereas overt subjects have a strong tendency to refer to an antecedent positioned lower in the syntactic structure (Carminati, 2002). The complementary distribution of null and overt subject pronouns is also pragmatically determined with null subjects referring to an active referent that is highly accessible and overt subjects referring to a less salient referent. The authors found that near-native speakers of L2 Italian are native-like in their interpretation of null subject pronouns but significantly diverge from native speakers in their use and understanding of overt subject pronouns showing a tendency to overuse overt subjects in sentences where null subjects are more pragmatically felicitous. The results are thus consistent with the Interface Hypothesis in that near-native speakers seem to have acquired the syntactic constraints on pronominal subjects but show variability when interpreting pronominal forms. Such results have since been replicated not only in studies of L2 acquisition (Belletti, Bennati, and Sorace, 2007; Belletti and Leonini, 2004)

but also L1 attrition (Tsimpli, Sorace, Heycock, and Filiaci, 2004). Anaphoric dependencies with demonstratives and personal pronouns in German were also tested with advanced L2 learners and heritage speakers of German living in the UK, and both types of bilinguals were native-like in their use of personal pronouns but exhibited inappropriate usage of demonstratives (Wilson, 2009; Wilson, Keller & Sorace, 2009). These studies suggest that acquiring discourse constraints of topic and focus in anaphora resolution remains a challenge even in advanced stages of L2 and heritage language acquisition as predicted by the Interface Hypothesis.

In addition to anaphoric dependencies, clitic doubling is another problematic area in L2 acquisition. Valenzuela (2006) tested English-speaking learners of Spanish on their knowledge of clitic doubling in Spanish and found that even highly proficient learners fail to acquire the discourse constraint that prohibits nonspecific topics from occurring with clitics. Similar findings have been reported for advanced learners of Greek (L1-Russian) who exhibited persistent indeterminacy in their knowledge of the discourse constraints on clitic doubling in Greek (Tsimpli & Sorace, 2006). Lozano (2006) echoes these findings in L2 acquisition of subject-verb and verb-subject word order in Spanish as the learners were found to be sensitive to the syntactic constraints of split intransitivity (unergative vs. unaccusative) in the word order but failed to associate the information status of focused subjects with sentence-final positions. As such, many studies in bilingualism provide evidence for the Interface Hypothesis and highlight the external interface between syntax and discourse/pragmatics as a vulnerable domain that often results in optionality and instability.

In contrast to such findings that report indeterminacy in external interfaces, others have started to challenge the distinction between internal vs. external interfaces. While the studies

cited above found persistent L2 difficulty in discourse-pragmatics even in near-native speakers, other studies have found that advanced L2 learners do in fact exhibit native-like performance on linguistic phenomena requiring mastery of discourse-pragmatic constraints (Dekydtspotter & Hathorn, 2005; Ivanov, 2009; Slabakova & Ivanov, 2011). Ivanov (2009) and Slabakova and Ivanov (2011) found that advanced learners of Bulgarian (L1-English) were sensitive to the discourse constraints on clitics and exhibited native-like knowledge on clitic doubling. Parodi (2009) also observes that advanced learners of Spanish can perform in a native-like manner on clitic left dislocation with definite vs. indefinite topics. Slabakova (2010) tested acceptance rates on lexical scalar implicatures of *some* and *all* by L1-Korean learners of English and found that L2 learners are able to make pragmatic judgments regardless of contextual support. In fact, the L2 learners made more pragmatically sensitive judgments than the native speakers overall suggesting that linguistic pragmatic competence is universal. Similarly, White (1998) found no delay in the acquisition of Principle B in intermediate-level adult learners of English (French and Japanese speakers) and concludes that adult L2 learners' mature pragmatic abilities and greater memory capacity lead them to behave more like adult native speakers than L1 children who have been found to differ from adults in their pragmatic abilities (Noveck, 2001). In addition to such native-like performance in the external interfaces, it has been suggested that linguistic phenomena occurring in the internal interface (i.e., syntax/semantics), which the Interface Hypothesis deems inherently unproblematic could nevertheless result in indeterminacy. For example, studies have found persistent instability in the interpretation of wh-interrogatives or wh-indefinites in L2 Korean (Choi & Lardiere, 2006), L2 Japanese (Umeda, 2008), and L2 Chinese (Yuan, 2008, 2010). Similarly, Italian-English bilinguals' use of (null) determiners and encoding of specificity/genericity in English was non-native and divergent (Serratrice, Sorace,

Filiaci, & Baldo, 2009). These findings question the distinction between the internal vs. external interfaces and suggest that interfaces should not be viewed holistically.

In view of such conflicting results, the concept of “interface” has come under a lot of scrutiny, and questions have been raised as to how to define this concept within the theories of bilingual acquisition (Schwartz, 2011; Tsoulas & Gil, 2011; Duffield, 2011). Moreover, it has been pointed out that isolating phenomena at particular interfaces may be challenging, because every utterance ultimately involves discourse and “must be read off at all linguistic interfaces” (Montrul, 2011, p.592). The Interface Hypothesis fails to provide a clear reason *why* some properties (i.e., discourse-pragmatics) are often more problematic than others, and many have suggested that bilinguals’ variability in the interfaces does not arise from the external interfaces per se but from processing multiple interfaces and *integrating* discourse-pragmatic constraints with other syntactic and semantic information to the computation of meaning (Sorace & Serratrice, 2009; Hopp, 2007, 2009; Sorace, 2011; White, 2011; E.S. Chung, 2013). Much research in the field of psycholinguistics has found that integrating multiple types of information in real-time is more costly than processing only syntactic dependencies even for monolingual speakers (Burkhardt, 2005; Piñango & Burkhardt, 2005) and that this challenge is greater for bilinguals compared to monolinguals (Roberts, Gullberg, & Indefrey, 2008). In light of such findings, studies focusing on the acquisition of interface properties are increasingly viewing the L2 vulnerability in terms of computational complexity and processing limitations: Sorace and Serratrice (2009) propose that processing limitations of bilingual speakers may explain the difficulty and variability in L2 behavior. The learners may lack processing resources in the L2, or even if they have sufficient processing resources, might face problems integrating multiple types of information efficiently especially when dealing with discourse-pragmatic information.

In his study of L2 acquisition of German scrambling that involve multiple interfaces of syntax/morphology (case and word order), syntax/semantics (interpretive constraints on scrambling of indefinites), and syntax/discourse (information structure), Hopp (2007, 2009) observes that L2 learners have intact grammatical representations and processing mechanisms that are almost identical to those of native speakers but that their processing is much less efficient than native speakers. Convergence was found at the syntax-discourse interface for advanced and near-native L1-English, L1-Russian, and L1-Dutch learners in both online and offline studies leading Hopp to conclude that it is not the interfaces per se that limits the L2 learners' capability to integrate multiple sources of knowledge during comprehension. Instead, the shortage of computational resources was identified as the problem in L2 acquisition as decreasing the computational load at the syntax-morphology interface was found to help L2 learners to converge at the syntax-discourse interface and vice versa (Hopp, 2007). Hopp's comprehensive studies convincingly point to computational difficulty rather than representational deficit as the main culprit of L2 variability, and others are also increasingly viewing the problem as stemming from processing limitations and resources allocation issues in bilinguals who must deal with multiple grammars (Sorace, 2011; White, 2011). Similarly, E-S Chung (2013) suggests in her study of L2 scope judgments that L2 learners' failure to calculate pragmatic inferences may be due to processing limitations rather than a lack of pragmatic competence per se. The learners' scope interpretations were seen to be driven by their focus on content and meaning access via syntactic-semantic operations with minimum processing costs if possible, which resulted in an oversight of pragmatic information. In other words, a possible explanation of the selective difficulty of discourse-pragmatic properties lies in L2 learners' focus on meaning access and the consequent failure to incorporate pragmatic information when

processing resources are depleted. The study posits pragmatic information to be one of the last considerations when processing multiple types of information despite the fact that L2 learners possess mature pragmatic abilities.

Within this context, the present work will further examine bilingual acquisition of a phenomenon involving multiple layers of linguistic analysis (i.e., syntax-morphology, syntax-semantics, and syntax-discourse/pragmatics) and investigate whether or not selective difficulty can indeed be found when acquiring discourse-pragmatic properties. If so, I will examine what types of information or cues the bilinguals resort to in case of such difficulty and suggest possible reasons in light of the recent developments in the literature that view bilingual variability in terms of processing limitations (Hopp, 2007, 2009) and focus on meaning (E-S Chung, 2013). Furthermore, the present work will explore the similarities and differences between early and late bilingualism by investigating whether or not both early and late bilinguals can equally overcome such challenges and attain implicit native-like knowledge of the phenomenon.

Another area of interest in the present dissertation that has not been extensively examined in previous works is the effects of input, more specifically “structural priming”, in bilingual acquisition of phenomena involving multiple types of information. Structural priming refers to the phenomenon in which the most recently heard structure is made more salient than others leading the speakers to use the syntactic structure of the previous sentence that has been produced or heard (Bock, 1986; Branigan, Pickering, & Cleland, 2000). Studies in psycholinguistic research have found structural priming to have both immediate and long-term effects in monolingual and bilingual contexts (Bock & Griffin, 2000; Bock, Dell, Chang &

Onishi, 2007; Costa, Pickering & Sorace, 2008; Loebell & Bock, 2003; Hartsuiker, Pickering, & Veltkamp, 2004) and have found this effect for a variety of linguistic structures such as transitives and datives (Bock, 1986), syntactic embedding (Branigan, Pickering, McLean, & Stewart, 2006), placement of particles (Konopka & Bock, 2005), and production or omission of the optional complementizer *that* in English (Ferreira, 2003). Moreover, structural priming is a wide-ranging phenomenon that is not only found in English (Bock, 1986) but also in other languages such as German (Scheepers, 2003) and Dutch (Hartsuiker & Kolk, 1998).

The phenomenon of structural priming also have an effect on L2 acquisition and learning, as studies have found benefits of structural priming on L2 development of English prepositional-object datives (McDonough, 2006), active and passive structures (Kim & McDonough, 2008), and question forms (McDonough & Mackey, 2006, 2008) with participants producing more of these structures when they had previously encountered them than when they had not. These works suggest that structural priming helps facilitate L2 development and hence plays a beneficial role in L2 acquisition/learning. In addition, following the implicit-learning account of structural priming in the L1 literature that considers structural priming as a form of non-conscious and automatic learning (Bock & Griffin, 2000; Chang, Dell, & Bock, 2006; Chang, Dell, Bock, & Griffin, 2000), Shin and Christianson (2012) have found that structural priming leads to implicit knowledge in L2 acquisition of complex structures such as the double-object dative structure in English.<sup>5</sup> Such empirical evidence has implications for L2 acquisition theories, as structural priming could play a role in promoting L2 development and enhancing automaticity in L2 production. It is not yet clear whether structural priming is also present when the learners

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<sup>5</sup> Shin and Christianson claim that the double-object dative structure can be seen as relatively complex because it implicates multiple thematic arguments in accordance with the criteria put forth by Hulstijn and de Graaff (1994).

must deal with multiple layers of linguistic analysis, and thus the present dissertation will examine such effects in bilingual acquisition of CE in Korean.

### 1.3 GOALS OF THE DISSERTATION

The present dissertation seeks to examine bilingual language development in Korean CE that necessitates the integration of different types of information and poses many learnability problems for the learners. The acquisition of CE in Korean has not been examined before, and the study is original in that it examines monolingual and bilingual acquisition of Korean CE by using a set of oral and written elicited production experiments. It will provide a tenable framework for this phenomenon with highly complex linguistic properties that predominantly occurs in casual informal speech and investigate *how* and *whether* the learners acquire sensitivity to multiple cues while delving into differences between L1, L2, and HL acquisition. Similarities and differences between the two bilingual groups as well as between L1 and bilingual populations will be examined by comparing the types of cues that are more readily accessible than others and identifying potential developmental stages. L2 and HL difficulty is predicted in the integration of information from different domains, and this study will help determine whether or not target-like acquisition of highly complex linguistic phenomena involving the integration of syntactic, semantic, and discourse-pragmatic information is possible in bilingual acquisition. Task as well as structural priming effects will also be discussed. As such, the present study will not only increase our understanding of the nature of bilingual acquisition and the differences between early and late bilingualism but also contribute to our knowledge of the differences between monolingual and bilingual acquisition.

Furthermore, the present study has theoretical and pedagogical significance for the fields of early and late bilingualism as well as second and heritage language teaching. It will inform the teaching of heritage and second languages by examining the learners' linguistic representations of an elusive linguistic phenomenon with highly complex linguistic properties that predominantly occurs in casual informal speech. By investigating what type of information is more accessible than others for the learners, the present study will identify the nature of difficulty in L2 and HL acquisition while addressing the different needs of the two learner groups. As many heritage speakers in colleges and universities enroll in foreign language classes to "relearn" their HL, language programs and instructors are faced with the challenges of accommodating the different needs of learners with heritage vs. non-heritage backgrounds. While some language programs have implemented special tracks for heritage learners, the instructional materials for these learners that are supported by research are sorely lacking. The results of this study will thus inform instructional practices in language classrooms and be a valuable resource for designing pedagogical materials for L2 and HL learners of Korean.

#### 1.4 ORGANIZATION OF THE DISSERTATION

The dissertation is organized as follows: Chapter 2 describes the properties of Korean case ellipsis and introduces a valid framework that can be used to examine monolingual and bilingual acquisition of the phenomenon. Chapter 3 introduces previous research related to L1 acquisition of CE and presents an experimental study that examines L1-acquiring Korean children's knowledge of the phenomenon. Chapters 4 and 5 describe and report the results of experimental studies that examine bilingual acquisition of Korean CE using a written and an oral task

respectively. Chapter 6 summarizes and evaluates the findings of the experimental studies and concludes.

## CHAPTER 2

### KOREAN CASE ELLIPSIS: THEORIES AND APPROACHES

This chapter presents the theories and properties of Korean case ellipsis (CE) and introduces a valid framework of the phenomenon that will be used in the following chapters of the dissertation. It also presents the results of an experiment (Experiment 1) that was conducted to confirm the tenability of an analysis of CE that was adopted in previous works and finds that a multi-factor functional analysis offers a reliable framework that can be used to examine monolingual and bilingual acquisition of the present phenomenon. The chapter concludes by addressing how additional constraints and considerations will be examined in the dissertation.

#### 2.1 THEORIES AND PROPERTIES OF KOREAN CASE ELLIPSIS

In Korean, case plays a central role in argument licensing, in the signaling of grammatical functions, and also in marking properties of information structure. Yet, the nominative case (-*ka/-i*) on subjects and accusative case (-*lul/-ul*) on objects can be dropped especially in informal casual speech as seen in (1) that is replicated below.

- |        |                 |                   |              |
|--------|-----------------|-------------------|--------------|
| (1) a. | Na- <i>ka</i>   | pap- <i>ul</i>    | an-mek-e     |
|        | I-NOM           | food-ACC          | not-eat-DECL |
| b.     | Na- $\emptyset$ | pap- <i>ul</i>    | an-mek-e     |
|        | I- $\emptyset$  | food-ACC          | not-eat-DECL |
| c.     | Na- <i>ka</i>   | pap- $\emptyset$  | an-mek-e     |
|        | I-NOM           | food- $\emptyset$ | not-eat-DECL |

- d. Na-∅      pap- ∅      an-mek-e  
 I- ∅      food- ∅      not-eat-DECL  
 ‘I don’t want to eat’

This phenomenon in Korean bears many similarities to CE in Japanese in which the nominative case (-*ga*) on subjects and the accusative case (-*o*) on objects can also be dropped in plausible contexts as shown in (2).

- (2) a.      John-*ga*      sono      hon-*o*      kat-*ta*  
             John-NOM    that      book-ACC    buy-PAST
- b.      John- ∅      sono      hon-*o*      kat-*ta*  
             John- ∅      that      book-ACC    buy-PAST
- c.      John-*ga*      sono      hon- ∅      kat-*ta*  
             John-NOM    that      book- ∅      buy-PAST
- d.      John- ∅      sono      hon- ∅      kat-*ta*  
             John- ∅      that      book- ∅      buy-PAST  
             ‘John bought that book’

Previous research has shown CE to be affected by various factors—stylistic factors such as formality of the extralinguistic context and familiarity among interlocutors (Ko, 2000; Lee & Thompson, 1989), idiomatic, figurative, or metaphorical meanings (Lee, S-B, 2006), discourse/semantic factors such as specificity and definiteness (D. Lee, 2002; D. Kim, 1993), focus and information structure status of nominals (Kwon & Zribi-Hertz, 2008; Ko, 2000;

Masunaga, 1988), morphophonological or syntactical weight of the noun phrase (NP) (Mori & Givon 1987), and syntactic factors such as construction type (i.e., question, idiom) and adjacency of the NP to the predicate (Fry, 2001).

Ko (2000) conducted a discourse analysis of 1) informal telephone conversations, 2) informal narratives in a newsgroup, and 3) formal TV news broadcast scripts and found that the frequency of Korean CE is closely correlated with discourse style. Case-marked objects appeared most frequently in formal news broadcasts and least frequently in telephone conversations while the reverse was true for bare objects. As such, the formality and style of discourse were found to correlate highly with the occurrence of CE. In addition, Lee and Thompson (1989) proposed an analysis based on the principle of ‘sharedness between communicators’ that predicts a higher frequency of CE when there is a greater amount of ‘sharedness’ or familiarity in experience, context, or cultural background between the communicators.

S-B Lee (2006) explains object CE in terms of neo-Gricean pragmatics and asserts that expressions that undergo CE trigger idiomatic and figurative meanings when compared to their case-marked counterparts. Lee proposes that case-marked and case-dropped expressions do not differ in semantic meaning and are thus used interchangeably at first. Case-dropped expressions are assumed to be more marked and thus trigger an additional figurative/metaphorical meaning, which becomes conventionalized with frequent use. For example, the expression “ppyam-Ø chita” (cheek-Ø hit-DECL) whose literal meaning is ‘to hit one’s cheek’ has been conventionalized to mean ‘equal to’ when used with a bare object NP but this metaphorical meaning can always be ‘canceled’ and take on the literal interpretation. According to this analysis, CE is used to denote metaphorical meaning, habitual or repeated activity, and mood of participants or context. While this analysis captures the pragmatic function of bare NPs, it is valid for only a restricted set of

data and fails to account for various aspects of CE.

Furthermore, Korean CE has often been described in terms of the information structure status of the NP. Ko (2000) put forth an analysis in which CE is predicted to occur when it is old information (i.e., already known or inferable) for the hearer but is new in the discourse. C-M Lee (1995) also contends that CE occurs when the nominal is expected and is inferable whereas explicit marking of case would involve a rather unexpected event/referent to which the hearer must pay attention. A more in-depth account of CE based on information structure is offered by Kwon and Zribi-Hertz (2008) who claim that a single-factor of focus-structure<sup>6</sup> visibility determines categorical distinction between case-marked vs. bare NPs. Put simply, it is argued that bare subjects and objects are not visible at the level of focus-structure and can never be construed as topics or foci while case-marked NPs can stand as focus-structure constituents. For example, a bare object that is not visible in focus-structure would fail to be a felicitous response to a wh-question bearing on the object, since wh-phrases call for new information that can receive focus. Therefore, (3) would not be a felicitous answer to the question ‘What is Minsu looking for?’ in the example below.

(3) (What is Minsu looking for?)

- |    |           |              |                |            |
|----|-----------|--------------|----------------|------------|
| a. | Minsu-ka  | kawi-lul     | chac-ko        | iss-ta.    |
|    | Minsu-NOM | scissors-ACC | look.for -COMP | PROG-DECL. |
| b. | *Minsu-ka | kawi-Ø       | chac-ko        | iss-ta.    |
|    | Minsu-NOM | scissors-Ø   | look.for-COMP  | PROG-DECL. |
- ‘Minsu is looking for a pair of scissors.’

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<sup>6</sup> Focus-structure is a level of representation belonging to sentence grammar that is separate from syntax but highly relevant to discourse structure. For more detailed description, see section 3 in Kwon & Zribi-Hertz (2008).

While information structure and focus do seem to play an important role in determining CE as discussed in various works (Ko, 2000; C-M Lee, 1995; H-J Lee, 2006), the analysis offered by Kwon and Zribi-Hertz (2008) that place *exclusive* importance on information structure faces problems, because its supporting data and interpretations may not be systematically agreed upon by other native speakers of Korean. In fact, the claims of this analysis are disproved by E-S Chung (2010) who examined native judgments of Kwon and Zribi-Hertz's data such as (3) using an acceptability judgment task. Native speakers of Korean of varying age groups not only allowed the interpretation that should not be possible under the focus-structure analysis but also sometimes rejected the interpretations that should be acceptable in the focus-structure analysis. As such, information structure seems to be an important factor in CE, but it cannot be the only factor that determines CE.

Following Enç (1991) who uses the notion of definiteness and specificity to account for case-marking in Turkish, Korean CE has also been described in terms of these semantic notions. Definite NPs are always specific, while indefinite NPs are specific if there is an antecedent in the previous discourse but nonspecific if there is none. That is, specific NPs are always linked to the previous discourse while non-specific NPs are new information in the discourse. Using this framework, D. Kim (1993) contends that specificity plays an important role in Korean case marking and mandates specific NPs in Korean to be overtly case-marked. For example, the specific object 'book' in (4) that is modified by 'certain' ('*etten*') would require the presence of an accusative marker.

- (4) a. Chelswu-nun    etten            chayk-ul    ilk-ko        iss-ta.  
                          Chelswu-TOP    certain        book-ACC    read-COMP    PROG-DECL.

- b. \*Chelswu-nun etten chayk- Ø ilk-ko iss-ta.  
 Chelswu-TOP certain book- Ø read-COMP PROG-DECL.  
 ‘Chelswu is reading a certain book’

However, such specificity analysis fails to account for sentences in which a specific NP can be case-dropped without sounding awkward as in (5).

- (5) Minsu-ka il nyen cen-ey cw-un chayk- Ø acikto ilk-ko  
 Minsu-NOM one year prior-TEMP give-COMP book - Ø still read-COMP  
 iss-ni?  
 PROG-Q  
 ‘Are you still reading the book that Minsu gave you a year ago?’

Moreover, it cannot explain why both bare and case-marked object NPs can sometimes have the same specific interpretation in sentences like (6).

- (6) Ecey ku cip-Ø/-ul sa-n namca-ka onul an wa-ss-ta.  
 Yesterday that house-Ø/-ul buy-COMP man-NOM today NEG come-PST-DECL  
 ‘The man who bought that house yesterday did not come today’

As such, the semantic account of Korean CE may be too simplistic, as it fails to explain why bare NPs can sometimes have the [+specific] interpretation and case-marked NPs, the [-specific] interpretation.

In sum, many investigations have identified various factors that are involved in CE, but few studies have provided an analysis that simultaneously examines these factors together. The lack of a systematic unified characterization of the phenomenon has made it difficult to examine how and when Korean speaking children acquire CE, which no previous work has addressed, not to mention its acquisition by bilinguals. However, Lee (2006a, 2006b) provides a close to comprehensive analysis in which a combination of information structural and semantic/grammatical factors independently interacts to determine CE. A closer look at the claims of Lee’s approach will be described in the following section.

### 2.1.1 A Functional Multi-factor Analysis of Korean CE

Through a series of corpus and experimental studies, H-J Lee (2006a, 2006b) found that Focus, Animacy, and Definiteness simultaneously and independently determine Korean CE and put forth a multi-factor analysis in which these factors interact to determine case-marking. Lee (2006b) analyzes Korean CE using Animacy and Definiteness hierarchies in differential marking that has been put forward in the stochastic Optimality Theory (OT) by Aissen (2003). CE has often been compared to split case marking phenomena in various languages that systematically mark only certain classes of subjects and objects due to the need to differentiate subjects and objects<sup>7</sup>. Following Bossong’s (1991) description of differential subject marking and differential

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<sup>7</sup> Spanish is a well-known language with differential object marking. The use of the preposition *a* is mainly dependent on animacy and referentiality/specificity properties of the direct object: The insertion of *a* is obligatory with human specific direct objects but may be optional depending on the referential properties of direct objects as seen in (1) below.

- (1) A. Specific human referent  
*Busco a Lucia*  
 Search.1SG A Lucia  
 “I’m looking for Lucia”  
 B. Nonspecific human referent  
*Busco un chica*

object marking, Aissen (2003) explores the effects of Animacy and Definiteness in differential marking and posits hierarchies in both factors as shown in (7) below:

- (7) a. Animacy hierarchy: Human > Animate > Inanimate  
b. Definiteness hierarchy: Personal Pronoun > Proper noun > Definite NP > Indefinite specific NP > Non-specific NP (Aissen 2003: 437)

Subjects are assumed to have features high in both hierarchies, and thus are unmarked when they have high features and marked when low. In comparison, objects usually have features lower on the hierarchies, and thus are unmarked when they have low features and marked when high.

Based on the intuition that subjects and objects need to be maximally discriminated from each other, morphological case realization plays an important role when objects have high features or subjects have low features.

In statistical analyses of the CallFriend Korean corpus (LDC, 1996), Lee (2006b) found that Animacy and Definiteness have a significant effect on the alternation between case-marking vs. case ellipsis of subjects and objects. The rate of CE for human/animate and definite subject NPs (pronouns and names) was found to be significantly higher than the rate of CE for inanimate and indefinite subject NPs, and the converse was found to be true for direct object NPs. In other words, prototypical subjects with features high in the Animacy and Definiteness hierarchies and

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Search.1SG a girl  
“I’m looking for any girl”

- C. Inanimate referent  
*Busco la casa* (\**Busco a la casa*)  
Search.1SG a house  
“I’m looking for a particular/any house”

prototypical objects with low features in the hierarchies were found to undergo CE significantly more frequently than subjects with low features and objects with high features, respectively. Lee observes that such quantitative patterns reflect “the cross-linguistic tendency to mark more marked or less prototypical types of arguments” (p. 214).<sup>8</sup> Here, Lee uses the term ‘markedness’ to refer to the parameters of Animacy and Definiteness of arguments that determine how marked those arguments are as subjects or objects.

In addition to the effects of Animacy and Definiteness, Lee also draws attention to the effects of Focus. Previous works have suggested Focus to be one of the strongest factors affecting CE with nominative and accusative case being morphological realizations of underlying informational features (Ko, 2000; Kim, 1990; Choi, 1995; Kwon & Zribi-Hertz, 2008). Such analysis will disallow CE when the NP that is case-marked by *-i/-ka* or *-(l)ul* is focused. For example, while ‘the clothes’ in (8)a is not focused as presupposed old information and shared knowledge and can appear without the accusative marker, it is focused and hence case-marked in (8)b and (8)c either as new information or when interpreted as contrasting with some other objects from a set of alternatives.

- (8) a.    A:    kulayse ecey        os-Ø        kacko        wa-ss-ni?  
           So        yesterday clothes-Ø    bring-COMP come-PST-Q?  
           ‘So, did you bring the clothes yesterday?’  
       B:        Yes, I did! There are right here!

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<sup>8</sup> For example, Christianson and Cho (2009) also observe that native speakers of Odawa (Ottawa) resolve anaphora ambiguity of the *pro* element by relying on the canonical (i.e., unmarked) alignment of relevant feature hierarchies (animacy, thematic, discourse, and obviation hierarchy) in which the dropped argument is expected to be more topical, more animate, and marked with proximate morphology.

- b. A: What's in the package?  
 B: Mina-ka os-**ul** ponay-ess-e.  
 Mina-NOM clothes-ACC send-PST-DECL.  
 'Mina sent clothes.'
- c. A: Is that a stuffed animal in the package?  
 B: Ani, Mina-ka os-**ul** ponay-ess-e.  
 No, Mina-NOM clothes-ACC send-PST-DECL.  
 'No, Mina sent clothes.'

Lee draws a distinction between two types of focus: “Completive focus” and “contrastive focus”. Completive focus involves new information such as a response to a yes-no or WH-question as in (8), while contrastive focus may not be new information but instead involves an explicit choice among the limited set of contextually given alternatives as in (8)c. Being ‘counter-presuppositional,’ contrastive focus is assumed to be more complex in its property especially in its pragmatic import and thus have a stronger effect on the discourse than completive focus.

In an elicitation experiment with 132 native speakers of Korean (ages 21-27), Lee (2006a) tested the effects of Animacy, Definiteness, and Focus in object CE and found that all three factors simultaneously and independently determine object CE, with Focus having a greater effect than Animacy and Definiteness, and Animacy having a greater effect than Definiteness. Statistical analysis using binary logistic regression showed that Focus, Animacy, and Definiteness all significantly influenced native judgments on CE ( $p < .001$ ,  $p < .001$ ,  $p < .01$ , respectively). Unmarked objects were more frequent in the Non-contrastively focused (71%) than in the Contrastively focused (29%) condition, in the Inanimate (57.7%) than the Human

(42.3%) condition, and in the Indefinite (52.1%) than the Definite (47.9%) condition as shown in (9).

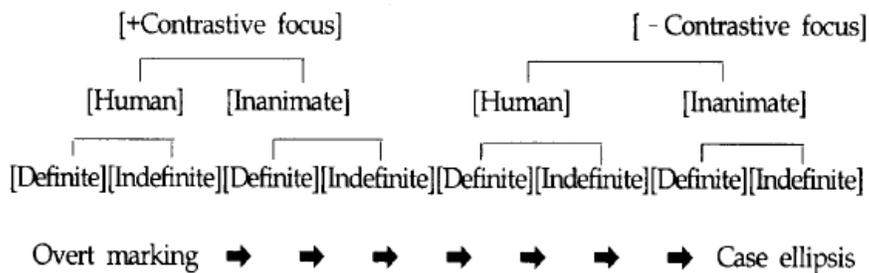
(9) Non-contrastive focus (71%) > Contrastive focus (29%)

Inanimate (57.7%) > Human (42.3%)

Indefinite (52.1%) > Definite (47.9%)

In addition, object CE occurred most frequently in the [Non-contrastive focus, Inanimate, Indefinite] condition, and least in the [Contrastive focus, Human, Definite] condition as shown in (10). That is, high-prominence values of each variable favored overt marking of objects whereas low-prominence values favored CE. The cline shown in (10) suggests that judgments on object CE are not categorical but gradient statistical preferences.

(10) Preference structure for object forms (Lee 2006a: 221)



Lee explains the predominant effects of Focus in terms of the two basic functions of case-marking (Mallinson & Blake, 1981; Comrie, 1989; Song, 2001) and the overall character of the Korean case system, which values the *identifying* function of case-marking more highly than the *distinguishing* function. The identifying function uses case morphology to encode specific

semantic information and also to mark strong arguments on the basis of discourse prominence (de Hoop & Narasimhan 2004). For example, the locative case in Finnish that functions like English prepositions and the ergative case in Manipuri that marks agentivity have this function. The distinguishing function, on the other hand, uses case morphology to distinguish two arguments in a transitive clause that are likely to be confused (e.g. subjects and objects) (Aissen, 2003). The identifying function of case-marking predicts that objects with low discourse prominence in focus will undergo CE while those with high prominence will be case-marked. The distinguishing function marks objects with high features or subjects with low features in the markedness hierarchy to maximally differentiate subjects and objects, and predicts that objects with high referential prominence in markedness will be case-marked while objects with low prominence will undergo CE. This functional account of CE predicts that morphologically more complex forms (i.e., overt marking of case) are motivated by conceptually complex notions that contain more marked content. Parallels can be found in other languages with differential marking,<sup>9</sup> and Lee (2006b) describes this correlation between structural and conceptual complexity as “conventionalization of the same universal pragmatic tendency to mark disharmonic elements (e.g., high prominence objects and low-prominence subjects)” (p.91).

As such, Lee successfully integrates factors in information status and markedness of arguments into a unified functional account, and the robust empirical findings lend credibility to this multi-factor functional approach of Korean CE. However, it is not clear whether or not such analysis can be extended to subject CE, and Lee’s experiment needs to be also conducted with subject NPs. If all three factors in Lee’s work are also significant predictors of subject CE with

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<sup>9</sup> An example mentioned in Lee (2006a) is Dyirbal that marks case for first and second person when they function as objects but not subjects. On the other hand, third persons receive case when in the subject position but are not case-marked as objects.

Focus having a stronger effect than Definiteness or Animacy, Lee's analysis may be able to provide a unified framework for CE. In order to examine monolingual and bilingual acquisition of the present phenomenon, it is important to put together a systematic account of Korean CE in which both subject and object CE are subsumed under a unified analysis. Therefore, I have conducted an experiment that examines native speaker judgments of subject CE under Lee's functional multi-factor analysis of CE in the next section.

## 2.2 TOWARDS A UNIFIED ACCOUNT OF KOREAN CE

An experiment was conducted to validate the tenability of Lee's analysis for subject CE. The main goal of the experiment was to determine if Lee's multi-factor functional analysis for object CE also holds for subject CE.

### 2.2.1 Experiment 1: An Examination of Subject CE within Lee's (2006a) Framework

In this experiment, the written elicited production task that was conducted with object NPs in Lee (2006a) was replicated with subject NPs. Sixty adult native speakers of Korean (ages 18-50) were recruited and tested in Seoul, Korea. As in Lee's previous study, the three variables of Focus (Contrastive focus vs. Non-Contrastive focus), Animacy (Human vs. Inanimate), and Definiteness (Definite vs. Indefinite) generated eight experimental conditions as shown in Table 2.1. Whereas Lee's study had 10 items per condition, the present study was smaller in scale and had five items per condition with no fillers, 40 items altogether. Similar to Lee's study, each participant was given a paper questionnaire that contained short conversations between two speakers. The choice of case-marked or bare forms of a subject was given within the conversations, and the participants were asked to choose one form that sounded more natural in

the context of the conversation as intuitively and quickly as possible. A sample item from the questionnaire is provided in (11) below:

**Table 2.1 Experiment 1: Experimental conditions of subject CE**

	Conditions	abbreviation
1	Contrastive focus, Human, Definite	CHD
2	Contrastive focus, Human, Indefinite	CHI
3	Contrastive focus, Inanimate, Definite	CID
4	Contrastive focus, Inanimate, Indefinite	CII
5	Non- Contrastive focus, Human, Definite	NHD
6	Non- Contrastive focus, Human, Indefinite	NHI
7	Non- Contrastive focus, Inanimate, Def	NID
8	Non- Contrastive focus, Inanimate, Indef	NII

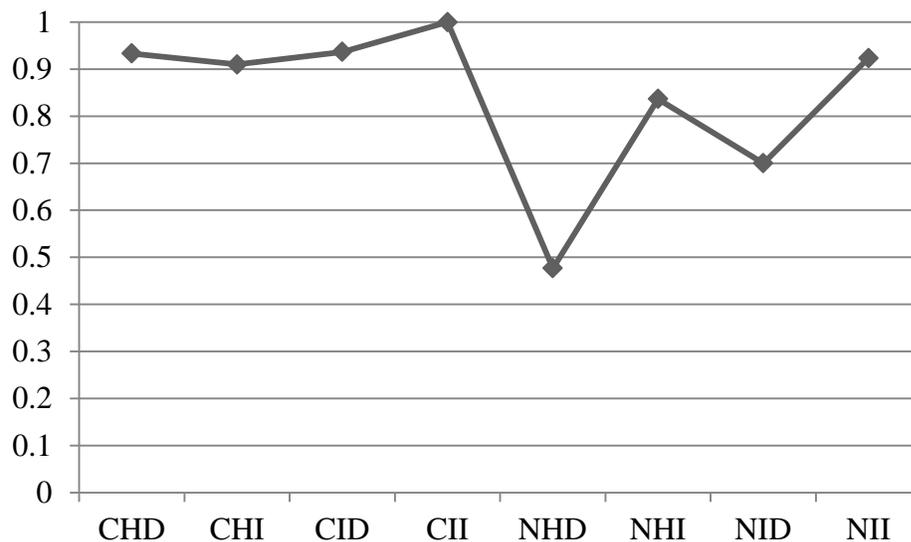
(11) Sample item: [+Contrastive focus, Human, Definite] condition

- A: Way ssuleyki an pely-ess-e?  
 Why trash NEG throw-away-PST-DECL  
 ‘Why didn’t you take out the trash?’
- B: Ecey ne-ka/ne-Ø hanta hay-ss-canh-a!  
 Yesterday you-NOM/you-Ø do say-PST-DECL  
 ‘You said you-NOM/you-Ø were going to yesterday!’

The responses were coded as ‘1’ when the subject NP that was chosen was case-marked and ‘0’ when the NP was bare. The mean scores in each condition displayed in Table 2.2 and Figure 2.1 show that subject NPs were almost always overtly case-marked in Contrastive focus conditions whereas a gradient pattern surfaced in Non-contrastive focus conditions in which Human and Definite conditions were relatively more prone to CE.

**Table 2.2 Mean scores of case-marked subjects in written elicited production (Exp. 1)**

CHD	CHI	CID	CII	NHD	NHI	NID	NII
0.93	0.91	0.94	1.00	0.48	0.84	0.70	0.92



**Figure 2.1 Mean scores of case-marked subjects in written elicited production (Exp. 1)**

Following Lee (2006a), the responses were analyzed using binary logistic regression in SPSS 17.0 to analyze the relationship between a binary dependent variable (the alternation between case-marking vs. case ellipsis) and a set of independent variables (Focus, Animacy, and

Definiteness). All three factors significantly influenced native judgments on subject CE ( $p < .001$  for all three factors) as has been found for object CE. When the relative frequency of unmarked subjects was examined, unmarked forms were more frequent in the Non-contrastive focus condition (82%) than in the Contrastive focus condition (18%) as has been found for objects. Unlike what has been found for objects, however, bare subjects were more frequent in the Human condition (65%) than the Inanimate condition (35%) and in the Definite condition (74%) than the Indefinite condition (26%) as can be predicted by the “markedness reversal”—the state in which one form that is relatively marked in one context is relatively unmarked in another (Battistella, 1996)—in the effects of animacy and definiteness hierarchies between subjects and objects (Aissen, 2003). Subject CE occurred most frequently in the [Non-Contrastive focus, Human, Definite] condition and least frequently in the [Contrastive focus, Inanimate, Indefinite] condition as indicated by the mean scores in Table 2.2 and frequency counts and percentages in Table 2.3.

