EMPIRICAL EXAMINATION OF TWO DIAGNOSTICS OF KOREAN UNACCUSATIVITY

by

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Abstract

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According to the Unaccusative Hypothesis (UH), intransitive verbs can be divided into two classes: unaccusative verbs (e.g. *fall*) and unergative verbs (e.g. *dance*) (Burzio 1986, Perlmutter 1978). Several approaches have been developed to distinguish between these two classes of verbs across languages. Sorace (2000) also developed the Split Intransitive Hierarchy (SIH) which proposes that there is a continuum of intransitive verbs ranging from unaccusative to unergative.

Evidence for the Unaccusative Hypothesis has been developed from an empirical perspective. The aim of this dissertation is to complement the linguistic theory of the UH in Korean by examining two Korean unaccusative diagnostics using two empirical methodologies. This study combines evidence from an acceptability ratings experiment with corpus linguistic data to investigate whether the Korean unaccusative diagnostics are supported in real data.

For the corpus-based study, two Korean unaccusative diagnostics were chosen: the case marking of floating quantifiers (CFQ), and the case marking of oblique nominals (CON) (Yang 1991). These two diagnostics were investigated using the Sejong Morph Tagged Corpus. The corpus-based findings indicate that: 1) there is a distinction between unaccusative verbs and unergative verbs in the corpus, and 2) the case-marking floating quantifier diagnostic needs to be complemented with an adverb factor. In addition, these two diagnostics were evaluated using the SIH verbal categories. The data indicate that they were not sensitive to this hierarchy.

For the acceptability ratings experiment, an online survey was conducted to determine the degree of acceptability for unaccusative and unergative verbs with the case marking of floating quantifiers. The results showed that generally people rated UA verbs higher than UE verbs. However, the adverb factor affected the rating of UE verbs.

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List of Abbreviations

NOM	nominative
LOC	locative
PRES	present
DECL	declarative
PST	past
CL	classifier
GEN	genitive
ACC	accusative
COMP	complementizer
DAT	dative
PL	plural
OBL	oblique
POSS	possessive
PAS	passive
PROG	progressive
NEG	negation
CONN	connective ending

Chapter 1

Introduction

This dissertation presents the results of an empirical investigation into the unaccusativity of Korean. I examined two unaccusative diagnostics in Korean by testing whether there are observable differences between the two categories of intransitive verbs not only in corpus data, but also in the data of an acceptability ratings experiment.

The corpus and experimental findings of this dissertation provide insights into the linguistic theories of Korean unaccusativity. In addition to providing empirical evidence for the Unaccusative Hypothesis (UH)' claims that there are distinctions between the two categories of verbs, the proposed diagnostics can be complemented with an additional factor which will be described later.

In this chapter, the relevant research issues, the research gap, the methodology, the aims and the organization of this dissertation are presented. In section 1.1 the research issues are presented. The research gap, methodology and aims are suggested respectively in sections 1.2, 1.3, and 1.4. Finally, in section 1.5, the organization of this dissertation is provided.

1.1 The Research Issues

According to the Unaccusative Hypothesis (UH), intransitive verbs can be divided into two classes: unaccusative verbs (e.g., *fall*, *slide*, etc.), and unergative verbs (e.g., *dance*, *talk*, etc.) (Burzio 1986, David M. Perlmutter 1978). A great

deal of linguistic research has been done to identify the underlying differences between these two subclasses of intransitive verbs from different perspectives.

Under the Principles and Parameter's framework, each class has a different syntactic representation. While subjects of unaccusative verbs are base-generated from object position and move to subject position, subjects of unergative verbs are base-generated in subject position. Thus, if we consider the D-structure of an unaccusative sentence such as *The leaves fell.*, the representations of D- and S-Structure are shown as in (1).

(1) a. D-structure: [TP e [VP fell the leaves]]

b. S-structure: [TP The leaves$_i$ [VP fell t_i]]

However, if we consider the D-structure of an unergative sentence such as *The students laughed*., the representations of D- and S-Structure are as shown in (2).

(2) a. D-structure: [TP The students [VP laughed]]

b. S-structure: [TP The students [VP laughed]]

Since these two subclasses of intransitive verbs look similar on the surface but have different syntactic representations, many studies have been done to attempt to identify behavioral differences between unaccusatives and unergatives across languages. Tests that distinguish between these two classes are referred to as unaccusative diagnostics (Levin and Rappaport Hovav 1995). Some representative syntactic unaccusative diagnostics include Auxiliary selection for Italian (Burzio 1986), the Resultative construction for English and Korean (Lee

2004, Levin and Rappaport Hovav 1995), and Quantifier floating with numeral classifiers for Japanese and Korean (Oshita 2000, Oshita 2001, Yang 1991).

In the meantime, there have been other attempts to support the UH from empirical perspectives. Many empirical studies have been done using psycholinguistic experiments. Psycholinguistic experiments revealed that the unaccusative/unergative distinction is realized during on-line sentence processing. (Bever and Sanz 1997, Friedmann, Taranto, Shapiro, and Swinney 2008, Lee and Thompson 2011). After reading unaccusative and unergative sentences, participants presented different response times for target words with these two subclasses of intransitive verbs. Spanish speakers recognized the target word (e.g., *handsome)* in unaccusative sentences (e.g., *the handsome critic who visited the museum arrived with care*) faster than they did in unergative sentences (e.g. *the handsome critic who visited the museum spoke with care*) with an end-of-sentence probe recognition (Bever and Sanz 1997). In eye tracking experiments, participants showed an increase in looks when they produced a noun phrase with an unaccusative verb rather than with a unergative verb in English (Lee and Thompson 2011). The proposed explanation for this difference is that unaccusative sentences with SV word order in English and Spanish are derived by NP movement, while unergative sentences with SV word order are not. Therefore, most of the psycholinguistic experiments support the Unaccusative Hypothesis and the differences between these two classes.

From other perspectives, a few corpus-based studies have also provided evidence that there is a difference between unaccusatives and unergatives. These were accomplished by analyzing large datasets extracted from corpora. The corpus data was also used to investigate the validity of unaccusative diagnostics. In English, for example, the locative inversion construction has been claimed as an unaccusative diagnostic. However, Levin and Rappaport Hovav (1995) studied the locative inversion construction with a corpus of about 2100 instances, and looked at the distributional characteristics of this construction. They examined the actual types of verbs found in the locative inversion and found that certain unergative verbs were also compatible with this construction in a corpus. With the help of large data sets, they concluded that locative inversion is not an appropriate unaccusative diagnostic for English.

Since Perlmutter's claim of the Unaccusative Hypothesis, many unaccusative diagnostics to distinguish between these two kinds of intransitive verbs have been suggested theoretically and tested empirically across languages. In this dissertation, I attempt to empirically test the two Korean unaccusative diagnostics by examining both corpus data and the acceptability ratings of these two classes in Korean.

1.2 The Research Gap

In Korean, there is a substantial body of research which focuses on identifying unaccusative diagnostics to distinguish between unaccusatives and

unergatives (Lee 2004, Yang 1991). Most of these studies have suggested different syntactic constructions for Korean unaccusative diagnostics. For example, Lee (2004) suggested the Korean resultative construction as an unaccusative diagnostic. A detailed study of Korean unaccusativity by Yang (1991) and by Oshita (1997) claimed five syntactic constructions as unaccusative diagnostics respectively. Thus, there has been a general assumption that there exist syntactic unaccusative diagnostics for Korean that can classify intransitive verbs as either unaccusative or unergative. Given the linguistic claim that there is a distinction between unaccusatives and unergatives among Korean intransitives, there have been very few examinations of Korean unaccusativity from an empirical perspective. This dissertation addresses that gap.

1.3 The Research Methodology

The first way I look at the empirical data is via corpus work. Most previous studies of Korean unaccusativity offered a syntactically theoretic account. To see the distinction between unaccusatives and unergatives in real data, in an earlier paper (Allman 2007) I examined unaccusative diagnostics based on a corpus analysis. In that paper, I examined the aspectual characteristics of intransitive verb classes with several syntactic constructions from a sample corpus, and in Allman (2011), I examined two unaccusative diagnostics and distributions of both among intransitive verbs in the Korean corpus. The corpus evidence has shown that although Korean intransitives did not conform to the

aspectual characteristics of verb classes, they generally can be categorized as either unaccusative or unergative. Based on both studies, I extend my corpus investigation into the nature of Korean unaccusativity by examining the proposed unaccusative diagnostics, and test these diagnostics in a large Korean corpus. Rather than looking for the distributional differences between unaccusatives and unergatives, I compare the verb classes and the gradient characteristics of the Unaccusative Hypothesis. I do this by adopting Split Intransitive Hierarchy (SIH) by Sorace (2000). Instead of distinguishing between two types of intransitive verbs and developing an unaccusative(UA)-unergative(UE) dichotomy, Sorace (2000) suggested the Split Intransitive Hierarchy (SIH). The Split Intransitivity Hierarchy (SIH) shows a continuum classification of intransitive verbs.

The second way I look at the empirical data is by a survey for an acceptability ratings experiment. This experiment examines the acceptability ratings of Korean intransitive sentences by native speakers of Korean. An online questionnaire administered via Google Docs presented a range of Korean sentences involving different lengths of sentences and different case-marking on the nouns, and asked participants to make judgments on the acceptability of those sentences. It involved presenting a survey questionnaire in which different intransitive sentences were presented together online, and asking participants to make judgments on the acceptability of those sentences. Participants could take this survey online from any computer where they can access the Internet. The

questions I examined were whether there were differences of acceptability between unaccusatives and unergatives when native speakers of Korean read sentences with intransitive verbs. In this dissertation, therefore, I focus on comparing acceptability ratings of Korean unaccusative and unergative sentences.

1.4 The Research Aims

The aim of this dissertation, then, is to complement the linguistic theory of the Unaccusative Hypothesis (UH) and the Split Intransitive Hypothesis (SIH) by examining the unaccusative/unergative distinction among Korean intransitive verbs using two empirical methods. This study combines the corpus linguistic data with the acceptability ratings experiment to investigate whether the unaccusative and unergative distinction can be found in Korean.

For the corpus-based studies, I propose the following questions:

1. Can we see the two Korean unaccusative diagnostics in real corpus data?
2. Which classes of verbs most frequently appear with each diagnostic?

Additionally, for the acceptability ratings experiment, I propose the following questions:

1. How do native Korean speakers rate the acceptability of Korean unaccusative and unergative sentences?

2. Can we see the differences in the acceptability ratings of unaccusative sand unergatives?

1.5 The Organization of the Chapters

In chapter 1, Introduction, I address the relevant research issues, the research gaps, the research methodology, and the aims of this research. After Perlmutter (1978) proposed the Unaccusative Hypothesis(UH), which distinguishes two different kinds of intransitive verbs: unaccusative verbs and unergative verbs, many unaccusative diagnostics which can distinguish these two types of verbs and many approaches to unaccusativity have been proposed, yet there have been few examinations of Korean unaccusativity from an empirical perspective. I examine the unaccusative/unergative distinction and the gradient characteristics of the UH from two empirical perspectives: corpus linguistics and an acceptability ratings experiment. This study combines the experimental results and the corpus linguistic data to investigate whether the Unaccusative Hypothesis and Split Intransitive Hierarchy can be found in Korean.

In chapter 2, I provide the relevant background information on the framework being used. First, previous studies of unaccusativity from syntactic analyses are reviewed. Second, several cross-linguistics unaccusative diagnostics are overviewed. I then examine two of the proposed Korean diagnostics in more detail. Third, the framework which I adopted for this study is reviewed in terms of verb categories and verbal classes. I provided the verb categories and classes

along this SIH. Finally, the previous studies from empirical perspectives were reviewed.

In chapter 3, one of the claimed Korean unaccusative diagnostics, the case marking of floating quantifiers (FQs), was examined through both the corpus data and an acceptability ratings experiment. For the corpus-based studies, I provide a corpus analysis methodology to evaluate this diagnostic. Detailed corpus files, tools, and methods to analyze the date are provided. For the acceptability ratings experiment, this experiment has been done to see the native Korean acceptability of two different classes of intransitive verbs. The details of the processes for this experiment are also provided. Finally, the discussion and summary of these two findings are presented.