**Table 2.3 Frequency count and percentage of bare subjects in each condition (Exp. 1)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
Count	20	27	19	2	157	49	90	23
%	7	9	6	1	52	16	30	8

Similar to what Lee has done in her experimental study, the frequency of bare subjects in each condition was used to predict the relative strength of each factor using a non-parametric test—the chi-square test. The effect of Focus was stronger than Definiteness when the subject is Human ( $X^2 = 13.77$ ,  $p < .001$ ) but not when it is Inanimate ( $X^2 = .41$ ,  $p = .522$ ). Similarly, Focus

was stronger than Animacy when the subject is Definite ( $X^2 = 54.55$ ,  $p < .001$ ), but not when it is Indefinite ( $X^2 = .35$ ,  $p = .555$ ). That is, the relative strength of Focus was greater than Definiteness and Animacy when the subject had high prominence values in Animacy and Definiteness, respectively. Likewise, the relative strength between Animacy and Definiteness was found to depend on the prominence value of Focus in the subject NP. Definiteness was significantly stronger than Animacy when the subject was not contrastively focused ( $X^2 = 15.74$ ,  $p < .001$ ), but no difference in relative strength could be found when it was contrastively focused ( $X^2 = 1.51$ ,  $p = .220$ ). Unlike what has been found for object CE where the relative strength between different factors was significant in all comparisons (Lee, 2006a), the relative strength between two factors in subject CE hinged on the factor that is being controlled: The relative strength between factors was significant when the control variable is favorable to subject CE (Non-contrastive focus, Human, Definite) but insignificant when it is not (Contrastive focus, Inanimate, Indefinite). Nevertheless, the results of the significant relationships suggest that Focus is the strongest factor followed by Definiteness and then Animacy. These results are summarized in Table 2.4.

Going back to Lee's functional account of CE and the notion of discourse and referential prominence, the results of Experiment 1 found bare subjects to be significantly more frequent in high-prominence conditions for Animacy and Definiteness but low in Focus, while case-marked forms exhibited the opposite pattern. This is different from object CE conditions for which high prominence in *all* three variables favored overt marking and low prominence in all three favored CE. However, such subject-object asymmetry is expected in light of the markedness reversal in the effects of Animacy and Definiteness hierarchies between subjects and objects (Aissen, 2003). In addition, Focus had the strongest effect in subject CE as has been found for object CE, which

signals the precedence given to the identifying function over the distinguishing function of case-marking in Korean.

**Table 2.4 Relative strength of factors in subject CE (Exp. 1)**

Factor in control	Strength relationships
CF	Definiteness > Animacy, $X^2 = 15.74$ , $p < .001$
Non-CF	None
Human	Focus > Definiteness, $X^2 = 13.77$ , $p < .001$
Inanimate	None
Definite	Focus > Animacy, $X^2 = 54.55$ , $p < .001$
Indefinite	None
Overall	Focus > Definiteness > Animacy

In sum, the results of the elicitation task in Experiment 1 found that the factors of Focus, Animacy, and Definiteness simultaneously determine subject CE with Focus having a greater effect than Animacy and Definiteness as has been found for object CE. However, the relative strength of Animacy and Definiteness was reversed, with Definiteness having a greater effect than Animacy. While the reason for such reversal is not clear, these results suggest that Definiteness may be a better predictor than Animacy for determining the prototypicality of subjects, while Animacy is a better predictor than Definiteness for determining the prototypicality of objects. Moreover, unlike the case of object CE where the three factors were shown to *independently* determine CE, the factors were found to hinge on one another in subject CE, as the relative strength between two different factors depended on the third factor that is

being controlled. Despite such differences, the overall results of the experiment support Lee's analysis of CE, and both object and subject CE can be subsumed under Lee's multi-factor functional account. The similarities and differences between object and subject CE are summarized in Table 2.5 below:

**Table 2.5 Object CE vs. Subject CE**

	Object CE	Subject CE
Similarities	Focus > Markedness	
Differences	Animacy > Definiteness	Definiteness > Animacy
	Independent Effect	Dependent Effect

### 2.2.2. A Valid Framework for Korean CE

The results of Experiment 1 confirmed the tenability of H-J Lee's (2006a) analysis of CE for not only objects but also subjects. Despite a few notable differences between subject and object CE, the functional account holds for both types of CE with the identifying function taking precedence over the distinguishing function of case-marking. However, it has been much debated whether or not object and subject CE can fall under the same structural analysis. Kuno (1972) argues that the nominative marker cannot be dropped in Japanese, and that bare NPs in the subject position act as topics, not subjects. Similarly, Kanno (1996) adopts the theoretical explanation of Empty Category Principle (ECP) (Rizzi, 1990) and claims that subjects are assigned case by the nominative case-marker, which must thus be obligatorily present in subject NPs. Objects, on the other hand, are assigned case by the verb and need not be marked by case. Subject-object asymmetries in CE are further explored by Ahn and Cho (2007) who offer a

formal approach that proposes structural differences between bare subjects and bare objects. Bare objects are seen to form a complex predicate with the subcategorizing verb whereas bare subjects are analyzed as Left-Dislocated NPs that are closely related to discourse properties. That is, the different syntactic positions (VP-internal vs. VP-external) are predicted to account for differences in semantic/pragmatic properties of bare NPs that restrict bare subjects to be specific or topical and case-marked objects to receive a focalized reading. As such, studies have argued that the two types of CE must be examined separately as phenomena with different sets of structural properties.

While the results of Experiment 1 do not elucidate the syntactic status or structural properties of case-marked and bare NPs in subject vs. object CE,<sup>10</sup> it was found that both types of CE can be subsumed under a unified functional analysis in which multiple factors of Focus, Animacy, and Definiteness have a significant effect and the identifying function precedes the distinguishing function of case-marking. Moreover, native judgments formed gradient statistical preferences in not only object CE but also in subject CE when the subject NP was not contrastively focused contra assumptions of formal accounts that predict subject CE to exhibit categorical distinctions. While further work is needed to determine what additional factors<sup>11</sup> other than Focus, Animacy, and Definiteness may have a systematic effect on Korean CE, Lee's functional analysis of CE was found to offer a reliable framework that can be used to examine monolingual and bilingual acquisition of the present phenomenon in this dissertation.

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<sup>10</sup> The aspects of Korean CE that this study is mainly concerned with are interpretative rather than structural.

<sup>11</sup> Despite numerous investigations in Korean CE, much still needs to be examined to further understand the complicated nature of this phenomenon. The role of modifiers, classifiers, types of verbs, and theta-roles in Korean CE, for example, has not yet been extensively examined and can be pursued in future studies.

### 2.3. FURTHER CONSIDERATIONS IN KOREAN CE

In a more recent work, H-J Lee (2011) observed that earlier experimental studies were not balanced for subtypes of contrastive focus and conducted another experimental study in which contrastive focus is divided into “replacing focus”, “selecting focus”, and “information focus”. Replacing focus explicitly contradicts an alternative that is mentioned in the previous utterance as in (12) whereas selecting focus in (13) does not contradict but selects one of the two alternatives in the previous utterance. Information focus in (14) implicates membership in a set but does not have a contrast set and is the least contrastive of the three.

(12) Replacing focus (Lee 2011: 24)

A: Jinmi-ka computer(-lul) sa-ss-e.

Jinmi-Nom computer(-Acc) bought

‘Jinmi bought a computer.’

B: Aniya, hywutaephon(-ul) sa-ss-e.

No, cellphone(-Acc) bought.

‘No, (she) bought a cellphone.’

(13) Selecting focus (Lee 2011:24)

A: Jinmi-ka computer(-lul) sa-ss-e, hywutaephon(-ul) sa-ss-e?

Jinmi-NOM computer(-Acc) bought, cellphone(-Acc) bought?

‘Did Jinmi buy a computer or a cellphone?’

B: Computer(-lul) sa-ss-e.

Computer(-Acc) bought

‘(She) bought a computer.’

(14) Information focus (Lee 2011: 25)

A: Did you finish packing what you need?

B: Yes, I packed toothpaste and a hair-dryer. But I forgot my toothbrush.

Four criteria that contribute to contrastiveness are discussed: a) membership in a set, b) limited set of alternatives, c) exhaustiveness, and d) explicit contradiction of alternatives. Replacing focus meets all four criteria of contrastiveness and is seen to be the strongest subtype of contrastive focus. Selecting focus does not explicitly contradict other alternatives, and information focus meets only the first requirement for contrastiveness. Due to the different degrees of contrastiveness, replacing focus is predicted to be most frequently case-marked, and selecting focus is predicted to be more frequently case-marked than information focus.

In addition to the strength of contrastiveness, the “degree of accessibility” that refers to the degree to which the nominal in question is activated in one’s mental representation is also seen to be implicated in CE. In accordance with Hawkins’ (2004) proposal that intricately ties the “economy of expression”, which prompts speakers to only provide information that is necessary (Grice, 1975) to the degree of accessibility, Lee introduces an alternative account of CE in which entities with a higher degree of accessibility in terms of recent and explicit mention (i.e., mention of the entity in the same or previous utterance) are predicted to be more prone to CE. Of the three subtypes of contrastive focus mentioned above, selecting focus in which the referent is explicitly mentioned in the previous utterance is seen to have the highest accessibility. To test the relative strength between contrastive strength and discourse accessibility, Lee conducted an elicited

production task and an acceptability judgment task with 90 native speakers of Korean that examined native judgments on the alternation between case-marked and bare objects. In the results, speakers exhibited object CE most frequently in the selecting focus condition and least frequently in the replacing focus condition. A higher number of objects were case-marked than bare in the replacing and information focus conditions whereas more objects were bare than case-marked in the selecting focus condition. Such results suggest that both contrastive strength and discourse accessibility interact to determine CE with discourse accessibility having a greater effect than contrastive strength. Lee discusses the role of accessibility in CE within the general principle of Minimize Forms (Hawkins, 2004) in (15) that prefers reduction in form (i.e., case ellipsis) for processing ease and concludes that it is not only the distinguishing and identifying functions but also form minimization and processing efficiency that significantly influence case variation.

- (15) *Minimize Forms*: The human processor prefers to minimize the formal complexity of each linguistic form F and the number of forms with unique conventionalized property assignments, thereby assigning more properties to fewer forms. These minimization apply in proportion to the ease with which a given property P can be assigned in processing to a given F. (Hawkins 2004: 38)

The results of Lee's (2011) study suggest that accessibility of arguments also plays a significant role in CE for reasons of linguistic economy, and that distinctions between focus types must be more fine-grained in future studies. The present dissertation will reflect this interaction found between strength of contrastiveness and degree of accessibility and control for these further constraints in its experiments.

## 2.4 SUMMARY

In this chapter, HJ Lee's (2006a, 2006b) multi-factor functional analysis that involves the factors of Animacy, Definiteness, and Focus in object CE was tested for subject CE. Lee's account was found to also hold for subject CE, and thus this analysis offers an adequate framework that could be used to examine monolingual and bilingual acquisition of Korean CE in this dissertation. Moreover, the interaction between strength of contrastiveness and degree of accessibility in different subtypes of focus (Lee, 2011) was reported to have a significant effect on CE and will thus be controlled as a further constraint in subsequent experiments of the present dissertation.

## CHAPTER 3

### L1 ACQUISITION OF KOREAN CASE ELLIPSIS

This chapter will discuss previous research related to L1 acquisition of case ellipsis (CE). No previous study has yet examined native language acquisition of CE, and thus an experimental study (Experiment 2) with monolingual children was conducted in this chapter to determine when and how Korean-speaking children come to acquire CE. It was found that Korean-speaking children, ages 5-7, are capable of employing and integrating the relevant factors of CE in an adult-like manner, which has implications for L1 acquisition of linguistic phenomena that involves the interaction of multiple types of information. The results of this chapter also have implications for bilingual acquisition, heritage language acquisition in particular, and could provide possible reasons for differences between early vs. late bilingual acquisition of the present phenomenon that will be investigated in the following chapters.

#### 3.1 NATIVE LANGUAGE ACQUISITION OF KOREAN CASE

While L1 acquisition of the Korean case-marking system has been previously investigated, no study has yet examined how Korean-speaking children acquire the phenomenon of CE. The complexities in the case marking system pose challenges for young Korean-speaking children as it allows multiple nominative constructions, has no one-to-one correspondence with grammatical functions (i.e., an object can be marked with a nominative case at times), and interacts with word order (Chung, G., 1994). Studies have found that Korean children generally produce the nominative and accusative case markers between 1;8–3;0 (Cho, 1982; Zoh, 1982), but do not fully comprehend them until the age of four (Cho, 1982; Lee & Pae, 1989). Similarly, Japanese

children also fail to understand case marking until the age of four or five (Hakuta, 1982). Such late acquisition of the case marking system in Korean and Japanese is seen to be due to the optionality and irregularity of case markers, as Turkish children whose case marking system is highly regular and obligatory were found to acquire case marking in comprehension before the age of two (Slobin & Bever, 1982).

Based on longitudinal diary notes and tape-recorded data of four Korean children, G-H Chung (1994) found that the nominative marker *-ka* is acquired five months earlier (1;7-2;0) than the accusative marker *-lul*. Four developmental stages of Korean children's acquisition of the case-marking system are posited based on the data: In the first stage, which falls during the two-word stage (1;7-2;0), only *-ka* is produced for subjects and no case marker occurs with objects. Then, Korean children start overextending *-ka* to all NPs (accusative, dative, genitive, and comitative) in the second stage (2;0-2;4), which is similar to what Cook (1985) and Clancy (1985) have found for Japanese children. The third stage (2;5-2;7) is called the *Accusative stage* where the accusative marker *-lul* appears but is used only with the second NP of a sentence. The markers always appear as an ordered pair governed by a "*ka-lul* ordering constraint" as the children seem to be only using the positional cue of the NP when assigning case. During this stage, children would not have acquired the grammatical functions of the case markers, as they frequently mark the NPs incorrectly in sentences with stative transitive verbs and mostly use canonical word order. Adult-like system is acquired in the last stage (2;6-3;0) where they appear to understand the grammatical functions of case marking although they do make occasional errors. Examples of the four stages provided by Chung are demonstrated in (16).

(16) Stage 1: Only nominative –ka is produced

- a. Emma-**ka** hay-cwu-e.  
Mommy-NOM do-give-IMP  
'Do (it for me), mommy.'
- b. Koki-∅ mek-e.  
Meat-∅ eat-DECL  
'(I) eat meat.'

Stage 2: Overextension of nominative –ka to all NPs (Accusative, Dative)

- c. \*Hyucki-**ka** ppangppangi-**ka**[lul] than-ta.  
Hyuck-NOM car-NOM [ACC] ride-DECL  
'Hyuck is riding a car'
- d. \*Hyucki-**ka** [hantey] cwul-ka.  
Hyuck-NOM [DAT] give-DECL.  
'Give (it) to Hyuck'

Stage 3: Accusative stage

- e. Emma-**ka** ankyeng-**ul** ssu-e.  
Mommy-NOM glasses-ACC wear-DECL  
'Mommy wears glasses'
- f. \*Hyucki-**ka** mintuley-**lul** [ka] iss-e.  
Hyuck-NOM dandelion-ACC be-DECL  
'Hyuck has a dandelion'

Stage 4: Adult-like use

- g. Hyucki-**ka** kong-**ul** tenci-e.

Hyuck-NOM ball-ACC throw-DECL

‘Hyuck throws a ball’

h. Mwul-**ul** Hyucki-**ka** mek-e.

Water-ACC Hyuck-NOM eat-DECL

‘Hyuck is drinking water’

In addition to the four stages, Chung found that children use word order cues (i.e., the position of the NP in the word order) to acquire case-marking unlike Pinker’s (1984) semantic bootstrapping model, in which children acquire case based on thematic roles. The word order in caregiver speech is predominantly the canonical SOV order, and the children mostly use this order throughout all the developmental stages. Chung claims that Korean children use the word order cue, which is more salient and has higher cue validity than other cues, to acquire the case-marking system of Korean.

Using longitudinal adult-child interactions that were audio-recorded at five children’s homes, Y-J Kim (1997) also found that Korean children produce the nominative marker fairly early between 1;8 and 2;0 and the accusative marker much later between 1;11 and 2;3 for three children and between 2;6 and 2;8 for two children. Similar to Chung’s (1994) findings, no case particle was produced at the one-word stage. Moreover, when the rate of CE was observed in both children’s and adults’ speech, the rate of object CE was significantly higher than that of subject CE. Kim attributes this asymmetry to the difference in input frequency by primary caretakers who were found to drop the accusative markers more often than supply them in adult-child interactions. While Kim compares the rate of object and subject CE in children’s speech, it is not yet clear *when* the children acquire the properties of this phenomenon if they have acquired

it at all.

Previous studies have examined L1 acquisition of other case-related phenomena such as multiple nominative constructions and scrambling (Kang, 2005), but no study has yet investigated L1 acquisition of CE. It can be predicted that the children will come to acquire the implicit properties of CE at a relatively later stage of acquisition because it involves the interaction of syntactic, semantic, and discourse principles that assumes knowledge of information structure and necessitates integration of contextual information. Previous studies in L1 acquisition have found delays in interpretation of pronominals (Avrutin, 1999), the use of null or overt pronouns (Serratrice, 2009), interpretative effects of scrambling (Krämer, 2000; Phillip, 2003), and interpretation of inflected infinitives in European Portuguese (Pires, Rothman, & Santos, 2011) all of which involve the integration of discourse-pragmatic properties. Also, it seems plausible that the children will come to acquire CE after the age of four or five only once the case-marking system is in place, but no study has examined such assumptions. Moreover, it is unclear whether children acquire CE by computing statistical information in the input or are equipped with innate prior grammatical knowledge that guides them to acquire these constructions under impoverished input as is the case of multiple nominative constructions and scrambling (Kang, 2005). While exploring these questions is beyond the scope of this dissertation, an experiment was conducted to determine whether young Korean-speaking children possess implicit knowledge of CE, and how they compare to adult native speakers of Korean.

### 3.2 EXPERIMENT 2: L1 CHILDREN'S ACQUISITION OF KOREAN CE

In Experiment 2, L1-acquiring Korean children's production of CE was examined using an

oral picture description task. The following questions were addressed.

- 1) Do L1-acquiring children, ages 5-7, show sensitivity to multiple factors that lead to adult-like knowledge of Korean CE?
- 2) If not, what types of cues do they use to acquire the phenomenon, and what developmental stages do the children pass through?

### 3.2.1 Method

#### 3.2.1.1 Participants

Twenty-three Korean-speaking children, ages 5-7, (15 Male, 8 Female; Mean age = 5.35) and 20 Korean-speaking adults, ages 19-35, (7 Male, 13 Female; Mean age = 27.05) who were born in and are residing in Korea participated in an oral picture description task that was conducted in Seoul, Korea. The participants' oral proficiency was measured in the form of story-telling in which the participants were asked to narrate a story after reading a 'frog story' picture book. The stories were audio-recorded on a digital voice recorder and transcribed, and the score was calculated based on the rate (%) of error-free utterances. Exact self-repetitions or repetitions of the experimenter's utterance were excluded along with incomplete utterances or single-word responses. All participants were at ceiling in their oral proficiency with a mean score of 96.7 out of 100 (Range: 91-100, SD: 2.78) for children and a mean score of 98.6 (Range: 97-100, SD: 0.98) for adults.

#### 3.2.1.2 Oral picture description task

The variables of Focus, Animacy, and Definiteness that were used in Lee's (2006b) study and Experiment 1 were also examined in Experiment 2. The three variables generated eight

experimental conditions, and there were four items per condition for subject and object NPs, resulting in a total of sixty-four test items. The experimental conditions are shown in Table 3.1, together with the abbreviations used to refer to the distinct test conditions.

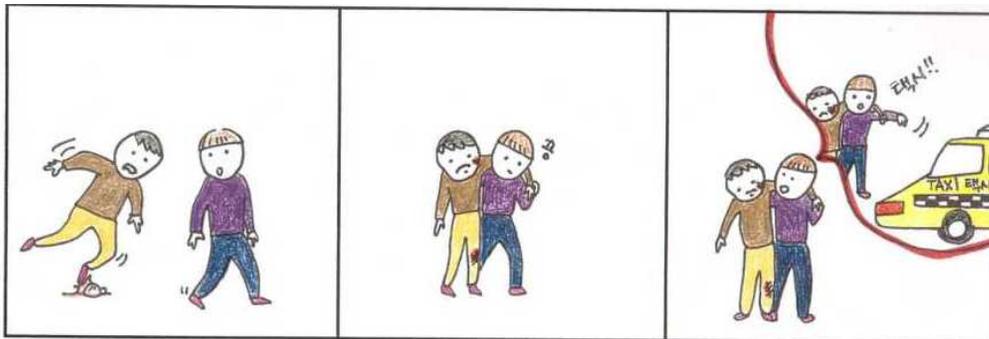
**Table 3.1 Experimental conditions**

Object	Subject
Contrastive focus (CF), Human, Definite (OCHD)	CF, Human, Definite (SCHD)
CF, Human, Indefinite (OCHI)	CF, Human, Indefinite (SCHI)
CF, Inanimate, Definite (OCID)	CF, Inanimate, Definite (SCID)
CF, Inanimate, Indefinite (OCII)	CF, Inanimate, Indefinite (SCII)
Non-CF, Human, Definite (ONHD)	Non- CF, Human, Definite (SNHD)
Non-CF, Human, Indefinite (ONHI)	Non-CF, Human, Indefinite (SNHI)
Non-CF, Inanimate, Def (ONID)	Non- CF, Inanimate, Def (SNID)
Non-CF, Inanimate, Indef (ONII)	Non- CF, Inanimate, Indef (SNII)

Participants saw a series of comic strips each of which had three consecutive pictures. The third/last picture in each item always contained a speech bubble with pictures, and the participants were asked to imagine what the character is saying and to say it out aloud using natural informal speech as if they were the character him/herself. The degree of Definiteness (proper noun vs. nonspecific NP) and Animacy (human vs. inanimate) was controlled, and contrastive focus involved explicitly contradicting an entity within a limited set of alternatives that is shown in one of the first two pictures. The stimuli was not controlled with respect to the relative proto-typicality of the subject and object pair in each item. However, the subject NPs in

Object conditions were Definite (pronouns or proper nouns) in all but one item (97%) and Human in all but two items (94%) that had animate subjects (*dog* and *monkey*). Also these subject NPs were all topics (i.e., what is being talked about) that were either available in the preceding pictures or the speaker/hearer himself. As for Subject conditions, only three items contained transitive verbs with Inanimate and Definite objects, and the rest of the items (90%) contained intransitive verbs that required no object. In other words, although the relative prototypicality of subject-object pairs in test items was not controlled, subjects in Object conditions and objects in Subject conditions were almost always constant or absent. A sample item is provided in (17) below (see Appendix D for more sample questions).

(17) ONII condition: [Object, Non-CF, Inanimate, Indefinite]

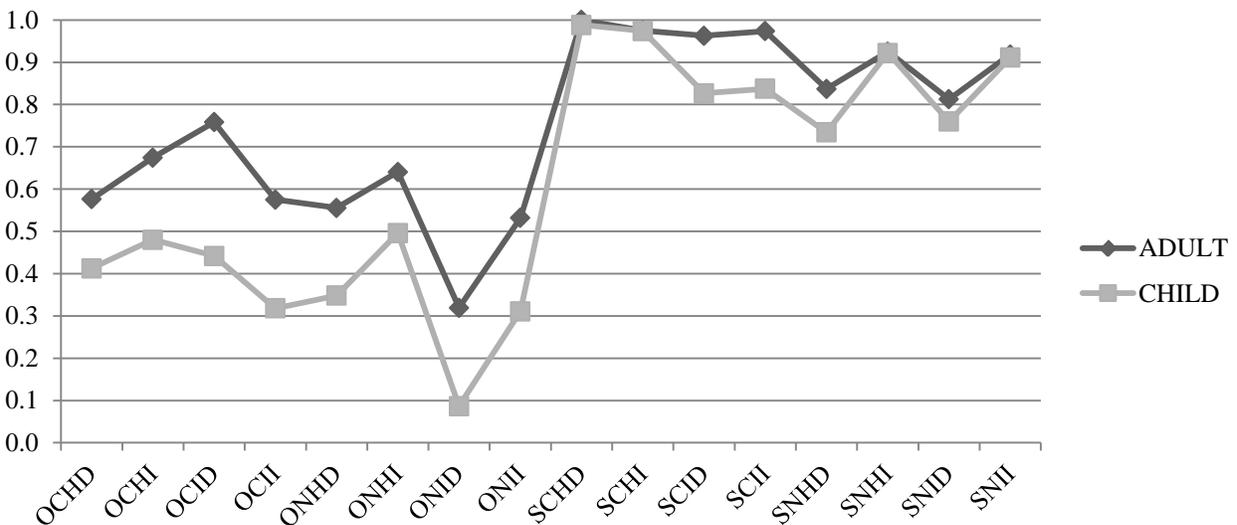


In this particular test item, an expected response would be “Let’s call a taxi!” or “Should I call a taxi?” After the response, the participants were given two word cards with the relevant noun *thayksi* (‘taxi’) and the verb *pwulu-ta* (‘to call’) in the declarative form in Korean and were asked to use these two words in their utterance to describe the character’s speech if they have not done so in the previous utterance. If they had already used the identical words in their utterance, they

were instructed to go onto the next item. Instructions and four practice items were provided in the beginning of the task. All responses were audio-recorded on a digital voice recorder, transcribed, and coded for analysis. Participants' answers were coded as '1' when the object or subject NP in the utterance was accompanied by a case-marker and '0' when the NP was bare.

### 3.2.2 Results

Overall, the results of the study indicate that Korean-speaking children, ages 5-7, have acquired sensitivity to the factors of interest and are capable of employing these factors in an almost adult-like manner, albeit with certain differences. The mean scores in the oral picture description task in Figure 3.1 and Tables 3.2 and 3.3 show children closely mirroring adults' production of case-marked NPs although they provided fewer case-markers overall.



**Figure 3.1 Mean scores of case-marked forms in the Oral Picture Description Task (Exp. 2)**

**Table 3.2 Mean and SD values of case-marked objects in production (Exp. 2)**

	OCHD	OCHI	OCID	OCII	ONHD	ONHI	ONID	ONII
Adult	.58 (.45)	.67 (.43)	.76 (.43)	.58 (.50)	.56 (.48)	.64 (.48)	.32 (.37)	.53 (.45)
Child	.41 (.49)	.48 (.47)	.44 (.49)	.32 (.47)	.35 (.43)	.50 (.41)	.09 (.25)	.31 (.46)

**Table 3.3 Mean and SD values of case-marked subjects in production (Exp. 2)**

	SCHD	SCHI	SCID	SCII	SNHD	SNHI	SNID	SNII
Adult	1.00 (0)	.98 (.08)	.96 (.09)	.97 (.08)	.84 (.30)	.93 (.17)	.81 (.29)	.92 (.27)
Child	.99 (.05)	.97 (.11)	.83 (.36)	.84 (.22)	.73 (.41)	.92 (.23)	.76 (.35)	.91 (.19)

As indicated by the standard deviation values in Tables 3.2 and 3.3, both groups showed a fair amount of variability in object CE but were less ambivalent in subject CE, adults more so than children. The adults almost always marked subject NPs with the nominative marker especially in CF conditions as has been found in Experiment 1. Both adults and children dropped case frequently in the SNID and SNHD conditions and least frequently in the SCHD condition, which mainly differs in Focus. As for object CE, adults produced bare objects most frequently in the ONID condition and least frequently in the OCID condition, which is suggestive of the prevailing influence of Focus. The children also dropped the accusative marker most frequently in the ONID condition like the adults and least frequently in the ONHI condition, which differs from ONID in Animacy and Definiteness. The percentage and frequency count of bare NPs in each condition are summarized in Tables 3.4 and 3.5.

**Table 3.4 Percentage and frequency count of bare objects in each condition (Exp. 2)**

	OCHD	OCHI	OCID	OCII	ONHD	ONHI	ONID	ONII
Adult	13%	10%	7%	13%	14%	10%	20%	14%
	(32)	(26)	(18)	(34)	(35)	(25)	(50)	(36)
Child	11%	10%	11%	15%	11%	9%	19%	15%
	(45)	(40)	(43)	(58)	(42)	(34)	(76)	(59)

**Table 3.5 Percentage and frequency count of bare subjects in each condition (Exp. 2)**

	SCHD	SCHI	SCID	SCII	SNHD	SNHI	SNID	SNII
Adult	0%	4%	7%	4%	26%	13%	33%	13%
	(0)	(2)	(3)	(2)	(12)	(6)	(15)	(6)
Child	1%	3%	14%	14%	25%	9%	22%	12%
	(1)	(2)	(10)	(10)	(17)	(6)	(15)	(8)

When the relative frequency of bare NPs was examined within the conditions of each factor using descriptive statistics and the chi-square test, bare forms were more frequent in Non-contrastive focus (Non-CF) than Contrastive focus (CF) conditions, Inanimate than Human, and Definite than Indefinite for both groups in object and subject CE as shown in Table 3.6. Children significantly differentiated the conditions within almost all factors in both object and subject CE (Definiteness in object CE approached significance), but the differences between conditions of Definiteness in object CE and Animacy in subject CE were not significant in adult judgments.

**Table 3.6 Frequency (%) of bare forms within each factor (Exp. 2)**

		Adults	Children
Obj	Focus	Non-CF (57%) > CF (43%) ** ( $\chi^2 = 11.49, p = .001$ )	Non-CF (53%) > CF (47%) ** ( $\chi^2 = 8.90, p = .003$ )
	Animacy	Inanim (54%) > Human (46%) * ( $\chi^2 = 3.20, p = .074$ )	Inanim (59%) > Human (41%) *** ( $\chi^2 = 12.73, p < .001$ )
	Definiteness	Definite (53%) > Indefinite (47%) ( $\chi^2 = 2.06, p = .151$ )	Definite (52%) > Indefinite (48%). ( $\chi^2 = 3.62, p = .057$ )
Sbj	Focus	Non-CF (85%) > CF (15%) *** ( $\chi^2 = 24.59, p < .001$ )	Non-CF (67%) > CF (33%) ** ( $\chi^2 = 7.49, p = .006$ )
	Animacy	Inanim (57%) > Human (43%) ( $\chi^2 = .78, p = .376$ )	Inanim (62%) > Human (38%) ** ( $\chi^2 = 9.72, p = .002$ )
	Definiteness	Definite(65%) > Indefinite (35%) * ( $\chi^2 = 4.845, p = .028$ )	Definite (62%) > Indefinite (38%) * ( $\chi^2 = 5.95, p = .015$ )

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

It can be noted that the expected markedness reversal in the effects of Animacy and Definiteness between subjects and objects that was found in Experiment 1 was not manifested in these results. That is, previous studies with adult native speakers of Korean found object CE to occur more frequently in the Indefinite than the Definite condition, and subject CE to occur more frequently in the Human than the Inanimate condition. In this experiment, however, CE was more prevalent in the Inanimate and Definite conditions regardless of NP type.

The frequency of CE in each condition (Tables 3.4 and 3.5) was used to predict the relative strength of each factor using the chi-square test, and adults and children exhibited similar strength relationships. Not all comparisons were significant, but the significant relationships in object CE revealed the prevailing effect of Focus followed by Animacy then Definiteness for both groups as shown in Table 3.7. In subject CE, the effect of Focus was greater than Definiteness, and Definiteness was greater than Animacy for both groups. As such, Focus (the identifying function) had a stronger effect than factors of markedness (the distinguishing function) in object and subject CE for both groups as expected. Moreover, Animacy was stronger than Definiteness in object CE but Definiteness was stronger than Animacy in subject CE, which matches the results of Lee (2006a) and Experiment 1.

The above results were further examined using logit mixed models in R (version 2.15.0). This method of statistical analyses was used instead of binary logistic regression that was used in Lee (2006a) and Experiment 1, for it allows for better control of random effects, such as subject and item effects. The results of logit mixed models indicate that children are sensitive to the three factors and their interactions to a greater degree than adults in both object and subject CE as shown in Table 3.8. In the adults' judgments of object CE, there was a main effect of Focus ( $z(599) = 4.07, p < .001$ ) with CE occurring more frequently in Non-CF conditions, and Animacy ( $z(599) = 1.84, p = .066$ ) approached significance with a higher rate of CE in Inanimate conditions. Significant interactions were also found between Focus and Animacy ( $z(599) = -2.91, p < .01$ ), Focus and Definiteness ( $z(599) = 2.80, p < .01$ ), and Focus, Animacy, and Definiteness ( $z(599) = -2.87, p < .01$ ). In the children's judgments of object CE, there was a main effect of Focus ( $z(603) = 3.77, p < .001$ ), Animacy ( $z(603) = 4.44, p < .001$ ), and Definiteness ( $z(603) = -2.98, p < .01$ ) with CE occurring more frequently in Non-CF, Inanimate,

**Table 3.7 Relative strength of each factor (Exp. 2)**

Factor in	Object		Subject	
	Adults	Children	Adults	Children
CF	-	-	-	Def > Anim**  ( $\chi^2 = 7.89$ ,  $p = .006$ )
N-CF	Anim > Def***  ( $\chi^2 = 17.05$ ,  $p < .001$ )	Anim > Def***  ( $\chi^2 = 28.35$ ,  $p < .001$ )	Def > Anim*  ( $\chi^2 = 4.58$ ,  $p = .027$ )	Def > Anim**  ( $\chi^2 = 8.51$ ,  $p = .004$ )
Human	(Foc > Def,  $\chi^2 = 2.36$ ,  $p = .085$ )	Foc > Def*  ( $\chi^2 = 4.38$ ,  $p = .026$ )	Foc > Def*  ( $\chi^2 = 6.08$ ,  $p = .015$ )	(Foc > Def,  $\chi^2 = 3.36$ ,  $p = .071$ )
Inanimate	Foc > Def***  ( $\chi^2 = 11.882$ ,  $p < .001$ )	Foc > Def***  ( $\chi^2 = 14.161$ ,  $p < .001$ )	-	-
Definite	Foc > Def**  ( $\chi^2 = 6.47$ ,  $p = .009$ )	(Foc > Anim .  $\chi^2 = 2.66$ ,  $p = .069$ )	Foc > Anim***  ( $\chi^2 = 16.38$ ,  $p < .001$ )	Foc > Anim***  ( $\chi^2 = 18.01$ ,  $p < .001$ )
Indefinite	-	-	-	Foc > Anim*  ( $\chi^2 = 4.38$ , $p$  $= .037$ )
OVERALL	Foc > Anim > Def	Foc > Anim > Def	Foc > Def > Anim	Foc > Def > Anim

and Definite conditions. There were also significant interactions between Focus and Animacy ( $z(603) = -2.71, p < .01$ ), Focus and Definiteness ( $z(603) = 3.69, p < .001$ ), and Focus, Animacy, and Definiteness ( $z(603) = -2.20, p < .05$ ) all in the same direction as the adults.

In subject CE, adults were significantly affected by Focus ( $z(622) = 4.55, p < .001$ ) and Definiteness ( $z(622) = -2.30, p < .05$ ) with CE occurring more frequently in Non-CF and Definite conditions. However, there was no significant interaction between any of the factors. For children, there was a main effect of Focus ( $z(603) = 2.76, p < .01$ ) and Animacy ( $z(603) = 3.53, p < .001$ ) with CE occurring more frequently in Non-CF and Inanimate conditions. In contrast to the adults who only exhibited independent effect of factors and no interaction, significant interactions were found between Focus and Animacy ( $z(603) = 2.87, p < .01$ ) and Focus and Definiteness ( $z(603) = 2.21, p < .05$ ). When tested for group effects, the children were significantly different from the adults in object CE ( $z(1204) = 3.28, p < .01$ ), but no significant difference was found between the two groups in judgments of subject CE. The results are summarized in Table 3.8.

**Table 3.8 Main effect and interaction of factors (Exp. 2)**

		Adults		Children	
		<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value
Object	Focus	4.067	$p < .001^{***}$	3.766	$p < .001^{***}$
	Animacy	1.836	$p = .066.$	4.444	$p < .001^{***}$
	Definiteness	-1.316	$p = .188$	-2.980	$p = .003^{**}$
	Focus x Animacy	-2.909	$p = .004^{**}$	-2.707	$p = .007^{**}$

**Table 3.8 (cont.)**

		Adults		Children	
		<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value
	Focus x Def	2.797	<i>p</i> = .005**	3.694	<i>p</i> < .001***
Object	Animacy x Def	-0.996	<i>p</i> = .319	0.054	<i>p</i> = .957
	Foc x Anim x Def	-2.872	<i>p</i> = .004**	-2.195	<i>p</i> = .028*
Subject	Focus	4.550	<i>p</i> < .001***	2.761	<i>p</i> = .006**
	Animacy	0.910	<i>p</i> = .363	3.535	<i>p</i> < .001***
	Definiteness	-2.302	<i>p</i> = .021*	-1.022	<i>p</i> = .307
	Focus x Animacy	-	-	2.870	<i>p</i> = .004**
	Focus x Def	-	-	2.211	<i>p</i> = .027*
	Animacy x Def	-	-	-0.042	<i>p</i> = .966
	Foc x Anim x Def	-	-	0.454	<i>p</i> = .650

*Note.* . *p* < 1.0, \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001

### 3.2.3 Discussion

Overall, Korean-speaking children exhibited production patterns that are fairly similar to those of the adults but not without differences. First of all, the children provided fewer case-markers overall in both NP types<sup>12</sup> and showed greater ambivalence than the adults. Children were significantly different from the adults in their production of object CE, in particular, in that they preferred to drop case more frequently than the adults. Also, unlike the adults for whom

<sup>12</sup> It can be asked if the higher rate of CE in the children's data is due to the children omitting case-markers as default, for they are still learning the complex properties of the Korean case system. It is unclear whether children omit or supply case as default, and how much of case-dropped forms in children's speech is intentional. Future works should address this concern, which would help further elucidate the present findings.