In Chapter 4, the corpus-based studies have been done to investigate whether the case marking of oblique nominals can serve as an accusative diagnostic. Taking a corpus-based approach, I first examine sentences with the nominative case marking of oblique nominals pattern to see if their case alternations function as an unaccusative diagnostic in the corpus. Second, conversely to the first corpus of sentences with the nominative case-marked oblique nominals pattern, I examine the sentences with the oblique case markers to see if their case alternations function as an unaccusative diagnostic in the corpus. The corpus data, tools, processes, and the corpus-based findings are provided.

In chapter 5, I tested two proposed Korean unaccusative diagnostics along with the Split Intransitive Hierarchy(SIH). Each verbal category is discussed with diagnostics. I provide the results and discussion of them along with the SIH and their sensitivity to the SIH.

In chapter 6, I provide the results and discussion with regard to each diagnostic examined in chapters 3, and chapter 4 respectively. I begin by providing a discussion of the case marking of floating quantifier as an unaccusative diagnostic, followed by a discussion of the case marking of oblique nominals. Then, I provide the results and discussion of two diagnostics along with the SIH and their sensitivity to the SIH. Finally I present my conclusions with further research issues and implications.

In the appendices, Appendix A provides a list tag which was used in the Sejong Morph Tagged corpus. Appendix B provides recruitment email letters in English and in Korean respectively which were used before the acceptability ratings experiment. Appendix C includes an approval letter from the Institute Review Board (IRB) of the University of Texas at Arlington. Finally, Appendix D provides the full experimental sentences used in the acceptability ratings experiment.

Chapter 2

Literature Review

In order to understand the methodologies that I use, in this chapter, I provide some theoretical background on the Unaccusative Hypothesis (UH), the unaccusative diagnostics which distinguish the two kinds of intransitive verbs, and the gradient phenomenon of unaccusativity, namely the Split Intransitive Hierarchy (SIH). Finally, this chapter summarizes the previous research which has been done from an empirical perspective. In 2.1, I present the previous studies on the concept of two different kinds of intransitive verbs from syntactic accounts; in 2.2, I present unaccusative diagnostics which are syntactic tests to distinguish between the unaccusative/unergative verbs. In 2.3, I present previous work on the gradient characteristics of intransitive verbs. For the analysis of the gradient characteristics of intransitive verbs, I adopted the framework of the Split Intransitive verbs Hierarchy (SIH), suggested by Sorace (2000). I discuss the verbal categories based on this hierarchy of intransitive verbs. Finally, I provide the previous work on unaccusativity from experimental approaches in 2.4.

2.1 The Unaccusative Hypothesis

Intransitive verbs have only one argument, but linguists have argued that not all intransitive verbs have the same internal argument structure. The Unaccusative Hypothesis (UH), proposed by Perlmutter (1978) as part of his work in relational grammar (RG), posits the existence of two types of intransitive verbs:

unergative verbs and unaccusative verbs. The former have an initial 1 stratum, i.e. subject, while the latter have an initial 2 stratum, i.e., direct object, but no initial 1 stratum. Then, their initial 2s advances to final 1.

Within the Principles and Parameters framework, these two classes of intransitive verbs look similar on the surface in that they both have subject NPs, but they have different underlying syntactic configurations. If we consider the D-structure of these two classes, unergative sentences have only subjects, while unaccusative sentences have only objects. Thus, the differences of D-Structure are represented in (3).

(3) a. Unergative verb: [$_{IP}$ NP [$_{VP}$ V]]

b. Unaccusative verb: [$_{IP}$ ____ [$_{VP}$ V NP]]

Following Burzio's generalization (1986), unaccusatives which lack external arguments cannot assign accusative case, so their internal arguments have to move to the subject position. Thus, the surface structures of both (3a) and (3b) look like each other as shown in (4), and thus, "its underlying grammatical relation is obscured on the surface" (Levin and Rapport Hovav 1995: 215).

(4) a. Unergative verb: [$_{IP}$ NP [$_{VP}$ V]]

b. Unaccusative verb: [$_{IP}$ NP$_i$ [$_{VP}$ V t$_i$]]

In this dissertation, I adopted the definition of an unaccusative verb as "one that takes an internal argument but no external argument" (Levin and Rappaport Hovav 1995:3).

Since the Unaccusative Hypothesis (UH) was proposed, a great deal of research has been conducted to diagnose unaccusativity cross linguistically, including many languages such as French (Sorace 2000), Italian (Burzio 1986), Hindi (Bhatt 2003), German (Keller and Sorace 2003) and Japanese (Oshita 2001). Different language-specific tests for unaccusativity have been proposed as diagnostics for the distinction between unaccusatives and unergatives. These syntactic constructions are referred to as unaccusative diagnostics (Levin and Rappaport Hovav 1995). In the following section, I review both Korean and cross-linguistic unaccusative diagnostics.

2.2 Unaccusative Diagnostics

2.2.1 Korean Unaccusative Diagnostics

Several unaccusative diagnostics have been proposed that apply specifically to for Korean. First, Oshita (1997) proposed five syntactic unaccusative diagnostics. The five syntactic diagnostics are 1) the cognate object construction and "Nominal + *ha*" construction, 2) constructions with *–e-iss-ta*, 3) VV compounding, 4) Case Marker Drop from a Numeral Quantifier, and 5) the Resultative Construction. In addition, Yang (1991) proposed five syntactic unaccusative diagnostics within the framework of Relational Grammar. He proposed these unaccusative diagnostics and classified 250 intransitive verbs into these two classes. In addition, Lee (2004) in her dissertation on Korean resultative constructions argued that "Korean doses not allow pattern in which a resultative

predicate is predicated of the subject of a matrix verb. Based on these facts, it is argued that resultative construction in Korean are constrained by the Direct Object Restriction, which states that a resultative phrase is predicated only direct object (Levin and Rappaport 1995), and that the resultative construction can therefore be used as diagnostic for unaccusativity in Korean." (Lee 2004:5).

As seen by the fact that several researchers have proposed different Korean unaccusative Korean unaccusative diagnostics, it is assumed that Korean provides a distinction between UA and UE verbs. In the following, I briefly outline two Korean diagnostics that I examined in this dissertation: 1) the case-marking of Floating Quantifiers, and 2) the case-marking of oblique nominals.

2.2.1.1 The Case-marking of Floating Quantifiers

In Korean, it has been proposed that the pattern and case marking of floating quantifiers can distinguish unaccusatives from unergatives. Unaccusatives can go either with or without nominative case marking of FQs, but nominative case marking is essential for unergatives.

The quantifier can be composed of a numeral (e.g., *sey* 'three') with a numeral classifier (e.g., *myong* 'numeral classifier for counting persons') as shown in (5).

(5) sey-myong
three-CL
'three'

This quantifier can appear inside or outside of noun phrases (NPs). When it precedes the Noun, the basic word order is that the quantifier modifies the head noun phrase (e.g., *kyengchal* 'policeman') with the genitive case marking as shown in (6).

(6) sey-myong-uy kyengchal
three-CL-GEN policeman
'three policemen'

However, when quantifiers appear outside of head noun phrases, which is referred to as floating quantifiers (FQs), the word order and case marking is different from those of non-FQs as in (8). The noun phrases precede FQs and FQs may or may not have the case marking as shown in (7).

(7) kyengchal-i sey-myong-(i)
policeman-NOM three-CL-(NOM)
'three policemen'

Yang (1991) proposed the case marking of FQs as an unaccusative diagnostic with intransitive verbs in Korean. When FQs occur with unergatives, these FQs have to be marked with a nominative case marker. Thus, nominative case marking of FQs is obligatory for unergative verbs. (8a) below represents the non-FQ word order when the numeral *sey-* 'three' is used with the numeral classifier *myong*, which is used for counting people. In (8b), the quantifier can float with the nominative case marker, but it cannot float without the nominative

case marker with an unergative verb such as *ttwi-* 'to run.' Without the nominative case marker, the sentence is ungrammatical (marked with *).

(8) a. sey-myong-uy kyengchal-i eceypaey ttwi-ess-ta.
three-CL-GEN policeman-NOM last night run-PST-DECL
'Three policemen ran last night.'

b. kyengchal-i eceypamey sey-myong-*(i) ttwi-ess-ta.
policeman-NOM last night three-CL-*(NOM) run-PST-DECL
'Three policemen ran last night.'

Thus, nominative case-marking of FQs is obligatory with unergatives. However, the subjects of unaccusative verbs do not require the nominative case marker with these FQs, so the case is optional. As seen in (9) below, (9a) is the non-FQ sentence with the numeral *sey* 'three' and the numeral classifier *myoung*, but in (9b), this can float with or without the nominative case marker with the unaccusative verb *mikkuleci* 'to slip'.

(9) a. sey-myoug-uy kyengchal-i mikkuleci-ess-ta.
three-CL-GEN policeman-NOM slip-PST-DECL
'Three policemen slipped.'

b. kyengchal-i sey-myoug-(i) mikkuleci-ess-ta.
policeman-NOM three-CL-(NOM) slip-PST-DECL
'Three policemen slipped.'

Yang (1991:40) proposed that "If a quantifier with numeral classifier can float without a case marker in an intransitive clause, the clause is unaccusative." According to Yang's syntactic unaccusative diagnostics, an unaccusative verb can occur with or without nominative case marker of FQs, while an unergative verb can only occur with the nominative case marker as shown in (10). Thus, the case marker of FQs is obligatory with unergatives as in (10a), but optional with unaccusatives as in (10b).

(10) a. kyengchal-i sey-myong-*(i) ttwi-ess-ta.
Policeman-NOM three-CL-*(NOM) run-PST-DECL
'Three policemen ran.'

b. kyengchal-i sey-myoug-(i) mikkuleci-ess-ta.
Policeman-NOM three-CL-(NOM) slip-PST-DECL
'Three policemen slipped.'

2.2.1.2 The Case-marking of Oblique Nominals

Yang (1991) discusses a case marker of oblique nominals as an identification of Korean UA verbs, and proposed the case marking of oblique nominals as an unaccusative diagnostic within the framework of Relational Grammar. According to his analysis, for unaccusative verbs that lack an external argument, dative or locative marked nominals are advanced to the subject and can allow the case alternation between both OBL and NOM. However, unergative verbs that have an external argument do not allow this case alternation. In the

sentences below, the locative marked nominal *chencheng* ‘ceiling’ is a locative which is advanced to the subject from the locative position with an unaccusative verb in (11a) allowing a LOC and NOM case alternation, while the locative marked *kongcang* ‘factory’ is not advanced to the subject position in (11b) with an unergative verb even though (11b) shows the same syntactic structure as (11a).

(11) a. i chengcheng-eyse/-i mwil-i tteleci-ni-ta.
this ceiling-LOC/-NOM water- NOM drip-PRES-DECL
‘Water drips from this ceiling.’

b. i kongcang-eyse/*-i salamtul-i ilha-yss-ta.
this factory-LOC/*-NOM people-NOM work-PST-DECL
‘People worked in this factory.’

In sentence (11b), the oblique argument *kongcang* ‘factory’ is scrambled to the front. Sentence (12) below is the basic sentence for (15b).

(12) salamtul-i i kongcang-eyse ilha-yss-ta.
people-NOM this factory-LOC work- PST-DECL
‘People worked in this factory.’

Although unaccusatives and unergatives have the same structure on the surface, unaccusatives can occur with an oblique nominal which is marked by either the locative or nominative case, while unergatives cannot occur with this nominative case marking, but can occur with a locative case marking which is

scrambled to the front. Therefore, Yang (1991) claimed that the case marking of oblique nominals is one of the unaccusative diagnostics for Korean.

2.2.2 Cross-linguistic Unaccusative Diagnostics

On the other hand, each language has its language specific diagnostics cross-linguistically. Some cross-linguistic diagnostics includes the Auxiliary Selection for Italian and the Resultative construction for English. The following briefly describes these diagnostics.

2.2.2.1 The Auxiliary Selection

The Auxiliary selection is a widely used diagnostic for European languages which have two kinds of perfective auxiliaries. According to Burzio (1986), two kinds of auxiliaries, *essere* 'be' and *avere* 'have', show different distributions. Consider the contrast between unaccusative and unergative verbs in terms of their auxiliary selection in (13) below. The unaccusative verb in (13a) takes a form of *essere* 'to be,' while the unergative verb in (13b) takes a form of *avere* 'to have'(Burzio 1986).

(13) a. Giovanni e arrivato.

'Giovanni has arrived.'

b. Giovanni ha telefonato

'Giovanni has telephoned.'

The choice of auxiliary is claimed to be a diagnostic of the argument being at the underlying object position at D-structure and being moved to the subject position at S-structure.

2.2.2.2 English Resultative Construction

Levin and Rappaport Hovav (1995) proposed that the resultative construction is a diagnostic for unaccusativity in English. According to them "a resultative phrase may be predicated of the immediately postverbal NP, but may not be predicated of a subject or of an oblique complement."(Levin and Rappaport Hovav 1995:134). They called this the Direct Object Restriction (DOR). So the resultative phrase is possible with only the direct objects of transitive verbs, not with subjects. If we assume that the subjects of unaccusative verbs are derived from object position, then we can predict that the resultative construction may appear with unaccusative verbs as in (14a), but not with unergative verbs as in (14b).

(14) a. The river froze solid.

b. * Dora shouted hoarse.

(14b) cannot have the meaning that *Dora got hoarse* as a result of shouting, while (14a) can mean that *the river became solid* as a result of freezing. It is claimed in the UH that the subject in (14a) is base generated from object position so that it can be modified by the resultative phrase. Thus, the English resultative construction can be used as an unaccusative diagnostic.

A couple of constructions have been suggested as language specific unaccusative diagnostics such as the Auxiliary selection for Italian, the Resultative construction for English, and the Case marking of Floating Quantifiers for Korean. Each language seems to have its own specific constructions that come into play for unaccusative marking.

2.3 Gradience in the Unergative/Unaccusative Distinction

2.3.1 Split Intransitive Hierarchy (SIH)

Next, as a contrast to the binary systems assumed for the diagnostics above, I review some verb categories suggested by Sorace's Split Intransitive Hierarchy (SIH). Instead of distinguishing between the two types of intransitive verbs and developing an unaccusative (UA)-unergative (UE) dichotomy, Sorace (2000) proposes the Split Intransitive Hierarchy or Auxiliary Selection Hierarchy (ASH) as a basic framework. The Split Intransitivity Hierarchy (SIH) presents a continuum classification of intransitive verbs. Sorace and Keller (2000) provided a hierarchy of semantic verbal classes with regards to the auxiliary selection (*Be* or *Have* auxiliary) in some European languages. "Verbs at the BE end of the Auxiliary Selection Hierarchy are core unaccusatives and denote telic change; verbs at the HAVE end are core unergatives and denote agentive activity in which the subject is unaffected. Intermediate verbs between the two extremes incorporate telicity and agentivity to lesser degrees, and tend to have a less specified (basically stative) event structure" (Sorace 2000:5).

With this hierarchy, UA core verbs, which denote "telic change" (Sorace 2000:863) consistently select the *Be* auxiliary, while UE core verbs, which denote "agentive process" (Sorace 2000:964) consistently select the *Have* auxiliary. The two core categories of verbs are defined at each extreme of the continuum. The peripheral verbs which exhibit variability in the selections of these auxiliaries are in the middle of both extremes. The verbal categories can be shown in Figure 2-1.

UA Hierarchy	***Examples***	***Auxiliary Selection***
1) Change of Location	*arrive*	selects BE (least variation) – UA
2) Change of State		
a) Inherently Telic	*die*	
b) Appearance	*appear*	
c) Indefinite Change		
i) Internally-Caused	*decay/rot*	
ii) Directed Motion	*rise*	
3) Continuation of Condition		
a) Inanimate Subject	*persist*	
b) Animate Subject	*stay*	
4) Existence of State		
a) Concrete State	*exist*	greatest variation in auxiliary selection across languages
b) Positional Verbs	*lie*	
c) Abstract State	*seem*	
1) Uncontrolled Processes		
a) Motional	*float*	
b) Verbs of Emission	*drip, echo, glow, smell*	
c) Involuntary Reaction	*shiver*	
d) Bodily Function	*cough*	
2) Controlled Processes		
a) Motional	*run*	
b) Non-motional, affecting	*yield*	
c) Non-motional, unaffecting	*sing*	selects HAVE (least variation) – UE
UE Hierarchy		

Figure 2-1 Split Intransitive Hierarchy (SIH) (adapted from Laws 2010)

2.3.2 Verb Categories

The following section describes the six semantic verbal classes of SIH with regards to the auxiliary selection. I classified the verbs in the Korean corpus along these semantic categories. UA core verbs include a category of change of location verbs. UA peripheral verbs include categories of change of state verbs and stative verbs. UE peripheral verbs included categories of uncontrolled process verbs and controlled motional process verbs. UE core verbs include a category of controlled non-motional process verbs.

2.3.2.1 Change of Location Verbs

The category of "change of location" verbs are claimed to be core UA verbs across languages. These include verbs which "involve a concrete displacement from one point in space to another and which have the highest degree of dynamicity and telicity" (Sorace 2000:863). This category of verbs includes verbs of inherently directed motion such as *arrive*, *depart*, *fall* and *leave*. Most of this class of verbs select the *BE* auxiliary in the SIH hierarchy and strongly show unaccusative verb classification. Some examples are *come*, *arrive*, *leave* and *fall*. The following examples show three different languages with the BE auxiliary.

(15) a. Maria è venuta alla festa (Italian) (Sorace 2000:863)
Maria is come to the party
'Maria came to the party.'

b. Marie est arrivée en retard (French)

Marie is arrived late

'Marie arrived late.'

c. De brief is met de tweede post gekomen (Dutch)

the letter is with the second post arrived

'The latter arrived with the second post.'

2.3.2.2 Change of State Verbs

Change of state verbs include verbs which denote indefinite change such as *rise*, *desend*, etc., and verbs denoting internally caused change of state such as *bloom*, *burn* and *decay*. In addition, these verbs include verbs of appearance such as *appear*, *disappear*, and verbs of happening such as *happen* and *occur*. Some example sentences show variable behavior as seen in (16).

(16) La pianta e/ ha fiorito due volte quest'anno

the plant is/ has blossomed twice this year

'The plant blossomed twice this year.' (Sorace 2000:865)

2.3.2.3 Stative Verbs

The stative verb class includes two categories of verbs: continuation of a pre-existing state, and existence of state. The former includes verbs such as *stay*, *remain*, *last*, and *survive*. The latter includes verbs denoting concrete states such as *be*, and *exist*, and verbs denoting abstract or psychological states such as *seem*,

suffice, and *please,* and verbs denoting position verbs (*sit*, *lie*, etc.). Some examples of these two categories are shown from Sorace's data in (17).

(17) a. verbs of a pre-existing state and existence of state

Ancora una volta sono / ?ho rimasto solo.

again one time am / have remained alone

'Once again I remained alone.'

b. verbs of existence of state

Le dinosaures ont existé /*?sont existé il y a 65 millions d'ans

the dinosaurs have existed there is 65 million of years

'The dinosaurs existed 65 million years ago.'

2.3.2.4 Uncontrolled Process Verbs

Verbs in this class include verbs denoting uncontrolled actions such as involuntary bodily actions (*tremble*, *shiver, cough, vomit)* and emission (*ring*, *rumble*, *shine*). In addition, weather verbs such as *rain, thunder*, *snow* are also included in this class. Examples of each category are shown respectively in (20).

(18) a. verbs of involuntary bodily actions

Die Frau *ist/hat in der Wohnung getorkelt.

the woman is/has in the-DAT flat tottered

'The woman tottered in the flat.'

b. verbs of emission

Der Zug *ist/hat im Bohnhof gerumpelt.

the train is/has in-the-DAT station rattled

'The train rattled in the station.'

c. weather verb

La neige a fondu /*est fondue.

the snow has melted /is melted

'Snow melted.'

2.3.2.5 Controlled Motional Process Verbs

Verbs in this group denote "nondirected displacement of their single argument and the subject is volitional initiator of the event and an experiencer of the undirected change of location denoted by it" (Sorace 2000: 874). Some examples of these verbs are *dance*, *swim*, and *work*. An example is shown in (19).

(19) Gli atleti svedesi hanno corso /?sono corsi alle Olimpiadi

the athletes swedish have run /are run at the Olympics

'The Swedish athletes ran at the Olympic Games.'

2.3.2.6 Controlled Non-motional Process Verbs

Verbs denoting controlled non-motional processes consistently select the HAVE auxiliary in the SIH hierarchy, and verbs in this category are claimed to be core UE verbs. These verbs include agentive processes such as *work, play* and *talk*. Example sentences are shown in (20).

(20) a. I colleghi hanno chiaccherato tutto il pomeriggio.

the colleagues have chatted whole the afternoon

‘My colleagues chatted the whole afternoon.’

b. Les policiers ont travaillé toute la nuit.

the policeman have worked whole the night

‘The policeman worked all night.’

In this dissertation, I classified each Korean verb using these six categories from the gradient system so that I could examine where Korean two diagnostics are sensitive to this gradient approach.

2.4 Unaccusativity from an Empirical Perspective

2.4.1 Corpus Approach

In English, Baker (2013) examined four proposed diagnostics of unaccusativity in English with regards to the hierarchy of intransitive verb classes formulated by Sorace (2000) to see if they are sensitive to this hierarchy.

First, he examined a proposed unaccusative diagnostic of derived adjectival form formed with the suffix *-able*. The form (e.g., *deplorable* and *meltable*) can occur with only transitive and unaccusative verbs which can undergo the causative alternation as shown in (21). Also, some unaccusative verbs which cannot undergo the causative alternation are included (for example, **the postman arrived the letter.).*

(21) Causative alternation

a. The chocolate melted.

b. The chef melted the chocolate.

He observed that most of the verbs along the hierarchy do not form with this suffix in the corpus. He found the opposite expectation that "verbs closer to the unergative end of the hierarchy are more likely to possess *-able* forms" (Baker 2013:5). This provided his first evidence that the proposed unaccusative diagnostic is questionable from the results of corpus data.

Second, he examined another proposed diagnostic of unaccusativity in English: prenominal participle forms of verbs (such as *fallen*, *grown*, and *decayed*) proposed by Shardl (2010). He found that this construction is largely restricted to core UE verbs and some classes of UA verbs. Therefore, "It seems that this diagnostic does not simplistically pick out the same verbs whose equivalents in other Western European languages are defined as unaccusative by the auxiliary selection diagnostic." (Baker 2013:6).

Third, Baker examined locative inversion and *there*-insertion together. Both constructions are shown as in (22) and (23).

(22) locative inversion (Baker 2014:7)

a. Into the room came a man.

b. *In the room laughed a girl.

(23) *there*-insertion

a. There came a man.

b. *There laughed a girl.

As seen in (22) and (23), only unaccusatives can occur with these two constructions, while unergative verbs cannot form these constructions. The results on Google Search and in the BNC for both syntactic constructions indicated that the locative inversion and *there*-insertion tests, like the other diagnostics considered, do not seem to show any strong correlation with the SIH hierarchy by Sorace.

In Korean, there have been very few studies on the distinction between unaccusatives and unergatives using a corpus-based analysis. In Allman (2007), I investigated these two types of intransitive verbs as they occur in Korean texts. A corpus-based analysis was designed to observe the distributional patterns of four syntactic constructions in Korean, and to see how these constructions are arranged and displayed along the Split Intransitivity Hierarchy (SIH). The SIH was proposed by Sorace (2000), based on the aspectual/thematic characteristics of monadic intransitive verbs. Sorace (2000) believed that each intransitive verb may be associated with one of two distinct aspectual events: a process or a state. Verbs denoting a process have the key notion of agentiveness. On the other hand, verbs denoting states have the key notion of telic change. These two classes of events can be further differentiated into eight semantic categories. She observed that the selection of a perfective auxiliary in four European languages is sensitive to these aspectual distinctions. Thus, the monadic intransitive verbs can be positioned along the hierarchy according to the extent of variation in auxiliary selection.

Examination of the manually built corpus revealed that, although the Korean intransitive verbs do not conform to the overall Split Intransitivity Hierarchy, Korean intransitive verbs do generally distinguish unergative from unaccusative verbs.