Focus was the predominant factor that guided their judgments of object CE, the children were sensitive to more factors and their interactions in their production than the adults overall. In fact, the adults' production patterns were somewhat different from those found in the written task in Lee (2006a) and Experiment 1 in which all three factors significantly affected Korean adults' judgments of CE. Also, the markedness reversal in the effects of Animacy and Definiteness between subjects and objects that was found in Experiment 1 was not replicated in the results, as CE was found to be more prevalent in Inanimate and Definite conditions regardless of NP type. Such difference from previous studies is speculated to be due to the effect of written vs. oral task modes although the exact reasons why Definite and Inanimate NPs would undergo CE more frequently in oral production than in the written task are unclear at present. It could be that Inanimate and/or Definite NPs are more clearly and concretely represented in the pictures making it easier for the participants to retrieve them from the immediate context, which in turn may result in a higher rate of CE. However, such speculations remain untested and need to be further examined.

The differences between the two age groups notwithstanding, Korean-speaking children, ages 5-7, were similar to adults in overall frequency pattern of CE within each factor and condition, the relative strength relationships between factors, and sensitivity to multiple factors and their interactions in CE. In fact, the children seemed more 'adult-like' than the adults in their sensitivity to and employment of the multiple factors in this experiment as noted above. It could be that the adults, assuming that the task was testing explicit knowledge, were more "vigilant" in their production in comparison to the children who as more "naïve" participants provided more natural utterances. In sum, the results of Experiment 2 indicate that young children are capable of employing and integrating the relevant factors of CE in an adult-like manner, and that the

phenomenon of Korean CE, which involves multiple types of information and necessitates integration of contextual information, can mostly be acquired by age 5.

Such findings in L1 acquisition of Korean CE have important implications for bilingual acquisition of the present phenomenon as well. The empirical evidence that Korean-speaking children acquire CE at a relatively young age is suggestive of a possible advantage that heritage learners (i.e., early bilinguals) may have over second language learners (i.e., late bilinguals) in acquiring the phenomenon. Heritage learners who receive exposure to Korean in early childhood may have acquired CE to a certain degree, which could result in differences between early vs. late bilingual acquisition of the present phenomenon. Based on such findings, I will investigate bilingual acquisition of Korean CE in the following chapters.

### 3.3 SUMMARY

In this chapter, previous research in L1 acquisition of case in Korean was presented. No study has yet examined L1 acquisition of Korean CE, and thus an experiment (Exp. 2) was conducted with L1-acquiring Korean-speaking children to examine their sensitivity to multiple factors that would lead to adult-like knowledge of Korean CE. While children provided fewer case-markers in both NP types and showed greater ambivalence than the adults overall, they were capable of employing and integrating these factors of CE in an adult-like manner and seemed to have attained implicit knowledge of this seemingly “optional” and abstract linguistic phenomenon that involves multiple types of information. We now turn to bilingual acquisition of CE in the next chapters.

## CHAPTER 4

### BILINGUAL ACQUISITION OF KOREAN CE: WRITTEN TASK

This chapter will review previous research on bilingual acquisition of CE and present the theoretical and empirical motivations for an experimental study (Experiment 3) that examines L2 and HL acquisition of Korean CE under a validated theoretical framework using Lee's (2006a) methodology of a written elicited production task.

#### 4.1 PREVIOUS STUDIES

No study has yet investigated L2/HL acquisition of CE in Korean, but L2 acquisition of the same phenomenon in Japanese, which is almost identical to that of Korean, has been examined using various theoretical frameworks. However, the results have been inconclusive, which can be attributed to the use of different and oversimplified theoretical assumptions of the phenomenon.

Kanno (1996) examined the question of whether L2 grammars in the initial stages are sensitive to a non-parameterized principle of Universal Grammar (UG) by looking at CE in Japanese. Kanno assumes that the phenomenon of CE in Japanese is regulated by the Empty Category Principle (ECP) that requires empty categories to be "properly governed". Under this ECP analysis, subjects must be assigned case because bare subjects are not properly governed. In comparison, CE can occur with objects because bare objects are properly governed by the accompanying verb. In short, CE can occur only with objects and not subjects due to reasons of proper-government according to this analysis. Twenty-six L1-English university students learning Japanese as a second language and 20 native speakers of Japanese were given an offline written questionnaire testing object and subject CE in interrogative transitive sentences. They

were asked to indicate the ‘*naturalness*’ of the sentence on a scale of three (*unnatural, in-between, and natural*) and to correct unnatural sentences. The results showed striking similarity between the scores of the native speakers of Japanese and L2 learners with both groups judging object CE to be significantly more natural than subject CE. Kanno, therefore, concludes that adult L2 learners can acquire CE even at very early stages of L2 acquisition, and that the availability of UG in the initial stages of L2 grammar enables application of a non-parameterized principle. However, other studies (Kellerman & Yoshioka, 1999; Mazzotta, 2005) observe that even advanced L2 learners fail to show sensitivity to the constraints on CE and have since failed to replicate Kanno’s findings. Oversimplification of the theoretical assumptions of the phenomenon seems to have led Kanno to prematurely conclude that adult L2 learners can easily acquire CE, and thus the ECP hypothesis needs to be questioned.

Kellerman and Yoshioka (1999) report failure to replicate Kanno’s (1996) results and entertain an alternative functionalist account called the ‘one-noun hypothesis’ by which at least one noun needs to be case-marked to account for L2 learners’ behavior. They conducted a modified replication of Kanno’s work and compared the predictions made by the ECP vs. the ‘one-noun’ hypothesis. The ECP analysis predicts that a transitive sentence with a case-marked subject and a bare object is more acceptable than that with a bare subject and a case-marked object, whereas the ‘one-noun’ hypothesis predicts both types of sentences to be equally acceptable. In sentences with only one argument, a sentence with a bare object would be more acceptable than that with a bare subject under the ECP analysis, but both types of sentences would be equally acceptable under the ‘one-noun’ hypothesis. These predictions are delineated in (18).

- (18) a. Predicted hierarchy of acceptability if ECP is available
- i. 2 arguments:  $[+NOM][+ACC] \geq [+NOM][-ACC] > *[-NOM][+ACC] > *[-NOM][-ACC]$
  - ii. 1 argument:  $[+NOM] = [+ACC] \geq [-ACC] > *[-NOM]$
- b. Predicted hierarchy of acceptability if ‘one-noun’ hypothesis applies
- i. 2 arguments:  $[+NOM][+ACC] \geq [+NOM][-ACC] = *[-NOM][+ACC] > *[-NOM][-ACC]$
  - ii. 1 argument:  $[+NOM] = [+ACC] > [-ACC] = *[-NOM]$

Using the eight different conditions generated by the predictions in (18) as stimuli, the authors tested the predictions and found that the ‘one-noun’ hypothesis provides a better account for the learners’ judgments of Japanese CE. Such results notwithstanding, it is not clear as to whether or not this tendency could also be found in native speakers, for no control group was tested.

Yoo, Kayama, Mazzotta, and White (2001) also examined CE in L2 Japanese using theoretical assumptions that are based on the syntactic positions of object NPs. According to their assumptions, the accusative marker is optional in immediate preverbal positions but a bare object NP must obligatorily receive nonspecific interpretation. Eighteen L1-English L2-Japanese learners (12 intermediate, 6 advanced) and 15 native speakers of Japanese participated in a written grammaticality judgment task with preceding contexts and an interpretive task in which brief stories were read in English followed by a sentence in Japanese that the participants had to judge as either ‘appropriate’ or ‘inappropriate’. The contexts were either specific or nonspecific, and the test sentences had objects that were either case-marked or bare. Unfortunately, the results were largely inconclusive, and no significant difference could be found across conditions for all

participant groups in the study. The authors concluded that the experimental design and the instrument were unsuccessful in examining the interpretive preferences of the phenomenon at hand, but the inconclusive results could also be due to the oversimplified assumptions that object CE can be characterized by structural considerations alone. Such a narrow focus and approach on a complex phenomenon like CE may be why the results did not turn out as expected.

Taken together, the contradictions and non-significant findings in previous studies of bilingual (or rather L2) acquisition of CE seem to have resulted from different theoretical assumptions that led to different phenomena being tested as well as unsuccessful experimental design and instrument. Also, previous studies have often taken on a narrow approach that fails to capture the complex nature of the phenomenon of CE. The present dissertation will thus re-examine bilingual learners' behavior of Korean CE under a validated theoretical framework that is supported by robust empirical evidence.

#### 4.2 EXPERIMENT 3: BILINGUAL ACQUISITION OF KOREAN CE (WRITTEN ELICITED PRODUCTION TASK)

The main purpose of this study is to investigate whether or not second language (L2) and heritage language (HL) learners can attain native-like implicit knowledge of Korean CE, a gradient linguistic phenomenon that straddles multiple types of information. L2 and HL difficulty is predicted in the integration of information from different domains, and the study will examine if particular domains are significantly more problematic than others. Moreover, the study will examine if the effects of structural priming are present when the learners must deal with multiple layers of linguistic analysis, and if so whether this effect could possibly contribute to promoting L2 development in this phenomenon. By using Lee's (2006a) framework of CE as

well as the same methodology of a written elicited production task that has also been used in Experiment 1, the study examines how early vs. late bilinguals differ in their knowledge of CE in comparison to each other as well as native speakers of Korean.

#### 4.2.1 Research Questions

The research questions can be stated as the following:

- 1) Are bilingual learners sensitive to multiple factors of Focus, Animacy, and Definiteness in their judgments of object and subject CE? Are certain types of cues more readily accessible than others? How do the bilinguals compare to adult native speakers in their use of these factors?
- 2) What are the similarities and differences between L2 and HL learners? That is, how are the learners affected by age, context, and mode of acquisition?
- 3) Additionally, can structural priming effects be found for this particular phenomenon? If so, which population is most susceptible to this effect, and how is it predicted to affect acquisition of the phenomenon?

#### 4.2.2 Hypotheses

In accordance with previous results that have found L2 and HL variability and vulnerability in phenomena that require integration of syntactic, semantic, and discourse-pragmatic constraints, I predict that bilingual learners for whom the target language is their weaker language will show difficulty accessing and integrating multiple factors in their judgments. The factor of Focus, in particular, which assumes knowledge of information structure and necessitates integration of contextual information, is predicted to be harder to integrate than other types of information and

constraints as discussed in previous works (Slabakova & Montrul, 2002; Sorace & Serratrice, 2009; Sorace & Filiaci, 2006; E-S Chung, 2013). As suggested by E-S Chung (2013), discourse-pragmatic information of Focus is predicted to be one of the last considerations when processing multiple types of information due to primacy given to basic syntactic-semantic operations in the face of processing limitations. Despite the fact that Focus is a universal property and that bilingual learners possess mature cognitive mechanisms, the learners' are predicted to attend to content and meaning access, which could result in an oversight of discourse-pragmatic information. On the other hand, the factors of Animacy and Definiteness that are based on universal principles of markedness, which reflect "the cross-linguistic tendency to mark more marked or less prototypical types of arguments" (HJ Lee, 2006b, p. 214), may be more readily accessible to the learners. Animacy in particular, which is an inherent semantic feature of what an NP denotes, can be predicted to be more accessible than Definiteness or Focus that are context-inferred. Under the assumption that incomplete acquisition in bilingualism can be put in terms of processing limitations and computational complexity, more processing resources would become available with increased proficiency, and the learners with advanced proficiency will show a heightened awareness of the multiple factors and their interactions. However, I predict that even the advanced L2 and HL learners will fail to fully attain native-like implicit knowledge of CE that requires modulation of multiple interfaces, both within and outside of grammar. While highly proficient learners will be able to acquire sensitivity to certain aspects of the phenomenon, a full grasp of the phenomenon is predicted to be hard to attain.

Furthermore, significant differences are expected between the two types of bilinguals. Extra difficulty can be predicted for L2 learners who are mainly exposed to formal instructed input in the classroom, for Korean CE occurs primarily in the informal spoken register. Therefore, HL

learners who are exposed to aural naturalistic input and casual informal speech in the home since childhood may find it easier to acquire context-inferred subtle discourse-pragmatic properties of Korean CE than adult L2 learners. As it is, HL learners' language background in age, context, and mode of acquisition seem to better equip them in acquiring Korean CE when compared to L2 learners. Although L2 learners were found to be more accurate than HL learners on untimed written tasks testing explicit metalinguistic knowledge (Montrul, 2008; Bowles, 2011), it is unclear whether this would also be the case in the written task of the present study, since using explicit metalinguistic knowledge does not confer much advantage in the present phenomenon.

Additionally, I expect to find structural priming effects in the judgments of bilinguals as well as the native speakers. In accordance with previous studies that have found both immediate and long-term priming effects in monolingual and bilingual acquisition (Bock, 1986; Costa, Pickering & Sorace, 2008; Loebell & Bock, 2003; Hartsuiker, Pickering, & Veltkamp, 2004), both types of bilinguals and L1-Korean speakers are expected to be significantly affected by priming in the present phenomenon. Low proficiency bilingual learners, in particular, who may not have established a distinct pattern of judgments yet, may be more susceptible to this effect in the input. This prediction is somewhat reflective of McDonough and Kim's (2009) suggestion that low type/high token frequency in syntactic priming materials could help L2 learners find structural patterns in the input. It is predicted that low proficiency learners with limited exposure to the phenomenon of CE would show a strong tendency to extract patterns from reoccurring unfamiliar input.

#### 4.2.3 Participants

Forty-three adult native speakers of Korean (NS), 41 adult HL learners (HL), and 39 adult L2

learners (L2) participated in the experiment. Out of the 43 native speakers, 22 were recruited and tested at the University of Illinois at Urbana-Champaign, and 21 at various universities in Seoul (Korea University, Yonsei University, and Hongik University). They were undergraduate or graduate students at these universities. For those recruited in the US, none of them arrived in the US before the age of 18. Out of the 41 HL learners, 21 were undergraduate or graduate students at the University of Illinois at Urbana-Champaign, and 20 were students enrolled in exchange or university language programs at Yonsei University. All HL learners were Korean-Americans who came to the US before the age of three and were raised in Korean-speaking homes but were schooled in English since childhood. All 39 L2 learners were native speakers of English who were enrolled in exchange or university language programs at Yonsei University or Korea University. Of all the participants tested, one L1-Korean adult, five HL learners, and seven adult L2 learners who did not match the required linguistic background or proficiency for the study were excluded from analysis. Participant description is summarized in Table 4.1 and Table 4.2.

#### 4.2.4 Language Background Questionnaire

A language background questionnaire that examined linguistic and sociological variables of individuals was administered. Participants were asked to complete a language background questionnaire that asked about age, gender, native language, additional languages spoken, language spoken at home, language of instruction, age of arrival and duration of stay in Korea, formal language instruction in Korean, and self-rated proficiency in Korean. HL learners completed an additional questionnaire that asked about biographical variables pertaining to early bilingualism such as age of exposure to Korean, language use in various stages of life, parents' first language(s), sibling/birth order and so forth.

**Table 4.1 Description of participants**

	NS	HL	L2
N	42	36	32
Gender	13 M, 29 F	12M, 24F	9M, 23F
Age	19-35 (M: 26.85)	19-40 (M: 22.51)	20-33 (M: 24.22)

**Table 4.2 Description of NS and HL based on testing location**

	NS		HL	
	US	KOREA	US	KOREA
N	22	20	19	17
GENDER	7 M, 15 F	6M, 14 F	3M, 16F	9M, 8F
AGE	20-33 (M:26.8)	19-35 (M: 26.9)	19-35 (M: 21.79)	19-40 (M:23.23)

L2 learners were all native speakers of English from various English-speaking countries: US (n=19), Singapore (n=10), UK (n=2), and New Zealand (n=1). The age of acquisition of Korean ranged from ages 17 to 33 (M: 21.62, SD: 3.97), and the length of acquisition ranged from 2 to 36 months (M: 17.21, SD: 9.10). All L2 learners were recruited and tested in Korea, and their length of stay in Korea ranged from 0.5 to 84 months (M: 19.32, SD: 21.13). When asked to rate their proficiency, most L2 learners rated it within the intermediate proficiency range—beginner (n=1), low-intermediate (n=8), intermediate (n=16), high-intermediate (n=6), and advanced (n=1).

All HL learners were from the US and were also native speakers of English. They all indicated that both parents spoke Korean as their native language, and that they were exposed to

Korean since birth. To the question “At what age did you first begin to learn English?” their answers ranged from “since birth” to age 7 (M: 3.47, SD: 1.58). All except five HL learners (86%) received formal instruction in Korean (i.e., Korean language classes or lessons) at various points in their lives that ranged from ages 5 to 22 (M: 8.78, SD: 4.77). Moreover, all except two HL learners (95%) spent time in Korea, and their length of stay in Korea ranged from 0.5 to 48 months (M: 7.67, SD: 12.49). When asked to rate their proficiency, most HL learners rated it as intermediate or high-intermediate—low-intermediate (n=6), intermediate (n=14), high-intermediate (n=14), and advanced (n=2). To the questions that asked about the learners’ use of Korean in their daily lives, the HL learners were generally less confident in reading and writing (i.e., literacy skills) than speaking and listening as shown in Table 4.3.

#### 4.2.5 Written Proficiency Measure

A written proficiency test was administered to control for proficiency effects in the bilingual populations. The test consisted of two short cloze tests based on a Korean folktale (‘Golden Axe, Silver Axe’) and ‘The Three Little Pigs’ as well as multiple choice questions on grammar and vocabulary. It tested participants’ knowledge of 1) vocabulary, 2) tense, 3) verb morphology, 4) conjunctions, 5) negation, 6) delimiters, and 7) case-markers. Three L2 learners and 2 HL learners with chance performance on general knowledge of case whose responses for more than half of the items on case were incorrect were excluded from further analysis. There were a total of 40 questions, and the test was conducted on an online survey tool called Surveygizmo. The written proficiency scores of the participants are displayed in Table 4.4.

**Table 4.3 HL learners' response to questions about their use of Korean in daily life**

Question	Percentage (%) and number (N) of response				
	Never/ Strongly disagree	Rarely/ Disagree	Sometimes/ Somewhat disagree	Often/ Agree	Always/ Strongly agree
Do you use Korean with your parents, grandparents, siblings, or friends? (speaking & listening)	0% (0)	8% (3)	28% (10)	56% (20)	8% (3)
Do you read any printed material in Korean? (reading)	8% (3)	50% (18)	36% (13)	5% (2)	0% (0)
Do you watch Korean movies, TV, or soap operas? (listening)	3% (1)	19% (7)	33% (12)	39% (14)	5% (2)
Can you talk about your daily life or personal preferences in Korean without difficulty? (speaking)	0% (0)	5% (2)	39% (14)	44% (16)	11% (4)
Can you write uncomplicated letters, and essays related to work and school experiences in Korean? (writing)	5% (2)	33% (12)	31% (11)	25% (9)	5% (2)

**Table 4.4 Written proficiency scores (out of 40 points)**

	NS	HL	L2
Range	37-40	16-40	13-32
Mean	39.19 (SD: .86)	28.85 (SD: 7.49)	21.48 (SD: 6.12)

When the written proficiency scores of the three groups were compared using independent sample t-tests, all group comparisons were significantly different from each other: HL vs. L2 ( $t(66) = 4.385, p < .001$ ), NS vs. HL ( $t(76) = 10.132, p < .001$ ), and NS vs. L2 ( $t(72) = 18.629, p < .001$ ). That is, all three groups were significantly different in their written proficiency with L2 learners scoring the lowest. Speakers in NS and HL groups were recruited and tested in different locations (US vs. Korea) as specified in Section 4.2.3, and their written proficiency scores (see Table 4.5 below) were also compared using independent samples t-tests. No significant difference was found between the scores ( $t(40) = -1.148, p = .258$ ) of native speakers who were recruited in Korea and those of native speakers recruited in the US. The results suggest that the native speakers in both locations had similar written proficiency scores. Similarly, there was no significant difference between the scores ( $t(34) = -.242, p = .810$ ) of HL learners in Korea and those of the HL learners in the US. As such, speakers tested in different locations within groups were not significantly different from each other in their written proficiency scores and were thus grouped together in subsequent descriptive and statistical analyses of the results.

#### 4.2.6 Methodology: Written Elicited Production Task

The task used in this experiment was similar to the written elicited production task that was used in Lee H-J (2006a) and Experiment 1 (Chapter 2). The test format was identical, and the

**Table 4.5 Written proficiency scores of NS and HL from different testing locations**

	NS		HL	
	US	KOREA	US	KOREA
Range	37-40	37-40	18-38	16-40
Mean	39.05	39.33	28.58	29.12
	(SD: .84)	(SD: .86)	(SD: 5.81)	(SD: 7.49)

participant had to choose a case-marked or a bare NP within the context of a short conversation. However, the individual test items were largely different from previous studies. The same variables of Focus, Animacy, and Definiteness generated eight experimental conditions, and there were six items per condition for subject and object NPs, resulting in a total of ninety-six test items. No filler items were included. The experimental conditions were identical to those used in Experiment 2 and can be found in Table 4.6 (a reproduction of Table 3.1 from Chapter 3), together with the abbreviations used to refer to the distinct test conditions.

As in previous experiments, the degree of Definiteness (proper noun vs. nonspecific NP) and Animacy (human vs. inanimate) was controlled, and Contrastive Focus (CF) involved selecting an entity within a limited set of alternatives with contrastive effects. The degree of accessibility was also controlled within the Focus conditions with entities in CF conditions having low predictability (i.e., no explicit mention of entities in the preceding context), and entities in Non-CF items having high predictability (i.e., explicit mention in the preceding context). In addition to the variables of Focus, Animacy, and Definiteness, structural priming was also examined within each condition. In each condition, the test items belonged to one of the following three priming conditions: a) CM-primed—the first utterance contains a case-marked (CM) NP, b) CE-

**Table 4.6 Experimental conditions (same as Table 3.1 in Chapter 3)**

Object	Subject
Contrastive focus (CF), Human, Definite (OCHD)	CF, Human, Definite (SCHD)
CF, Human, Indefinite (OCHI)	CF, Human, Indefinite (SCHI)
CF, Inanimate, Definite (OCID)	CF, Inanimate, Definite (SCID)
CF, Inanimate, Indefinite (OCII)	CF, Inanimate, Indefinite (SCII)
Non-CF, Human, Definite (ONHD)	Non- CF, Human, Definite (SNHD)
Non-CF, Human, Indefinite (ONHI)	Non-CF, Human, Indefinite (SNHI)
Non-CF, Inanimate, Def (ONID)	Non- CF, Inanimate, Def (SNID)
Non-CF, Inanimate, Indef (ONII)	Non- CF, Inanimate, Indef (SNII)

primed—the first utterance contains a bare NP, and c) No-NP/Prime—the first utterance does not contain an NP. The three priming conditions were randomly assigned to the six test items in each experimental condition, two items each. To better control for other factors, there was no NP modifier, no NP in the beginning of the sentence, no semantic incorporation, no previous mention for contrastively focused NPs, and all sentences were in the present tense. As in the oral task, the stimuli was not controlled with respect to the relative proto-typicality of the subject and object pair in each item. However, the subject NPs in Object conditions were Definite (pronouns or proper nouns) in all but five items (90%) and Human in all but two items (96%) that had animate subjects (*dog* and *monkey*). Also, all except three subject NPs (94%) were topics (i.e., what is being talked about) that were either available in the preceding pictures or the speaker/hearer himself. As for Subject conditions, only seven items contained transitive verbs with Inanimate and Definite objects, and the rest of the items (85%) contained intransitive verbs

that required no object. In other words, although the relative proto-typicality of subject-object pairs in test items was not controlled, subjects in Object conditions and objects in Subject conditions were almost always constant or absent.

The context of the conversation was given in English for the bilingual learners and in Korean for the NS in parentheses prior to the conversations themselves. The participants were asked to select one answer that sounded more natural in the context of the conversation as quickly as possible. The instructions also emphasized that there are no right or wrong answers for these questions. The task was conducted using Surveygizmo along with the written proficiency test. A sample item is given in (19) below.

(19) OCII [Object, +CF, Inanimate, Indefinite], CM-Primed condition

(Context: Mina is getting a present for her niece)

Mina: Mwe-l sacwu-ci? Kulimchayk-**ul** sacwu-l-kka?

WH-ACC buy? picture book-**ACC** buy-fut-Q?

‘What should I get? Should I get her a picture book?’

Youngsu: (pro) acik eli-nikka \_\_\_\_\_ sacwu-e.

(s/he) still young-CAUS \_\_\_\_\_ buy-DECL

‘Get her a \_\_\_\_\_ since she’s still young’

Answer options: cangnankam-ul (toy-ACC) vs. cangnankam (toy)

The order of the stimuli was randomized using blocking, and the items were presented in the same order for all participants.

#### 4.2.7 Procedure

Participants were first asked to complete the language background questionnaire followed by the written proficiency test and then the written elicited production task. The tasks were all administered using Surveygizmo, but the materials were printed and administered in the format of a paper-and-pencil test in case of technical difficulties. The whole procedure could be completed in one visit. Specific instructions as well as sample questions and answers were given on the tests, and the experimenter went over the instructions with the participants.

#### 4.2.8 Predictions

As has been found in previous studies (Lee, 2006a; Experiment 1), native speakers are predicted to employ multiple factors in both object and subject CE and give precedence to the role of Focus in their judgments. In accordance with the predictions made in Lee's framework of CE, object CE will occur most frequently in the [Non-CF, Inanimate, Indefinite] condition and least frequently in the [CF, Human, Definite] condition. The object-subject asymmetry found in Experiment 1 is also predicted to be manifested in the results with subject CE occurring most frequently in the [Non-CF, Human, Definite] condition and least frequently in the [CF, Inanimate, Indefinite] condition. Moreover, Animacy will have a stronger effect than Definiteness in object CE, but Definiteness will be relatively stronger than Animacy in subject CE as has been found in previous results. Overall, native speakers are predicted to display gradient statistical preferences in all conditions of object CE and in Non-CF conditions (but not CF conditions) of subject CE.

The bilingual learners, on the other hand, are predicted to diverge from native judgment patterns especially in their employment and integration of the factor of Focus. They, however, are predicted to show sensitivity to the factors of Animacy or/and Definiteness as cues for CE.

That is, they will show a tendency to drop case in Inanimate and Indefinite conditions for objects and Human and Definite conditions for subjects. It is possible that they would depend on a single factor for both types of CE and fail to show gradient patterns that can be observed in native speaker judgments. It is also possible that low proficiency learners who have not yet developed a distinct pattern of judgments on CE would exhibit categorical judgments by consistently dropping or marking case throughout all test conditions and items. As such, L2 and HL difficulty is predicted in the present phenomenon. However, HL learners are predicted to show greater sensitivity to the multiple factors than L2 learners due to their exposure to aural naturalistic input since childhood. Focus may have a significant effect on HL judgments, but this effect will not be as consistent as in native judgments, and the effect of Animacy and Definiteness is predicted to outweigh that of Focus. Overall, they will show a tendency to drop case in Non-CF, Inanimate, and Indefinite conditions for objects and CF, Human, and Definite conditions for subjects just like the native speakers, but judgment patterns in Focus conditions will not be as strong or evident as those in native judgments. In other words, HL learners are predicted to exhibit judgments that are not quite native-like, but more native-like than L2 learners with respect to their sensitivity to multiple factors and the use of Focus.

Lastly, structural priming is predicted to have a significant effect on all three groups' judgments in both types of CE: The CE-primed condition will activate a significantly higher number of bare NPs than the CM-primed or the No-NP/Prime conditions, and likewise, the CM-primed condition will activate a significantly higher number of case-marked NPs than the CE-primed or the No-NP/Prime conditions.

#### 4.2.9 Results: Object CE

The participants' judgments of object vs. subject CE were examined separately due to the distinct characteristics of the two types of CE as delineated in Chapter 2. This section presents the results for object CE, and the next section (4.2.10) reports the results for subject CE.

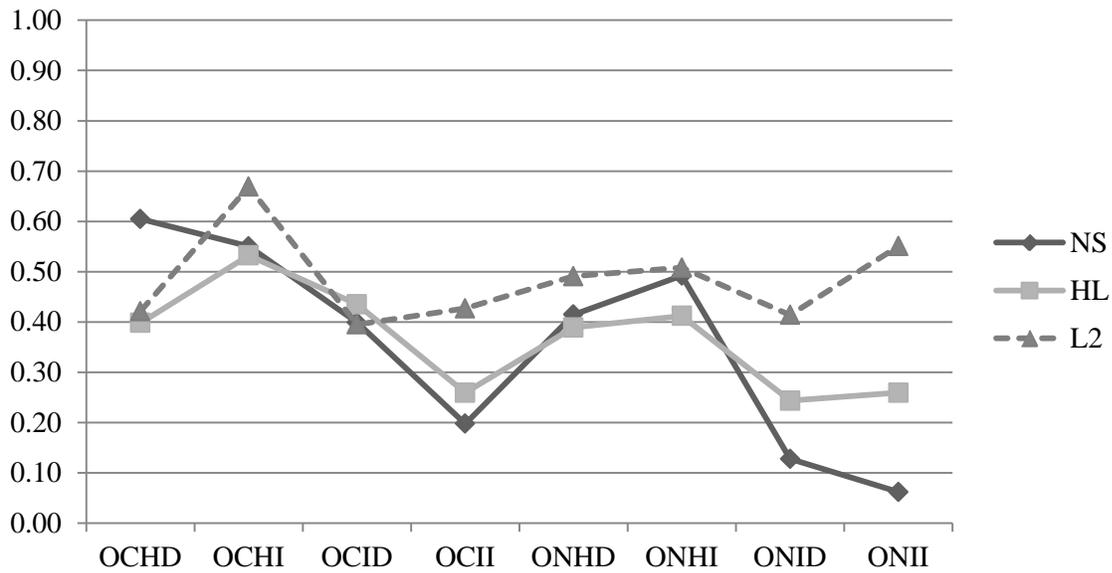
##### 4.2.9.1 Group results

All responses were coded as '1' when the object or subject NP in the answer was accompanied by a case marker and '0' when the NP was bare. Mean and frequency in each condition and within factor conditions was calculated using this quantified data (0 or 1), and the binary data was further analyzed using logit mixed models in R (version 2.15.0) to examine the main effect and interaction of the three factors. Mean and SD values of case-marked objects as displayed in Table 4.7 and Figure 4.1 show NS and HL exhibiting similar gradient patterns of judgments in which CE occurs frequently in Non-CF and Inanimate conditions. L2, on the other hand, were found to hover around 0.5 (i.e., chance performance) for the most part with no distinct pattern.

When the relative frequency of CE in NS and HL judgments was examined within each factor using descriptive statistics and the chi-square test as shown in Table 4.8, there was a significantly higher number of bare objects in Non-CF than in CF and in Inanimate than in Human conditions. In comparison, L2 did not significantly differentiate the Focus conditions, but there was a significantly higher number of bare objects in Inanimate than Human conditions as found for other groups. All three groups differed in their judgments of Definiteness with NS preferring to drop case in Indefinite than Definite conditions, HL not having a particular preference, and L2 dropping case more frequently in Definite than Indefinite conditions.

**Table 4.7 Mean and standard deviation values of case-marked objects (Written task)**

	OCHD	OCHI	OCID	OCHII	ONHD	ONHI	ONID	ONII
NS	.60 (.31)	.55 (.44)	.40 (.42)	.20 (.34)	.41 (.41)	.49 (.35)	.13 (.28)	.06 (.20)
HL	.40 (.46)	.53 (.50)	.44 (.49)	.26 (.43)	.39 (.47)	.41 (.47)	.24 (.41)	.26 (.41)
L2	.42 (.48)	.67 (.48)	.39 (.45)	.43 (.49)	.49 (.44)	.51 (.50)	.41 (.48)	.55 (.50)



**Figure 4.1 Mean scores of case-marked objects in the written task<sup>13</sup>**

<sup>13</sup> The y-axis indicates the suppliance or ellipsis of case-markers: 1 indicates suppliance and 0 indicates ellipsis.

**Table 4.8 Frequency (%) of bare objects within each factor (Written task)**

	NS	HL	L2
Focus	Non-CF (56%) > CF (44%) *** ( $\chi^2 = 60.349, p < .001$ )	Non-CF (53%) > CF (47%) *** ( $\chi^2 = 12.22, p < .001$ )	CF (51%) > Non-CF (49%) ( $\chi^2 = .26, p = .610$ )
Animacy	Inanimate (62%) > Human (38%) *** ( $\chi^2 = 228.71, p < .001$ )	Inanimate (55%) > Human (45%) *** ( $\chi^2 = 33.57, p < .001$ )	Inanimate (53%) > Human (47%) > ** ( $\chi^2 = 7.60, p = .006$ )
Definiteness	Indefinite (52%) > Definite (48%) * ( $\chi^2 = 3.98, p = .046$ )	Definite = Indefinite (50%) ( $\chi^2 = .000, p = 1.000$ )	Definite (55%) > Indefinite (45%) *** ( $\chi^2 = 16.678, p < .001$ )

*Note.* .  $p < 1.0$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The frequency count of object CE in each condition in Table 4.9 shows NS dropping case most frequently in the [Non-CF, Inanimate, Indefinite] condition and least frequently in the [CF, Human, Definite] condition, which matches the results in Lee (2006a). HL judgments differed from those of NS in the direction of Definiteness and dropped case most frequently in the [Non-CF, Inanimate, Definite] and least frequently in the [CF, Human, Indefinite] condition. L2, on the other hand, exhibited quite different judgments in which the [CF, Inanimate, Definite] condition had the highest rate of CE, and the [CF, Human, Indefinite] condition the lowest. In sum, all three groups differed in judgments of object CE: HL mainly differed from NS in their use of Definiteness, and L2 differed in the use of Focus and Definiteness.

**Table 4.9 Frequency of object CE in each condition (Written task)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
NS	8%	9%	12%	16%	11%	10%	17%	18%
	(102)	(116)	(155)	(207)	(151)	(131)	(225)	(242)
HL	12%	9%	11%	15%	12%	12%	15%	15%
	(130)	(101)	(122)	(160)	(132)	(127)	(164)	(160)
L2	14%	8%	15%	14%	12%	12%	14%	11%
	(111)	(62)	(115)	(111)	(97)	(97)	(111)	(84)

Next, the frequency of CE in each condition was used to predict the relative strength of each factor using the chi-square test. Fairly robust relationships were present in NS and HL judgments in which Animacy is strongest followed by Focus and then Definiteness. Contrary to previous findings in object CE that predict Focus to have the strongest influence (Lee, 2006a), Animacy was strongest even for NS. Strength relationships in L2 judgments were not very robust, but the few significant relationships that were present mirrored those found in NS and HL judgments as shown in Table 4.10.

In addition, the main effect and interaction of the three factors were examined using logit mixed models in R. NS was significantly affected by Focus ( $z(2061) = 7.265, p < .001$ ) and Animacy ( $z(2061) = 15.401, p < .001$ ) with CE occurring more frequently in Non-CF and Inanimate conditions. There were also significant interactions between Focus and Animacy ( $z(2061) = -3.782, p < .001$ ), Animacy and Definiteness ( $z(2061) = -2.835, p < .01$ ), and Focus, Animacy, and Definiteness ( $z(2061) = -2.763, p < .01$ ). Similarly, HL learners were also significantly influenced by Focus ( $z(1723) = 3.111, p < .01$ ) and Animacy ( $z(1723) = 6.389, p$

**Table 4.10 Relative strength of factors in object CE (Written task)**

Factor in control	NS	HL	L2
CF	Anim > Def *** ( $\chi^2 = 11.821, p < .001$ )	Anim > Def * ( $\chi^2 = 4.088, p = .027$ )	Anim > Def *** ( $\chi^2 = 29.440, p < .001$ )
Non-CF	Anim > Def *** ( $\chi^2 = 80.045, p < .001$ )	Anim > Def *** ( $\chi^2 = 14.414, p < .001$ )	None
Human	Foc > Def** ( $\chi^2 = 9.508, p = .001$ )	Foc > Def ** ( $\chi^2 = 8.954, p = .002$ )	Foc > Def *** ( $\chi^2 = 13.149, p < .001$ )
Inanimate	Foc > Def * ( $\chi^2 = 4.607, p = .021$ )	None	None
Definite	None	None	None
Indefinite	Anim > Foc *** ( $\chi^2 = 49.538, p < .001$ )	Anim > Foc *** ( $\chi^2 = 11.305, p < .001$ )	None
OVERALL	Anim > Foc > Def	Anim > Foc > Def	Anim, Foc > Def

< .001) with CE occurring more frequently in Non-CF and Inanimate conditions. Significant interactions were also present between Animacy and Definiteness ( $z(1723) = -3.329, p < .001$ ) and Focus, Animacy, and Definiteness ( $z(1723) = -4.756, p < .001$ ). L2 learners, on the other hand, were not significantly influenced by Focus, but by Animacy ( $z(1526) = 3.163, p < .01$ ) and Definiteness ( $z(1526) = -4.408, p < .001$ ) with CE occurring more frequently in Inanimate and Definite conditions. Significant interactions were present between Focus and Animacy ( $z(1526) = 2.983, p < .01$ ) and Focus, Animacy, and Definiteness ( $z(1526) = -4.070, p < .001$ ).

When written proficiency scores were added to the mixed model as a fixed effect to examine proficiency effects in the bilingual groups, results for L2 revealed a main effect of Proficiency ( $z(1526) = 2.194, p = .028$ ) and a significant interaction between Proficiency and Animacy ( $z(1526) = 4.431, p < .001$ ). In comparison, results for HL showed no main effect of Proficiency, but significant interactions were found between Proficiency and Focus ( $z(1723) = 1.937, p = .052$ ) and Proficiency and Animacy ( $z(1723) = 2.842, p = .004$ ). The significant interactions indicate that the learners exhibited greater sensitivity to these factors with increasing proficiency. These results are summarized in Table 4.11.

When ‘Group’ was added to the mixed model as another fixed effect to observe group effects, NS was significantly different from the two bilingual groups ( $z(5316) = 2.213, p = .027$ ), and the two bilingual groups were different from each other ( $z(5316) = 2.480, p = .013$ ) in the use of all three factors: More specifically, post-hoc group comparisons between NS and HL showed no main effect of Group but significant differences in the use of Focus ( $z(3786) = 3.953, p < .001$ ), Animacy ( $z(3786) = 7.110, p < .001$ ), and Definiteness ( $z(3786) = 2.656, p = .008$ ) as well as in the interactions between Focus and Animacy ( $z(3786) = -2.441, p = .015$ ) and Focus, Animacy and Definiteness ( $z(3786) = 3.046, p = .002$ ). In the comparison between NS and L2, there was a main effect of Group ( $z(3590) = 3.428, p < .001$ ) as well as significant differences in not only all three factors (Focus:  $z(3590) = 6.891, p < .001$ ; Animacy:  $z(3590) = 9.289, p < .001$ ; Definiteness:  $z(3590) = 5.999, p < .001$ ) but also all interactions of these factors (Focus x Animacy:  $z(3590) = -5.040, p < .001$ ; Focus x Definiteness:  $z(3590) = 2.557, p = .011$ ; Animacy x Definiteness:  $z(3590) = 2.557, p = .019$ ; Focus x Animacy x Definiteness:  $z(3590) = 3.325, p < .001$ ). The comparison between the two bilingual groups also showed a main effect of Group ( $z(3252) = -2.280, p = .023$ ) and significant differences in the use of all three factors (Focus:  $z(3252) = 3.040,$

**Table 4.11 Main effect and interaction of factors in object CE (Written task)**

	NS		HL		L2	
	<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value
(Intercept)	-0.642	.521	-1.509	.131	-0.502	.616
Focus	7.265	< .001 ***	3.111	.002 **	-0.394	.694
Animacy	15.401	< .001 ***	6.389	< .001 ***	3.163	.002 **
Def	-1.338	.181	-1.580	.114	-4.408	< .001 ***
Focus:Animacy	-3.782	< .001 ***	-0.672	.502	2.983	.003 **
Focus: Def	-0.564	.573	-0.120	.905	-1.510	.131
Animacy: Def	-2.835	.005 **	-3.329	< .001 ***	-1.169	.243
Foc:Anim:Def	-2.763	.006 **	-4.756	< .001 ***	-4.070	< .001 ***
Proficiency			.244	.807	2.194	.028 *
Foc: Prof			1.937	.053 .	-1.017	.309
Anim: Prof			2.842	0.004 **	4.431	< .001 ***
Def: Prof			.574	0.566	1.427	.153

$p = .002$ ; Animacy:  $z(3252) = 2.389$ ,  $p = .017$ ; Definiteness:  $z(3252) = 3.415$ ,  $p < .001$ ) as well as in the interaction between Focus and Animacy ( $z(3252) = -2.765$ ,  $p = .006$ ). Marginal differences were also found in the interactions between Focus and Definiteness ( $z(3252) = 1.915$ ,  $p = 0.055$ ) and Animacy and Definiteness ( $z(3252) = -1.881$ ,  $p = .06$ ). In sum, all groups were significantly different in their employment of the three factors. The difference between NS and L2 was especially salient as they significantly differed in all factors and their interactions. While no main effect of group was found between NS and HL, significant differences could still be

found in the use and interaction of factors. These comparisons are summarized in Table 4.12.

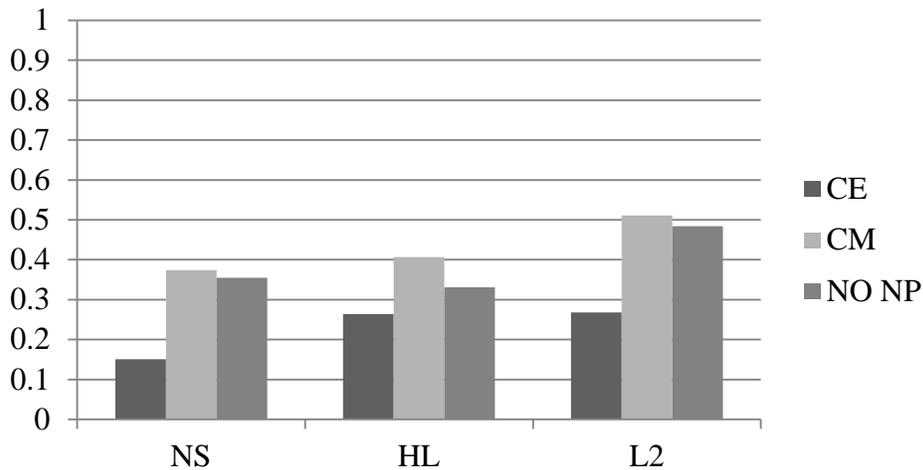
**Table 4.12 Post-hoc group comparisons of object CE (Written task)**

	NS vs. HL		L2 vs. HL		NS vs. L2	
	z	p	z	p	z	p
Intercept	-.821	.412	-.496	.620	.084	.933
Group	-.566	.571	-2.280	.023 *	-3.428	< .001 ***
Foc: Group	3.953	< .001***	3.040	.002 **	6.891	< .001 ***
Anim: Group	7.110	< .001***	2.389	.017 *	9.289	< .001 ***
Def: Group	2.656	.008 **	3.415	< .001***	5.999	< .001***
Foc:Anim:Group	-2.441	.015 *	-2.765	.006 **	-5.040	< .001***
Foc:Def:Group	.816	.415	1.915	.055 .	2.557	.011 *
Anim:Def:Group	-.453	.650	-1.881	.060 .	-2.336	.020 *
Foc:Anim:Def:Group	3.046	.002 **	.368	.713	3.325	< .001***

Lastly, structural priming effects were examined in the group results. The mean scores of case-marked objects in the three priming conditions—1) CM-primed, 2) CE-primed, and 3) No-prime/NP—as displayed in Table 4.13 and Figure 4.2 show all groups exhibiting a similar pattern of judgments in which CE-primed condition is most prone to CE and CM-primed condition most likely to be case-marked. When tested for group effects using logit mixed models in R, the difference between NS and the bilinguals ( $z(5318) = 1.754, p = .079$ ) as well as the difference between the bilingual groups ( $z(5318) = 1.677, p = .094$ ) was marginally significant.

**Table 4.13 Mean and SD of case-marked objects in priming conditions (Written task)**

	NS	HL	L2
CE-prime	.15 (.39)	.26 (.44)	.27 (.43)
CM-prime	.37 (.34)	.41 (.47)	.51 (.49)
NO-prime/NP	.36 (.35)	.33 (.44)	.48 (.47)



**Figure 4.2 Mean scores of case-marked objects in priming conditions (Written task)**

When the three priming conditions were compared, the CM-primed condition was significantly different from the CE-primed condition in the results of all three groups (NS:  $z(2063) = 2.200, p = .028$ ; HL:  $z(1725) = 2.630, p = .008$ ; L2:  $z(1529) = 2.578, p = .009$ ). Moreover, the CE-primed condition was significantly different from the No-prime/NP condition in NS ( $z(2063) = 2.399, p = .020$ ) and L2 ( $z(1529) = 2.318, p = .020$ ) judgments. However, no group showed a significant difference between CM-primed and No-prime/NP conditions. As such, priming effects were primarily found for bare objects but not for case-marked ones. NS and

L2 showed a strong tendency to drop case in their response when the object NP in the previous utterance was bare but provided case-marked objects when the previous utterance contained a case-marked NP or no NP at all. HL did not significantly differentiate CE-primed or CM-primed conditions from the No-prime/NP condition and seemed least affected by priming effects.

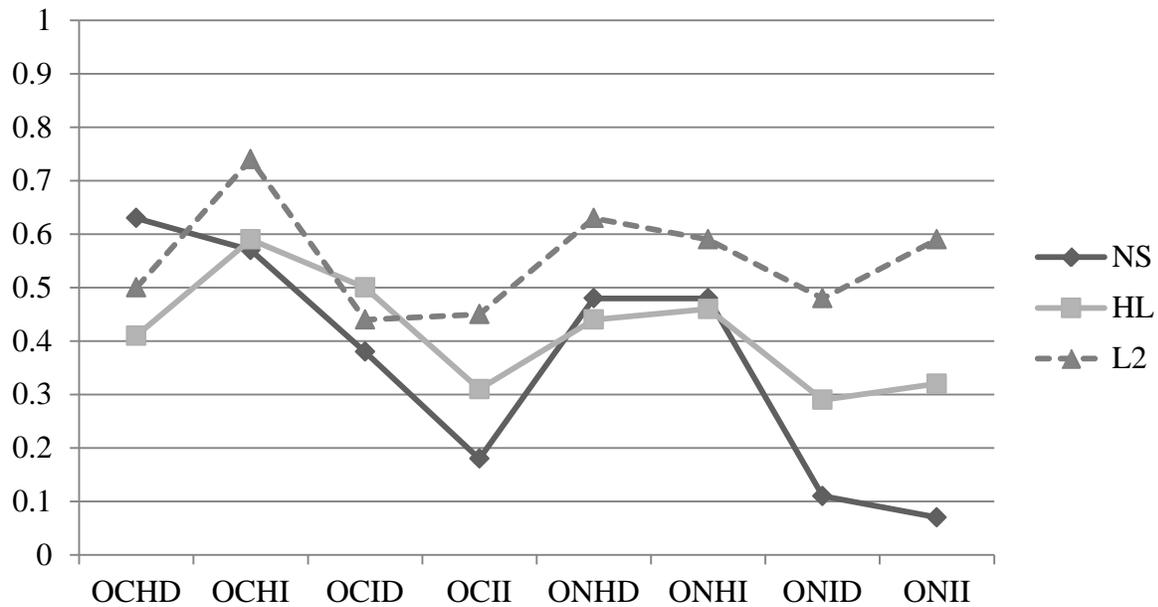
In light of the fact that the HL group's written proficiency scores were significantly higher than those of the L2, proficiency-matched learners were compared to control for proficiency effects. Twenty participants from HL ( $M = 25.9$ ,  $SD = 3.88$ ,  $R = 21-32$ ) and L2 ( $M = 25.9$ ,  $SD = 3.51$ ,  $R = 20-33$ ) with matching intermediate proficiencies were compared. Twenty participants from NS ( $M = 39.37$ ,  $SD = 0.89$ ,  $R = 37-40$ ) were also randomly selected and compared to the bilinguals as the control group. The overall judgment patterns by these bilinguals were similar to what was found in the results for the whole group: NS and HL exhibited similar gradient patterns of judgments, and L2 displayed chance performance for the most part with no distinct pattern as shown in Table 4.14 and Figure 4.3.

Furthermore, the relative frequency of CE within each factor in the proficiency-matched bilinguals' judgments was also quite similar to what has been found in the whole group results in Table 4.8. HL were native-like in their use of Focus and Animacy with a significantly higher number of bare objects occurring in Non-CF than in CF and in Inanimate than in Human conditions. In comparison, L2 were native-like only in their use of Animacy and showed an opposite tendency in their use of Focus and Definiteness. These results are shown in Table 4.15.

In addition, the main effect and interaction of the three factors in the proficiency-matched bilinguals' judgments was also quite representative of the whole group results. HL learners were significantly influenced by Focus and Animacy while L2 learners were significantly influenced by Animacy and Definiteness as shown in Table 4.16. Post-hoc comparisons showed no

**Table 4.14 Mean values of case-marked objects by proficiency-matched bilinguals (Written task)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
NS	.63 (.18)	.57 (.11)	.38 (.11)	.18 (.18)	.48 (.20)	.48 (.13)	.11 (.20)	.07 (.17)
HL-Inter	.41 (.48)	.59 (.49)	0.5 (.49)	.31 (.45)	.44 (.48)	.46 (.49)	.29 (.42)	.32 (.44)
L2-Inter	.5 (.47)	.74 (.47)	.44 (.41)	.45 (.49)	.63 (.44)	.59 (.50)	.48 (.50)	.59 (.50)



**Figure 4.3 Mean scores of case-marked objects by proficiency-matched bilinguals (Written task)**

**Table 4.15 Frequency (%) of bare objects within each factor by proficiency-matched bilinguals (Written task)**

	NS	HL-Intermediate	L2-Intermediate
Focus	Non-CF (56%) >	Non-CF (54%) >	CF (52%) >
	CF (44%) ***	CF (46%) **	Non-CF (48%)
	( $\chi^2 = 24.05, p < .001$ )	( $\chi^2 = 6.44, p = .007$ )	( $\chi^2 = 1.521, p = .217$ )
Animacy	Inanimate (64%) >	Inanimate (56%) >	Inanimate (57%) >
	Human (36%) ***	Human (44%) ***	Human (43%) ***
	( $\chi^2 = 135.07, p < .001$ )	( $\chi^2 = 16.81, p < .001$ )	( $\chi^2 = 15.68, p < .001$ )
Definiteness	Indefinite (53%) >	Definite (51%) >	Definite (55%) >
	Definite (47%) *	Indefinite (49%)	Indefinite (45%) *
	( $\chi^2 = 6.18, p = .013$ )	( $\chi^2 = .106, p = .745$ )	( $\chi^2 = 6.41, p = .011$ )

significant difference between NS and HL ( $z(1963) = -1.265, p = .70$ ), marginal differences between the two bilingual groups ( $z(1915) = -1.830, p = .067$ ), and significant differences between NS and L2 ( $z(1965) = -3.653, p < .001$ ). Such similarities between the results of the whole group and the proficiency-matched groups indicate that the significant differences between the two bilingual groups are not an effect of proficiency but of group itself.

#### 4.2.9.2 Individual results

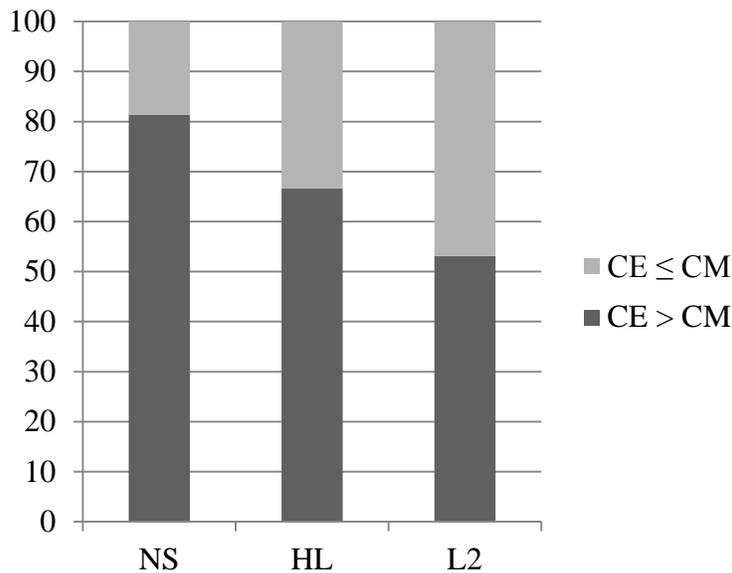
In light of the variability present in each group, it is crucial to look at individual results in addition to group results. The individual analysis examined the percentage of individuals in each

**Table 4.16 Main effect and interaction of factors in object CE by proficiency-matched bilinguals (Written task)**

	NS		HL-Intermediate		L2-Intermediate	
	<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value
(Intercept)	55.853	.000***	9.917	.002**	4.592	.032*
Focus	35.628	.000***	5.518	.019*	1.424	.233
Animacy	98.504	.000***	20.395	.000***	19.916	.000***
Def	9.311	.002**	.180	.672	7.359	.007**
Focus:Animacy	5.939	.015*	.830	.362	3.284	.070.
Focus: Def	2.505	.114	.153	.695	3.573	.059.
Animacy: Def	16.281	.000***	8.494	.004**	.703	.402
Foc:Anim:Def	1.178	.278	13.922	.000***	11.547	.001**

group with a preference for CE within each factor condition. Overall, more individuals in NS (81%) and HL (67%) displayed a higher rate of CE than CM in the eight conditions of object CE. While 53% of L2 also displayed this preference, almost an equal number of individuals had the opposing preference, and a further breakdown shows 16% of L2 individuals providing as many as 37-48 (out of 48) case-marked objects. The percentage of HL individuals with an overall preference for CE was in between that of the NS and L2 as shown in Figure 4.4.

For conditions in Focus, 93% of NS and 72% of HL dropped case more frequently in the Non-CF than the CF condition while only 41% of L2 had this preference. For conditions in Animacy, all groups (NS: 100%, HL: 75%, L2: 66%) had more individuals dropping case more frequently in the Inanimate than the Human condition. All individuals in NS had this preference,

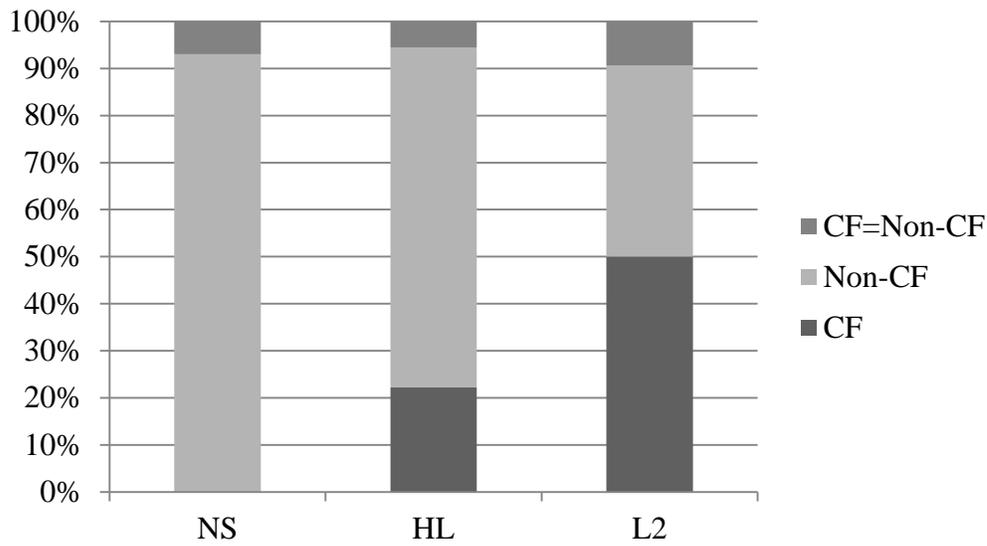


**Figure 4.4 Percentage of individuals with an overall preference for CE or CM in objects (Written task)**

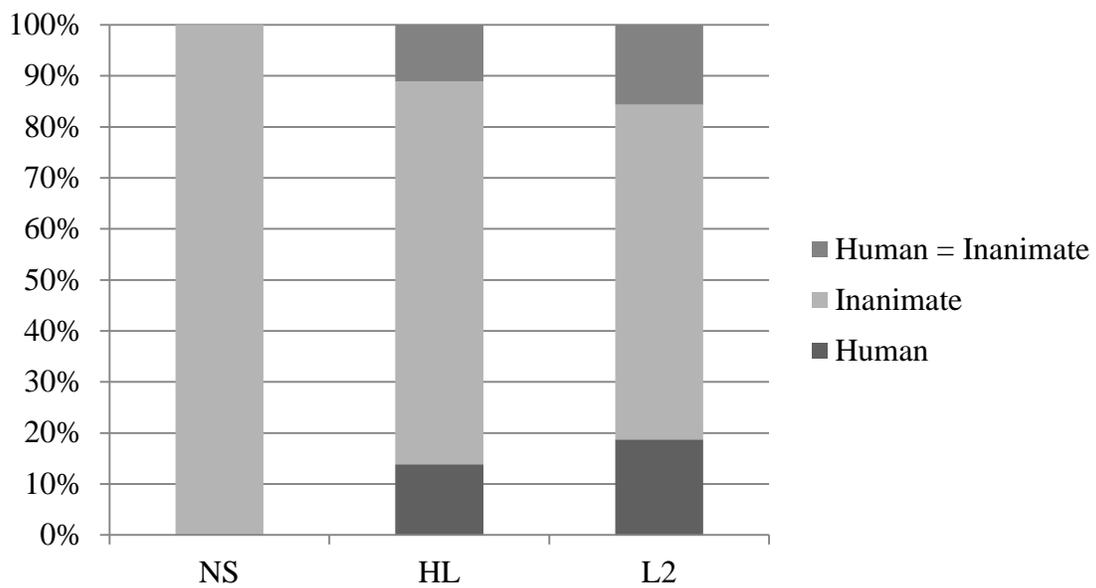
and they exhibited preferences that were stronger than those of individuals in HL and L2. The strength of preference was measured by the difference in the frequency count of CE in the opposing conditions of each factor in each individual (0-2: Similar preference, 3-7: Weak preference, 8-12: Medium preference, above 12: Strong preference). For conditions in Definiteness, 65% of NS dropped case more frequently in the Indefinite than the Definite condition while 47% of HL and only 22% of L2 displayed this preference. That is, more individuals in NS preferred to drop case in the Indefinite than the Definite condition whereas more individuals in HL and L2 preferred to drop case in the Definite than the Indefinite condition. However, the strength of these preferences in all three groups was not very strong. Overall, the individual results show NS and L2 exhibiting opposing preferences except in the factor of Animacy, and HL always showing preferences that are in between those of NS and L2. These results are summarized in Table 4.17 and Figures 4.5 – 4.7 below.

**Table 4.17 Percentage (%) of individuals with a preference for object CE within each factor condition and the strength of these preferences (Written task)**

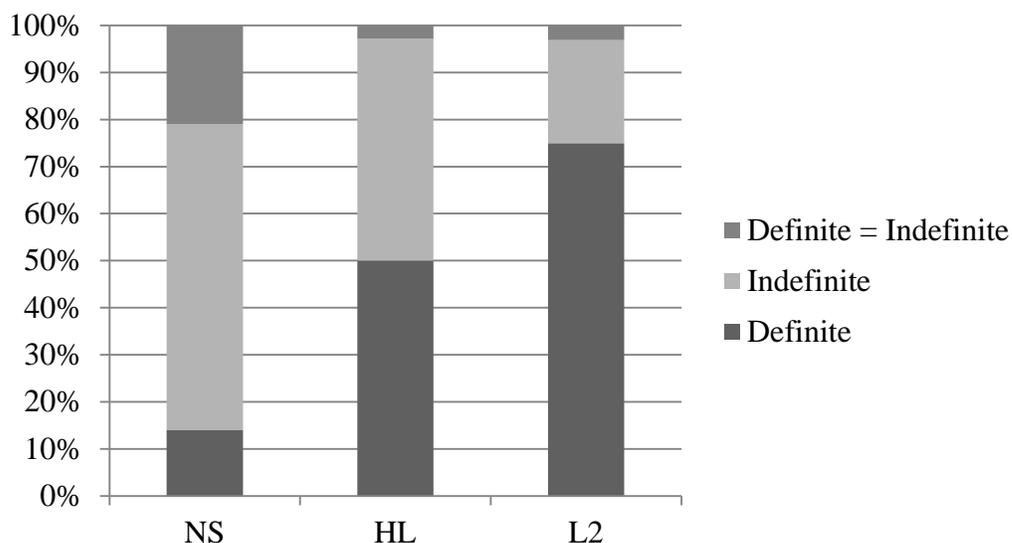
		NS	HL	L2
Focus	CF	0	22.22	50
	Non-CF	93.02	72.22	40.63
	CF = Non-CF	6.98	5.56	9.38
	Similar (0-2)	37.21	47.22	56.25
	Weak (3-7)	51.16	47.22	40.63
	Medium (8-12)	11.63	5.56	3.13
	Strong (>12)	0	0	0
Animacy	Human	0	13.89	18.75
	Inanimate	100	75	65.63
	Human = Inanimate	0	11.11	15.63
	Similar (0-2)	0	41.67	43.75
	Weak (3-7)	34.88	50	46.88
	Medium (8-12)	58.14	8.33	9.38
	Strong (>12)	6.98	0	0
Definiteness	Definite	13.95	50	75
	Indefinite	65.12	47.22	21.88
	Definite = Indefinite	20.93	2.78	3.13
	Similar (0-2)	65.12	55.56	37.5
	Weak (3-7)	34.88	44.44	59.38
	Medium (8-12)	0	0	0
	Strong (>12)	0	0	3.13



**Figure 4.5 Percentage of individuals with a preference for object CE in Focus conditions (Written task)**



**Figure 4.6 Percentage of individuals with a preference for object CE in Animacy conditions (Written task)**



**Figure 4.7 Percentage of individuals with a preference for object CE in Definiteness conditions (Written task)**

#### 4.2.9.3 Summary

The overall results of object CE revealed differences in all three groups but notable similarities between NS and HL. In contrast, L2 judgments were quite different from those of others. In NS judgments, bare objects were most frequent in the [Non-CF, Inanimate, Indefinite] condition and least frequent in the [CF, Human, Definite] condition, which matched the results of Lee (2006a). HL judgments were similar to those of NS in the use of Focus and Animacy but mainly differed in the use of Definiteness. The L2 learners, on the other hand, showed variable patterns in Focus and Definiteness and were almost equally divided between the opposing conditions of each factor that led to chance performance in the selection of case-marked vs. bare objects. Overall, NS and HL significantly relied on Focus and Animacy whereas L2 relied on Animacy and Definiteness to guide their judgments. While all three groups were different in the

employment of the three factors and their interactions, the difference between NS and L2 was especially salient in both group and individual results. Even when proficiency-matched bilinguals were compared to control for proficiency effects, HL were more native-like than L2 in their judgments, which suggests that group and individual differences in the results are not an effect of proficiency but of group. Contra predictions that the identifying function precedes the distinguishing function of case-marking in Korean, Animacy, instead of Focus, had the strongest influence on object CE for all groups for reasons that are unclear at present. As for the effects of structural priming, NS and L2 groups were primed by bare objects in the previous utterance but were not significantly influenced by case-marked objects in the previous utterance. Among the three groups, HL seemed least affected by priming effects. The individual results mirrored group preferences and showed NS individuals exhibiting stronger preferences than the bilinguals overall. Individuals in NS and L2 tended to have opposing preferences except in the factor of Animacy, and HL individuals showed preferences that are in between those of NS and L2.

#### 4.2.10 Results: Subject CE

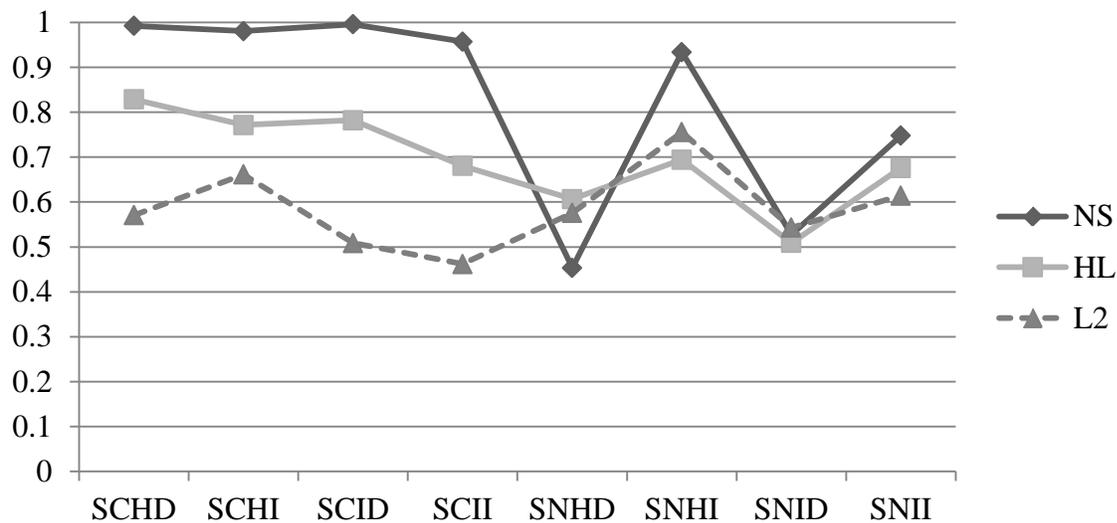
##### 4.2.10.1 Group results

Mean scores and SD values of case-marked subjects as displayed in Table 4.18 and Figure 4.8 show NS rarely dropping case in CF conditions and the [Non-CF, Human, Indefinite] condition but frequently dropping case in other Non-CF conditions. HL exhibited a similar pattern but CE occurred more frequently overall especially in CF conditions. L2 judgments in Non-CF conditions were similar to those of HL and NS, but the mean scores of CF conditions were much lower than those of HL and NS. It can be noted that while NS hardly dropped case in CF conditions, L2 dropped case more frequently in CF than Non-CF conditions. Despite such

differences in CF conditions, all groups patterned similarly in Non-CF conditions where Definiteness had an evident effect with CE occurring more frequently in the Definite than the Indefinite condition.

**Table 4.18 Mean and standard deviation values of case-marked subjects (Written task)**

	SCHD	SCHI	SCID	SCII	SNHD	SNHI	SNID	SNII
NS	.99	.98	1.00	.96	.45	.93	.53	.75
	(.04)	(.09)	(.03)	(.07)	(.41)	(.20)	(.43)	(.29)
HL	.83	.77	.78	.68	.61	.69	.51	.68
	(.36)	(.41)	(.41)	(.43)	(.43)	(.46)	(.50)	(.46)
L2	.57	.66	.51	.46	.58	.76	.54	.61
	(.49)	(.48)	(.48)	(.48)	(.47)	(.44)	(.51)	(.49)



**Figure 4.8 Mean scores of case-marked subjects in the written task**

When the relative frequency of CE was examined within the conditions of each factor using the chi-square test, NS and HL dropped case significantly more frequently in Non-CF than CF and in Inanimate than Human. There were a significantly higher number of bare subjects in Definite than Indefinite in NS judgments, but HL did not significantly differentiate the two Definiteness conditions. While L2 judgments were similar to those of NS with respect to Animacy and Definiteness, they differed in the conditions of Focus with bare subjects surfacing significantly more frequently in CF than Non-CF conditions as shown in Table 4.19.

**Table 4.19 Frequency (%) of bare subjects within each factor (Written task)**

	NS	HL	L2
Focus	Non-CF (95%) > CF (5%) *** ( $\chi^2 = 354.48, p < .001$ )	Non-CF (62%) > CF (38%) *** ( $\chi^2 = 41.85, p < .001$ )	CF (54%) > Non-CF (46%) * ( $\chi^2 = 6.19, p = .013$ )
Animacy	Inanimate (55%) > Human (45%) *** ( $\chi^2 = 18.66, p < .001$ )	Inanimate (55%) > Human (45%) ** ( $\chi^2 = 7.94, p = .005$ )	Inanimate (56%) > Human (44%) *** ( $\chi^2 = 17.21, p < .001$ )
Def	Definite (73%) > Indefinite (27%) *** ( $\chi^2 = 94.14, p < .001$ )	Definite (52%) > Indefinite (48%) ( $\chi^2 = 1.09, p = .297$ )	Definite (55%) > Indefinite (45%) ** ( $\chi^2 = 10.33, p = .001$ )

The percentage and frequency count of subject CE in each condition in Table 4.20 show all three groups exhibiting different preferences. NS dropped the highest number of case-markers in

the [Non-CF, Human, Definite] condition and the least in the [CF, Inanimate, Definite] condition. HL judgments differed from NS judgments in the direction of Animacy and dropped case most frequently in the [Non-CF, Inanimate, Definite] condition and least frequently in the [CF, Human, Definite] condition. L2 judgments differed from NS judgments in the direction of all three factors and dropped case most frequently in the [CF, Inanimate, Indefinite] condition and least frequently in the [Non-CF, Human, Indefinite] condition.

**Table 4.20 Percentage and frequency of subject CE in each condition (Written task)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
NS	1%	1%	0%	3%	39%	5%	34%	18%
	(2)	(5)	(1)	(11)	(141)	(17)	(122)	(65)
HL	7%	9%	9%	13%	16%	12%	20%	13%
	(37)	(50)	(47)	(69)	(85)	(66)	(106)	(70)
L2	13%	10%	15%	16%	13%	8%	14%	12%
	(83)	(63)	(93)	(101)	(82)	(48)	(89)	(73)

The results of the chi-square test using the frequency count of CE in each condition as shown in Table 4.21 reveal robust relative strength relationships in NS and HL judgments in which Focus is strongest followed by Definiteness and then Animacy, which matches the native speaker data in Experiment 1. Significant strength relationships were also present in L2 judgments: Definiteness was the strongest factor, but the strength relationship between Focus and Animacy was not clear. These results suggest that NS and HL primarily rely on Focus as the most prominent cue, while L2 primarily rely on Definiteness.

**Table 4.21 Relative strength of factors in subject CE (Written task)**

Factor in control	NS	HL	L2
CF	None	None	Def > Anim** ( $\chi^2 = 10.457, p = .001$ )
Non-CF	Def > Anim*** ( $\chi^2 = 108.561, p < .001$ )	Def > Anim*** ( $\chi^2 = 18.418, p < .001$ )	Def > Anim*** ( $\chi^2 = 16.661, p < .001$ )
Human	Foc > Def*** ( $\chi^2 = 12.295, p < .001$ )	Foc > Def** ( $\chi^2 = 8.577, p = .002$ )	Def > Foc*** ( $\chi^2 = 13.414, p < .001$ )
Inanimate	Foc > Def*** ( $\chi^2 = 71.163, p < .001$ )	Foc > Def * ( $\chi^2 = 4.767, p = .019$ )	Def > Foc** ( $\chi^2 = 7.224, p = .005$ )
Definite	Foc > Anim*** ( $\chi^2 = 152.564, p < .001$ )	Foc > Anim*** ( $\chi^2 = 50.206, p < .001$ )	None
Indefinite	Foc > Anim*** ( $\chi^2 = 59.5, p < .001$ )	Foc > Anim* ( $\chi^2 = 4.767, p = .019$ )	None
OVERALL	Foc > Def > Anim	Foc > Def > Anim	Def > Foc, Anim

Next, the main effect and interaction of the three factors were examined using logit mixed models in R. NS was significantly affected by Focus ( $z(2061) = 10.290, p < .001$ ) and Animacy ( $z(2061) = 2.807, p < .01$ ) displaying more frequent CE in Non-CF and Inanimate conditions. Significant interactions were also present between Focus and Animacy ( $z(2061) = -4.296, p < .001$ ) and Focus and Definiteness ( $z(2061) = 5.386, p < .001$ ). Likewise, HL learners were

significantly influenced by Focus ( $z(1723) = 5.085, p < .001$ ) and Animacy ( $z(1723) = 4.942, p < .05$ ) displaying more frequent CE in Non-CF and Inanimate conditions, and significant interaction was present between Focus and Definiteness ( $z(1723) = 4.680, p < .001$ ). In L2 judgments, all three factors were significant (Focus:  $z(1526) = -2.962, p < .01$ , Animacy:  $z(1526) = -4.264, p < .001$ , Definiteness:  $z(1526) = -3.613, p < .001$ ) with more frequent CE occurring in CF, Inanimate, and Definite conditions. Also, there were significant interactions between Focus and Definiteness ( $z(1526) = 2.100, p < .05$ ) and Animacy and Definiteness ( $z(1526) = -2.732, p < .01$ ).

When written proficiency scores were added to the mixed model as a fixed effect to examine proficiency effects in the bilingual groups, results for HL revealed a main effect of Proficiency ( $z(1723) = 4.353, p < .001$ ) and a significant interaction between Proficiency and Focus ( $z(1723) = 4.471, p < .001$ ) with higher proficiency HL learners showing heightened sensitivity to the factor of Focus. On the other hand, there was no effect of Proficiency for L2 learners but a marginally significant interaction was present between Proficiency and Animacy ( $z(1526) = 1.732, p = .08$ ) with higher proficiency L2 learners exhibiting greater sensitivity to Animacy. These results are summarized in Table 4.22.

When 'Group' was added to the mixed model as another fixed effect to observe group effects, NS was significantly different from the two bilingual groups ( $z(5316) = -8.540, p < .001$ ) in the use of Focus ( $z(5316) = -9.301, p < .001$ ), and the two bilingual groups were significantly different from each other ( $z(5316) = -2.658, p = .008$ ) in the use of Focus ( $z(5316) = -7.270, p < .001$ ) and Definiteness ( $z(5316) = -2.059, p = .039$ ). More specifically, post-hoc group comparisons between NS and HL showed a main effect of Group ( $z(3786) = 6.487, p < .001$ ) and significant differences in the use of Focus ( $z(3786) = 7.702, p < .001$ ) as well as in the

**Table 4.22 Main effect and interaction of factors in subject CE (Written task)**

	NS		HL		L2	
	z-score	p-value	z-score	p-value	z-score	p-value
(Intercept)	2.126	.034 *	1.701	.089 .	2.043	.041 *
Focus	10.290	< .001 ***	5.085	< .001 ***	-2.962	.003 **
Animacy	2.807	.005 **	4.942	< .001 ***	4.264	< .001 ***
Def	-1.162	.245	-0.073	.942	-3.613	< .001 ***
Focus:Animacy	-4.296	< .001 ***	-1.756	.079 .	.426	.670
Focus: Def	5.386	< .001 ***	4.680	< .001 ***	2.100	.036 *
Animacy: Def	.658	.511	1.358	.175	-2.732	.006 **
Foc:Anim:Def	1.733	.083 .	-1.613	.107	-.464	.643
Proficiency			4.353	< .001 ***	1.293	.196
Foc: Prof			4.471	< .001 ***	.170	.865
Anim: Prof			-0.761	.446	1.732	.083.
Def:Prof			-1.190	.234	1.546	.122

interactions between Focus and Definiteness ( $z(3786) = 3.366, p < .001$ ) and Animacy and Definiteness ( $z(3786) = -2.363, p = .02$ ). When NS and L2 were compared, there was a main effect of Group ( $z(3590) = 9.444, p < .001$ ) and significant differences in the use of Focus ( $z(3590) = 10.564, p < .001$ ) and interaction between Focus and Definiteness ( $z(3590) = 4.447, p < .001$ ). The comparison between the two bilingual groups also showed a main effect of Group ( $z(3252) = 2.550, p = .011$ ) and significant differences in the use of Focus ( $z(3252) = 7.192, p < .001$ ) and Definiteness ( $z(3252) = 2.067, p = .039$ ). Significant differences were also found in

the interactions between Focus and Definiteness ( $z(3252) = 2.072, p = .038$ ) and Animacy and Definiteness ( $z(3252) = 2.196, p = .028$ ). As such, all groups were significantly different from each other especially in their use of Focus and its interaction with Definiteness. These comparisons are summarized in Table 4.23.