In Allman (2012), I examined two unaccusative diagnostics: Inversion nominal and quantifier floating with the case construction and their distributions among intransitive verbs in the Korean corpus. I compared 10 unaccusative verbs and 10 unergative verbs, extracting a total of 1000 token sentences for each class from the corpus. Overall, the corpus evidence in this study showed that although the percentages were relatively low, Korean intransitive verbs can generally be categorized as either unaccusative or unergative, and it showed the syntactic differences between them. Based on these results, unaccusative verbs can occur with Inversion nominal, but the unergative verbs cannot. With regards to the case marker with the quantifier floating construction, the corpus data revealed that unaccusatives can have the quantifier with or without nominative case, and unergatives also show the same results.

However, in Allman (2007) the corpus was built manually, and was therefore small and may not have provided a representative sample. And in Allman (2012), I pre-selected 10 verbs which have been identified as either unaccusative or unergative by at least two other previously claimed unaccusative diagnostics. As Yang commented that some tests cannot apply to some verbs and

sometimes more than one test is need to see the unaccusativity of intransitive verbs, some verbs which passed one diagnostic might not contain other diagnostic constructions. Thus, the general frequencies of the two examined constructions in my corpus data were very low. Therefore, my next corpus-analysis aims to do an in-depth study of Korean unaccusative diagnostics using several diagnostics with the corpus data.

2.4.2 Other Experimental Paradigms

Unaccusativity has also been studied from an experimental perspective. Significant psycholinguistic work has been done to examine the processing differences between unaccusative and unergative verbs. Much of the evidence from psycholinguistic experiments has supported the idea that unaccusatives and unergatives are different from each other both in their syntactic and conceptual representations using different tasks. In the following, I review the studies which were done from three psycholinguistic experimental paradigms such as a probe word recognition, a cross-modal lexical priming and an eye-tracking.

2.4.2.1 Probe Word Recognition

First, Bever and Sanz (1997) studied the processing of the arguments of unaccusatives and unergatives in Spanish. They provided some empirical evidence for the differences of the syntactic representations of these two types of intransitive verbs.

In Spanish, when the themes of unaccusative verbs can appear in preverbal position, this is a result of movement of the themes from the postverbal position leaving a trace behind. They examined the preverbal and postverbal subjects for unaccusatives and unergatives. Participants were asked to perform two tasks. After the participants read the sentences, they were asked to decide if a probe word occurred in the sentence which appeared in capital letters and between asterisks. The probe, an adjective of the subject NPs, was displayed on the screen (e.g. *tall in the tall waiter*). Additionally, the participants were asked to answer content questions about the sentences and respond as quickly as possible by pressing one of two keys (yes or no).

Even though there is no difference in processing of sentences with the postverbal subject, participants showed a significantly faster response time in recognizing the adjectives contained in the subjects in preverbal position with unaccusative verbs. Bever and Sanz attributed this to the trace facilitation effect that the trace in unaccusative sentences facilitated its referent and made it more salient for recognition. These results support the claims that 1) there is a difference between unaccusatives and unergatives with a preverbal subject, and 2) a preverbal subject with an unaccusative verb originates in object position. So they provided psycholinguistic evidence that unergatives and unaccusatives are different in their syntactic representations.

2.4.2.2 Cross-modal Lexical Priming

Sseveral cross-modal lexical priming studies have shown that the traces of subject NPs with unaccusatives provide an extra representation of subject NPs and facilitate recognition for their antecedents compared to the corresponding subject NPs with unergatives which have no trace. In the cross-modal lexical priming paradigm, while participants listened to spoken sentences, a visual target appeared on their screen. Then, participants are asked to make lexical decisions to judge whether a target word is a word or a non-word. This method was used to examine whether the gap leads to an activation and reactivation of its antecedent during auditory sentence processing.

Friedmann, Taranto, Shapiro and Swinney (2008) used this CMLP to test the reactivation pattern of NP movements with unaccusatives. They hypothesized that if the subjects of unaccusative sentences are derived from the object position by NP movement, the traces in the object position would facilitate reactivation of their antecedents. Conversely, the subjects in unergatives are not moved from the object position, but are generated in subject position. Therefore this reactivation would not be observed in the object position with unergatives. They found that participants were significantly faster at making lexical decisions about the semantic associates of unaccusative verbs than unergative verbs. Also, this priming effect did not occur right at the gap position, but occurred at the delayed position around 750 ms after the trace. These results were consistent with the

previous result that reactivation of NP movement did not show up right at the trace, but at a somewhat delayed position.

2.4.2.3 Eye-tracking

Moed, Kuperman and Kučerova (2013) tested NP movement in English with the use of eye-tracking. They examined five syntactic constructions in English to provide psycholinguistic evidence for NP movement: the English middle construction (i.e., *The book reads well*.), unaccusative (i.e., *The leaf fell.*), inchoative (i.e., *The illness develops rapidly.*), unergative (i.e., *The attendant apologizes quickly.*), and unergative instrument (i.e., *The paste cements poorly*.). They hypothesized that if there is psycholinguistic evidence for NP-movement in the English middle and unaccusative constructions, there would be increased processing times with these two constructions.

The results indicated that the unaccusative constructions were processed with the most difficulty, while the middle constructions were processed easily compared to the other construction types. The unaccusative constructions showed extra processing costs, and this might be due to the NP-movement. They concluded that "It seems that the significant processing cost exhibited with unaccusatives is due to the trace that the reader must process. As such, this result can be taken as psycholinguistic evident for NP-movement in the unaccusatives." (Moed et al. 2013).

This chapter reviewed the previous studies of the Unaccusative Hypothesis (UH), Unaccusative diagnostics, and the Split Intransitive Hierarchy (SIH). From a theoretical perspective, Perlmutter(1978) proposed the Unaccusative Hypothesis, which claims there are two kinds of intransitive verbs: Unaccusatives and Unergatives under the framework of Relational Grammar. This hypothesis was developed by Burzio (1986) claiming that the subjects of UA verbs are base-generated from the object position, while the subjects of UE verbs are base-generated from the subject position. Therefore, these two types of verbs exhibit different underlying syntactic configurations.

Since these two classes show the different underlying configurations, many syntactic constructions have been proposed for distinguishing between unaccusatives and unergatives. These syntactic construction are referred to as unaccusative diagnostics (Levin & Rappaport Hovav, 1995). Some language specific unaccusative diagnostics are the case marking of floating quantifiers in Korean (Yang, 1991), the resultative construction in English (Levin & Rappaport Hovav, 1995), and the Auxiliary Selection in Italian (Burzio, 1986).

In the meantime, Sorace proposes the Split Intransitive Hierachy (SIH). Instead of distinguishing between these two types of intransitive verbs, Sorace proposed the Split Intransitive Hierarchy which claims that “intransitive verbs are subject to gradient acceptability in certain syntactic constructions” (Acartürk, 2005:73). The Split Intransitive Hierarchy proposes a continuum of

verbal hierarchy, claiming the change of location verbs as core UA, and controlled non-motional process verbs as core UE. The peripheral verbs consist of the change of state, stative verbs, uncontrolled process and controlled motional process verbs. The two core categories of verbs are defined at each end of the continuum. The peripheral verbs are in the middle of the continuum.

Finally, this chapter also provided summaries of the previous studies on unaccusativity from an empirical perspective. From an empirical perspective, the corpora data were used to identify the English unaccusative diagnostics by Levin and Rapport Hovav (1995) and Baker (2013). Several psycholinguistic methods such as probe recognition by Bever and Sanz (1997), a cross-modal lexical priming by Friedmann et al. (2008) and an eye-tracking by Moed et al (2013) and Lee et al. (2011) were reviewed.

In Korean, there have been very few studies on the distinction between unaccusatives and unergatives from an empirical perspective. In the following chapters 3, and chapter 4, I report the empirical investigation into the two Korean unaccusative diagnostics. In chapter 5, I provide the results and discussion of two diagnostics and their sensitivity to the SIH.

Chapter 3

A Case-marking of Floating Quantifier Diagnostic

This chapter provides a discussion and the results of examining one of the unaccusative diagnostics from an empirical perspective using both a corpus-based analysis and an acceptability ratings experiment. In this chapter, I examine one Korean unaccusative diagnostic, the case marking of floating quantifiers, to see whether or not there is evidence supporting the claim that this diagnostic distinguishes between UA and UE verbs, and to see which verbs occur with this diagnostic in Korean texts.

The organization of this chapter is as follows. Section 3.1 introduces the background of the Korean unaccusative diagnostic. I review the previous studies that show how the case marking of FQs can be claimed as an unaccusative diagnostic. Then section 3.2 provides the methodology by which I investigated the corpus distribution of this diagnostic test, and reviews the case marking and the verbs with FQs. The corpus and tools are also provided in this section. The findings of the corpus-based analysis is also provided. In section 3.3, I provide another methodology by which I examined the acceptability of the two kinds of intransitive verbs. The detailed procedure of this methodology is provided and then the results of the acceptability ratings experiment is discussed. Finally, in section 3.4, a summary of these two studies is provided, followed by the conclusion in section 3.5.

3.1 Introduction

In the literature on Korean unaccusative diagnostics, several researchers have proposed different syntactic constructions as unaccusative diagnostics. Yang (1991) claimed five syntactic constructions as unaccusative diagnostics under the framework of Relational Grammar: 1) possessor ascension for Unaccusativity (PAU), 2) case marking of oblique nominals (CON), 3) case marking of Floating quantifiers with numeral classifiers (FQs), 4) case marking of duration / frequency adverbs (DFC), and 5) lexical alternation of light verbs (LAL).

Oshita (1997) proposed the following five syntactic constructions for distinguishing between UA and UE verbs in Korean: 1) Cognate object and "Nominal + ha" construction, 2) constructions with–e-iss-ta, 3) VV Compounding, 4) Case marker drop from a numeral quantifier, and 5) Resultative constructions.

Several other constructions have also been suggested as unaccusative diagnostics (Kang 1996, Lee 2008, Lee and Thompson 2011). Even though there is no widely accepted set of unaccusative diagnostics for Korean, several diagnostics such as the case marking of numeral classifiers, Nominal+ha constructions, and the resultative constructions have been claimed as unaccusative diagnostics by several scholars.

Along with the theoretical claims it can be assumed that intransitive verbs can be divided into unaccusatives and unergatives (Perlmutter 1978), and there

are some diagnostics which can distinguish between UA and UE verbs in Korean. However, despite the existence of several claimed unaccusative diagnostics in Korean, "it is not so easy to provide the syntactic evidence for unaccusativity in such languages as Korean" (Lee and Lee 2003:169). In addition, it is difficult to provide experimental evidence for these tests in Korean, and examples of these constructions are admittedly very rare in real language data.

However, corpus linguistic analysis is known to be very useful in analyzing syntactic constructions that are relatively low in frequency. Since large corpora and processing software are now widely available, it is easier to gather multiple examples and extract grammatical patterns (Gries and Wulff 2009a). Therefore, in the first part of this chapter, I have used corpus data in order to observe any syntactic distinctions between these two types of intransitive verbs in actual language data, and to see whether or not unaccusativity is syntactically encoded in actual data. In the second part of this chapter, I conduct an acceptability ratings experiment to see how native Koreans rate the acceptability of unaccusative and unergative sentences.

Yang (1991) proposed extensive Korean unaccusative diagnostics in his dissertation, and suggested five unaccusative diagnostics. He applied his five unaccusative diagnostics to about 250 Korean intransitive verbs, classifying them into groups of UA and UE verbs. Among these five diagnostics, two diagnostics, specifically the case-marking of floating quantifiers (CFQ) and the case-marking

of oblique nominals (CON), were applied to a higher number of intransitive verbs because both diagnostics can be applied to more than 240 verbs. But other diagnostics cannot apply to certain verbs, so they were applied to a lower number of intransitive verbs (See details in Appendix in his dissertation).

Even though the ranking of unaccusative diagnostics needs to be statistically motivated such as the statistical method suggested by Surtani and Paul (2012), I chose to examine these two diagnostics in the corpus because they perform as unaccusative diagnostics over the maximum number of verbs. As I examined the corpus data, there was a higher probability of sentences with these two constructions because they occur with more verbs. In addition, these two selected diagnostics are related to the Korean case marking system, so they can readily be extracted from the morphologically tagged corpus.

Regarding the identification of verbs as either UA or UE in the corpus, I applied the other diagnostics which are not examined in this dissertation. If we consider Yang's classification of verbs as either unaccusative or unergative, each verb had to pass at least two diagnostics. For example, when I examined the case marking of floating quantifier construction in the corpus, I classified verbs identified as unaccusative or unergative according to the other four diagnostics.

In chapter 3, I examine one unaccusative diagnostic, case marking of Floating Quantifiers (FQs), to see whether this construction shows syntactic encodings of Korean unaccusativity. In chapter 4, I examine one unaccusative

diagnostic, a case-marking of Oblique nominals from a corpus-based analysis, to see whether this construction shows syntactic encodings of Korean unaccusativity. For a corpus approach, I am particularly interested in the surface differences among Korean intransitive verbs and in describing the actual syntactic distributional contrasts between these two classes of intransitive verbs from a large data set, and thereby contribute to the classification of Korean intransitive verbs. By taking a corpus approach, if an unaccusative diagnostic provides syntactic evidence for distinguishing unaccusatives from unergatives in actual data, we can expect that only unaccusative verbs will occur within this distinct syntactic construction, while unergative verbs will not.

For the acceptability ratings experiment, I conducted an online questionnaire to see whether Korean intransitive verbs can be classified into two different subclasses of verbs with regards to the case marking of floating quantifiers. This survey was distributed with sample Korean sentences that are hypothesized to take different case markings to see whether Korean speakers recognize a difference and find them acceptable or nonacceptable with regards to the case marking of FQs.

The next section provides a description of the corpus analysis of the case marking of FQs in section 3.2, and a description of the acceptability ratings experiment on the case marking of FQs is in section 3.3

3.2 The Case-marking of Floating Quantifier: A Corpus-based Analysis

3.2.1 Introduction

In Korean, it has been proposed that the pattern and case marking of floating quantifiers can distinguish unaccusatives from unergatives (Oshita 1997, Yang 1991). In particular, it is claimed that unaccusatives can occur either with or without the nominative case marking of FQs, while the nominative case marking is required for unergatives.

The quantifier can be composed of either a numeral (N) alone (e.g., *seys* 'three') as shown in (24a), or a numeral (N) (e.g., *sey* 'three') with a numeral classifier (CL) (e.g., *myon*g 'numeral classifier for counting people') as shown in (24b).

(24) a. Numeral only

seys

'three'

b. Numeral with a numeral classifier

sey-myong

three-CL

'three'

This quantifier can appear either inside or outside of noun phrases (NPs). When it precedes the noun, the basic word order is that the quantifier modifies the head noun phrase (e.g., *kyengchal* 'policeman') with the genitive case marking (-*uy*) as

shown in (25) below. However, when quantifiers appear outside of the head noun phrases, which is referred to as floating quantifiers (FQs) (Kang 2002), the word order and case marking is different from those of non-FQs as in (26). The noun phrases precede FQs, and FQs may or may not have the case marking as shown in (26).

(25) sey-myong-uy kyengchal
three-CL-GEN policeman
'three policemen'

(26) yengchal-i sey-myong-(i)
policeman-NOM three-CL-(NOM)
'three policemen'

Both Yang (1991) and Oshita (1997) proposed the case marking of FQs as an unaccusative diagnostic with intransitive verbs in Korean. When FQs occur with unergatives, these FQs must be marked with a nominative case marker. Thus, nominative case marking of FQs is obligatory for unergative verbs. Below, (27a) illustrates the non-FQ word order when the numeral *sey* 'three' is used with the numeral classifier *myong*, which is used for counting people. (27b) illustrates a FQ sentence in which the quantifier can float with the nominative case marker, but it cannot float without the nominative case marker with an unergative verb such as *ttwi* 'to run.' Without the nominative case marker, the sentence is ungrammatical (marked with *).

(27) a. sey-myong-uy kyengchal-i eceypamey ttwi-ess-ta.
three-CL-GEN policeman-NOM last night run-PST-DECL
'Three policemen ran last night.'

b. kyengchal-i eceypamey sey-myong-*(i) ttwi-ess-ta.
policeman-NOM last night three-CL-*(NOM) run-PST-DECL
'Three policemen ran last night.'

Thus, nominative case marking of FQs is obligatory with unergatives. However, the subjects of unaccusative verbs do not require the nominative case marker with these FQs, even though the case is optional. As seen in (28), (28a) is the non-FQ sentence with the numeral *sey* 'three' and the numeral classifier *myoung*, but in (28b), this quantifier can float with or without the nominative case marker with the unaccusative verb *mikkuleci* 'to slip' (Yang 1991:35).

(28) a. sey-myoug-uy ai-dul-i mikkuleci-ess-ta.
three-CL-GEN kid-PL-NOM slip-PST-DECL
'Three kids slipped.'

b. ai-dul-i sey-myoug-(i) mikkuleci-ess-ta.
kid- PL-NOM three-CL-(nom) slip-PST-DECL
'Three kids slipped.'

Yang (1991:40) proposed that "If a quantifier with numeral classifier can float without a case marker in an intransitive clause, the clause is unaccusative." According to Yang's syntactic unaccusative diagnostics, an unaccusative verb can

occur with or without a nominative case marker of FQs, while an unergative verb can only occur with the nom case marker as shown in (29). Thus, the case maker of FQs is obligatory with unergatives as in (29a), but optional with unaccusatives as in (29b).

(29) a. kyengchal-i sey-myong-*(i) ttwi-ess-ta.
Policeman-NOM three-CL-*(NOM) run-PST-DECL
'Three policemen ran.'

b. kyengchal-i sey-myoug-(i) mikkuleci-ess-ta.
Policeman-NOM three-CL-(NOM) slip-PST-DECL
'Three policemen slipped.'

This distinction between UE and UA verbs in Korean was also supported by evidence from an experimental study done by Ko (2007). The following section reviews the study of the case marking of FQs from an experimental approach with regards to the distinction between UE and UA verbs.

3.2.2 Previous Experimental Work

Most of the studies on the case-marking of FQs has been done from a syntactic perspective. Ko (2007), however, taking an empirical perspective, examined on-line judgment of the case-marking of FQs, and evaluated different approaches to the case-marking of FQs with regards to processing the case-marking of FQs with intransitive verbs in Korean. She distinguished between

case-marked FQs and caseless FQs, and tested four types of sentences with intransitive verbs as shown in (30).

(30) a. Unergative subject with caseless FQ

Haksayngtul-i chulkepkey ney-myeng wusessta.

Students-NOM happily 4-CL laughed

'Four students laughed happily.'

b. Unergative subject with case marked FQ

Haksayngtul-i chulkepkey ney-myeng-i wusessta.

Students-NOM happily 4-CL-NOM laughed

'Four students laughed happily.'

c. Unaccusative subject with caseless FQ

Haksayngtul-i coyonghi ney-myeng tulewassta.

Students-NOM quietly 4-CL came

'Four students came in quietly.'

d. Unaccusative subject with case marked FQ

Haksayngtul-i coyonghi ney-myeng-i tulewassta.

Students-NOM quietly 4-CL-NOM came

'Four students came in quietly.'

Ko tested 74 native speakers of Korean to see when or where processing difficulty occurred with FQ sentences. She found significant processing effects of the verb position by measuring the mean Response Time (RT). The mean RT for caseless

FQs with unergative verbs (30a above) is much slower than the corresponding mean RT for case marked FQs (30b) with unergative verbs. With unaccusative verbs, the mean RT for caseless FQs (30c) is much faster than the corresponding mean RT for case marked FQs (30d). With this evidence, Ko claimed that the case marking identifies the differences between UA and UE verbs.

Even though Ko's study did not directly test the UH or differences between UA and UE verbs in Korean, she examined the case marking of FQs from an empirical perspective. We can see in the results that there is evidence of processing differences between unaccusatives and unergatives and the roles of case marking. Her experimental results also supported the prediction of Yang's unaccusative diagnostic in that 1) the arguments of UA and UE verbs behave differently, and 2) the case marked FQ with UE and caseless FQs with UA verbs are preferable constructions over the corresponding counterparts in the processing of sentences. With both the previous syntactic claims and Ko's experimental results, it will be interesting to see if there are actual differences between UA and UE verbs among the corpus data.

The current study is different from the previous studies because most of the previous studies were done from the syntactic perspective in which the example sentences were created, or in which the syntactic diagnostics tests were focused on independently. However, this study, using data from a natural corpus, examines whether there is evidence for syntactically claimed unaccusative

diagnostics to distinguish between UA and UE verbs in a corpus of naturally occurring data.

3.2.3 Methodology

3.2.3.1 Corpus

The data for this study comes from the 21st Century Sejong project (http://www.sejong.or.kr), which is a10 year project to build a national corpus of the Korean language. For this project, raw corpora, morphologically tagged corpora, and semantically tagged corpora have been developed.

For this study, a part of speech (POS) tagged corpus of Modern Korean was chosen. The original size of this morphologically tagged corpus of Modern Korean is 15 million words. Since Korean has a rich morphological system and frequent irregular conjugations, the Korean data are analyzed and tagged morphologically for words (Kang and Kim 2004). The following sentence shows an example from the POS tagged corpus. The POS tags are followed with a slash (/) after each word. For example, *nassta* 'occurred' is composed of a verb stem *na-* (tagged VV), a prefinal ending -a*ss*- (tagged EP) , a word final ending -*ta* (tagged EF), and a period (tagged SF) as shown in an example (31).

(31) Example of POS tags

나/VV + 았/EP + 다/EF + ./SF

na/VV +ass/EP+ ta/EF + ./SF

'came out, occurred'

The POS Tags which are used in the corpora are a modified version of the Im and Song (1998) system. Some tags are part of speech tags, while other tags are more detailed than POS tags. The list of tags that are used in this corpus is provided in Appendix A.

From this POS tagged corpus, 247 files containing 6,039,599 ecels were downloaded from The National Institute of the Korean Language (http://ithub.korean.go.kr) [1].

Table 3-1 Corpus genre, corpus files and corpus amount

Fields		Genre	Formats	Amount (unit: files)	Amount (unit: ecels)
Modern Korean	Written	Newspapers	Tagged	53	1,174,904
		Magazines	Tagged	34	936,350
		books	Tagged	80	3,175,242
	Spoken	Transcription from visual media	Tagged	40	105,847

[1] An ecel refers to the morphosyntactic combination of one word and particle(s), or one word and ending(s), or one word alone. It can be identified in terms of spacing according to Kim (2006).

Table 3-1-*Continued*

		Transcription from audial media	Tagged	40	196,847
Total				256	6,039,599

3.2.3.2 Selecting Types of Quantifiers

In the morphologically tagged corpus, numeral quantifiers are tagged either as secondary nouns (tagged as NNB) or numerals (tagged as NR). Since there are 601 types of secondary nouns and 533 types of numbers, in order to extract the most frequent quantifiers, I examined the distributional frequency of Korean quantifiers using the Kokoma project (KKMA). KKMA is a web-based application tool to access and utilize the Sejong Corpus (available from http://kkma.snu.ac.kr/). KKMA includes its own statistical results of all the POS tagged words (http://kkma.snu.ac.kr/statistic?submenu=morp).

Korean quantifiers can occur with a numeral classifier (*sey-myong* 'three-CL) or without a numeral classifier (*set* 'three'). When quantifiers occur with or without numeral classifiers (NC), both the noun and the classifier may have their own case marker. Compare the two cases shown in (32).

(32) a. Quantifier with NC

kyengchal-i sey-myong-*(i) ttwi-ess-ta.

Policeman-NOM three-CL-*(NOM) run-PST-DECL

'Three policemen ran.'

b. Quantifier without NC

kyengchal-i set-*(i) ttwi-ess-ta.

Policeman-NOM three-(NOM) run-PST-DECL

'Three policemen ran.'

For this study, floating quantifiers include numerals which can be used either with or without numeral classifiers. Table 3-2 below shows the frequency of the quantifiers that were chosen for this corpus. The frequencies are provided in parenthesis.