**Table 4.23 Post-hoc group comparisons of subject CE (Written task)**

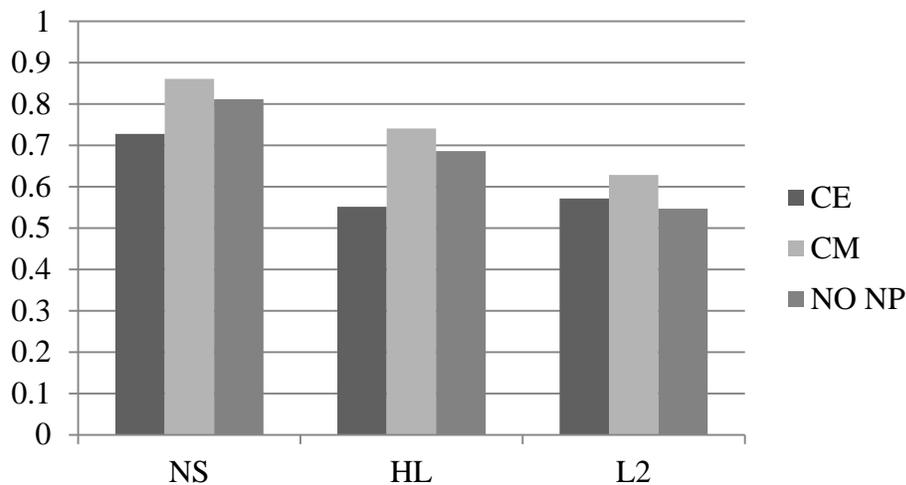
	NS vs. HL		L2 vs. HL		NS vs. L2	
	z	p	z	p	z	p
Intercept	1.544	.123	.733	.463	1.085	.278
Group	6.487	< .001 ***	2.550	.011*	9.444	< .001 ***
Foc: Group	7.702	< .001 ***	7.192	< .001 ***	10.564	< .001 ***
Anim: Group	-.456	.648	-.809	.419	-.496	.620
Def: Group	-.738	.460	2.067	.039 *	.489	.625
Foc:Anim:Group	-1.460	.144	.021	.983	-1.141	.254
Foc:Def:Group	3.366	< .001 ***	2.072	.038 *	4.447	< .001 ***
Anim:Def:Group	-2.363	.018 *	2.196	.028 *	-1.572	.116
Foc:Anim:Def:Group	1.029	.303	-.697	.486	.434	.664

Lastly, structural priming effects were examined in the group results. The mean scores of the three priming conditions as displayed in Table 4.24 and Figure 4.9 show NS and HL exhibiting a similar pattern in which CE-primed condition is most prone to CE and CM-primed condition most prone to case-marking. Although similar in pattern, NS had a higher suppliance of case-markers than HL overall. L2 showed a tendency to mark CM-primed conditions with case, but

dropped case most frequently in the No-prime/NP condition. When tested for group effects using logit mixed models in R, NS was significantly different from the bilinguals ( $z(5318) = -5.816, p < .001$ ) and the bilinguals were also significantly different from each other ( $z(5318) = -2.111, p = .035$ ).

**Table 4.24 Mean and SD of case-marked subjects in priming conditions (Written task)**

	NS	HL	L2
CE-primed	.73 (.27)	.55 (.45)	.57 (.47)
CM-primed	.86 (.18)	.74 (.42)	.63 (.47)
No-prime/NP	.81 (.18)	.69 (.44)	.55 (.49)



**Figure 4.9 Mean scores of case-marked subjects in priming conditions (Written task)**

When the three priming conditions were compared, the CM-primed condition was significantly different from the CE-primed condition in the results for all three groups (NS:

$z(2063) = 2.957, p = .003$ , HL:  $z(1725) = 3.927, p < .001$ , L2:  $z(1529) = 3.120, p = .002$ ).

Moreover, the CE-primed condition was significantly different from the No-NP condition in NS ( $z(2064) = 7.427, p < .001$ ) and HL ( $z(1725) = 4.515, p < .001$ ), but not in L2 judgments. The CM-primed condition was also significantly different from the No-prime/NP condition in all three groups (NS:  $z(2063) = 6.468, p < .011$ , HL:  $z(1725) = 5.285, p < .001$ , L2:  $z(1529) = 2.409, p = .016$ ). In sum, there were significant differences between all three conditions in all groups except in the difference between CE-primed and No-prime/NP conditions in L2 judgments. As such, priming effect was present in all three groups' judgments, but this effect was not as strong in L2 judgments as in NS or HL judgments.

When proficiency-matched bilinguals from HL and L2 were compared to control for proficiency effects as has been done for object CE in the previous section, the results were quite similar to those of the whole group as can be seen in Tables 4.25– 4.27 and Figure 4.10. The proficiency-matched bilingual learners at the intermediate level were quite representative of their respective groups in the overall judgment patterns as well as the use of the factors in subject CE. All groups patterned similarly in Non-CF conditions with CE occurring more frequently in the Definite than the Indefinite condition, but the bilinguals dropped case significantly more frequently than NS in the CF conditions. NS and HL exhibited similar patterns of judgments overall, but HL dropped case more frequently than NS in all conditions. Similar to the whole group results, L2 employed the factor of Focus in the opposite direction dropping case more frequently in CF than Non-CF conditions.

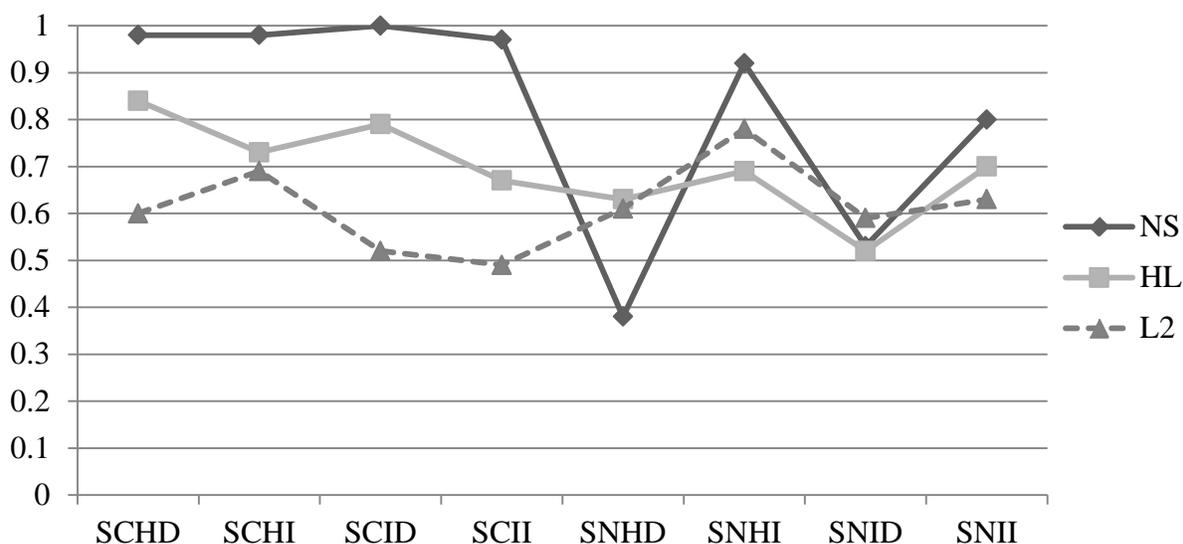
When the relative frequency of CE was examined within the conditions of each factor as shown in Table 4.26, NS and HL dropped case significantly more frequently in Non-CF than CF

conditions, but L2 showed an opposite pattern. NS and L2 significantly differentiated the Definiteness conditions with CE occurring significantly more frequently in Definite than Indefinite conditions, but HL did not differentiate these conditions. As such, HL were more native-like than L2 in their use of Focus, but L2 were more native-like than HL in their use of Definiteness, which resembles the whole group results. In addition, the main effect and interaction of factors in the proficiency-matched bilinguals' judgments shown in Table 4.27 were similar to what was found for their respective groups: HL largely depended on Focus and Animacy while L2 employed all three factors in a distinctive manner. When these subgroups were compared using post-hoc group comparisons, no significant difference was found between NS and HL ( $z(1964) = -.049, p = .96$ ), but marginal differences were found between NS and L2 ( $z(1965) = -1.653, p = .07.$ ) and between HL and L2 ( $z(1916) = -1.660, p = .09$ ). Similar to what has been found for object CE, these results suggest that the differences found between the two bilingual groups are not an effect of proficiency but of group itself.

**Table 4.25 Mean values of case-marked subjects by proficiency-matched bilinguals**

**(Written task)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
NS	.98 (.13)	.98 (.12)	1 (0)	.97 (.17)	.38 (.20)	.92 (.18)	.53 (.12)	.8 (.23)
HL-Inter	.84 (.36)	.73 (.43)	.79 (.40)	.67 (.43)	.63 (.43)	.69 (.46)	.52 (.51)	.70 (.45)
L2-Inter	.6 (.49)	.69 (.44)	.52 (.48)	.49 (.45)	.61 (.47)	.78 (.46)	.59 (.51)	.63 (.49)



**Figure 4.10 Mean scores of case-marked subjects by proficiency-matched bilinguals (Written task)**

**Table 4.26 Frequency (%) of bare subjects within each factor by proficiency-matched bilinguals (Written task)**

	NS	HL-Intermediate	L2-Intermediate
Focus	Non-CF (95%) > CF (5%) *** ( $\chi^2 = 172.25, p < .001$ )	Non-CF (62%) > CF (38%) *** ( $\chi^2 = 19.08, p < .001$ )	CF (55%) > Non-CF (45%) * ( $\chi^2 = 6.01, p = .014$ )
Animacy	Human (51%) > Inanimate (49%) ( $\chi^2 = .175, p = .676$ )	Inanimate (55%) > Human (45%) . ( $\chi^2 = 3.58, p = .058$ )	Inanimate (57%) > Human (43%) *** ( $\chi^2 = 12.341, p < .001$ )
Definiteness	Definite (77%) > Indefinite (23%) *** ( $\chi^2 = 60.44, p < .001$ )	Indefinite (50%) = Definite (50%) ( $\chi^2 = .021, p = .884$ )	Definite (54%) > Indefinite (46%) * ( $\chi^2 = 4.78, p = .029$ )

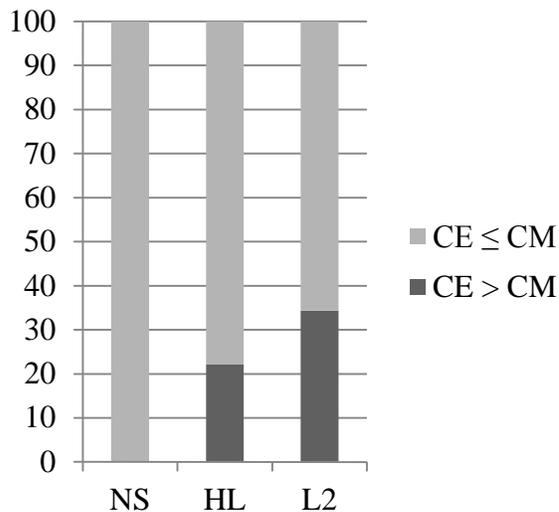
**Table 4.27 Main effect and interaction of factors in subject CE by proficiency-matched bilinguals (Written task)**

	NS		HL-Intermediate		L2-Intermediate	
	z -score	p -value	z -score	p -value	z -score	p -value
(Intercept)	289.593	.000***	71.630	.000***	34.150	.000***
Focus	199.661	.000***	17.381	.000***	5.757	.016*
Animacy	245.209	.000***	4.140	.042*	11.770	.001**
Def	92.703	.000***	.937	.333	6.321	.012*
Focus:Animacy	149.919	.000***	.017	.898	.765	.382
Focus: Def	182.317	.000***	14.252	.000***	1.812	.178
Animacy: Def	249.359	.000***	1.008	.315	4.926	.026*
Foc:Anim:Def		- <sup>α</sup>	.616	.433	.048	.826

<sup>α</sup> Unable to compute due to numerical problems

#### 4.2.10.2 Individual results

Overall, a high number of individuals in all three groups displayed more CM than CE in the eight conditions of subject CE. In fact, *all* individuals in NS preferred case-marked subjects over bare subjects, and 78% of HL and 66% of L2 also had this preference as shown in Figure 4.11. In conditions of Focus, 98% of NS and 75% of HL preferred to drop case in the Non-CF than the CF condition, while only 31% of L2 had this preference. None of the NS had the opposite preference with the remaining 2% providing the same rate of CE in both Focus conditions. While most individuals in HL exhibited preferences that are similar to those of individuals in NS, the

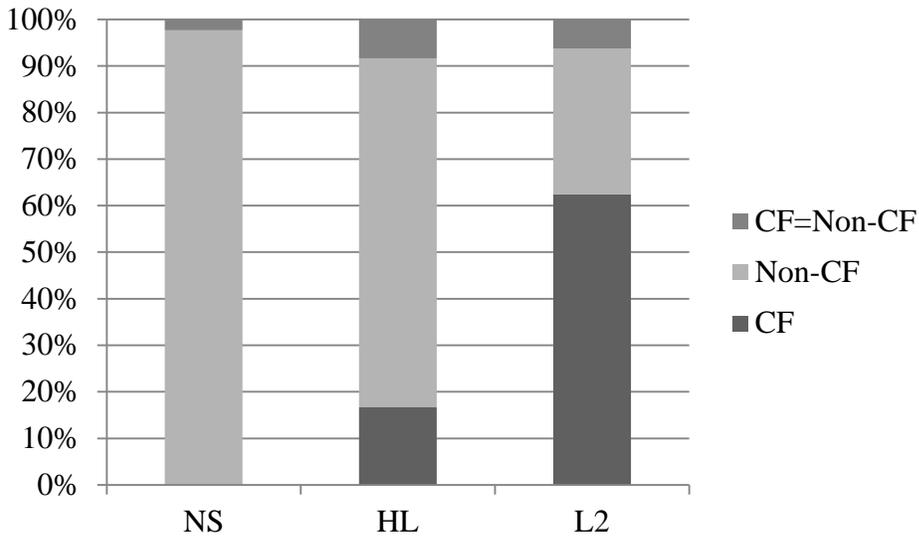


**Figure 4.11 Percentage of individuals with an overall preference for CE or CM in subjects (Written task)**

strength of their preferences was not as strong. In Animacy conditions, more individuals in all groups—53% of NS, 61% of HL, and 75% of L2—preferred to drop case in the Inanimate than the Human condition. However, most individuals in NS and HL were quite ambivalent and exhibited weak preferences unlike individuals in L2 who seemed more certain of their preferences. Lastly, 98% of NS, 53% of HL, and 56% of L2 preferred to drop case in the Definite than the Indefinite condition. Similar to what we saw in Focus conditions, individuals in NS showed strong preferences in Definiteness conditions as well. The bilinguals on the other hand were more ambivalent and were often equally divided between the two conditions. As such, individuals in NS showed strong preferences in Focus and Definiteness conditions while the bilinguals were more variable in their responses overall. These individual results are summarized in Table 4.28 and Figures 4.12- 4.14 below.

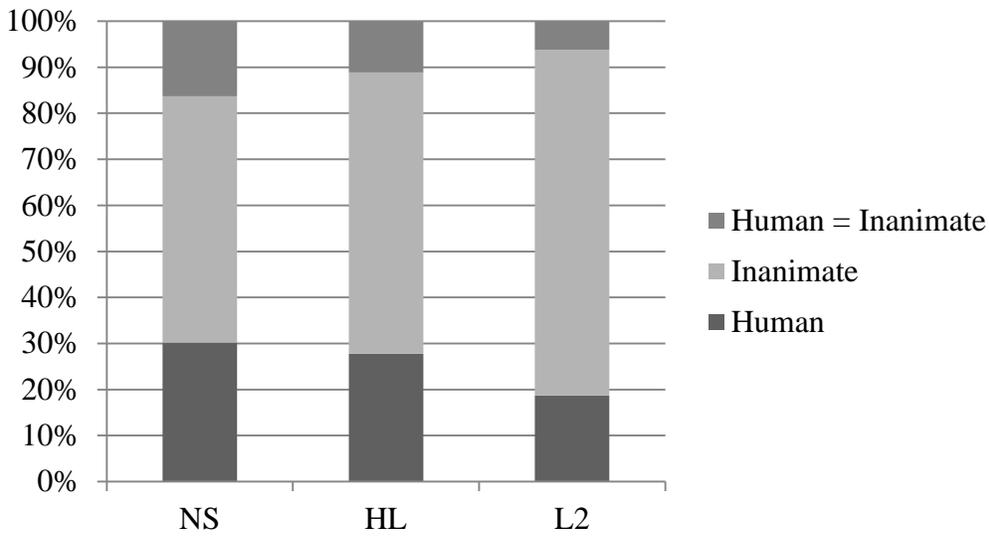
**Table 4.28 Percentage (%) of individuals with a preference for subject CE within each factor condition and the strength of these preferences (Written task)**

		NS	HL	L2
Focus	CF	0	16.67	62.5
	Non-CF	97.67	75	31.25
	CF = Non-CF	2.33	8.33	6.25
	Similar (0-2)	4.65	33.33	56.25
	Weak (3-7)	44.19	52.78	34.38
	Medium (8-12)	37.21	11.11	9.38
	Strong (>12)	13.95	2.78	0
Animacy	Human	30.23	27.78	18.75
	Inanimate	53.49	61.11	75
	Human = Inanimate	16.28	11.11	6.25
	Similar (0-2)	67.44	63.89	37.5
	Weak (3-7)	32.56	33.33	43.75
	Medium (8-12)	0	2.78	18.75
	Strong (>12)	0	0	0
Definiteness	Definite	97.67	52.78	56.25
	Indefinite	0	30.56	28.13
	Definite = Indefinite	2.33	16.67	15.63
	Similar (0-2)	23.26	47.22	46.88
	Weak (3-7)	74.42	52.78	46.88
	Medium (8-12)	2.33	0	3.13
	Strong (>12)	0	0	3.13



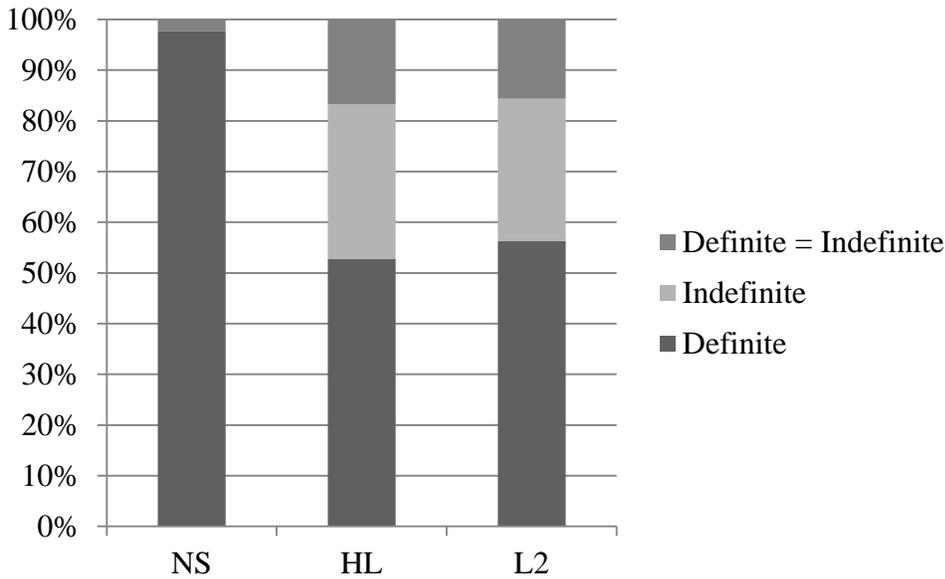
**Figure 4.12 Percentage of individuals with a preference for subject CE in Focus conditions**

**(Written task)**



**Figure 4.13 Percentage of individuals with a preference for subject CE in Animacy**

**conditions (Written task)**



**Figure 4.14 Percentage of individuals with a preference subject CE in Definiteness conditions (Written task)**

#### 4.2.10.3 Summary

Similar to the results for object CE, all three groups differed in their judgments of subject CE, but NS and HL exhibited many similarities in overall judgment patterns. NS and HL mainly dropped case in Non-CF and Definite conditions, and Focus was the strongest factor, which interacted with the other factors to determine subject CE. L2, on the other hand, diverged from the other groups mainly in the use of Focus and primarily relied on the factor of Definiteness. L2 dropped case more frequently in the CF than the Non-CF condition, as opposed to NS who rarely dropped case in CF conditions, and this divergent pattern in the employment and integration of Focus resulted in a pattern of judgments that is significantly different from NS and HL judgments. Nevertheless, all three factors and their interactions were significant for L2, and their use of Animacy and Definiteness was often native-like. The divergent but distinct pattern of

subject CE in L2 judgments suggests that L2 learners have developed their own systematic analysis of subject CE primarily using the factor of Definiteness.

In group comparisons, NS was significantly different from the bilinguals mainly in the use of Focus, while the two bilinguals groups were significantly different in the use of Focus and Definiteness. Proficiency effects were present in HL judgments especially in its interaction with Focus, but no proficiency effect was found in L2 judgments. Many parallels could be drawn between the results for whole group and proficiency-matched bilinguals, and thus the significant differences we see in the results are an effect of group rather than proficiency. As for effects of structural priming, all three groups were significantly influenced by priming in the CM-primed condition. Moreover, NS and HL dropped case most frequently in the CE-primed condition as predicted. L2, however, dropped case most frequently in the No-Prime/NP condition and was not significantly primed by bare subjects in the previous utterance. Individual results generally reflected what has been found in the group results and showed NS displaying strong preferences in Focus and Definiteness conditions while the bilinguals were often more ambivalent and variable in their responses.

#### 4.2.11 Discussion

The present study examined bilingual acquisition of Korean CE using a written elicited production task and has found that both L2 and HL learners are different from native speakers in their judgments of object and subject CE. However, HL showed notable similarities with NS, while L2 learners were more variable and divergent especially in the employment and integration of Focus in their judgments. A closer look at the judgment patterns of the two bilingual groups is suggestive of qualitative differences in the underlying linguistic knowledge of early vs. late

bilinguals with HL learners having an advantage over L2 learners in the acquisition of the present phenomenon.

It must be noted that the native speaker data in this study did not wholly match the predictions and the results of previous studies (Lee, 2006a; Experiment 1) in several respects: Contra predictions, a) the relative strength of Animacy, not Focus, was strongest among the three factors in object CE, b) the Inanimate condition was more prone to CE than the Human condition in subject CE, and c) the factor of Definiteness did not have a main effect in both object and subject CE but was mainly significant in its interaction with other factors. Despite such differences, the overall pattern of judgments was consistent with previous findings and predictions. Focus was a strong and significant cue in both types of CE with CE occurring more frequently in Non-CF than CF conditions. The object-subject asymmetry found in Experiment 1 was also found in the results with Animacy and Definiteness affecting judgments in the expected direction for the most part. Moreover, Animacy had a stronger effect than Definiteness in object CE while Definiteness had a stronger effect than Animacy in subject CE as has been found in previous results. Multiple factors and their interactions significantly influenced CE, and a gradient pattern of judgments surfaced in object CE and in Non-CF conditions (but not CF conditions) of subject CE as expected.

As for the bilinguals, HL learners were more native-like than L2 learners, and the two bilingual groups were substantially different from each other. When compared to NS, HL learners displayed a higher rate of CE, exhibited greater ambivalence, and differed in their use of Definiteness in object CE but showed similar patterns in mean, frequency, relative strength of factors, and interaction of factors. Contra predictions that Focus will not have a consistent effect

in HL judgments, Focus had a strong and significant effect that determined both types of CE as in NS judgments. Moreover, multiple factors and their interactions were significant, and gradient statistical preferences similar to those in NS judgments were also found in HL judgments of object CE. However, significant group differences were found between NS and HL judgments of subject CE, which mainly resulted from HL learners dropping case significantly more frequently than NS in CF conditions. They also somewhat diverged in the use of Animacy and Definiteness, but significant group differences between NS and HL arose primarily from the difference in the overall frequency of CE (i.e., quantitative difference) and not in how the factors were employed and integrated into judgments. As such, HL learners were more native-like in their judgment patterns than predicted and seemed to have attained a certain degree of implicit knowledge of CE.

L2 learners, on the other hand, showed divergent patterns in both types of CE: In object CE, they showed much ambivalence and were often equally divided between the opposing conditions of each factor that led to chance performance in the selection of case-marked vs. bare objects. In subject CE, they seemed to have developed their own systematic analysis that is quite distinct from that of other groups and primarily dependent on the factor of Definiteness. In both types of CE, L2 learners' most notable difference from the other groups was their use of Focus in the opposite direction. L2 dropped case more frequently in the CF than the Non-CF condition, and the effect of Focus was not very strong or significant. Instead, L2 learners strongly depended on the factors of markedness to guide their judgments, and the relative strength relationships between the factors reveal the predominant effect of Definiteness. However, it must be noted that L2 learners were sensitive to multiple factors and their interactions and were capable of forming a systematic pattern of judgments using all three factors in subject CE. As it is, the nature of L2 difficulty in this linguistic phenomenon can be characterized by the difficulty of employing and

integrating the factors in the right direction and manner rather than acquiring sensitivity to the multiple layers of information. That is, under the assumption that incomplete acquisition in bilingualism can be put in terms of processing limitations and computational complexity, the learners seemed to have sufficient processing resources for acquiring sensitivity to multiple types of information but not enough resources for integrating the multiple cues in a native-like manner. This was especially evident in the L2 learners' divergent use of Focus, which necessitates integration of contextual information.

In addition to the factors observed above, written proficiency score was a significant predictor of the bilinguals' judgments of CE. A proficiency effect was found in HL judgments of subject but not object CE and also in L2 judgments of object but not subject CE. However, even when there was no main effect of proficiency, the proficiency scores interacted with factors that were significant in the bilinguals' judgments of CE—Focus for HL learners and Animacy for L2 learners. In other words, although written proficiency scores did not always have a main effect, the significant interactions between written proficiency and other factors suggest that the learners' proficiency scores could predict their use of those factors in their judgments. When proficiency-matched bilingual learners at the intermediate level were compared to control for proficiency effects, these learners were quite representative of their respective groups. Many parallels could be drawn between the overall group results and the results of these learners, which suggests that the significant differences between the two groups is not an effect of proficiency but group. Such results suggest that HL learners have an edge over L2 learners in this phenomenon regardless of proficiency.

Another main finding in Experiment 3 was the effect of structural priming in the results. Contrary to the predictions that bilingual learners, low proficiency L2 learners in particular, may

be more susceptible to this effect in the input than NS, priming effect was strongest in NS judgments overall. In object CE, NS and L2 were significantly primed by bare objects but not case-marked objects in the previous utterance. Although similar in overall pattern where CE occurs most frequently in the CE-primed condition and least frequently in the CM-primed condition, HL was least affected by priming effects. In subject CE, NS and HL were significantly primed by case-marked subjects as well as bare subjects in the previous utterance, but L2 was primed by case-marked subjects only and dropped case most frequently when there was no NP in the previous utterance. As such, significant priming effects were present in the bilinguals' judgments, but these effects were not consistent across both types of CE. L2 learners depended on priming effects more heavily in object CE than subject CE, whereas HL learners depended on this effect more heavily in subject CE than object CE. This seems to be in line with the prediction that the learners would be more susceptible to priming effects when they have not yet established a systematic analysis of CE. L2 learners' judgments of object CE were more ambivalent and variable than their judgments of subject CE, and priming effects were more evident in object CE than subject CE. Similarly, HL learners showed minimal dependence on priming effects in object CE for which they had developed native-like judgment patterns, but not in subject CE where judgments were more variable. In contrast to the bilinguals, priming effects were consistently present in NS judgments for the most part in both types of CE. As such, priming effects were present in all three groups as predicted, but the bilingual learners showed a tendency to disregard this effect when they were systematically relying on other cues. In line with the implicit-learning account of structural priming in the L1 literature (Chang et al. 2000, 2006), these results suggest that structural priming may be used as a potential tool for bilingual learners to "implicitly" learn a phenomenon like Korean CE especially when the learners are not

certain of the workings of the multiple factors.

Overall, the results are suggestive of qualitative differences in the underlying linguistic knowledge of the two bilingual groups. While it seems possible for HL learners to attain implicit knowledge of Korean CE, such mastery is questionable for L2 learners. L2 learners appear to have developed their own system of CE that is predominantly determined by Animacy and Definiteness, and this unlearned pattern that is independent of both L1 and L2 grammar seems to be emerging as the analysis of CE for L2 learners. However, these findings need to be reexamined using a different methodology when taking into consideration the fact that CE primarily occurs in the spoken register. An oral task may garner results that are different from those of a written task, and the HL advantage found in this experiment may be more evident in the oral task mode that measures automatic and implicit knowledge. The inclusion of an oral production task in this dissertation will thus help further our understanding on how monolingual and bilingual speakers use CE in informal speech.

#### 4.3 SUMMARY

This chapter started out by reviewing previous studies that failed to capture the complex nature of the phenomenon of CE and highlighted the need for a more comprehensive investigation on bilingual acquisition of CE. To address this need, this chapter presented an experimental study (Experiment 3) that investigates L2 and HL acquisition of Korean CE using a written elicited production task based on Lee's (2006a) validated framework of CE. The results of the study indicate that different types of bilinguals process and acquire the phenomenon of Korean CE differently with HL learners having an overall advantage over the L2 learners. In the following chapter, we will re-examine and re-evaluate these findings using a different

methodology—an oral picture description task—that will further our understanding on how this phenomenon is acquired in bilingual acquisition.

## CHAPTER 5

### BILINGUAL ACQUISITION OF KOREAN CE: ORAL TASK

This chapter presents another experimental study (Experiment 4) that investigates bilingual acquisition of case ellipsis (CE) in Korean. Similar to Experiment 3, this study examines how native speakers of Korean and bilingual learners use object and subject CE in casual speech but employs the oral production task in Experiment 2 (Chapter 3) instead of a written task to observe the same phenomenon. By comparing how the bilinguals process the phenomenon of Korean CE in different task modes, this chapter re-evaluates the findings from previous studies and examines task effects in the present linguistic phenomenon.

#### 5.1 EXPERIMENT 4: BILINGUAL ACQUISITION OF KOREAN CE (ORAL PICTURE DESCRIPTION TASK)

This study examines L2 and HL acquisition of Korean CE using an oral picture description task. The findings will be compared to the data in Experiment 3 to compare how early and late bilinguals process Korean CE in oral vs. written task modes. The research questions can be stated as the following:

- 1) Are bilingual learners sensitive to multiple factors of Focus, Animacy, and Definiteness in their judgments of object and subject CE? Are certain types of cues more readily accessible than others? How do the bilinguals compare to adult native speakers in their use of these factors? (Same as research question 1 in Experiment 3)
- 2) Do monolinguals and bilinguals process the phenomenon differently depending on task modes (oral vs. written)?

- 3) Can the HL advantage that was found in the written task (Experiment 3) be also found in the oral task?

### 5.1.1 Method

#### 5.1.1.1 Participants

The same participants in Experiment 3 (see Sections 4.2.3 and 4.2.4) partook in the experiment, and an oral proficiency test was conducted in the form of story-telling in which the participants were asked to narrate a story after reading a picture book ('frog story'). The stories were audio-recorded on a digital voice recorder and transcribed. The oral proficiency score was calculated based on the rate (%) of error-free utterances. Exact self-repetitions or repetitions of the experimenter's utterance were excluded along with incomplete utterances or single-word response. Mixed utterances with both L1 and the target language were included unless half of the words were in the L1. The oral proficiency scores of the participants in the three groups are displayed in Table 5.1 below.

**Table 5.1 Oral proficiency scores (out of 100 points)**

	NS	HL	L2
Range	97-100	53-100	55-92
Mean	98.4 (SD: 1.16)	87 (SD:11)	76 (SD:10)

When the oral proficiency scores of the three groups were compared using independent sample t-tests, all group comparisons were significantly different from each other: HL vs. L2 ( $t(66) = 3.925, p < .001$ ), NS vs. HL ( $t(76) = 6.620, p < .001$ ), and NS vs. L2 ( $t(72) = 13.827, p < .001$ ).

Similar to what has been found for written proficiency scores in the previous chapter, all three groups were significantly different in their oral proficiency with L2 learners scoring the lowest.

Speakers in NS and HL groups were recruited and tested in different locations (US vs. Korea) as specified in Section 4.2.3, and their oral proficiency scores (see Table 5.2) were compared using independent samples t-tests. No significant difference was found between the scores ( $t(40) = -.763, p = .450$ ) of native speakers who were recruited in Korea and those of native speakers recruited in the US. Similarly, there was no significant difference between the scores ( $t(34) = .605, p = .549$ ) of HL learners in Korea and those of the HL learners in the US. As such, speakers tested in different locations within groups were not significantly different from each other in their oral proficiency scores and were thus grouped together in subsequent descriptive and statistical analyses of the results.

**Table 5.2 Oral proficiency scores of NS and HL from different testing locations**

	NS		HL	
	US	KOREA	US	KOREA
Range	97-100	97-100	60-100	53-100
Mean	98.27	98.55	87.84	85.53
	(SD: 1.202)	(SD: 1.146)	(SD: 9.53)	(SD: 13.29)

#### 5.1.1.2 Oral Picture Description Task

The task used in this experiment was the oral picture description task that was used in Experiment 2 with L1-acquiring children (Chapter 3). The task examined participants'

preference and usage of case marking and case ellipsis in spoken utterances. The test design, experimental conditions, test items, and the procedure were all identical to those of Experiment 2 except that the instructions were given in English instead of Korean in the beginning of the experiment (see Section 3.2.1.2 for detailed description of the task).

#### 5.1.1.3 Procedure

The procedure was similar in format to that in Experiment 3. Participants filled out the language background questionnaire and then took the oral proficiency test. Afterwards, the oral picture description task was administered using presentation slides on a computer screen and a digital voice recorder. In case of technical difficulties, pictures and word cards were printed on paper and administered in the paper format. The whole procedure could be completed in one visit. Specific instructions and four practice items were provided in the beginning of the task, and the experimenter went over the instructions with the participants. All responses were audio-recorded on a digital voice recorder, transcribed, and coded for analysis.

#### 5.1.2 Coding

All responses were coded as ‘1’ when the object or subject NP in the answer was accompanied by a case marker and ‘0’ when the NP was bare. The responses were also coded for infelicitous (‘IF’), wrong utterance (‘WU’), scrambled (‘S’), and left-dislocated (‘LD’), and these responses were removed from further analysis.<sup>14</sup>

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<sup>14</sup> Scrambled structures were removed from analysis because scrambled NPs have a tendency to be case-marked and could provide a potential confound. Left-dislocated NPs were also removed from analysis because of proposals that view bare subjects to be a form of left-dislocated NPs that are closely tied to discourse properties (Ahn & Cho, 2007).

### 5.1.3 Predictions

Similar to the findings in Experiment 3, I predicted that all three groups would exhibit distinct judgment patterns, but that HL would show similarities with NS while L2 learners would be more variable especially in the employment and integration of Focus in their judgments. As found in Experiment 3, the difference between NS and HL would be more quantitative than qualitative in nature whereas the difference between NS and L2 would be more qualitative than quantitative. That is, HL learners would exhibit greater ambivalence and differ in the overall frequency of CE, but the relevant factors would be employed in an almost native-like manner. In contrast, L2 learners were predicted to exhibit divergent patterns in how the factors are integrated into judgments. Unlike NS and HL judgments in which Focus was predicted to be the strongest factor affecting object and subject CE, Animacy and/or Definiteness were predicted to exert a stronger effect than Focus in L2 judgments. Overall, the HL advantage that was found in the written task was expected to be more evident in the present study as suggested by previous studies that found HL learners to be more accurate than L2 learners on oral tasks (Montrul et al., 2008; Bowles, 2011).

Notwithstanding such similarities with the written task, the speakers were predicted to process the phenomenon differently in the oral task. In fact, Experiment 2 used an oral production task that is identical to the one used in the present experiment and has found several discrepancies in the adult native speakers' use of CE in their utterances. Markedness reversal in the effects of Animacy and Definiteness between subjects and objects that was found in the written task in Experiment 1 was not replicated in the oral task, and CE was found to be more prevalent in Inanimate and Definite conditions regardless of NP type. It has been speculated that the concrete representation of Inanimate or/and Definite NPs in the pictures may make them

more readily available from the immediate context than in writing and thereby result in a higher rate of CE. In line with these results, I predicted that the results of the oral task will be different from that of the written task mainly in the use of markedness factors by NS as well as the bilinguals.