Table 3-2 Selected numerals and numeral classifiers

Quantifier			
Numeral		Numeral Classifiers (NC)	
	Meanings		Meanings
Hana (22,393)	one	myeng (22,810)	Counting people
Twul (4,294)	two	kay (17,431)	Counting objects
		kaci (12,351)	Counting types, kinds of things
		mari (2,461)	Counting animals

3.2.3.3 Tools and Processing

This study examined the case marking system of the floating quantifier construction in order to evaluate the claim that the case marking of FQs distinguishes between UA and UE verbs on the basis of the corpus data. AntConc 3.3.5w (Windows), a free downloadable concordance program developed by Laurence Anthony (2012) (http://www.laurenceanthony.net/software/antconc) was used in order to investigate the case marking of FQs through the POS tagged corpus. In addition, Microsoft EXCEL and ACCESS programs were used to encode and save the corpus data.

In order to identify all instances of sentences containing FQs in the morphologically tagged corpus of Modern Korean, a keyword search and a POS tag search with several wildcards in AntConc were used. The FQ strings of interest, with or without nominative case marker with intransitive verbs are shown in (33) and (34) below respectively. In both sentences, numerals are tagged as NR (Numeral) when they are used without NC or as MM (Determiner) when they are used with NC. Numeral classifiers are tagged as NNB (bound noun).

(33) FQ sentence without nom case

애/NNG+가/JKS 한/MM 명/NNB 오/VV+ㅏ 쓰/EP+다고/EC[2]

[2] If no other reference is provided, all these example sentences are taken from my corpus.

kid + NOM one CL come

‘One kid came.’

(34) FQ sentence with nom case

자원/NNG + 봉사자/NNG + 가/JKS 몇/MM 명/NNB + 이/JKS

VOLUNTEER +NOM SOME CL+NOM

오/VV + 았/EP + 는데/EC

come

‘Several volunteers came.’

All sequences of sentences containing subject and quantifier (e.g., Subject…. FQ) were identified within the displayed concordance lines. An example of the concordance of this construction is shown in Figure 3-1.

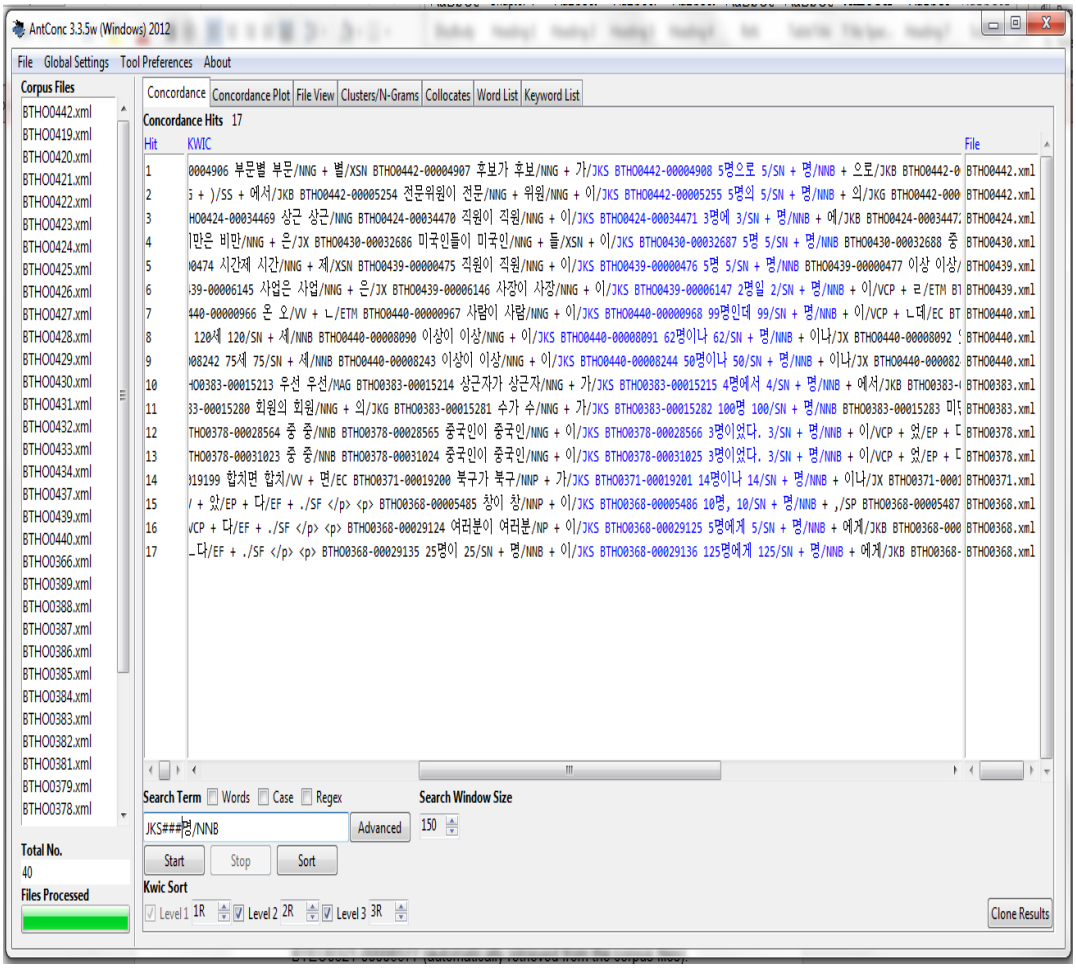

Figure 3-1 Concordance line of subject and quantifier sequence

In sentences (33) and (34) above, the subjects are marked with the nominative case marker *i* or *ka* (tagged with JKS), and followed by FQ without a nominative case marker as in (33), or with a nominative case marker as in (34). However, it was necessary to remove other sequences of sentences containing subject and quantifier sequences in which the verbs were not intransitive. All these screen processes were done manually by thorough examination of the

concordance lines. All identified FQ sentences in the concordance lines were exported to an Excel spreadsheet and Access database for analysis.

While the data retrieval for this study was done using AntConc, I semi-manually investigated the concordance lines thoroughly, and then copied the concordance into an Excel spreadsheet. The file names and original words were automatically copied to the spreadsheet. Each extracted sentence was coded with several types of information as follows using Access:

- Source file: the source file in which the extracted sentence occurred: e. g., BTEO0321-00006577 (automatically retrieved from the corpus files).
- Original ecels: words without POS tags: e.g.,물건이 (automatically retrieved from the corpus files).
- Tagged ecels: words with POS tags: e.g.,물건/NNG + 이/JKS (automatically retrieved from the corpus files).
- TQ: The type of quantifier which consists of Ns and NCs. : e.g., 하나 (This coding was semi automatically extracted with the Excel spreadsheet applied to the output of the AntConc concordance program).

- ICase: Identification of case marking : e.g., ∅ for no case, JKS for subject case marker (This was manually determined from the output of the sentence).
- Vlema: Verb Lemma form : e.g., *naota* 'come out' (The verb form was retrieved automatically from the corpus files, the lemmatization was done by myself, and this coding task was performed semi automatically with Excel applied to the output of AntConc).
- AUD: Application of unaccusative diagnostics: e.g., PAU, CON, DFC, LAL and N/A (Non applicable). I applied Yang's four other diagnostic tests to identify each verb in the corpus as either UA or UE (this application of the diagnostics was done by myself).
- Verb categories: with regards to verb categories of intransitive verbs, this study used the categories of intransitive verbs of Sorace. They are based on the categories of the corresponding verb classes of Split Intransitive Hierarchy (SIH) by Sorace (Sorace, 2000). Sorace (2000) proposed the Split Intransitivity Hierarchy (SIH), which shows a continuum classification of intransitive verbs. The auxiliary selection (*Be* or *Have* auxiliary) in some European languages exhibit a gradient behavior with respect to the aspectual/ thematic properties of verb classes. Within this hierarchy, the verbs

at one end consistently take the *be* auxiliary, and the verbs at the other end take the *have* auxiliary. These two ends are called Core UA verbs taking the *be* auxiliary, and Core UE verbs taking the *have* auxiliary. The verbs which are in the middle region take either the *be* or *have* auxiliary. They are called peripheral UA and peripheral UE verbs. The core UA verbs include change of location verbs such as *fall* and *arrive*. The peripheral UA verbs include change of state verbs such as *decay* and *appear*, and stative verbs such as *exist* and *remain*. The peripheral UE verbs include uncontrolled processes such as *shiver* and *hiccup*, and controlled motional processes such as *run* and *jump*. The Core UE verbs include the verbs of controlled non-motional processes such as *work* and *play*. (See details in Chapter 2 Literature Review)

Applying the above coding procedure to the sentences from the corpus in (35) below, we see the results in the following data set represented in Table 3-3.

(35) An example from the corpus file

A/SL + 가/JKS B/SL + 가/JKS 둘/NR + 다/MAG 운동/NNG + 하/XSV + ㄴ/ETM 것/NNB + 이/VCP + ㄴ지/EC + 를/JKO

'A and B both exercised.'

Table 3-3 Sample coding example

Variable	Value/Level
Source file	BTHO0127-00016118
	BTHO0127-00016119
	BTHO0127-00016120
	BTHO0127-00016121
Original ecels	A 가 B 가 둘 다 운동한
Tagged ecels	A/SL + 가/JKS B/SL +
	가/JKS 둘/NR +
	다/MAG 운동/NNG +
	하/XSV + ㄴ/ETM
TQ	둘
Icase	∅
Vemma	운동하다
Diagnostics	N/A
SIH	Controlled motional process

3.2.4 The Corpus-based Findings

In this section, I begin by presenting the overall frequencies of the case markings of FQs, and then present a verb specific investigation.

3.2.4.1 Overall Frequencies

From a total of 303 FQs with intransitive verbs, the frequencies for the unaccusative verbs and for the unergative verbs respectively are shown in Table 3-4 (This table included passive verbs separately even though they can be included in the category of UA).

Table 3-4 Total frequencies of FQs[3]

Verbs	Frequencies		Raw Total
	Caseless FQs	Case-marked FQs	
UA	224	37	261
UE	20	1	21
Passive	19	2	21
Column Total	263	40	303

The corpus results of case marking of FQs with intransitive verbs revealed the following features. First, sentences with caseless FQs predominate with both unaccusative verbs and unergative verbs. Second, unergative verbs mostly occur with FQs without nom case, and some classes of UE verbs are not attested in the construction. Third, the overall frequency of FQs which were found with unaccusatives is much higher than that of FQs with unergatives. Fourth, passive

[3] All of my corpus data include FQ sentences which include nothing or short adverbs between the head nouns and quantifiers such as examples (33) and (34) above.

verbs occurred more frequently with case-less FQs than with case-marked FQs. For passive verbs, the ratio of nominative case marking and no case marking is 1:8. FQs also prefer not to be marked with nominative case with passive verbs.

An alternative view of this corpus-based results is provided in Figure 3-2.