#### 5.1.4 Results: Object CE

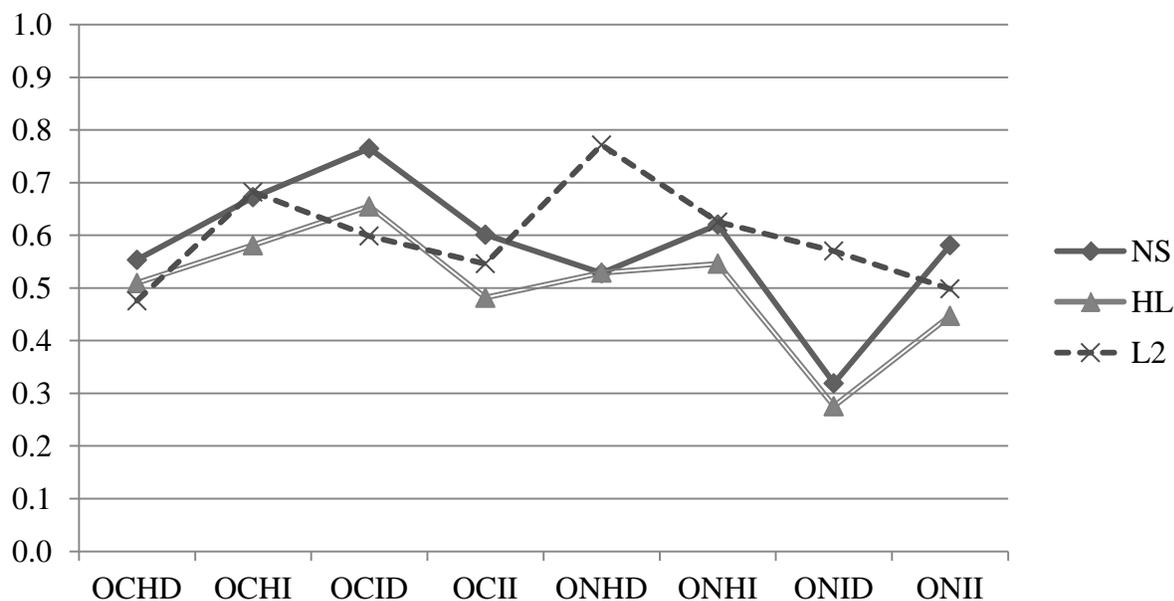
The participants' usage of object vs. subject CE was examined separately due to the distinct characteristics of the two types of CE as delineated in Chapter 2. This section presents the results for object CE, and the next section (section 5.1.5) reports the results for subject CE.

##### 5.1.4.1 Group results

Mean and frequency in each condition and within factor conditions was calculated using the coded data (0 or 1), and this binary data was further analyzed using logit mixed models in R (version 2.15.0) to examine the main effect and interaction of the three factors. Mean scores and standard deviation (SD) values of case-marked objects as displayed in Table 5.3 and Figure 5.1 show native speakers and HL learners exhibiting similar patterns in production and L2 learners showing a variable pattern overall. Even the NS displayed a lot of individual differences across the eight conditions as suggested by large SD values, but there was an evident effect of Focus with CE occurring more frequently in the Non-CF than the CF condition. HL learners exhibited a higher rate of CE than the NS but closely followed the NS production pattern. L2 learners, on the other hand, exhibited a pattern in which the workings of the three factors were unclear.

**Table 5.3 Mean and standard deviation values of case-marked objects (Oral task)<sup>15</sup>**

	OCHD	OCHI	OCID	OCII	ONHD	ONHI	ONID	ONII
NS	.55 (.46)	.67 (.43)	.76 (.41)	.60 (.49)	.53 (.47)	.62 (.47)	.32 (.37)	.58 (.46)
HL	.51 (.50)	.58 (.48)	.65 (.46)	.48 (.48)	.53 (.51)	.55 (.47)	.28 (.46)	.45 (.50)
L2	.48 (.50)	.68 (.46)	.60 (.49)	.55 (.48)	.77 (.43)	.63 (.49)	.57 (.50)	.50 (.50)



**Figure 5.1 Mean scores of case-marked objects in oral task<sup>16</sup>**

<sup>15</sup> The abbreviations for the experimental conditions in Table 3.1 are replicated below for reference.

**Table 3.1 Experimental conditions**

Object	Subject
Contrastive focus (CF), Human, Definite (OCHD)	CF, Human, Definite (SCHD)
CF, Human, Indefinite (OCHI)	CF, Human, Indefinite (SCHI)
CF, Inanimate, Definite (OCID)	CF, Inanimate, Definite (SCID)
CF, Inanimate, Indefinite (OCII)	CF, Inanimate, Indefinite (SCII)
Non-CF, Human, Definite (ONHD)	Non- CF, Human, Definite (SNHD)
Non-CF, Human, Indefinite (ONHI)	Non-CF, Human, Indefinite (SNHI)
Non-CF, Inanimate, Def (ONID)	Non- CF, Inanimate, Def (SNID)
Non-CF, Inanimate, Indef (ONII)	Non- CF, Inanimate, Indef (SNII)

When the relative frequency of CE was examined within the conditions of each factor using descriptive statistics and the chi-square test, NS dropped case significantly more frequently in the Non-CF than the CF condition, and L2 dropped case significantly more frequently in the Inanimate than the Human condition. Other comparisons between the frequency counts of the opposing conditions within each factor were not significant as shown in Table 5.4.

**Table 5.4 Frequency (%) of bare objects within each factor (Oral task)**

	NS	HL	L2
Focus	Non-CF (53%) > CF (47%) *** ( $\chi^2 = 35.53, p < .001$ )	Non-CF (52%) > CF (48%) ( $\chi^2 = .09, p = .760$ )	CF (51%) > Non-CF (49%) ( $\chi^2 = .10, p = .756$ )
Animacy	Human (52%) > Inanimate (48%) ( $\chi^2 = .04, p = .851$ )	Inanimate (51%) > Human (49%) ( $\chi^2 = .81, p = .367$ )	Inanimate (60%) > Human (40%) ** ( $\chi^2 = 11.37, p = .001$ )
Definiteness	Definite (51%) > Indefinite (50%) ( $\chi^2 = 1.71, p = .191$ )	Indefinite (53%) > Definite (47%) ( $\chi^2 = .59, p = .443$ )	Indefinite (51%) > Definite (49%) ( $\chi^2 = .83, p = .362$ )

In line with the mean scores in Figure 5.1, the frequency count of object CE in each condition in Table 5.5 indicates that both NS and HL dropped case most frequently in the [Non-CF, Inanimate, Definite] condition and least frequently in the [CF, Inanimate, Definite] condition.

<sup>16</sup> The y-axis indicates the suppliance or ellipsis of case-markers: 1 indicates suppliance and 0 indicates ellipsis.

In comparison, L2 dropped case at a similar rate in almost all conditions: The [Non-CF, Human, Definite] condition was most frequently marked with case, but other conditions were quite similar in the rate of CE. As such, L2 learners' use of object CE in production was quite different from that of NS and HL in the descriptive analysis.

**Table 5.5 Frequency of object CE in each condition (Oral task)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
NS	11%	7%	7%	12%	15%	15%	20%	12%
	(84)	(56)	(54)	(89)	(112)	(115)	(147)	(93)
HL	11%	9%	8%	13%	13%	15%	18%	13%
	(81)	(64)	(59)	(89)	(90)	(108)	(127)	(90)
L2	14%	12%	11%	13%	8%	14%	13%	14%
	(65)	(53)	(51)	(58)	(37)	(64)	(60)	(65)

Likewise, when the frequency of object CE in each condition was used to predict the relative strength of each factor using the chi-square test as has been done in Lee (2006a) and previous experiments, L2 utterances were distinct from those of NS and HL. Significant strength relationships were found in NS and HL utterances with Focus being the strongest followed by Animacy and then Definiteness. L2 utterances, on the other hand, hardly showed any significant strength relationships, but the few marginally significant relationships indicated that Definiteness and Animacy were relatively stronger than Focus as shown in Table 5.6.

These results were further analyzed using logit mixed models in R (version 2.15.0) to examine the main effect and interaction of the three factors. In NS productions of object CE,

**Table 5.6 Relative strength of factors in object CE (Oral task)**

Factor in control	NS	HL	L2
CF	None	None	None
Non-CF	Anim > Def *** ( $\chi^2 = 17.746, p < .001$ )	Anim > Def ** ( $\chi^2 = 8.347, p = .003$ )	None
Human	Foc > Def *** ( $\chi^2 = 37.333, p < .001$ )	Foc > ** ( $\chi^2 = 9.434, p = .003$ )	Def > Foc* ( $\chi^2 = 4.387, p = .025$ )
Inanimate	Foc > Def *** ( $\chi^2 = 57.894, p < .001$ )	Foc > Def *** ( $\chi^2 = 26.741, p < .001$ )	None
Definite	Foc > Anim*** ( $\chi^2 = 40.053, p < .001$ )	Foc > Anim ** ( $\chi^2 = 9.705, p = .001$ )	None (Anim > Foc: $\chi^2 = 2.638, p = .066$ )
Indefinite	Foc > Anim** ( $\chi^2 = 8.435, p = .003$ )	Foc > Anim** ( $\chi^2 = 6.619, p = .007$ )	None
OVERALL	Foc > Anim > Def	Foc > Anim > Def	Def, Anim > Foc

there was a main effect of Focus ( $z(984) = 6.965, p < .001$ ) and Definiteness ( $z(984) = -2.290, p < .05$ ) with CE occurring more frequently in Non-CF and Definite conditions. There were also significant interactions between Focus and Animacy ( $z(984) = -2.761, p < .01$ ), Focus and Definiteness ( $z(984) = 3.517, p < .001$ ), and Focus, Animacy, and Definiteness ( $z(984) = -2.578, p < .01$ ). For HL learners, there was a main effect of Focus ( $z(869) = 4.020, p < .001$ ) and Animacy ( $z(869) = 2.149, p < .05$ ) with CE occurring more frequently in Non-CF and Inanimate

conditions. Significant interactions were present between Focus and Animacy ( $z(869) = -3.204, p < .01$ ) and Focus, Animacy, and Definiteness ( $z(869) = -3.254, p < .01$ ). L2 learners, on the other hand, primarily resorted to Animacy ( $z(935) = 4.221, p < .001$ ) with CE occurring more frequently in Inanimate conditions. It appears that L2 learners' failure to develop sensitivity to or integrate Focus in the expected direction could explain the variable judgment patterns found in the group means and frequency. However, significant interactions were present between Focus and Animacy ( $z(935) = -2.833, p < .01$ ), Focus and Definiteness ( $z(935) = -3.355, p < .001$ ), and Focus, Animacy, and Definiteness ( $z(935) = -3.726, p < .001$ ). When oral proficiency scores were added to the mixed model as a fixed effect, none of the groups showed a main effect of proficiency.<sup>17</sup> These results are summarized in Table 5.7.

When 'group' was added to the mixed model as another fixed effect to observe group effects, the overall difference between the two bilingual groups was marginally significant ( $z(2793) = -1.887, p = .059$ ), but the use of Focus was significantly different ( $z(2793) = 3.081, p = .002$ ). When NS was compared to the bilinguals as a whole, they differed in their use of Focus ( $z(2793) = 4.275, p < .001$ ), Animacy ( $z(2793) = -2.081, p = .037$ ), and Definiteness ( $z(2793) = -2.364, p = .018$ ). More specifically, post-hoc group comparisons in Table 5.8 show significant differences between NS and HL in their use of Focus ( $z(1855) = 2.070, p = .038$ ) and the interaction between Focus and Definiteness ( $z(1855) = 1.894, p = .058$ ), albeit marginal. Significant differences between L2 and HL were also found in the use of Focus ( $z(1807) = 3.132, p = .002$ ) and the interaction between Focus and Definiteness ( $z(1807) = 3.059, p = .002$ ). NS and L2 were significantly different in all three factors of Focus ( $z(1922) = 5.249, p < .001$ ), Animacy ( $z(1922) = -2.623, p = .009$ ), and Definiteness ( $z(1922) = -2.392, p < .017$ ) as well as

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<sup>17</sup> A separate comparison for proficiency-matched bilinguals in the oral task was not conducted because no main effect of and interaction with oral proficiency was found for any group.

the interaction between Focus and Definiteness ( $z(1922) = 4.876, p < .001$ ). As such, L2 judgments on object CE diverged from NS judgments in all three factors while HL differed from NS mainly in their use of Focus.<sup>18</sup>

**Table 5.7 Main effect and interaction of factors in object CE (Oral task)**

	NS		HL		L2	
	z-score	p-value	z-score	p-value	z-score	p-value
(Intercept)	1.446	.148	-0.331	0.741	2.052	0.040 *
Focus	6.965	< .001 ***	4.020	< .001 ***	-0.491	0.624
Animacy	.632	.528	2.149	0.032 *	4.221	< .001 ***
Def	-2.290	.022 *	-0.105	0.917	1.169	0.242
Focus:Animacy	-2.761	.006 **	-3.204	0.001 **	-2.833	0.005 **
Focus: Def	3.517	< .001 ***	1.322	0.186	-3.355	< .001 ***
Animacy: Def	-.783	.434	-0.270	0.787	-0.597	0.551
Foc:Anim:Def	-2.578	.009 **	-3.254	0.001 **	-3.726	< .001 ***
Proficiency			0.645	0.519	1.447	0.148
Foc: Prof			1.632	0.103	0.260	0.794
Anim: Prof			0.028	0.978	-0.127	0.899
Def: Prof			0.092	0.926	-1.197	0.231

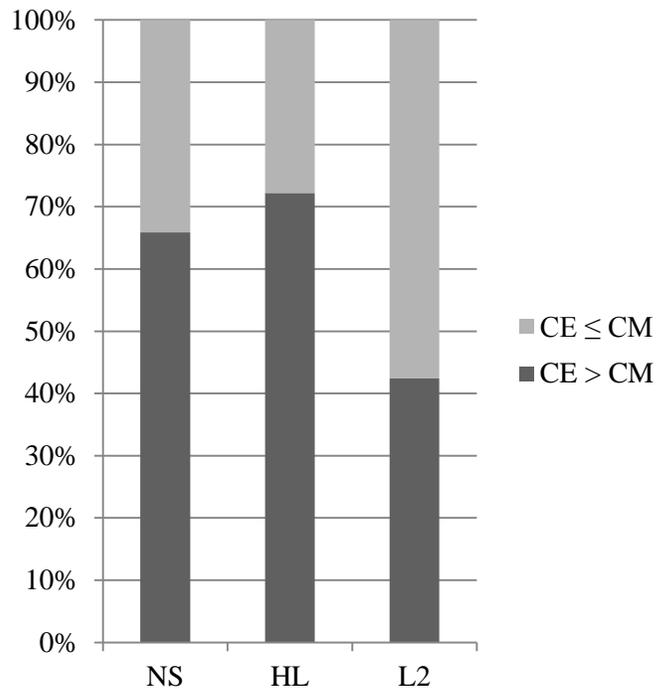
<sup>18</sup> This difference between NS and HL in the use of Focus could be somewhat puzzling, since both groups use this factor in a similar manner and direction. In accordance with the mean and frequency results, the difference appears to arise from the degree of contrast between CF vs. Non-CF conditions with the contrast being significantly stronger and more evident in NS than HL judgments.

**Table 5.8 Post-hoc group comparisons of object CE (Oral task)**

	NS vs. HL		L2 vs. HL		NS vs. L2	
	z	p	z	p	z	p
Intercept	-.204	0.838	1.895	0.058 .	2.314	0.021 *
Group	1.035	0.301	-1.782	0.075 .	-.961	0.336
Foc: Group	2.070	0.038 *	3.132	0.002 **	5.249	< .001 ***
Anim: Group	-.988	0.323	-1.532	0.125	-2.623	0.009 **
Def: Group	-1.598	0.110	-.808	0.419	-2.392	0.017 *
Foc:Anim:Group	.295	0.768	-.148	0.882	.185	0.853
Foc:Def:Group	1.894	0.058 .	3.059	0.002 **	4.876	< .001 ***
Anim:Def:Group	-.954	0.340	.580	0.562	-.115	0.908
Foc:Anim:Def:Group	.673	0.501	.209	0.834	.886	0.376

#### 5.1.4.2 Individual results

In the individual results, almost 66% of NS and 72% of HL displayed more CE than CM in all eight conditions of object CE, while only 42% of L2 displayed this preference. That is, more individuals in NS and HL preferred CE over CM than vice-versa while L2 individuals showed an opposite preference as shown in Figure 5.2. For conditions in Focus, 85% of NS and 83% of HL dropped case more frequently in the Non-CF than the CF condition, while only 36% of L2 had this preference. Conversely, 10% of NS, 11% of HL, and 45% of L2 preferred to drop case in the CF than the Non-CF condition. For conditions in Animacy, all groups were quite similar with more individuals dropping case more frequently in the Inanimate than the Human condition.

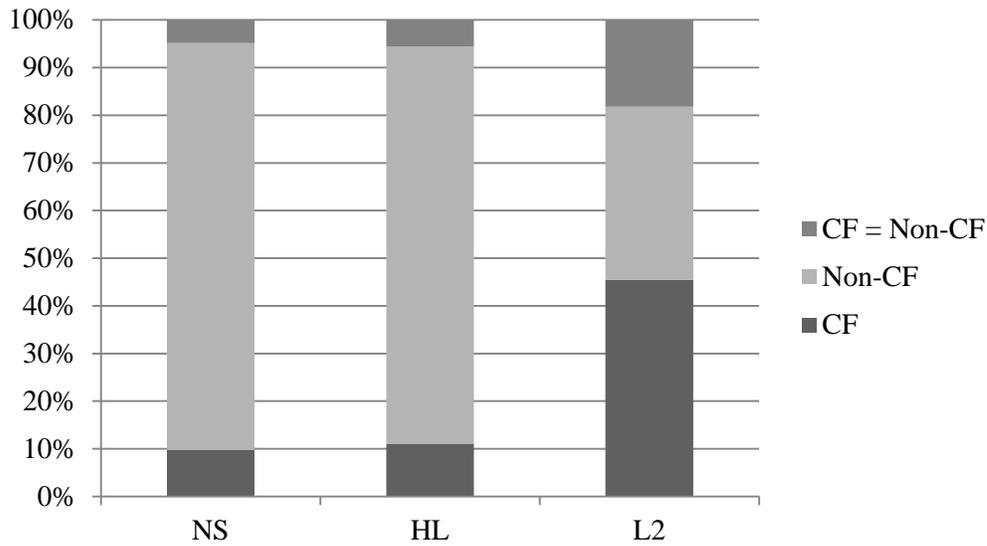


**Figure 5.2 Percentage of individuals with an overall preference for CE or CM in objects (Oral task)**

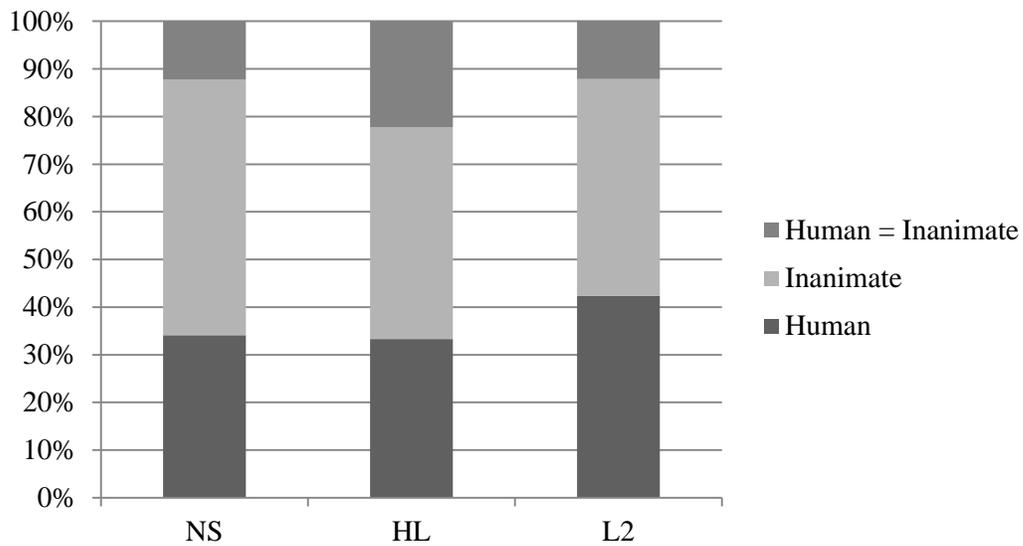
Despite this overall preference, however, the strength of preference as measured by the difference in the frequency count of CE in the opposing conditions of each factor in each individual (0-2: Similar preference, 3-5: weak preference, 6-8: medium preference, above 8: strong preference) was weak in most individuals in all three groups. Lastly, 58% of NS dropped case more frequently in the Definite than the Indefinite condition while only 33% of HL and 27% of L2 exhibited this preference. That is, more individuals in NS preferred to drop case in the Definite than the Indefinite condition whereas more individuals in HL and L2 preferred to drop case in the Indefinite than the Definite conditions. However, such preferences were quite weak like those for Animacy. The individual results are summarized in Table 5.9 and Figures 5.3-5.5 below.

**Table 5.9 Percentage (%) of individuals with a preference for object CE within each factor condition and the strength of these preferences (Oral task)**

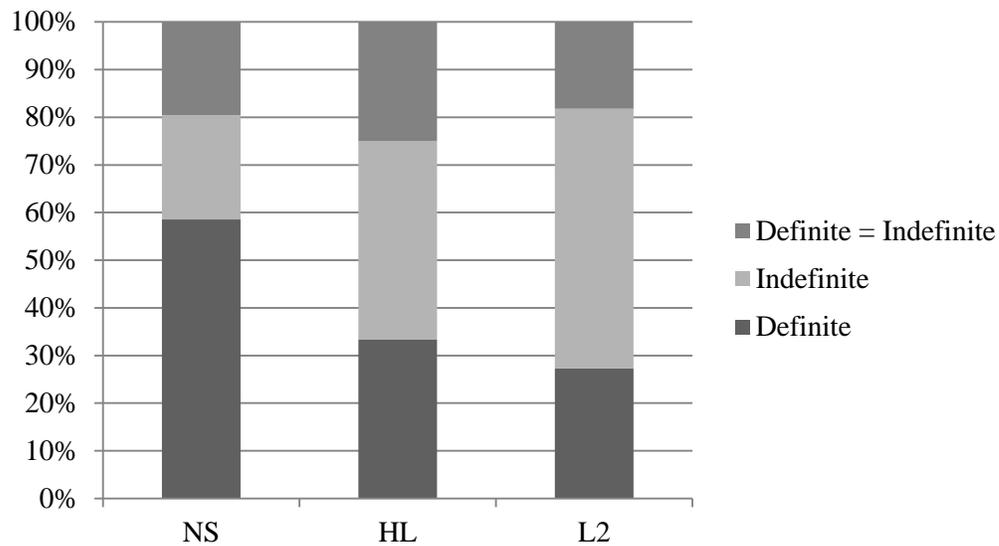
		NS	HL	L2
Focus	CF	9.76	11.11	45.45
	Non-CF	85.37	83.33	36.36
	CF = Non-CF	4.88	5.56	18.18
	Similar (0-2)	26.83	33.33	57.57
	Weak (3-5)	31.71	30.55	39.39
	Medium (6-8)	19.51	22.22	3.03
	Strong (>8)	21.95	13.89	0
Animacy	Human	34.15	33.33	42.42
	Inanimate	53.66	44.44	45.45
	Human=Inanimate	12.19	22.22	12.12
	Similar (0-2)	85.36	69.44	69.70
	Weak (3-5)	14.63	30.56	24.24
	Medium (6-8)	0	0	3.03
	Strong (>8)	0	0	3.03
Definiteness	Definite	58.54	33.33	27.27
	Indefinite	21.95	41.67	54.54
	Definite=Indefinite	19.51	25	18.18
	Similar (0-2)	70.73	80.55	75.76
	Weak (3-5)	26.83	19.44	21.21
	Medium (6-8)	2.44	0	3.03
	Strong (>8)	0	0	0



**Figure 5.3 Percentage of individuals with a preference for object CE in Focus conditions (Oral task)**



**Figure 5.4 Percentage of individuals with a preference for object CE in Animacy conditions (Oral task)**



**Figure 5.5 Percentage of individuals with a preference for object CE in Definiteness conditions (Oral task)**

The individual results of object CE are reflective of what has been found in the group results: HL and NS exhibit similarities in production patterns while L2 is more variable. More individuals in NS and HL preferred CE than CM in object CE overall, and this preference was especially shown in Non-CF, Inanimate, and Definite conditions for NS and Non-CF, Inanimate, and Indefinite conditions for HL. While their preferences differed in the factor of Definiteness, the strength of such preferences was not very strong. Many L2 individuals, however, preferred to overtly mark objects overall and had a preference for CE in CF, Inanimate, and Indefinite conditions. Such variability in L2 individuals is consistent with what we have found in the group results.

#### 5.1.4.3 Summary

The present results revealed all three groups using the relevant factors somewhat differently

in their use of object CE in the oral picture description task. Definiteness was a significant factor for NS but not HL while Animacy was significant for HL but not NS. Focus was significant for both groups but NS showed a greater contrast between CF vs. Non-CF conditions. Despite such differences, however, HL and NS exhibited similar patterns of production overall. Bare objects appeared most frequently in the [Non-CF, Inanimate, Definite] condition and least frequently in the [CF, Inanimate, Definite] condition. Similar strength relationships surfaced in both groups with Focus being the strongest followed by Animacy then Definiteness. Moreover, individual results revealed similarities in the preferences of individuals in both groups. In contrast, L2 learners were highly variable in their use of CE and often showed tendencies that are opposite from those of NS and HL in both group and individual results. They were especially different in the use of Focus and primarily relied on the factor of Animacy to guide their use of object CE. In the next section, we will examine the result for subject CE.

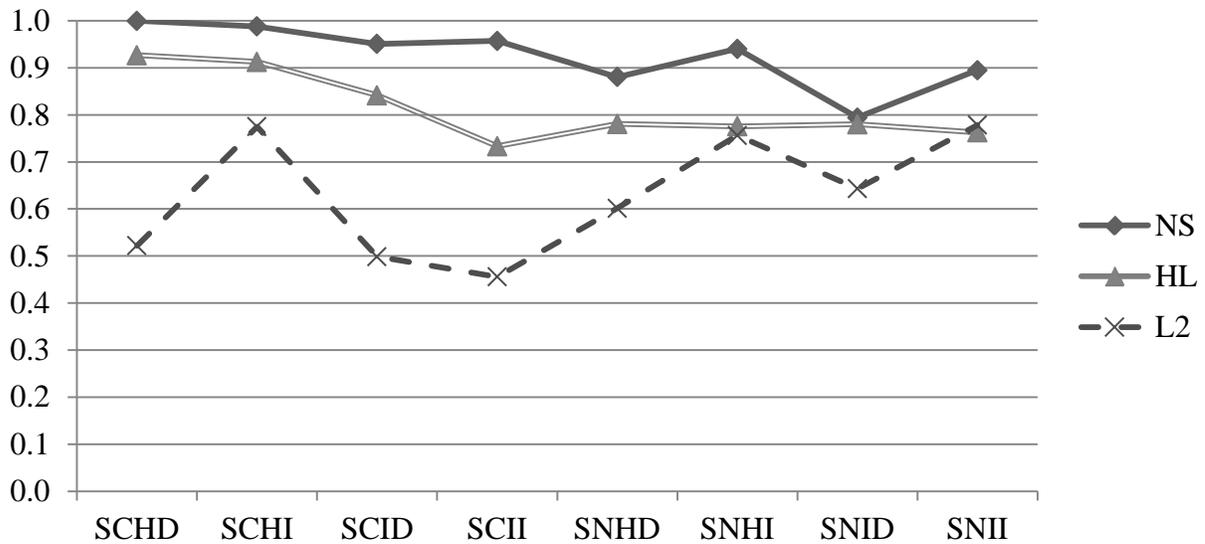
### 5.1.5 Results: Subject CE

#### 5.1.5.1 Group results

Mean and standard deviation values of case-marked subjects as displayed in Table 5.10 and Figure 5.6 show an evident effect of Focus in NS utterances with CE hardly occurring in CF conditions. NS showed minimum differences across CF conditions but exhibited variance in Non-CF conditions. In contrast, HL hardly differentiated the Non-CF conditions but showed variance in CF conditions. L2 dropped case more frequently than HL and NS in all conditions and exhibited a divergent but distinctive pattern in which all three factors seemed to have an effect. However, they were most ambivalent in their responses among the three groups as suggested by the largest SD scores.

**Table 5.10 Mean and standard deviation values of case-marked subjects (Oral task)**

	SCHD	SCHI	SCID	SCII	SNHD	SNHI	SNID	SNII
NS	1 (0)	.99 (.05)	.95 (.18)	.96 (.14)	.88 (.28)	.94 (.18)	.79 (.36)	.89 (.29)
HL	.93 (.20)	.91 (.28)	.84 (.36)	.73 (.40)	.78 (.42)	.78 (.41)	.78 (.41)	.76 (.42)
L2	.52 (.49)	.78 (.42)	.50 (.51)	.46 (.50)	.60 (.49)	.76 (.43)	.64 (.48)	.78 (.38)



**Figure 5.6 Mean score of case-marked subjects (Oral task)**

When the relative frequency of subject CE was examined within the conditions of each factor, NS and HL dropped case more frequently in the Non-CF than the CF condition, but L2 showed the opposite tendency. With regard to Animacy, NS and HL showed the same pattern with bare subjects occurring significantly more frequently in the Inanimate than the Human condition contrary to previous results in Experiment 1 and predictions of the effects of Animacy in differential marking (Aissen, 2003). Lastly, NS and L2 showed the same pattern for Definiteness

with bare subjects occurring significantly more frequently in the Definite than the Indefinite condition. Other comparisons between the opposing conditions within each factor were not significant as shown in Table 5.11.

**Table 5.11 Frequency (%) of bare subjects within each factor (Oral task)**

	NS	HL	L2
Focus	Non-CF (81%) > CF (19%) *** ( $\chi^2 = 35.63, p < .001$ )	Non-CF (60%) > CF (40%) ** ( $\chi^2 = 6.89, p = .009$ )	CF (57%) > Non-CF (43%) * ( $\chi^2 = 6.16, p = .013$ )
Animacy	Inanimate (72%) > Human (28%) ** ( $\chi^2 = 9.93, p = .002$ )	Inanimate (64%) > Human (36%) * ( $\chi^2 = 5.56, p = .018$ )	Inanimate (57%) > Human (43%) ( $\chi^2 = .000, p = .983$ )
Definiteness	Definite (61%) > Indefinite (39%) ** ( $\chi^2 = 8.11, p = .004$ )	Indefinite (58%) > Definite (42%) ( $\chi^2 = 2.81, p = .094$ )	Definite (53%) > Indefinite (47%) * ( $\chi^2 = 4.29, p = .038$ )

The percentage and frequency count of subject CE in each condition in Table 5.12 reveal NS providing the highest number of bare subjects in the [Non-CF, Inanimate, Definite] condition, and HL and L2 providing the highest number of bare subjects in the [CF, Inanimate, Indefinite] condition. All three groups provided the least number of bare subjects in the [CF, Human, Definite] condition. The frequency of subject CE in each condition was used to predict the relative strength of each factor as displayed in Table 5.13. NS and HL exhibited similar strength

**Table 5.12 Percentage and frequency of subject CE in each condition (Oral task)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
NS	0%	2%	9%	8%	14%	11%	38%	18%
	(0)	(2)	(8)	(7)	(13)	(10)	(34)	(16)
HL	5%	5%	11%	19%	10%	17%	16%	17%
	(9)	(10)	(22)	(37)	(19)	(32)	(31)	(33)
L2	1%	7%	17%	20%	12%	11%	12%	9%
	(3)	(24)	(53)	(63)	(38)	(34)	(37)	(29)

relationships in which Focus had the strongest effect followed by Definiteness and Animacy.

Definiteness had a stronger effect than Animacy in NS utterances, but the relative strength

relationship between the two factors of markedness was not clear in HL judgments. In L2

utterances, Focus was the weakest factor and Definiteness the strongest. As such, the factor of

Focus preceded markedness factors in NS and HL utterances, but these markedness factors were

stronger than Focus in L2 utterances.

These results were further analyzed using logit mixed models in R to examine the main effect

and interaction of the three factors. NS were significantly influenced by all three factors—Focus

( $z(1119) = 5.796, p < .001$ ), Animacy ( $z(1119) = 3.145, p < .01$ ), and Definiteness ( $z(1119) = -$

$2.971, p < .01$ )—displaying more frequent CE in Non-CF, Inanimate, and Definite conditions.

However, there was no significant interaction between factors, which is suggestive of the

independent effect of each factor. HL learners were significantly influenced by Focus ( $z(984) =$

$3.996, p < .001$ ) and Animacy ( $z(984) = 3.161, p < .01$ ), displaying more frequent CE in Non-

CF and Inanimate conditions, and there was a significant interaction between Focus and

**Table 5.13 Relative strength of factors in subject CE (Oral task)**

Factor in control	NS	HL	L2
CF	None	None	Def > Anim * ( $\chi^2 = 4.135, p = .028$ )
Non-CF	Def > Anim *** ( $\chi^2 = 15.969, p < .001$ )	None	None
Human	Foc > Def ** ( $\chi^2 = 7.201, p = .005$ )	Foc > Def ** ( $\chi^2 = 8.329, p = .003$ )	Def > Foc ** ( $\chi^2 = 8.872, p = .002$ )
Inanimate	Foc > Def . ( $\chi^2 = 3.046, p = .062$ )	Foc > Def . ( $\chi^2 = 2.851, p = .062$ )	Def > Foc * ( $\chi^2 = 3.436, p = .042$ )
Definite	Foc > Anim *** ( $\chi^2 = 27.768, p < .001$ )	Foc > Anim ** ( $\chi^2 = 7.655, p = .004$ )	Anim > Foc ** ( $\chi^2 = 7.532, p = .005$ )
Indefinite	Foc > Anim ** ( $\chi^2 = 8.079, p = .003$ )	Foc > Anim ** ( $\chi^2 = 8.266, p = .003$ )	None
OVERALL	Foc > Def > Anim	Foc > Def, Anim	Def > Anim > Foc

Animacy ( $z(984) = 3.266, p < .01$ ). As for L2 learners, all three factors significantly influenced their judgments (Focus:  $z(912) = -3.808, p < .001$ , Animacy:  $z(912) = 2.944, p < .01$ , Definiteness:  $z(912) = -2.921, p < .01$ ), with CE occurring more frequently in CF, Inanimate, and Definite conditions. Significant interactions were also present between Focus and Animacy ( $z(912) = 4.126, p < .001$ ), Animacy and Definiteness ( $z(912) = -2.801, p < .01$ ), and Focus, Animacy, and Definiteness ( $z(912) = -2.479, p < .05$ ).

When oral proficiency scores were added to the mixed model as a fixed effect to examine proficiency effects in the bilingual groups, results for HL revealed a main effect of Proficiency ( $z(984) = 2.075, p = .038$ ) and a significant interaction between Proficiency and Focus ( $z(984) = 3.297, p < .001$ ), which is suggestive of HL learners showing greater sensitivity to the factor of Focus with increasing proficiency. In contrast, results for L2 showed no main effect of Proficiency, but significant interactions were found between Proficiency and Animacy ( $z(912) = 2.454, p = .014$ ) and Proficiency and Definiteness ( $z(912) = -4.026, p < .001$ ) with higher proficiency L2 learners exhibiting greater sensitivity to these factors. The results are summarized in Table 5.14. In post-hoc group comparisons, NS was not significantly different from the two bilingual groups, but HL and L2 were significantly different from each other ( $z(1900) = 2.744, p = .006$ ) in the use of Focus ( $z(1900) = 5.419, p < .001$ ) and Definiteness ( $z(1900) = 2.958, p = .003$ ) as can be seen in Table 5.15.

Fourteen participants from the bilingual groups with matching intermediate proficiencies (HL:  $M = 86.40, SD = 4.6, R = 79-94$ ; L2:  $M = 85.25, SD = 3.95, R = 80-92$ ) were compared to control for proficiency effects. Fourteen participants from NS ( $M = 98.69, SD = 1.11, R = 97-100$ ) were also randomly selected and compared to the bilinguals as the control group. Mean values of case-marked objects, frequencies of bare objects, and the main effect and interactions of factors were observed to examine the overall production pattern and the use of the relevant factors by these proficiency-matched bilinguals. The proficiency-matched bilingual learners at the intermediate level were quite representative of their respective groups as can be seen in Figure 5.7 and Tables 5.16 and 5.17. HL differed from NS mainly in the use of Definiteness whereas L2 differed from NS mainly in the use of Focus. That is, HL were more native-like than L2 in their use of Focus while L2 learners were more native-like than HL in their use of Definiteness.

Moreover, HL showed many similarities to NS in their employment of the relevant factors as shown in Table 5.18 while L2 had a tendency to neglect the factor of Focus in their production. Similar to what has been found in the written task in the previous chapter, these results suggest that the significant differences between the two groups are not an effect of proficiency but of group itself.<sup>19</sup>

**Table 5.14 Main effect and interaction of factors in subject CE (Oral task)**

	NS		HL		L2	
	z-score	p-value	z-score	p-value	z-score	p-value
(Intercept)	9.894	< 2e-16 ***	5.183	2.18e-07 ***	3.098	0.00195 **
Focus	5.796	6.79e-09***	3.996	6.44e-05 ***	-3.808	0.00014 ***
Animacy	3.145	0.00166 **	3.161	0.00157 **	2.944	0.00324 **
Def	-2.971	0.00297 **	1.510	0.13116	-2.921	0.00349 **
Focus:Animacy			3.266	0.00109 **	4.126	3.68e-05 ***
Focus: Def			1.439	0.15024	0.214	0.83034
Animacy: Def			-0.830	0.40651	-2.801	0.00510 **
Foc:Anim:Def			-0.233	0.81559	-2.479	0.01317 *
Proficiency			2.075	0.037975*	1.268	0.204731
Foc x Prof			3.297	0.000978***	1.029	0.303275
Anim x Prof			0.775	0.438473	2.454	0.014109 *
Def x Prof			-1.076	0.281771	-4.026	5.68e-05 ***

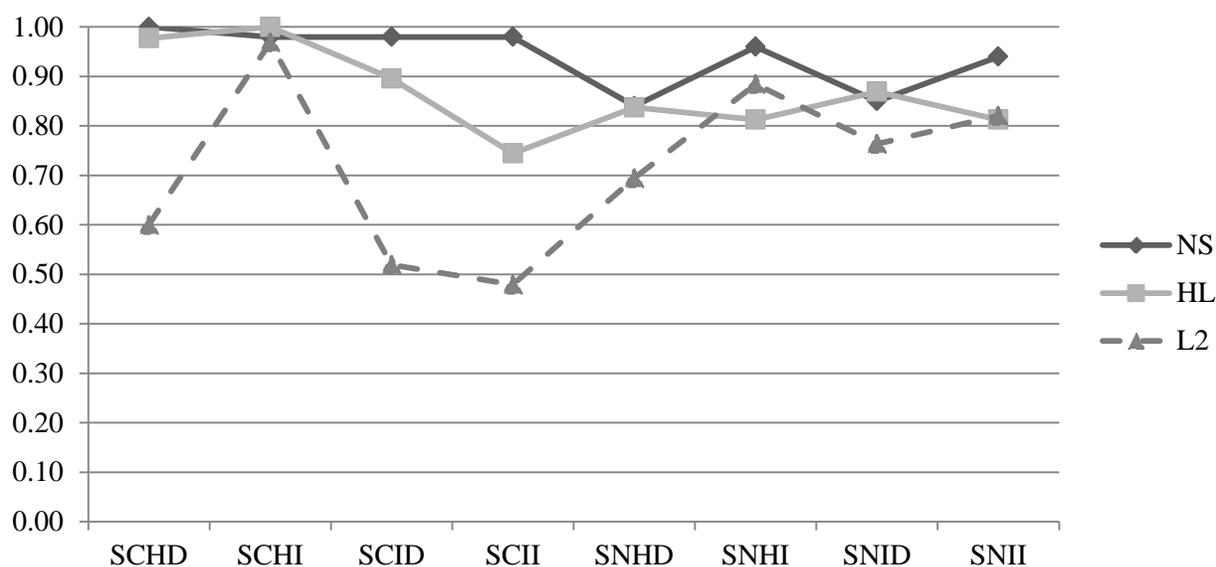
<sup>19</sup> Strangely, no significant difference was found between the three groups in post-hoc group comparisons. This is speculated to be due to the small number (n =14) of participants in this comparison.