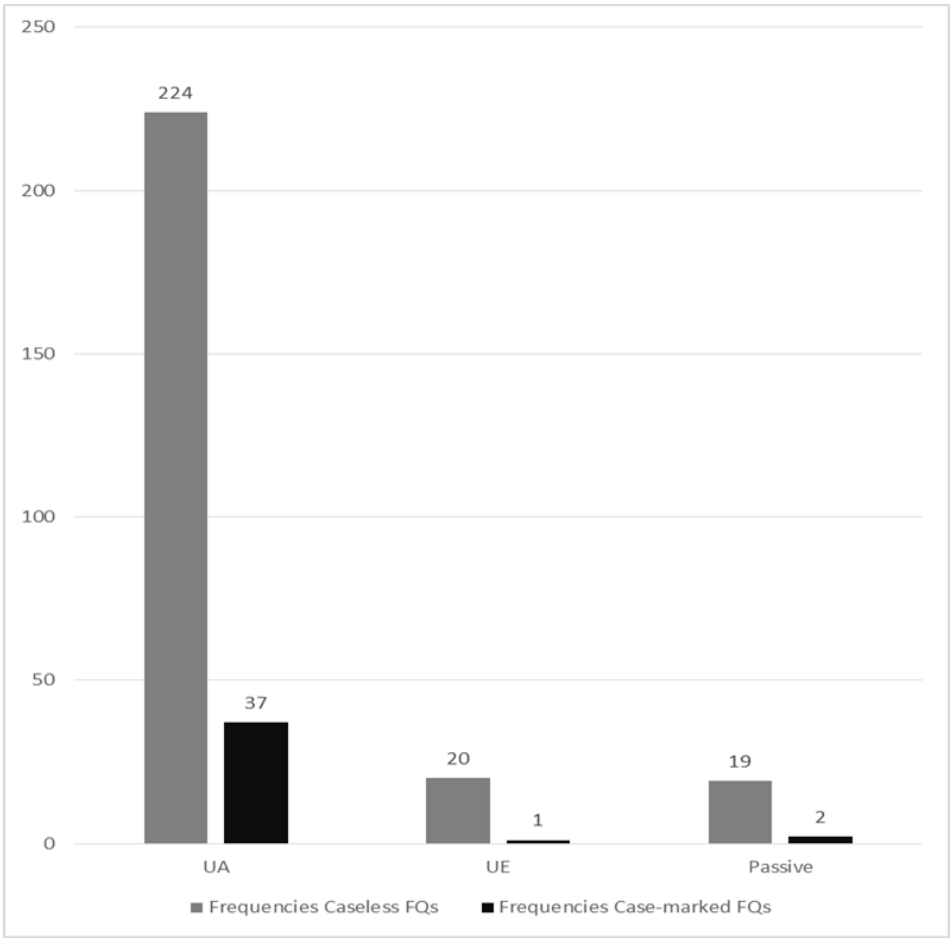

Figure 3-2 Total frequencies of FQs

Figure 3-2 shows that caseless FQ sentences predominantly occur with UA verbs, but they also occur with UE and passive verbs. The case-marked FQs also occur predominantly with the UA verbs followed by passive verbs and UE verbs.

3.2.4.2 Verb-specific Investigation

In this section, I provide a more detailed discussion of how individual verbs figure in the case marking of FQs. Since individual verbs may affect preferences for particular syntactic patterns (Gries and Wulff 2009b), it is interesting to see the patterns of case marking FQs with the top five most frequent verbs in the corpus data. The top five verbs that occurred with FQ strings in the present data set are shown in Table 3-5.

Table 3-5 Top five verbs that occurred with FQs

Rank	Verb	UA/ UE/ Passive	Frequencies	Percentages
1	*issta* ‘to be, exist’	UA	178	58.7 %
2	*sayngkita* ‘to come into existence’	UA	10	3.3%
3	*tallita* ‘to be hung’	passive	8	2.6%
4	*moita* ‘to be gathered’	UA	7	2.3%

Table 3-5-*Continued*

5	*nohita* 'to be put'	passive	5	1.7%

If we look at the case-marking of these five most frequently occurring verbs with FQ sequences in Table 3-5, the most frequently occurring verb in the corpus is *issta* 'to exist,' and 59% of the corpus sentences included it. A typical example of *issta* 'to exist' with caseless FQ is seen in (36a), and with case-marked FQ is seen in (36b).

(36) a. Caseless FQ with *issta* 'to exist, to be' verb

둥지/NNG + 가/JKS **하나/NR** 있/VV + 었/EP + 다/EF + ./

'There was one nest.'

b. Case-marked FQ with *issta* 'to exist, to be' verb

일/NNG + 꾼/XSN + 이/JKS **둘/NR + 이/JKS** 있/VV + 고/EC

'There are two workers.'

If we examine the frequencies of these verbs the case marking of FQ sequences, the results look similar with the overall results of Table 3-5 above. In addition, Figure 3-3 below shows a graphic representation of these frequencies.

Table 3-6 Top five verbs with the case-marking of FQs

Unaccusative diagnostic	Verbs				
	issta 'to exist'	*sayngkita* 'to come into existence'	*tallita* 'to be hung'	*Moita* 'to be gathered'	*nohita* 'to be put'
Caseless FQs	150	10	7	7	5
Case-marked FQs	28	0	1	1	0
Total	178	10	8	8	5

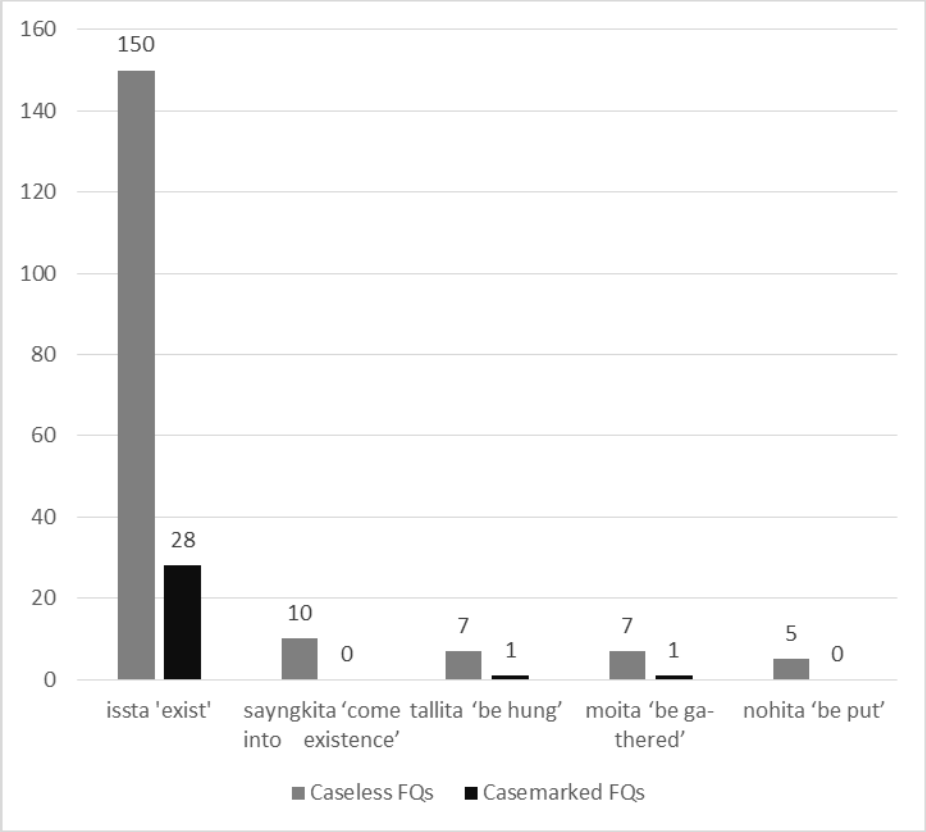

Figure 3-3 Top five verbs with the case-marking of FQs

Interestingly, if I excluded the most frequently occurring verb *issta* 'to exist,' the existential verb which might have language-specific forms across languages and behave differently than other verbs, the other verbs show that they prefer to be caseless with FQs. As seen in Figure 3-3, both an UA verb *sangita* 'to come into existence' and the passive verb *nohita* 'to be put' occurred without any case marking of FQs in the corpus. Examples (37) and (38) present these two verbs without any case marking of FQs in the corpus.

(37) 친구/NNG + 가/JKS 하나/NR 생기/VV + 었/EP + 다/EF + ./SF

'One friend came into being.'

(38) 돌덩이/NNG + 가/JKS 여러/MM 개/NNB 놓이/VV +

어/EC 있/VX + 었/EP + 다/EF + ./S

'Several rocks were put into.'

In addition, if we look at the frequencies of the other low frequency unaccusative verbs as shown in (39), they also strongly exhibited FQs without the nominative case marking.

(39) *epsecita* 'disppear', *concayhata* 'exist', *thecita* 'pop out',

philyohata 'need', *silcongtoyta* 'diappear', *iecita* 'be connected',

senpoita 'being introduced, *ppacita* 'come out', *salacita* 'disappear'

Since all of the top high frequency verbs are UA verbs above, it is difficult to see the UE verbs specifically. So I checked the frequencies of frequent UE verbs even though the overall frequencies of UE verbs were considerably low compared to those of UA verbs. The following Table 3-7 shows the frequencies of the case marking with the top UE verbs in the corpus.

Table 3-7 Top UE verbs with the case-marking of FQs

Unaccusative diagnostic	Verbs

Table 3-7-Continued

	ota 'come'	*moyetulta* 'gather'	*moita* 'gather'	*nalta* 'fly'	*wuntonghata* 'exercise'
Caseless FQs	6	2	2	1	1
Case-marked FQs	1	0	0	0	0
Total	7	2	2	1	1

Although there is much evidence that verbs such as *come*, *arrive* and *go* are UA verbs in other languages such as Italian, the verb *ota* 'to come' in Korean was categorized either as an UE verb or as an UA verb depending on the applications of unaccusative diagnostics.

To summarize the verb-specific investigation, the most frequent verb *issta* 'to be, to exist' exhibits overall tendencies in which the nominative case marking is optional for UA verbs. However, when the case marking is optional, this verb preferred to be expressed without case marking with FQs. Excluding this top frequency verb, the other remaining high frequency UA verbs and other low frequency verbs strongly preferred to be unmarked with the nominative case marker on FQs. All these verbs also showed the tendency that they occurred with caseless FQs.

3.2.5 Discussion

With this present corpus data, both UA and UE verbs occurred without caseless FQs. As seen in Table 3-4 above, both the unaccusative and unergative sentences showed that FQs occur without a case marker. Especially, caseless FQs were preferred with both unaccusative verbs and unergative verbs. Sentence (40) below is an example from the corpus which represents an example which a FQ occurs without a nominative case marker with the unergative verb *nalta* 'to fly.'

(40) 갈매기/NNG + 가/JKS 몇/MM 마리/NNB 날으/VV + 고/EC

seagull/NOM some CL fly

있/VX + 었/EP + 다/EF + ./SF </p>

'A few seagulls were flying.'

However, if we examine the data from the corpus, there are outstanding issues. With these corpus results, the frequencies show that both UA and UE verbs prefer to occur with caseless FQs. So why do both UA and UE verbs prefer caseless FQs? For UA verbs, Ko's processing FQs with psycholinguistic experiments mentioned that they found inhibition effects due to the case-marking of FQ. When a FQ is associated with UA verbs, the caseless FQ is processed faster than the case-marked FQ. Thus, one possible answer might be the inhibition effects of the case-marking of FQ.

Another possible answer might be the intervening adverbs between nouns and floating quantifiers. Yang mentioned that if there is nothing or a short adverb

between a noun and the floating quantifier, some Korean speakers accept the caseless FQs with UE verbs. Since this intervening adverb issue might affect the degree of acceptability of floating quantifier sentences, this may also affect the requirement of the diagnostic condition.

When I extracted the floating quantifier sentences with intransitive verbs, I used the definition of a floating quantifiers as one that occurs outside the head noun's phrase without any consideration of intervening adverbs. To see this factor in the corpus, I re-examined the distance of the intervening adverbs between the head nouns and the quantifiers in the corpus. The following table displays the results of the intervening adverbs between the head noun and quantifiers.

Table 3-8 Number of intervening adverbs between the head nouns and quantifiers in the corpus

	The number of Intervening adverbs between the head noun and quantifier		
	0	1	Total
UA verbs	272	10	282
UE verbs	21	0	21
Total	293	10	303

When we examine the results in this table, most of the corpus data are floating quantifier constructions that have no adverb (so the distance between the

head noun and quantifier is 0 in Table 3-8) or a short adverb (the distance is 1 in Table 3-8). Especially significant is the fact that there are no attested cases of either a UA or UE verb with a long adverb with a FQ construction.

If there is an adverb effect between the head noun and floating quantifiers, there needs to be another constraint on Yang's Unaccusative diagnostic condition on the case-marking of floating quantifiers. He claimed that one condition of this unaccusative diagnostic is that "If a Quantifier with a Numeral Classifier can float without a case marker in an intransitive clause, the clause is Unaccusative. If not, it is Unergative "(Yang 1991:40). If the distance between the head noun and the quantifier plays a role in determining unaccusativity, the sufficient distance needs to be included in the condition of the case marking of floating quantifier diagnostic.

In addition, if the distance between the head noun and the quantifier plays a role in determining unaccusativity, all of the examined corpus data lack this distance factor since most of the corpus data include no adverb or a short adverb between the head noun and the quantifier. Thus, none of the examined corpus data seems to be sufficient for Yang's diagnostic claim of floating quantifiers if he assumed that all floating quantifier constructions have the sufficient distance. If the diagnostic of the case-marking of floating quantifiers assumes that the floating quantifier construction includes only sufficient adverbs, a new data set with

sufficient distance is needed to evaluate to what extent this diagnostic claim would hold. I leave this issue for further research.