**Table 5.15 Post-hoc group comparisons of subject CE (Oral task)**

	NS vs. HL		L2 vs. HL		NS vs. L2	
	z	p	z	p	z	p
Intercept	6.602	4.06e-11 ***	2.804	0.005043 **	3.308	0.000941***
Group	0.033	0.973873	2.744	0.006066 **	0.060	0.952328
Foc: Group	0.023	0.981267	5.419	6.00e-08***	0.041	0.967032
Anim: Group	0.020	0.984189	0.706	0.479916	0.027	0.978320
Def: Group	0.014	0.988519	2.958	0.003100 **	0.024	0.980819
Foc:Anim:Group	0.017	0.986834	-0.077	0.938456	0.021	0.983179
Foc:Def:Group	0.020	0.983795	0.722	0.470552	0.027	0.978074
Anim:Def:Group	0.020	0.983722	0.960	0.337077	0.028	0.977462
Foc:Anim:Def:Group	0.020	0.984181	1.181	0.237622	0.028	0.977861

**Table 5.16 Mean values of case-marked subjects by proficiency-matched bilinguals (Oral task)**

	CHD	CHI	CID	CII	NHD	NHI	NID	NII
NS	1.00	.98	.98	.98	.84	.96	.85	.94
	(0)	(.07)	(.07)	(.07)	(.31)	(.09)	(.24)	(.21)
HL-Inter	.98	1.00	.90	.74	.84	.81	.87	.81
	(.11)	(0)	(.35)	(.40)	(.33)	(.39)	(.37)	(.40)
L2-Inter	.60	.97	.52	.48	.69	.88	.76	.82
	(.51)	(.11)	(.52)	(.49)	(.47)	(.34)	(.43)	(.40)



**Figure 5.7 Mean of case-marked subjects by proficiency-matched bilinguals (Oral task)**

**Table 5.17 Frequency (%) of bare subjects within each factor by proficiency-matched bilinguals (Oral task)**

	NS	HL-Intermediate	L2-Intermediate
Focus	Non-CF (64%) > CF (36%) * ( $\chi^2 = 4.66, p = .031$ )	Non-CF (57%) > CF (43%) ( $\chi^2 = .984, p = .321$ )	CF (61%) > Non-CF (40%) ** ( $\chi^2 = 10.319, p = .001$ )
Animacy	Inanimate (52%) > Human (48%) ( $\chi^2 = .059, p = .808$ )	Inanimate (71%) > Human (29%) * ( $\chi^2 = 5.277, p = .022$ )	Inanimate (63%) > Human (37%) ** ( $\chi^2 = 9.266, p = .002$ )
Definiteness	Definite (58%) > Indefinite (42%) ( $\chi^2 = 1.62, p = .204$ )	Indefinite (60%) > Definite (40%) ( $\chi^2 = 1.352, p = .245$ )	Definite (61%) > Indefinite (39%) *** ( $\chi^2 = 13.17, p < .001$ )

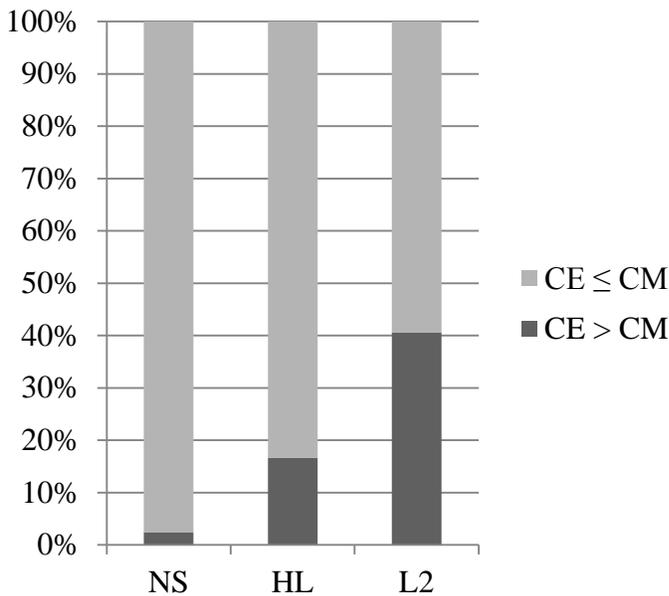
**Table 5.18 Main effect and interaction of factors in subject CE by proficiency-matched bilinguals (Oral task)**

	NS		HL-Intermediate		L2-Intermediate	
	<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value	<i>z</i> -score	<i>p</i> -value
(Intercept)	218.570	.000 ***	323.890	.000 ***	27.694	.000 ***
Focus	92.786	.000 ***	207.968	.000***	2.254	.133
Animacy	80.859	.000 ***	421.940	.000***	12.660	.000***
Def	54.057	.000***	329.859	.000***	22.183	.000***
Focus:Animacy	56.342	.000***	293.019	.000***	14.050	.000***
Focus: Def	98.119	.000***	534.536	.000***	.927	.336
Animacy: Def	183.501	.000***	504.814	.000***	12.390	.000***
Foc:Anim:Def	- <sup>α</sup>	- <sup>α</sup>	- <sup>α</sup>	- <sup>α</sup>	4.938	.026*

<sup>α</sup> Unable to compute due to numerical problems

### 5.1.5.2 Individual results

Overall, only 2% of NS displayed more CE than CM in all eight conditions of subject CE. Likewise, a mere 17% of HL had this preference, but many more in L2—almost 41%--showed this preference. As such, most individuals in NS and HL generally preferred case-marked subjects over bare subjects while such preference was not as predominant in the individuals in L2 as shown in Figure 5.8.



**Figure 5.8 Percentage of individuals with an overall preference for CE or CM in subjects (Oral task)**

For conditions in Focus, 51% of NS and 44% of HL dropped case more frequently in the Non-CF than the CF condition, while only 9% of L2 had this preference. In contrast, 72% of L2 preferred to drop case in the CF than the Non-CF condition. In Animacy conditions, 61% of NS, 58% of HL, and 31% of L2 dropped case more frequently in the Human than the Inanimate condition. That is, more than half of the individuals in NS and HL provided a higher number of bare subjects in the Human than the Inanimate condition, while most individuals in L2 had the opposite preference. This diverges from the group results of NS and HL, in which a higher number of CE was found in Inanimate than Human conditions overall. That is, while the total number of CE in the Inanimate condition may be greater than that in the Human condition, the results indicate that more individuals in NS and HL preferred to drop case in the Human than the Inanimate condition. Such discrepancy in the group vs. individual results suggest that individuals

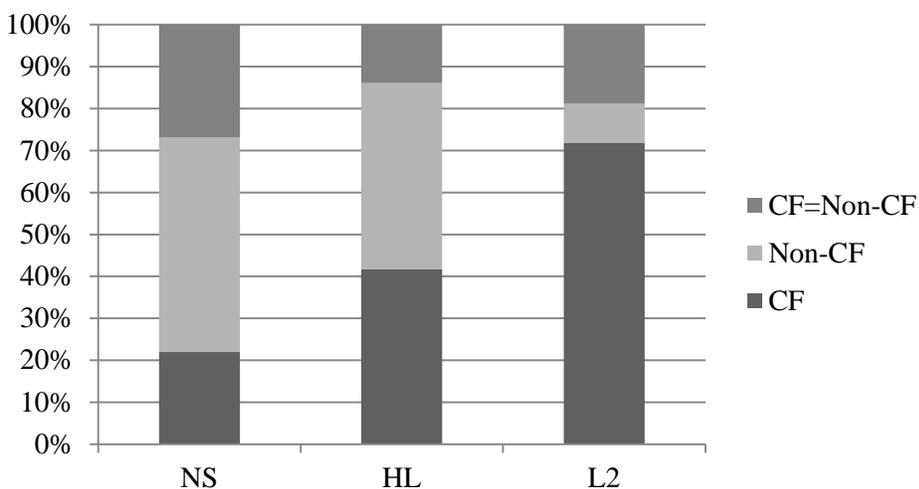
who preferred to drop case in the Inanimate condition showed preferences that were much stronger than those of individuals who preferred to drop case in the Human condition. In Definiteness conditions, 80% of NS, 50% of HL, and 62% of L2 dropped case more frequently in the Definite than the Indefinite condition, and HL individuals were most ambivalent in their preferences as shown in the strength of preferences in Table 5.19. Overall, the number of HL individuals with a preference for CE in each factor condition almost always seemed to be in between that of NS and L2, and the percentage of HL individuals with opposing preferences was fairly close in number. These individual results are summarized in Table 5.19 and Figures 5.9-5.11 below.

**Table 5.19 Percentage (%) of individuals with a preference for subject CE within each factor condition and the strength of these preferences (Oral task)**

		NS	HL	L2
Focus	CF	21.95	41.67	71.88
	Non-CF	51.22	44.44	9.38
	CF = Non-CF	26.83	13.89	18.75
	Similar (0-2)	80.49	77.78	53.13
	Weak (3-5)	17.07	11.11	40.63
	Medium (6-8)	2.44	2.78	3.13
	Strong (>8)	0	8.33	3.13
Animacy	Human	60.98	58.33	31.25
	Inanimate	17.07	30.56	53.13
	Human=Inanimate	21.95	11.11	15.63

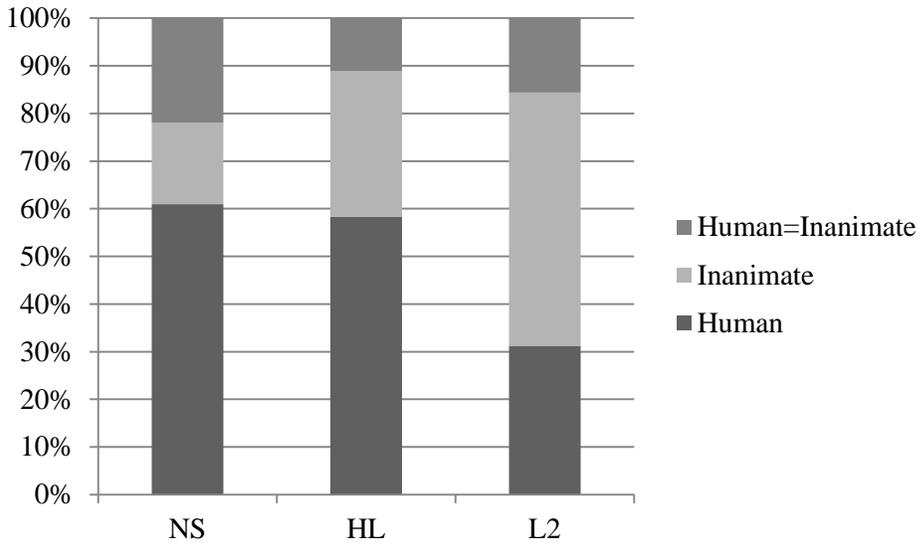
**Table 5.19 (cont.)**

		NS	HL	L2
Animacy	Similar (0-2)	51.22	44.44	56.25
	Weak (3-5)	24.39	27.78	34.38
	Medium (6-8)	21.95	25.00	9.38
	Strong (>8)	2.44	2.78	0
Definiteness	Definite	80.49	50.00	62.5
	Indefinite	4.88	19.44	25
	Definite=Indefinite	14.63	30.56	12.5
	Similar (0-2)	58.54	72.22	43.75
	Weak (3-5)	31.71	27.78	34.38
	Medium (6-8)	7.32	0.00	15.63
	Strong (>8)	2.44	0.00	6.25

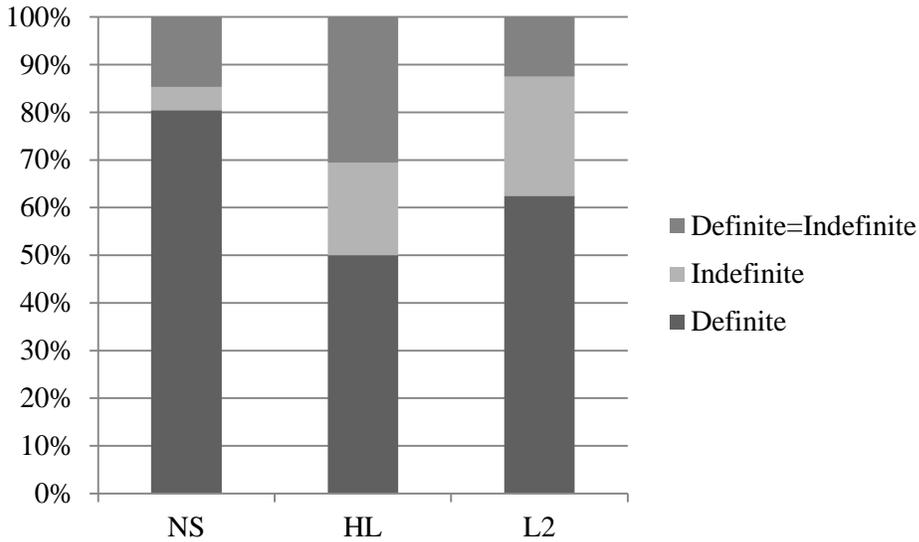


**Figure 5.9 Percentage of individuals with a preference for subject CE in Focus conditions**

**(Oral task)**



**Figure 5.10 Percentage of individuals with a preference for subject CE in Animacy conditions (Oral task)**



**Figure 5.11 Percentage of individuals with a preference for subject CE in Definiteness conditions (Oral task)**

### 5.1.5.3 Summary

The results of subject CE in the oral picture description task revealed differences mainly in the use of Definiteness between NS and HL and in the use of Focus between NS and L2. Moreover, the two bilingual groups were significantly different in the use of Focus and Definiteness. In NS and HL judgments, CE rarely occurred in CF conditions, and Focus had the strongest influence among the three factors, similar to what has been found for object CE. Animacy was also a significant factor for both groups, but discrepancy was found between group and individual results: Group results showed that both NS and HL dropped the nominative marker more frequently in the Inanimate than the Human condition contra predictions that subject CE is more prevalent in Human conditions. However, individual results showed that a greater number of individuals in both groups had a preference for CE in the Human than the Inanimate condition. Definiteness was also a significant factor for NS with CE occurring more frequently in the Definite than the Indefinite condition, but HL showed ambivalence with regard to Definiteness. As such, NS and HL showed similar production patterns overall but mainly differed in the use of Definiteness.

Similar to what has been observed in the results of object CE, L2 mainly diverged from NS in their use of Focus displaying more CE in Non-CF than CF conditions and heavily relied on markedness factors—Definiteness in particular—to guide their judgments on subject CE. It can be noted that L2 learners were sensitive to all three factors and exhibited a distinct pattern of judgments where these factors had a significant effect. In contrast to NS for whom the factors had an *independent* effect with no significant interactions, most of the interactions between factors were significant for L2. As such, L2 learners seem to have developed their own systematic analysis of subject CE that is primarily determined by Animacy and Definiteness.

The two bilingual groups were significantly different in their use of Focus and Definiteness: While HL learners were more native-like in their use of Focus, L2 learners were more native-like in their use of Definiteness. Also, significant interactions were found between oral proficiency scores and the factors: HL learners became more sensitive to the factor of Focus with increasing proficiency, whereas L2 learners exhibited greater sensitivity to Animacy and Definiteness with increasing proficiency. That is, the factor(s) that had a strong effect in the utterances of each group was what seemed to have guided their respective high proficiency learners' judgments of subject CE. Moreover, when the effect of proficiency was controlled by comparing proficiency-matched bilinguals, it was found that the differences in the group results are not an effect of proficiency but of group. In sum, the results of subject CE in the oral task largely resembled those of the written elicited production task in Experiment 3: All three groups displayed distinct patterns in production but NS and HL showed notable similarities while L2 learners seem to have developed a different but systematic pattern in which all three factors and their interactions are significant.

#### 5.1.6 Discussion

The present experiment examined bilingual acquisition of Korean CE using an oral picture description task and has found results that are similar to those of the written task in Experiment 3. Both L2 and HL learners were different from the native speakers in their use of object and subject CE, but HL learners patterned closely with NS while L2 learners were more variable and often showed preferences that are opposite from native judgments. HL differed from NS mainly in their use of Definiteness but showed similarities in the use of Focus as a significant and the strongest factor in both object and subject CE. Similarities between HL and NS could also be

found in overall frequency, strength patterns, and individual preferences. L2 learners, on the other hand, mainly diverged in the use of Focus and exhibited a distinct pattern that primarily relied on factors of markedness—Animacy for objects and Definiteness for subjects. It seems that the lack of sensitivity to or the divergent use of Focus resulted in a highly variable pattern in L2 utterances. As such, there were qualitative differences in the knowledge of Korean CE between the two bilingual groups with HL learners showing an advantage over the L2 learners as has been found in the written task in Experiment 3. When proficiency-matched bilingual learners at the intermediate level were compared to control for proficiency effects in subject CE, many parallels could be drawn between the overall group results and the results of these learners. Such parallels suggest that the significant difference between the two groups is not an effect of proficiency but of group, and that HL have an advantage over L2 in this phenomenon regardless of oral proficiency.

In accordance with the predictions, all three groups processed the phenomenon differently in the two different task modes especially in the use of markedness factors. NS dropped the accusative marker more frequently in the Indefinite than the Definite condition in the written task but this preference was reversed in the oral task. Also, Definiteness was a significant factor in the oral task but not in the written task, and Animacy was the strongest factor in the written task but was negligible in the oral task. The role of Focus, however, was strong and significant in both tasks. Similarly, HL learners employed the factor of Definiteness differently depending on task, and Animacy was the strongest factor in object CE in the written but not in the oral task. L2 learners also employed the factors of Animacy and Definiteness in opposing directions depending on the task mode: Object CE occurred more frequently in the Inanimate than the Human condition and in the Indefinite than the Definite condition in the oral task, but these

preferences were reversed in the written task. It can also be noted that NS dropped case more frequently in the Inanimate than the Human condition and in the Definite than the Indefinite condition regardless of NP type as has been found in Experiment 2. As such, the effects of Animacy and Definiteness were not as consistent as the effect of Focus in different task modes for all three groups for reasons that are unclear at present. It could be that the representation of objects and people in pictures vs. writing give rise to variance in the degree of definiteness and accessibility that result in such differences, but these speculations need to be further investigated. In addition to the inconsistencies in the effects of Animacy and Definiteness, the effects of group and proficiency were more prominent in the written than the oral task overall.

Such differences between the results of oral vs. written task modes in object and subject CE, notwithstanding, general observations can be made: In both oral and written tasks of object and subject CE, NS and HL exhibited similar patterns of judgment overall in which Focus was the strongest factor that determined CE. L2 learners showed divergent patterns in the use of Focus and primarily relied on the factors of markedness. They displayed no distinct pattern in object CE showing chance performance in the selection of case-marked vs. bare objects but displayed a distinct systematic analysis of subject CE in which all three factors and their interactions were significant but not integrated in a native-like manner. The results of the present experiment confirm the observation in Experiment 3 that HL learners seem capable of attaining implicit knowledge of the present phenomenon while such attainment is questionable for L2 learners.

## 5.2 SUMMARY

This chapter presented an experimental study that investigates bilingual acquisition of Korean CE using an oral task. Similar to the results of the written task in Experiment 3, early and

late bilinguals were found to process and acquire the phenomenon of Korean CE differently with HL learners having an overall advantage over the L2 learners. The results presented in this chapter and their significance will be discussed in greater depth in the next chapter.

## CHAPTER 6

### DISCUSSION AND CONCLUSION

The main purpose of this dissertation was to investigate bilingual acquisition of Korean CE, a gradient linguistic phenomenon that straddles multiple types of information. The results of Experiment 1 (chapter 2) confirmed that HJ Lee's (2006a) multi-factor functional analysis of CE can serve as a tenable framework for not only object but also subject CE that can be used to examine monolingual and bilingual acquisition of Korean CE. Lee's framework was thus used to examine L1 acquisition of CE by young Korean-speaking children in Experiment 2 (chapter 3) as well as bilingual acquisition of Korean CE in Experiment 3 (chapter 4) and 4 (chapter 5). Experiments 3 and 4 compared L2 and HL learners' use and judgments of object and subject CE in a written and an oral task respectively and examined how multiple factors are integrated in the bilinguals' knowledge. L2 and HL difficulty was predicted in the integration of information from different domains and sensitivity to discourse-pragmatic properties, and the studies investigated the similarities and differences between early vs. late bilinguals and monolingual vs. bilingual acquisition. This chapter summarizes the key findings from the experiments in this dissertation and discusses the implications for research in bilingual acquisition as well as second and heritage language teaching.

#### 6.1 SUMMARY OF MAJOR FINDINGS

The major findings of experiments in this dissertation are summarized below.

##### A. Adult Native Speakers

- In accordance with the results in HJ Lee (2006a), Focus was a significant factor in both oral and written tasks. Native speakers displayed a higher rate of CE in the Non-CF condition than the CF condition as expected (Almost no CE occurred in the CF condition in subject CE). When relative strength was compared between the three factors, Focus almost always had the strongest effect and played a crucial role in judgments of object and subject CE.
- The object-subject asymmetry found in Experiment 1 was also found in the results of Experiments 3 and 4, but the markedness reversal between objects and subjects was not always present. Animacy had a stronger effect than Definiteness in object CE whereas Definiteness was stronger than Animacy in subject CE as previously found. However, the effects of Animacy and Definiteness were not as consistent as that of Focus and varied depending on the task mode.
- While not identical to the results of previous studies (Lee 2006a), multiple factors and their interactions significantly influenced CE, and a gradient pattern of judgments surfaced in object CE and in the Non-CF condition (but not the CF condition) of subject CE as expected. Native speakers were least ambivalent in their responses compared to other groups and exhibited strong preferences especially in subject CE.
- Priming effects were quite consistent in NS judgments across both types of CE with CE occurring most frequently in the CE-primed condition and least frequently in the CM-primed condition as predicted.

## B. L1-Acquiring Korean Children (Experiment 2)

- Korean speaking children, ages 5-7, displayed a higher rate of CE in both object and subject CE and showed greater ambivalence in their judgments than the adults but were capable of employing and integrating the multiple factors of CE in an adult-like manner. They were similar to the adults in overall frequency pattern of CE within each factor and condition, the relative strength relationships between factors, and sensitivity to multiple factors and their interactions in CE.

#### C. Early vs. Late Bilinguals (HL vs. L2 learners)

- Contra predictions that bilingual learners would fail to integrate multiple factors in their judgments, they were sensitive to multiple factors and their interactions but differed from NS in *how* they employed and integrated these factors.
- HL learners showed notable similarities with NS and exhibited gradient statistical preferences in which Focus had a strong and significant effect. They were generally more ambivalent in their responses than NS and often differed from NS in the use of Definiteness but showed similar patterns in mean, frequency, relative frequency of factors, and interaction of factors. Group differences between NS and HL were more quantitative than qualitative in nature, and HL learners seemed to have attained a certain degree of implicit knowledge of Korean CE.
- Parallels can be drawn between HL learners and L1-acquiring children: Both groups seemed capable of employing and integrating the relevant factors in an almost native-like manner but provided fewer case-markers in both NP types than the adult native speakers overall. They also showed greater ambivalence than the adult native speakers in both group and individual results, and such quantitative

difference appear to be characteristic of a developmental stage that both monolingual and early bilingual learners pass through.

- L2 learners, on the other hand, exhibited variable patterns in both types of CE and often showed preferences that are opposite from those of NS. They mainly diverged in the use of Focus, dropping case more frequently in the CF than the Non-CF condition. The effect of Focus was not very strong or significant, and the effects of Animacy and Definiteness were almost always stronger than Focus. The factors of Animacy and Definiteness, on the other hand, were often employed in a native-like manner. L2 learners primarily relied on Animacy and/or Definiteness in both types of CE, and this qualitative difference in the knowledge of Korean CE resulted in a highly variable pattern of judgments that is significantly different from NS judgments: In object CE, L2 learners were often equally divided between the opposing conditions of each factor that led to no distinct pattern of judgments and chance performance in the selection of case-marked vs. bare objects. In subject CE, they displayed a distinct systematic pattern in which all three factors and their interactions are significant but not integrated in a native-like manner.
- Proficiency effect was present in both types of bilinguals especially in the written task. Written proficiency scores had a significant effect on HL judgments of subject but not object CE and on L2 judgments of object but not subject CE. The proficiency scores also interacted with factors that were significant in the bilinguals' judgments of CE. HL learners' proficiency scores mainly interacted with the factor of Focus and L2 learners' scores with the factor of Animacy,

which suggests that they became more sensitive to the workings of these factors with increasing proficiency. When proficiency-matched bilinguals from HL and L2 were compared to control for proficiency effects, the results were quite similar to those of the whole group. Therefore, the significant differences between the two bilingual populations are not an effect of proficiency but of group.

- Priming effect was also present in bilingual judgments, but this effect was not consistent across both types of CE. L2 learners were significantly affected by priming in object CE but not so much in subject CE, whereas HL learners were significantly affected by priming in subject CE but not in object CE. The bilingual learners were more susceptible to the effects of priming when they were not systematically relying on other cues.

#### D. Oral vs. Written task

- Significant differences in the results of the oral vs. written task modes were found even for native speaker controls especially in the use of Animacy and Definiteness. The effects of markedness factors were not as consistent as the effect of Focus in different task modes for all three groups.
- The effect of proficiency was more evident and group comparisons were more robust in the written task than the oral task overall.

## 6.2 IMPLICATIONS AND SIGNIFICANCE OF EXPERIMENTAL DATA

Based on the major findings summarized above, theoretical, methodological, and pedagogical implications of the present experimental data will be discussed in this section.

## 6.2.1 Theoretical Implications

### 6.2.1.1 Implications of the native experimental data

The native speaker data presented in this dissertation was not identical to that of Lee (2006a), but the overall judgment patterns as well as the significance, strength, and interaction of multiple factors in NS judgments and utterances support the multi-factor functional analysis of Korean CE put forth in Lee (2006a, 2006b). The factor of Focus almost always had a stronger effect than Animacy or Definiteness and played a consistent and important role in NS judgments and use of both types of CE. However, the effects of Animacy and Definiteness were not as consistent and varied depending on task and NP type. These results underline the relative importance and strength of the identifying function of case-marking in CE as proposed in Lee's analysis of CE. Moreover, object-subject asymmetry was observed in light of the markedness reversal in the effects of Animacy and Definiteness hierarchies, and CE occurred much less frequently in subject CE than in object CE especially in the CF condition. In fact, gradient statistical preferences surfaced only in the Non-CF condition and not in the CF condition in subject CE. Such results have implications for theoretical approaches to Korean CE: Contra accounts that argue for a single-factor analysis of CE (Kwon & Zribi-Hertz, 2008), the present results show that multiple factors of Focus, Animacy, and Definiteness interact to determine CE. Moreover, the results suggest that both object and subject CE can be analyzed under the same multi-factor functional framework but are expected to show distinct properties within.

In addition, the native speaker data suggests that the phenomenon of Korean CE is highly susceptible to the effects of structural priming. The status (case-marked vs. bare) of the NP in the preceding utterance was found to have a significant effect on CE in the written task. Object and subject CE occurred significantly more frequently when the previous utterance contained a bare

NP than when it contained a case-marked or no NP at all. Such results indicate that the effects of structural priming are present in a complex phenomenon like CE in which the speakers must deal with multiple layers of linguistic analysis. While it can be predicted that priming effects would also be present in an oral task, these effects were not tested in the oral task of the present dissertation. Also, whether these priming effects found in Korean CE have both immediate and long-term effects is not yet clear and should be investigated in future studies. Nevertheless, the present findings point towards significant priming effects in NS judgments of CE which must be taken into account in future examinations of the phenomenon.

Lastly, L1-acquiring Korean children, ages 5-7, were found to have acquired an adult-like system of Korean CE. That is, young Korean-speaking children possessed implicit knowledge of CE contra predictions that CE will be acquired at a relatively later stage of acquisition because it involves multiple levels of analysis and assumes knowledge of information structure that necessitates integration of contextual information. Despite the complexity of the phenomenon, Korean-speaking children were found to have acquired the properties of CE along with the Korean case system by age 5. While it is not clear what mechanisms or information children use to acquire the phenomenon (e.g., frequency of use, salience in the input, innate prior grammatical knowledge etc.), the present findings suggest that the complex linguistic properties of CE that require integration of discourse-pragmatic properties can be acquired at a relatively young age.

#### 6.2.1.2 Implications of the bilingual data

The bilingual data in this dissertation is suggestive of qualitative differences in the underlying linguistic knowledge of early vs. late bilinguals with HL learners having an evident advantage over L2 learners in their acquisition of Korean CE. The difference between NS and

HL judgments were more quantitative than qualitative in nature, and HL learners seemed to have attained a certain degree of implicit knowledge of Korean CE. In contrast, L2 learners exhibited judgment patterns that are qualitatively different from those of others and seemed to have adopted an unlearned analysis of CE that is predominantly determined by Animacy and Definiteness. Even when proficiency was controlled, HL learners reached a higher degree of native-likeness and a higher level of acquisition than L2 learners in the present phenomenon. It must be pointed out that most bilinguals in the experiments were not end-state learners at an ultimate stage of acquisition but still “acquiring” learners who are going through developmental stages in acquisition. While these developmental stages could not be examined in the cross-sectional data of the present study, the significant differences in the overall judgment patterns in the two bilingual groups suggest that distinct developmental stages may need to be posited for different types of bilinguals.

The bilingual data also has implications for bilingual acquisition of phenomena involving multiple layers of linguistic analysis. The discourse/pragmatic domain of integrating contextual information (i.e., Focus) in Korean CE was significantly more problematic and vulnerable to incomplete acquisition than other domains for L2 learners. L2 learners primarily depended on the factors of Animacy and Definiteness to determine CE and were often native-like in the use of these factors but displayed a highly variable pattern in the use of Focus. In contrast, the discourse/pragmatic information of Focus served as the strongest cue for HL learners who employed and integrated this factor in a native-like manner, but their use of the factor of Definiteness was not as consistent or native-like. As such, the two bilingual populations (early vs. late) were challenged by different types of information. The bilinguals’ failure to integrate certain factors appears to be reflective of the learners’ tendency to depend on factors/cues that

are more familiar and readily available to them from the context and mode of acquisition when processing a multi-factor phenomenon like Korean CE. HL learners who have received aural naturalistic input in the home since childhood may find it easier to employ context-inferred subtle discourse-pragmatic cues than L2 learners whose exposure to the language mainly occurs in the form of formal instruction in the classroom.<sup>20</sup> Given the relative importance of the role of Focus in Korean CE and the fact that CE predominantly occurs in informal casual speech, HL learners' language background seems to better equip them in acquiring the phenomenon compared to L2 learners, which is what we find in the results. L2 learners who may not have had sufficient exposure to the phenomenon would depend more heavily on semantic/grammatical cues than contextual cues as shown in their dependence on the factors of Animacy and Definiteness that are based on universal principles of markedness and whose semantic features are inherent to the NP.<sup>21</sup> Such results are in line with E-S Chung's (2013) suggestion that L2 learners' preoccupation with basic grammatical processes and access to meaning may result in an oversight of discourse-pragmatic or contextual information. According to Chung, L2 learners give primacy to grammatical parsing over discourse-pragmatic calculations when processing resources are depleted because meaning can be derived from basic syntactic-semantic processes alone. It must be pointed out, however, that L2 learners were also sensitive to other factors and their interactions, just not in the right direction or manner. As it is, the nature of L2 difficulty seem to lie in employing and integrating the factors in the right direction and manner rather than acquiring sensitivity per se to the multiple layers of information.

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<sup>20</sup> The L2 learners in the present dissertation were students enrolled in university language programs in Seoul who were immersed in the L2 setting. They would have had greater exposure to informal casual speech in Korean outside of the classroom than those who learn Korean in a foreign language classroom, but it is still predicted that HL learners would have had greater exposure to informal contextualized speech in Korean in their daily lives overall.

<sup>21</sup> Animacy is an inherent semantic feature of an NP, but Definiteness can be contextual. However, almost all [+Definite] NPs in the test items were pronouns or proper nouns that do not need to be context-inferred. The [-Definite] NPs, on the other hand, were non-specific NPs and have to be context-inferred.

Under the assumption that bilingual difficulty can be put in terms of lack of processing resources (Hopp 2007, 2009; Sorace & Serratrice, 2009), the bilingual difficulty in the present phenomenon appears to lie in *integrating* constraints that the learners are relatively unfamiliar with in their context and mode of acquisition with other types of information. L2 learners seem to have sufficient processing resources for acquiring sensitivity to multiple types of information but not enough resources to employ context-inferred discourse-pragmatic cues in the right direction or to integrate the multiple cues in a native-like manner. HL learners' variable use of the factor of Definiteness can be seen in a similar light—HL learners mainly employ their knowledge of Focus and Animacy and disregard the effect of Definiteness due to processing limitations, not a lack of sensitivity to this factor.<sup>22</sup> In sum, the bilingual data in the present dissertation suggest that bilingual difficulty does not lie in particular domains but is more computational in nature with learners resorting to cues that are more readily available to them in their respective context and mode of acquisition and thus failing to effectively incorporate multiple levels of information in a native-like manner.

In addition, structural priming effects were found in bilingual acquisition of Korean CE as has been found for native speakers. However, these effects were not consistent across both types of CE as in NS judgments. The bilinguals were more susceptible to the effects of priming when they were variable and ambivalent in their answers and have not yet established a systematic analysis of CE. That is, primed NPs in the previous utterance became a significant and strong cue for the bilinguals when they were not systematically relying on other factors in their judgments. While the same thing cannot be said of the native speakers who were susceptible to this effect

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<sup>22</sup> It is unclear why Definiteness should pose challenges for the HL learners. However, it can be speculated that their predominant use of Focus, a context-inferred cue, precludes them from employing Definiteness, which is also context-inferred, in a native-like manner due to processing limitations.

regardless of their reliance on other factors, the bilingual data in this dissertation suggests that priming may have a greater effect on bilingual judgments when the learners are uncertain of the workings of the multiple factors in their analysis of a linguistic phenomenon. In line with the implicit-learning account of structural priming (Chang et al. 2000, 2006), these results suggest that a complex phenomenon like CE can potentially be acquired through sufficient exposure to primed input. That is, structural priming can be a useful tool for bilingual learners to “implicitly” learn a phenomenon like Korean CE especially when they are not certain of the workings of the multiple factors. The present study, however, did not specifically test this learning effect, and further investigations must address whether or not structural priming could indeed lead to implicit knowledge of Korean CE in bilingual acquisition.

Overall, the bilingual learners were capable of applying the universal properties of markedness into their judgments although not explicitly taught. The universal tendency to mark disharmonic elements, which is found in languages with differential case marking (Aissen, 2003), could be found in the bilinguals’ use of the factors of Animacy and Definiteness. L2 learners, in particular, developed an unlearned pattern that is independent of both L1 and L2 grammar based on universal principles of markedness, which is suggestive of Universal Grammar (UG) at work in the bilingual learners’ acquisition of Korean CE.

### 6.2.2 Methodological Implications

Both oral and written task modes were used in the present dissertation, and all groups exhibited different linguistic behavior depending on the task mode. The effects of Animacy and Definiteness were especially different in each task, and such difference reflects the distinct characteristics of the tasks. For example, Definiteness was a more salient cue than Animacy in

the oral task, and the reverse was true in the written task in NS judgments. It could be that the concrete picture representation of definite objects and people in the oral task offers a high degree of accessibility to the object/person of interest, thus making Definiteness stand out than other cues. Definiteness of the NP may not be as salient in the written form, however, and thus Animacy, which is an inherent property of the NP served as a more salient cue than Definiteness in the written task. It could be that the speakers are relying on one of the markedness factors that is more prominent than the other depending on the task. However, these are speculations at best and need to be further investigated.

Moreover, the effect of bilinguals' proficiency scores on their performance was more significant in the written than the oral task. It could be that the written proficiency measure offers a more accurate measure of the bilinguals' proficiency level or that the oral proficiency scores do not significantly affect the learners' performance in the oral task that requires a spontaneous response. Previous studies have found L2 learners to be more accurate than HL learners on untimed written tasks testing explicit metalinguistic knowledge and HL learners to be more accurate than L2 learners on time-sensitive oral narrative tasks that measure automatic and implicit knowledge (Montrul et al., 2008; Bowles, 2011), but no such group advantage was found depending on task. In fact, HL learners showed an advantage over L2 learners in their acquisition of Korean CE in both task modes. This could be due to the nature of the present phenomenon that primarily occurs in informal casual speech and thus requires access to implicit rather than explicit metalinguistic knowledge even in the written mode.<sup>23</sup> The similar findings in both task modes suggest that one task does not necessarily provide a better representation of the speakers' knowledge of the phenomenon of CE than the other, and that both oral and written task

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<sup>23</sup> It must be noted, however, that L2 learners have learned that CE is possible despite the lack of explicit instructions in the classroom.

modes can effectively capture this knowledge. As it is, there is no one measure that can tap into one's linguistic competence directly, and it is thus important to employ different types of tasks and methods when investigating monolingual and bilingual acquisition of a multi-factor linguistic phenomenon such as Korean CE. Considering the fact that the challenges in this phenomenon is predicted to be computational in nature, future works should investigate bilingual acquisition of this phenomenon using other online research methods such as eye-tracking and self-paced reading that involve timed responses. Moreover, the confederate script technique (Branigan, Pickering, & Cleland, 2000) that provides interactive contexts can be used to further explore the effects of structural priming in this phenomenon.

### 6.2.3 Pedagogical Implications

The present results also have pedagogical implications for second and heritage language teaching. The distinct language behavior of L2 and HL learners in the results suggest that the two learner groups have different needs and advantages. HL learners were almost native-like in their judgments and showed an evident advantage over the L2 learners in the acquisition of Korean CE. HL learners' language background in age, context, and mode of acquisition made it easier for them to capture subtle pragmatic cues and gain implicit knowledge of the workings of the multiple factors in CE, while L2 learners did not have such advantage and showed difficulty integrating the relevant factors in the right direction and manner. When teaching the two different populations, HL learners can be expected to be more proficient in capturing subtle pragmatic cues than L2 learners and to have a better understanding of linguistic phenomena that primarily occurs in the spoken register. In comparison, L2 learners can be expected to primarily depend on grammatical (i.e., syntactic/semantic) rather than discourse/pragmatic cues and often

fail to grasp the intricate workings of a multi-factor phenomenon occurring in casual speech. With such differences in mind, it would do well for instructional practices to cater to these different needs and design separate pedagogical materials for the two learner groups.

Another finding that has implications for pedagogy is the effect of structural priming in the results. Both types of bilinguals were significantly influenced by primed conditions in the preceding utterance, and they were more susceptible to these effects when they were uncertain of their answers. Therefore, primed utterances can be incorporated into instructional materials and help familiarize the learners with spoken phenomena whose properties may seem elusive. Overall, the present research underlines the different needs of the two learner groups and suggests that HL learners have the potential to re-acquire the language faster than L2 learners. Such findings provide support for implementing separate tracks in institutional settings that could accommodate the different needs of learners with heritage vs. non-heritage backgrounds.

### 6.3 CONCLUSION

The primary goal of this dissertation was to examine whether and how different types of bilingual can attain implicit knowledge of Korean CE—a multi-factor linguistic phenomenon that necessitates the integration of different types of information and poses many learnability problems for the learners. Similarities and differences between L2 and HL learners as well as between L1 and bilingual populations were examined. The present research reveals qualitative differences in the underlying linguistic knowledge of early vs. late bilinguals with HL learners achieving a higher level of mastery than L2 learners. Although not identical to the native speakers, HL learners attained a certain degree of implicit knowledge of the phenomenon whereas L2 learners adopted an unlearned analysis that integrated the relevant factors in a

divergent manner. The bilingual learners were found to depend on cues that are more familiar and readily available to them from the context and mode of acquisition when processing a multi-factor phenomenon with abstract properties like CE, and it is thus crucial to take into account the learners' age, context, and mode of acquisition to understand bilingual difficulty. The present findings suggest that bilingual difficulty does not necessarily lie in developing sensitivity to particular domains or interfaces but in the failure to effectively integrate multiple types of information when in face of computational difficulty. To conclude, different types of bilinguals were found to process and acquire the phenomenon of Korean CE differently with HL learners reaching a higher degree of native-likeness than L2 learners in the present phenomenon. It seems highly possible for HL learners to attain native-like implicit knowledge of Korean CE that requires modulation of multiple interfaces, both within and outside of grammar, but L2 learners' variable patterns of judgments question their ability to acquire the phenomenon.

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**APPENDIX A: LANGUAGE BACKGROUND QUESTIONNAIRE**

1. Subject Number: \_\_\_\_\_
2. Age: \_\_\_\_\_
3. Sex: \_\_\_\_\_
4. What is your native language? \_\_\_\_\_
5. What language/s did you speak at home as a child? \_\_\_\_\_
6. In which language(s) were you educated (i.e., language of instruction)?  
Elementary School: \_\_\_\_\_  
Secondary (Middle/High) School: \_\_\_\_\_  
College/University: \_\_\_\_\_
7. At what age did you start studying Korean? \_\_\_\_\_
8. Did you receive instruction in Korean? (i.e., take Korean language classes or lessons)  
If so, when? Circle one or more below:  
Preschool    Elementary    Secondary                      College            Post-college  
how long? \_\_\_\_\_
9. Have you ever spent time in Korea? \_\_\_\_\_  
If so, when? \_\_\_\_\_ how long? \_\_\_\_\_
10. Estimate your level of **Korean** on a scale of 1 to 6, where 1 corresponds to “beginner” and 6 corresponds to “native speaker”:  
1                      2                      3                      4                      5                      6  
beginner    low-intermediate    intermediate    high-intermediate    advanced            native speaker
11. What other languages do you speak besides **English** and **Korean**? For each language, estimate your level: beginner, intermediate or advanced.  
\_\_\_\_\_

**If you were born or raised in the US but were raised in a family where Korean was spoken in the home (i.e., if you are a Korean-American), please answer the following questions.**

12. Were you born in the US/Canada? If not, please specify the age at which you arrived.

\_\_\_\_\_

13. What is your parent's first language?

Father \_\_\_\_\_ Mother \_\_\_\_\_

14. Exposure to Korean

When were you first exposed to Korean? \_\_\_\_\_

Did you speak and understand Korean when you were a child? \_\_\_\_\_

15. Do you have siblings? If yes, what is your birth order (i.e, first, second, youngest etc)?

\_\_\_\_\_

16. What language(s) (e.g., Korean, English, Mixed, Other) did your parents/caregivers use mostly when speaking to you when you were

0 ~ 5 years old: \_\_\_\_\_

Elementary school: \_\_\_\_\_

Middle school: \_\_\_\_\_

High school: \_\_\_\_\_

17. What language(s) (e.g., Korean, English, Mixed, Other) did your siblings/friends use mostly when speaking to you when you were

0 ~ 5 years old: \_\_\_\_\_

Elementary school: \_\_\_\_\_

Middle school: \_\_\_\_\_

High school: \_\_\_\_\_

18. What language(s) (Korean, English, Mixed or Other) did YOU use mostly when speaking to your parents/caregivers when you were:

0 ~ 5 years old: \_\_\_\_\_

Elementary school: \_\_\_\_\_

Middle school: \_\_\_\_\_

High school: \_\_\_\_\_

19. What language(s) (Korean, English, Mixed or Other) did YOU use mostly when speaking to your siblings/friends when you were:

0 ~ 5 years old: \_\_\_\_\_

Elementary school: \_\_\_\_\_

Middle school: \_\_\_\_\_

High school: \_\_\_\_\_

20. Did you attend daycare or were you cared at home before age 5? \_\_\_\_\_

21. At what age did you first begin to learn English? \_\_\_\_\_

22. Do you use Korean with your parents, grandparents, siblings, or friends?

never            rarely            sometimes            often            always

23. Do you read any printed materials in Korean?

never            rarely            sometimes            often            always

24. Do you watch Korean movies, TV, or soap operas?

never            rarely            sometimes            often            always

25. Can you talk about your daily life or personal preferences in Korean without difficulty?

Strongly disagree    Disagree    Somewhat agree    Agree    Strongly agree

26. Can you write uncomplicated letters and essays related to work and school experiences in Korean?

Strongly disagree    Disagree    Somewhat agree    Agree    Strongly agree

## APPENDIX B: WRITTEN PROFICIENCY MEASURE

### Instructions:

In this task, you will read a Korean folklore called 금도끼 은도끼 (Golden Axe, Silver Axe). All sentences tell the story, and you will see a blank in each sentence. For each blank, please select one of three options that is most appropriate for the context. Please choose one option only for each blank.

1. 옛날 옛적에 철수라는 착한 나무꾼(woodcutter)이 늙으신 부모님과 함께 \_\_\_\_\_.  
A. 계셨답니다.  
B. 살았답니다.  
C. 있었답니다.
2. 그들은 너무 가난해서 가진 거라고는 \_\_\_\_\_ 오래된 쇠도끼(iron axe) 하나 뿐이었어요.  
A. 낡고  
B. 늙고  
C. 늙은
3. 철수는 이 쇠도끼로 매일 숲속에 가서 나무를 베고 빈 나무를 팔아서 겨우겨우 가족을 \_\_\_\_\_했어요.  
A. 살려  
B. 지탱  
C. 부양
4. 어느날, 철수는 쇠도끼를 들고 나무를 힘껏 찍다가 \_\_\_\_\_ 연못 속에 빠뜨리고 말았어요.  
(연못: pond, 힘껏: hard, 찍다: hit)  
A. 도끼를  
B. 도끼가  
C. 도끼도

5. 깜짝놀란 철수는 연못 속으로 들어가서 열심히 찾아봤지만 쇠도끼는 \_\_\_\_\_ 없었어요.
- A. 온데간데
  - B. 여러곳에
  - C. 여기저기
6. \_\_\_\_\_ 늙으신 부모님을 위해 돈을 벌 수 없다는 생각을 하자 철수는 울음을 참을 수 없었어요.
- A. 그러나
  - B. 다만
  - C. 이제
7. 철수의 울음소리를 듣고 연못 속에서 하얀 머리와 수영을 한 산신령이 나타나서 왜 울고 있냐고 \_\_\_\_\_ . (산신령: Mountain God)
- A. 물었었어요.
  - B. 물었어요.
  - C. 물었요.
8. 철수가 하나밖에 없는 \_\_\_\_\_ 도끼를 연못에 빠뜨렸다고 말하자 산신령은 그 도끼를 찾기 위해서 연못속으로 들어갔어요.
- A. 쓸모없는
  - B. 소중한
  - C. 대단한
9. 얼마 후 산신령은 금도끼 (Golden Axe) 하나를 들고 나와 철수의 도끼냐고 물어보니 철수는 자기 것이 아니라고 했어요. 다시 한번 산신령은 연못으로 들어가서 은도끼 (Silver Axe) 하나를 들고 나와 또 철수의 도끼냐고 \_\_\_\_\_ 철수는 자기 것이 아니라고 했어요.
- A. 물어보며
  - B. 물어보자
  - C. 물어볼까봐
10. 산신령은 또 다시 한 번 연못속으로 들어가서 \_\_\_\_\_ 오래된 쇠도끼를 들고 나와 똑같은 질문을 했어요.
- A. 다시

- B. 이번에는
- C. 모처럼

11. 철수는 자기 것이 맞다며 기뻐하고 \_\_\_\_\_ 찾아줘서 고맙다고 말했어요.

- A. 도끼를
- B. 도끼가
- C. 도끼에게

12. 산신령은 철수의 \_\_\_\_\_ 않는 정직한 모습을 보고 철수에게 쇠도끼, 은도끼, 금도끼를 모두 함께 주었어요.

- A. 욕심나지
- B. 욕심내는
- C. 욕심내지

13. \_\_\_\_\_ 철수는 금도끼와 은도끼를 팔아 철수네 집은 큰 부자가 되었어요.

- A. 그러나
- B. 그런데
- C. 그래서

14. 이웃 집에 사는 욕심쟁이 영배가 철수가 부자가 된 이야기를 듣고 쇠도끼를 하나 \_\_\_\_\_ 산으로 갔어요.

- A. 들었고
- B. 들고
- C. 들며

15. 영배는 철수가 도끼를 잃어버렸던 연못으로 가서 자기 도끼를 빼뜨리고 우는 \_\_\_\_\_ 하기 시작했어요.

- A. 척을
- B. 소리를
- C. 눈물을

16. 그러자 연못속에서 산신령이 나타나서 왜 울고 있냐고 물었어요. 영배는 금도끼와 은도끼를 \_\_\_\_\_ 아주 비싸고 잘 만들어진 도끼를 연못 속에 빼뜨렸다고 말했어요.

- A. 바라보면서

- B. 기대하면서
- C. 물어보면서

17. 산신령은 연못 속으로 들어가서 금도끼, 은도끼, 쇠도끼를 모두 들고 나와서 영배에게 \_\_\_\_\_ 도끼가 그의 것이냐고 물었어요.

- A. 어느
- B. 누구
- C. 그런

18. 영배는 금도끼, 은도끼, 쇠도끼 모두가 자기의 것이라면서 \_\_\_\_\_.

- A. 좋았어요.
- B. 좋아해요.
- C. 좋아했어요.

19. 산신령은 욕심쟁이 영배에게 금도끼와 은도끼 \_\_\_\_\_ 쇠도끼도 돌려주지 않았어요.

- A. 더불어
- B. 함께
- C. 뿐만 아니라

20. 그래서 영배는 가지고 갔던 쇠도끼도 \_\_\_\_\_ 산을 내려왔답니다.

- A. 팔아버리고
- B. 잃어버리고
- C. 사라지고

21. 이처럼 욕심이 없고 정직했던 철수와 \_\_\_\_\_ 욕심을 내서 산신령을 속였던 영배는 더 가난해졌답니다.

- A. 비슷하게
- B. 비하여
- C. 반대로

22. 이번 일로 인해 영배는 이제부터 욕심을 내지 않고 정직하게 \_\_\_\_\_ 생각했습니다.

- A. 살겠다고
- B. 살아야겠다고

C. 살았다고

**For the following questions, select the most appropriate word/phrase for the blank.**

23. \_\_\_\_\_ 가난하지만 행복하다.  
A. 비록                      B. 어차피                      C. 기왕                      D. 어찌나
24. \_\_\_\_\_ 놀랐는지 소리를 크게 질렀다.  
A. 비록                      B. 어차피                      C. 기왕                      D. 어찌나
25. \_\_\_\_\_ 말이 나온 김에 오늘 너희 집에 가보자.  
A. 비록                      B. 어차피                      C. 기왕                      D. 어찌나
26. \_\_\_\_\_ 오늘은 비가 와서 못가니까 내일 갑시다.  
A. 비록                      B. 어차피                      C. 기왕                      D. 어찌나

**For each sentence, find the part of the sentence that makes it ungrammatical.**

27. 밤에 잠자리에 들다가 좋은 생각을 나서 다시 일어났다.  
A                                      B                                      C                                      D
28. 10 년만에 만날 친구와 이야기하느라고 약속 시간에 못 나갔어요.  
A                                      B                                      C                                      D
29. 약속 시간에 늦을 것 같아서 뛰어갔지만 아무나 안 나왔어요.  
A                                      B                                      C                                      D
30. 너무 더워서 아이스크림을 네 개 밖에 먹었더니 배탈이 나서 병원에  
가야겠어요.  
A                                      B                                      C                                      D
31. 어제 집에 너무 늦게 왔다고 엄마가 내가 나무라셨다.  
A                                      B                                      C                                      D

The following sentences tell the story of The Three Little Pigs (아기 돼지 삼 형제). For each blank, please select one of three options that is most appropriate for the context. Please choose one option only for each blank.

32. 깊은 숲 속에 아기 돼지 삼 \_\_\_\_\_ 살고 있었어요.  
A. 형제를  
B. 형제가  
C. 형제에게
33. 놀기 좋아하는 첫째 돼지는 볏짚(straw)으로 집을 짓고 잠자기 좋아하는 둘째 돼지는 나무로 집을 지었어요. 부지런하고 일하기 좋아하는 막내 돼지는 벽돌과 \_\_\_\_\_ 튼튼하게 집을 지었어요.  
A. 흙으로  
B. 흙와  
C. 흙과
34. 밤이 되어 아기 돼지들이 쿨쿨 잠을 자고 있는 사이에 \_\_\_\_\_ 찾아왔어요.  
A. 늑대에게  
B. 늑대를  
C. 늑대가
35. 늑대가 첫째 돼지의 볏짚으로 만든 집을 숨을 크게 \_\_\_\_\_ ‘흑’ 불자  
집이 확 날라가버렸어요.  
A. 들이마시고  
B. 들여마시고  
C. 들어마시고
36. 첫째 돼지는 둘째 돼지네 집으로 얼른 달아났어요. 늑대는 뒤쫓아 와서 둘째 돼지의 집을 ‘흑흑’ 불자 \_\_\_\_\_ 무너져 내렸어요.  
A. 나무집도  
B. 나무집만  
C. 나무집을
37. 첫째 돼지와 둘째 돼지는 막내 집으로 도망갔어요. 늑대는 다시 한번 숨을 들이마시고 ‘흑! 흑흑! 흑흑흑!’ 불었지만 \_\_\_\_\_ 끄떡없었어요.

- A. 벽돌집도
- B. 벽돌집은
- C. 벽돌집을

38. 늑대는 화가 나서 지붕으로 \_\_\_\_\_ 굴뚝으로 들어갔어요. (지붕: roof, 굴뚝: chimney)

- A. 올라가
- B. 오르며
- C. 올려

39. 늑대는 굴뚝으로 내려오다가 \_\_\_\_\_ 불이 붙어서 발버둥치며 도망갔어요.

- A. 엉덩이에
- B. 엉덩이를
- C. 엉덩이의

40. 첫째 돼지와 둘째 돼지는 막내 돼지에게 고마워하며 늑대가 와도 끄떡없는 튼튼한 \_\_\_\_\_ 지어야겠다고 생각했습니다.

- A. 집이
- B. 집을
- C. 집에

## APPENDIX C: WRITTEN ELICITED PRODUCTION TASK (SAMPLE TEST ITEMS)

**Instructions:** You will now read a series of short conversations of a married couple, Young-soo (영수) and Mina (민아). The context of the conversation will be given to you in English. For each conversation, select one answer that sounds more natural in the context of the conversation as intuitively and spontaneously as possible. There is no "correct" answer for these questions.

Example)

CONTEXT: (민아 is looking for food in the fridge)

민아: 아 너무 배고파 (Ahh, I'm so hungry)

영수: 너 \_\_\_\_\_ 아직 안먹었구나...(I guess you haven't eaten \_\_\_\_\_)

(a) 저녁을 (dinner-ACC)

(b) 저녁 (dinner-Ø)

### SUBJECT CONDITIONS

#### **SCHD: [Contrastive Focus, Human, Definite]**

(They are fighting over dirty dishes that were left undone)

영수: 설거지 왜 안했어? (Why didn't you wash the dishes?)

민아: 어제 \_\_\_\_\_ 한다 했잖아! (You said \_\_\_\_\_ will do it yesterday!)

(a) 너가 (니가) (you-NOM)

(b) 너 (you-Ø)

#### **SCHI: [Contrastive Focus, Human, Indefinite]**

(Mina has just asked Young-soo to fix the car)

영수: 왜 여자는 차를 못 고칠까? (Why can't girls fix cars?)

민아: 그런건 \_\_\_\_\_ 해야지! (\_\_\_\_\_ should fix cars!)

(a) 남자가 (Guys-NOM)

(b) 남자 (Guys- Ø)

#### **SCID: [Contrastive Focus, Inanimate, Definite]**

(They are talking about the tallest building in the US)

영수: 미국에서 제일 높은 빌딩이 Empire State 빌딩이지? (The Empire State building is the tallest building in the US, right?)

민아: 아니. 내가 알기로 Willis \_\_\_\_\_ 제일 높은데... (No, I think the Willis \_\_\_\_\_ is the tallest)

(a) 타워가 (tower-NOM)

(b) 타워 (tower- Ø)

**SCII: [Contrastive Focus, Inanimate, Indefinite]**

(They are trying to get a birthday present for their friend Young-hee)

민아: 책을 사주는 건 어때? (How about getting her a book?)

영수: 내 생각엔 \_\_\_\_ 더 좋을듯 (I think \_\_\_\_ would be a better gift)

- (a) 옷이 (clothes-NOM)                      (b) 옷 (clothes- Ø)

**SNHD: [Non-contrastive Focus, Human, Definite]**

(민아 just baked a chocolate cake)

영수: 케익 맛있겠다! 어디에 가져가려고? (The cake looks yummy! Where are you taking it?)

민아: 이거 \_\_\_\_\_ 먹을라고 만든건데...(I made it so \_\_\_\_ could eat it)

- (a) 우리가 (we-NOM)                      (b) 우리 (we-Ø)

**SNHI: [Non-contrastive Focus, Human, Indefinite]**

(They are at a bus stop and a crowded bus is approaching)

영수: 저기 버스 온다 (The bus is coming)

민아: 오늘따라 \_\_\_\_\_ 많네. (There's a lot of \_\_\_\_\_ in the bus today)

- (a) 사람이 (people-NOM)                      (b) 사람 (people- Ø)

**SNID: [Non-contrastive Focus, Inanimate, Definite]**

(There is a lot of traffic around a restaurant called Chungkane)

영수: 다들 어디가지? (Where's everyone going?)

민아: 내 생각엔 \_\_\_\_\_ 맛있어서 다들 거기 가나봐. (I heard \_\_\_\_\_ is really good. I think they are going there)

- (a) 정가네가 (Chungkane-NOM)                      (b) 정가네 (Chungkane-Ø)

**SNII: [Non-contrastive Focus, Inanimate, Indefinite]**

(Young-soo is looking for a pen to write with but can't find one in his room)

민아: 뭘 찾니? (What are you looking for?)

영수: 내 방에 \_\_\_\_\_ 없네. 하나만 빌려줄래? (There's no \_\_\_\_ in my room. Can I borrow one?)

- (a) 펜이 (pen-NOM)                      (b) 펜 (pen-Ø)

## **OBJECT CONDITIONS**

### **OCHD: [Contrastive Focus, Human, Definite]**

(They are talking about Young-soo's close friends)

민아: 넌 병수가 제일 좋아? (You like Byung-soo best?)

영수: 아니. 실은 난 \_\_\_\_\_ 제일 좋아해. (No, I actually like \_\_\_\_\_ best)

- (a) 택민이를 (Taek-min-ACC)                      (b) 택민이 (Taek-min-Ø)

### **OCHI: [Contrastive Focus, Human, Indefinite]**

(They see a car accident)

민아: 어머, 저 차가 다른 차를 쳤나봐. (Oh my, I think that car hit another car)

영수: 그게 아니고 \_\_\_\_\_ 친 거 같은데 (No, I think it hit a \_\_\_\_\_)

- (a) 사람을 (person-ACC)                      (b) 사람(person-Ø)

### **OCID: [Contrastive Focus, Inanimate, Definite]**

(They are talking about what languages Young-soo can speak)

민아: 너 일본어를 좀 배웠지? (You know some Japanese, right?)

영수: 아니 일본어 말고 \_\_\_\_\_ 배웠는데... (No, I know \_\_\_\_\_, not Japanese)

- (a) 중국어를 (Chinese-ACC)                      (b) 중국어 (Chinese- Ø)

### **OCII: [Contrastive Focus, Inanimate, Indefinite]**

(They are getting ready to eat and Young-soo is setting the table)

영수: 포크로 밥 먹을까? (Shall we eat with forks?)

민아: 아니. 난 \_\_\_\_\_ 줘. (No, give me \_\_\_\_\_ )

- (a) 젓가락을 (chopsticks-ACC)                      (b) 젓가락 (chopsticks- Ø)

### **ONHD: [Non-contrastive Focus, Human, Definite]**

(Mina is on her way out to meet her friend Sung-hee for dinner)

영수: 누구를 만나러 가? (Who are you meeting with?)

민아: 지금 \_\_\_\_\_ 만나러 가. (I'm going to meet with \_\_\_\_\_ right now)

- (a) 성희를 (Sunghee-ACC)                      (b) 성희 (Sunghee-Ø)

**ONHI: [Non-contrastive Focus, Human, Indefinite]**

(Young-soo is bored but Mina is busy and wants him to hang out with his friends)

영수: 심심해. 놀아줘. (I'm bored. Let's hang out)

민아: 나 바빠. 심심하면 \_\_\_\_\_ 만나러 나가던가... (I'm busy. If you're bored go and meet a \_\_\_\_\_)

(a) 친구를 (friend-ACC)

(b) 친구 (friend- Ø)

**ONID: [Non-contrastive Focus, Inanimate, Definite]**

(Mina is making hot chamomile tea)

영수: 무슨 차를 끓이니? (What tea are you making?)

민아: 여기 카모마일 \_\_\_\_\_ 끓이고 있는데 한번 마셔볼래? (I'm making chamomile \_\_\_\_\_. Do you want some?)

(a) 차를 (tea-ACC)

(b) 차 (tea- Ø)

**ONII: [Non-contrastive Focus, Inanimate, Indefinite]**

(Young-soo is looking at cameras at an electronics store)

민아: 뭘 사게? (What will you buy?)

영수: 안그래도 필요했는데 \_\_\_\_\_ 살까봐. (I think I'll get \_\_\_\_\_ because I need it)

(a) 카메라를 (camera-ACC)

(b) 카메라 (camera-Ø)

**APPENDIX D: ORAL PICTURE DESCRIPTION TASK (SAMPLE TEST ITEMS)**

**Instructions:**

- 시간제한 없음 (No time limit)
- 가장 자연스러운 대화체로 말씀해주세요 (Please speak in natural informal speech)
- 가급적 존댓말을 쓰지 말아주세요. 친구한테 얘기하듯이 편하게 말씀해주세요 (No honorifics)

**OBJECT CONDITIONS**

**OCHD: [Contrastive Focus, Human, Definite]**

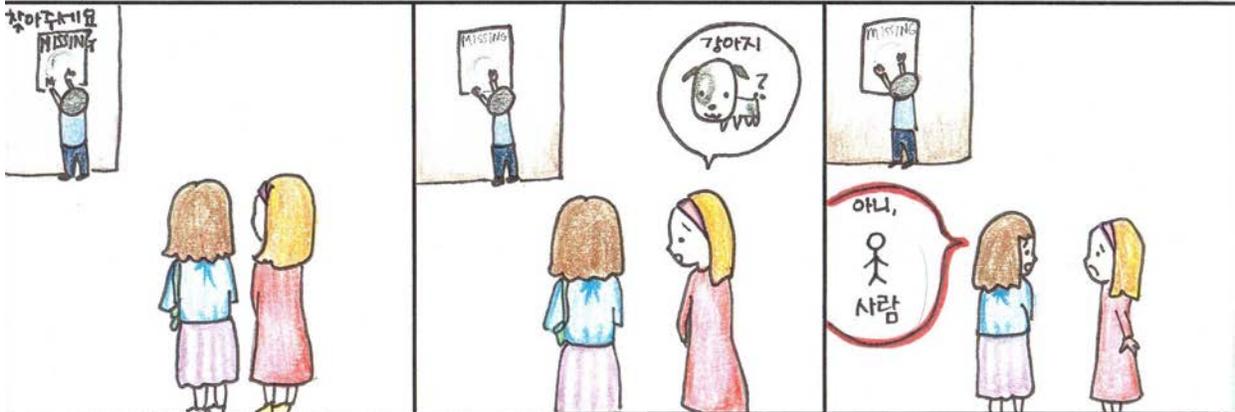


**WORD CARDS:**

사랑하다 (to love)

선아 (Sun-ah)

**OCHI: [Contrastive Focus, Human, Indefinite]**



**WORD CARDS:**

찾다 (to look for)

사람 (person)

**OCID: [Contrastive Focus, Inanimate, Definite]**



WORD CARDS:

주다 (to give)

꽃 (flower)

**OCII: [Contrastive Focus, Inanimate, Indefinite]**



WORD CARDS:

읽다 (to read)

책 (books)

**ONHD: [Non-contrastive Focus, Human, Definite]**

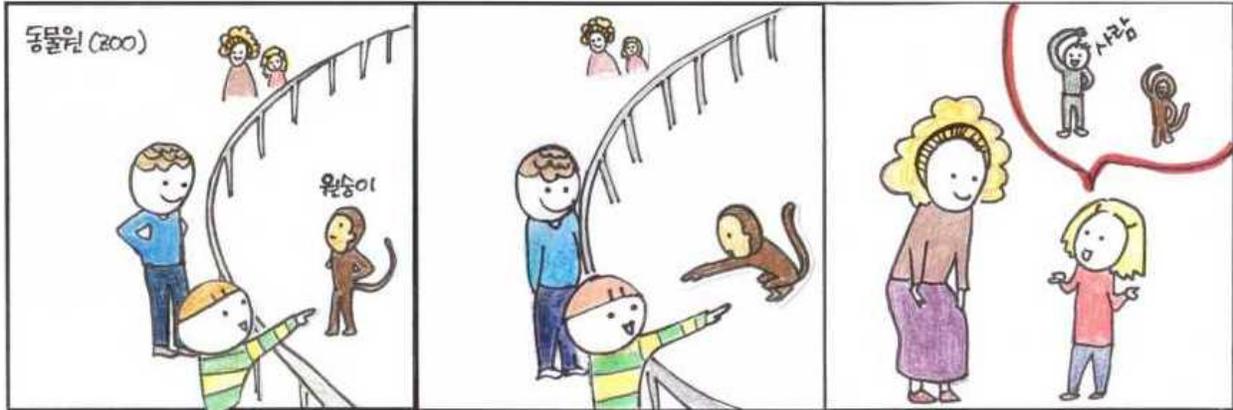


WORD CARDS:

때리다 (to hit)

동생 (little brother)

**ONHI: [Non-contrastive Focus, Human, Indefinite]**

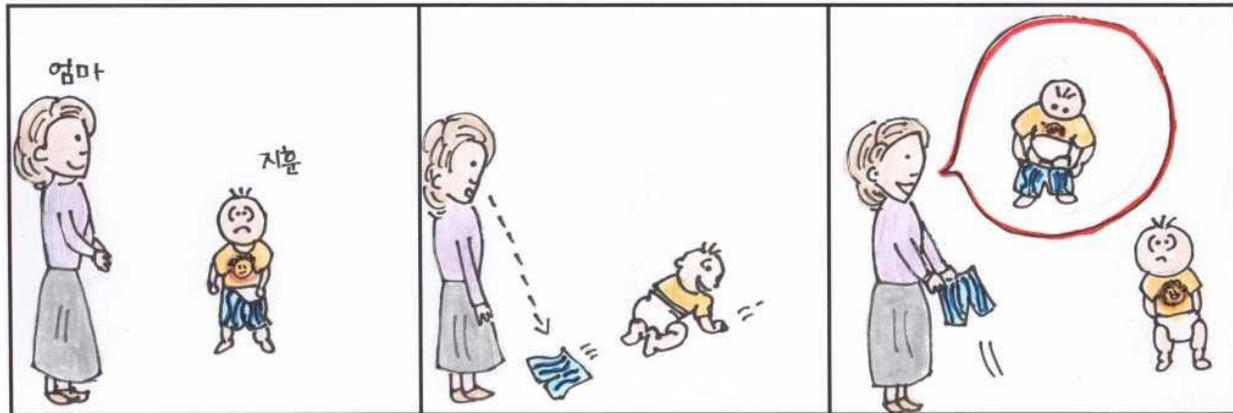


WORD CARDS:

따라하다 (to imitate)

사람 (person)

**ONID: [Non-Contrastive Focus, Inanimate, Definite]**



WORD CARDS:

입다 (to wear)

바지 (pants)

**ONII: [Non-contrastive Focus, Inanimate, Indefinite]**



WORD CARDS:

사다 (to buy)

우산 (umbrella)

**SUBJECT CONDITIONS**

**SCHD: [Contrastive Focus, Human, Definite]**



WORD CARDS:

사다 (to buy)

우산 (umbrella)

**SCHI: [Contrastive Focus, Human, Indefinite]**



WORD CARDS:

베다/자르다 (to cut)

사람 (person)

**SCID: [Contrastive Focus, Inanimate, Definite]**

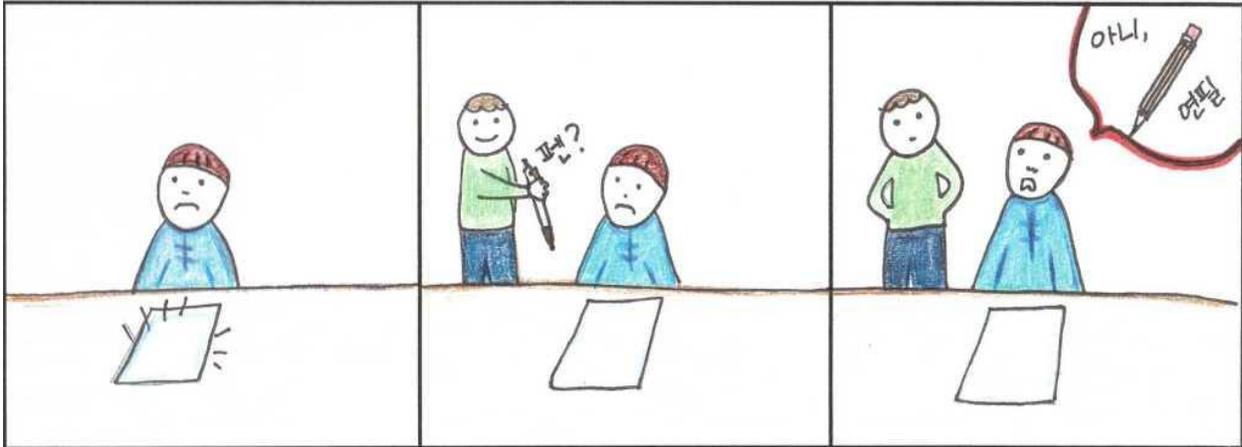


WORD CARDS:

없어지다 (to disappear)

모자 (hat)

**SCII: [Contrastive Focus, Inanimate, Indefinite]**



WORD CARDS:

필요하다 (to need)

연필 (pencil)

**SNHD: [Non-contrastive Focus, Human, Definite]**

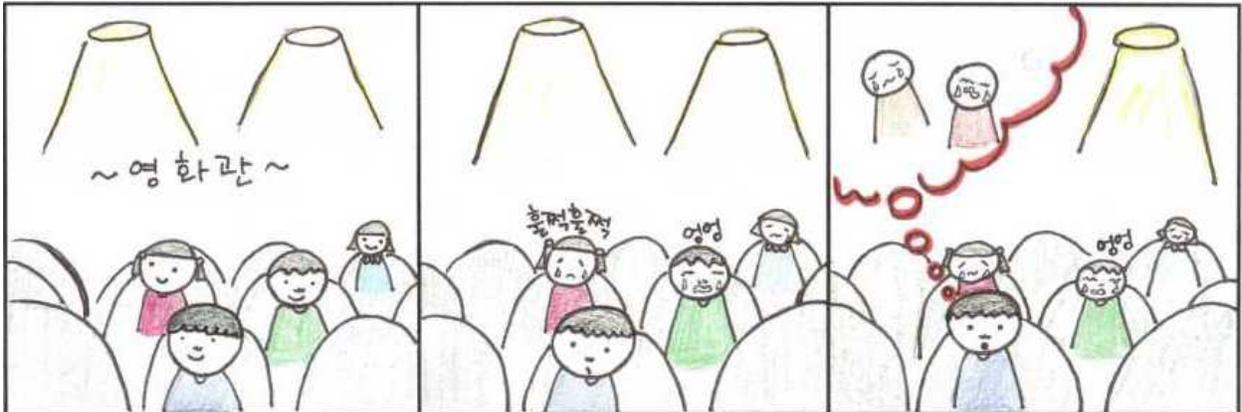


WORD CARDS:

다치다 (to hurt)

민지 (Minji)

**SNHI: [Non-contrastive Focus, Human, Indefinite]**



WORD CARDS:

울다 (to cry)

사람 (people)

**SNID: [Non-contrastive Focus, Inanimate, Definite]**

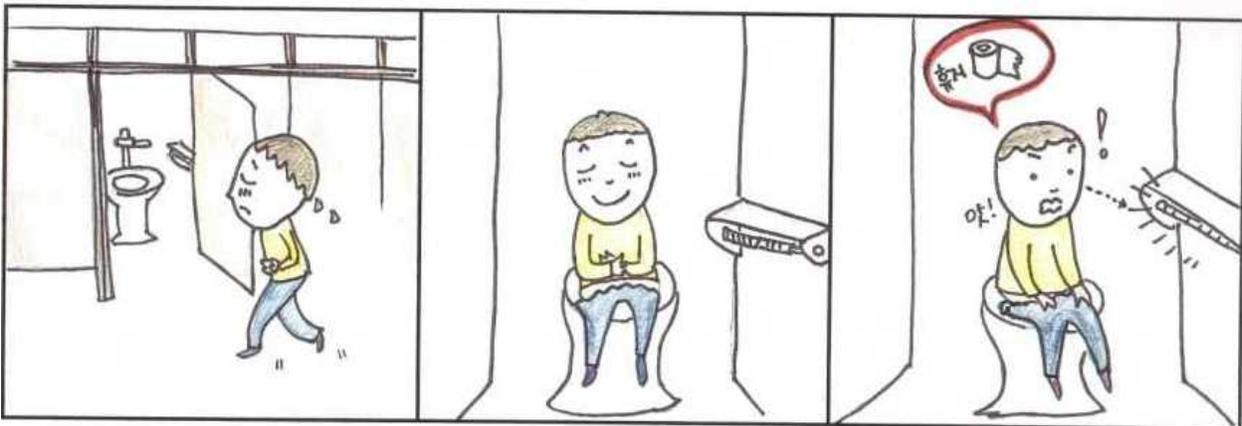


WORD CARDS:

시다 (sour)

사과 (apple)

**SNII: [Non-contrastive Focus, Inanimate, Indefinite]**



WORD CARDS:

없다 (to run out of)

휴지 (toilet paper)