In the following section, I address this diagnostic through another set of experimental data. In accordance with the corpus data, I performed an acceptability ratings experiment with Korean sentences with case markings of FQs in order to determine how native Korean speakers rate these sentences.

3.3 The Case-marking of Floating Quantifier : An Acceptability Ratings Experiment

3.3.1 Introduction

This section provides another empirical perspective of the Korean unaccusative diagnostics based on an acceptability ratings experiment. I examined one proposed unaccusative diagnostic claim, specifically the case-marking of floating quantifiers in Yang (1991). Yang claim that unaccusative verb can go either with or without the case-marking of floating quantifier, while unergative verbs are required the case for the floating quantifiers. An online survey of acceptability ratings experiment was developed to see how native Korean speakers rate the case marking of floating quantifiers in terms of their acceptability.

Since Perlmutter proposed the Unaccusative Hypothesis (1978) which assumes that there are two kinds of intransitive verbs, unaccusatives and unergatives, many unaccusative diagnostics have been proposed for a variety of

languages to distinguish these two classes of intransitive verbs. One of them in Korean is the case marking of Floating Quantifiers (FQs) by Yang (1991) and Oshita (1997). Yang (1991) claimed that when the quantifiers float, they can either be marked or unmarked for case. According to this claim, if the verb is an UA verb, the case marking of FQs is optional as in (41a); however if the verb is an UE verb, the case marking of FQs is required as in (41b). Without a nominative case marker, this sentence becomes ungrammatical (marked with *). Therefore, the case marking of FQs with intransitive verbs was claimed as an unaccusative diagnostic (Yang 1991).

(41) a. UA

kyengchal-i ecye pamey sey-myong-(i) mikkuleci-ess-ta.

policeman-NOM last night three-CL-(NOM) slip-PST-DECL

'Three policemen slipped.'

b. UE

kyengchal-i ecye pamey sey-myoug-*(i) ttwi-ess-ta.

Policeman-NOM last night three-CL-*(NOM) run-PST-DECL

'Three policemen ran.'

The corpus results showed that for UA verbs, the frequency of caseless FQs is much higher than for case-marked FQs[4]. Even though Yang's unaccusative

[4] All of my corpus data include only FQ sentences which have no adverb or a short adverb between the head noun and the quantifier such as in example (42) p.72.

diagnostic claim predicts that the case marking of FQs with unaccusative verbs is optional, UA verbs prefer caseless FQs in the corpus as seen in the example from the corpus data below (such as *hana* 'one' in (42)).

(42) sicang-i hana nathana-ss-ta.
market-NOM one appear-PST-DECL
'One market appeared.'

For UE verbs, most of UE verbs with this construction generally preferred no case marking of FQs as seen in (43). When a numeral quantifier *mali*, which counts animals, is floating out of the main noun phrase *taokswuli* 'eagle,' this quantifier was unmarked for case as in (43).

(43) tokswuli-ka han mali nalao-ta.
eagle-NOM one CL come.fly-DECL
'one eagle come flying and….'

Overall, both UE and UA verbs preferred no case marking of FQs.

However, the experimental evidence from Ko (2010) shows the following two interesting points regarding the case marking of FQs distinguishing between UA and UE verbs. First, there was grammatical judgmental differences regarding the case marking of FQs between UA and UE verbs. For unergative verbs, the case marked FQs as shown in (44a) judged more grammatical than the caseless FQs as shown in (44b). In accordance to Yang's unaccusative diagnostic, these

results are supportive of his claim that case marking of FQs is obligatory for UE verbs.

(44) UE (Ko 2000:8)

a. Case marked FQ

Haksaygtul-i chulkepkey ney-myeng-i wus-ess-ta.

students-NOM happily 4-CL-NOM laugh-PST-DECL

'Four students laughed happily.'

b. caseless FQ

Haksaygtul-i chulkepkey ney-myeng wus-ess-ta.

students-NOM happily 4-CL laugh-PST-DECL

'Four students laughed happily.'

For unaccusative verbs, both the case-marked FQs in (45a) and the caseless FQs as in (45b) were judged grammatical. This results also support the unaccusative claim which says that the case marking is optional for UA verbs.

(45) UA

a. Case marked FQ

Haksaygtul-i coyounghi ney-myeng-i tulew-ass-ta

students-NOM quietly 4-CL-NOM come-PST-DECL

'Four student came in quietly.'

b. caseless FQ

Haksaygtul-i coyounghi ney-myeng tulew-ass-ta

students-NOM quietly 4-CL-NOM come-PST-DECL

'Four student came in quietly.'

Overall, her experimental evidence suggests that there are judgmental differences regarding the case marking of FQs between UA and UE verbs. Generally, unaccusatives were judged grammatically higher than unergatives. For UA verbs, both caseless and case-marked FQs were judged grammatical, while for UE verbs, case-marked FQs were judged more grammatical than caseless FQs.

Very few studies of unaccusativity in Korean have been proposed from an empirical perspective. However, the two experiments by Ko (2010) and the corpus studies of the case marking of FQs give some interesting insights on the experimental results on the case-marking of floating quantifiers. Therefore, it will be interesting to take another experimental approach to see the relationship between the syntactic claim and the experimental results with regards to the case marking of FQs with the two different classes of intransitive verbs.

However, as seen in the corpus-based findings and the discussion of the case marking of FQs in section 3.2, there needs to be some constraints on the condition of the sufficient distance between the head nouns and the quantifiers. All of the corpus data show that there are only no adverb or short adverbs, but no attested long adverbs. Considering Yang's claim that "for UE verbs, if there is nothing or a short adverb between the host noun and the floated quantifier plus CL, some Koreans judge the sentences without NOM case as acceptable

sentences," and lack of this distance factor in the corpus signifies that the adverb length needs to be considered in the acceptability ratings experiment to see if it plays a role in determining the validity of the unaccusative diagnostic.

As an alternative approach for another empirical perspective on Korean unaccusativity, acceptability judgment ratings for the case marking of FQs may provide empirical evidence whether the case marking of FQs can distinguish between the two different classes of intransitive verbs. The main purpose of this experiment is to examine how native Korean speakers rate the case-marking of FQs to see whether it can serve as an applicable unaccusative diagnostic from an experimental approach. Additionally, I examined the determinant factor for unaccusative diagnostics and compare this result to the experimental results of Ko.

3.3.2 The Adverb Factor

Before describing the experiment, the adverb factor is considered for the acceptability ratings of FQs. Yang (1991:38) briefly mentioned that "for UE verbs, if there is nothing or a short adverb between the host noun and the floated quantifier plus CL, some Koreans judge the sentences without NOM case as acceptable sentences" as shown in (46a) below. However, sentence (46b), in which there is a long adverb between the host noun and the quantifier, is ungrammatical without the nominative case marker ($^{?}$ means acceptable for some).

(46)

a. Short adverb

haksang-i wuntongcang-eyse sey-myeng-ʔ(i) ttwi-ess-ta

student-NOM playground-LOC three-CL-ʔ(NOM) run-PST-DECL

'Three students ran on the ground.'

b. Long adverb

haksang-i wuntongcang-eyse ecyepam sey-myeng-*(i) ttwi-ess-ta

student-NOM playground-LOC last night three-CL-*(NOM)run-PST-DECL

'Three students ran on the ground last night.'

Thus, the grammatical acceptability of FQ sentences seems to be influenced by the length of the intervening adverbs, whether they are long or short.

Considering that the intervening adverbs also play a role in determining the acceptability of FQ sentences, the case marking of FQs may not be the sole syntactic factor to distinguish UA verbs from UE verbs. If the acceptability of FQ sentences are affected by an additional factor, then I can argue that the unaccusative diagnostic of the case-marking of floating quantifier need to be revised to include the factor.

In the following, I examined the case-marking of floating quantifiers with different length of adverbs to see the degree of the acceptability of two classes of intransitive verbs.

3.3.3 Methodology

In the previous section, I examined the case-marking of floating quantifier diagnostic through the corpus. However, the sufficient distant between the head nouns and the quantifiers was not considered. In order to address this issue, and additionally to examine the effect of intervening adverbs (long vs. short), the experiment described below is an online acceptability ratings experiment on the case marking of floating quantifiers in Korean. The materials, predictions, and experimental methodology are provided in the following sections.

3.3.3.1 Materials and Predictions

I examined native Korean speakers' ratings of the case marking of FQs to determine if this diagnostic can distinguish unaccusative verbs from unergatives through an online survey. The purpose of this experiment is to see how native Korean speakers rate the acceptability of Korean unaccusative and unergative sentences and see the degree of the acceptability ratings of unaccusative sand unergatives. Additionally, to see the effect of the intervening adverbs in the online acceptability judgement ratings, I manipulated three conditions on each verb type (UE vs UA): adverb type (long vs. short), and the case-marking (caseless vs. case-marked). The stimuli consist of 8 types of FQ sentences, and the schemata of these 8 types are as follows.

Table 3-9 Schemata of the sentence materials

		The case marking of FQs	
Verb	Adverb	Caseless FQ	Case-marked FQ
UA	Short	S-NOM S. Adv FQ UA	S-NOM S. Adv FQ-NOM UA
	Long	S-NOM L. Adv FQ UA	S-NOM L. Adv FQ-NOM UA
UE	Short	S-NOM S. Adv FQ UE	S-NOM S. Adv FQ-NOM UE
	Long	S-NOM L. Adv FQ UE	S-NOM L. Adv FQ-NOM UE

Sample example sentences with each condition are provided below.

(47) UA with a short adverb and caseless FQ

kaul iph-i soliepsi hana ttelecy-ess-ta.

fall leaf-NOM without a sound one fall-PST-DECL

'One fall leaf fell without a sound.'

(48) UA with a short adverb and case-marked FQ

kaul iph-i soliepsi hana-ka ttelecy-ess-ta.

fall leaf-NOM without a sound one-NOM fall-PST-DECL

'One fall leaf fell without a sound.'

(49) UA with a long adverb and caseless FQ

kaul iph-i soliepsi coyonghi hana ttelecy-ess-ta.

fall leaf-NOM without a sound quietly one fall-PST-DECL

'One fall leaf fell quietly without a sound.'

(50) UA with a long adverb and case-marked FQ

kaul iph-i soliepsi coyonghi hana-ka ttelecy-ess-ta.

fall leaf-NOM without a sound quietly one-NOM fall-PST-DECL

'One fall leaf fell quietly without a sound.'

(51) UE with a short adverb and caseless FQ

chinkwutul-i pakk-eyse twu-myeng wus-ess-ta.

friends-NOM outside-LOC two-CL laugh-PST-DECL

'Two friends laughed outside.'

(52) UE with a short adverb and case-marked FQ

chinkwutul-i pakk-eyse twu-myeng-i wus-ess-ta.

friends-NOM outside-LOC two-CL-NOM laugh-PST-DECL

'Two friends laughed outside.'

(53) UE with a long adverb and caseless FQ

chinkwutul-i pakk-eyse sikkulepkey twu-myeng wus-ess-ta.

friends-NOM outside-LOC noisily two-CL laugh-PST-DECL

'Two friends laughed outside noisily.'

(54) UE with a long adverb and case-marked FQ

chinkwutul-i pakk-eyse sikkulepkey twu-myeng-i wus-ess-ta.

friends-NOM outside-LOC noisily two-CL-NOM laugh-PST-DECL

'Two friends laughed outside noisily.'

The predictions of this experiment vary depending on the above four conditions. First, under Yang's case marking of FQs as an unaccusative diagnostic claim, all the sentences except for the two caseless FQs with UE sentences ((51) and (53)) are predicted to be rated more acceptable than these two sentences. Because the case marking of FQs is obligatory for UE verbs, sentences (51) and (53) would be rated as ungrammatical, according to this diagnostic claim. Thus, these two ungrammatical sentences are predicted to be rated less acceptable than the other sentences.

Second, under the corpus frequencies approach, which indicates that both UE and UA verbs are preferred without case marking of FQs, the prediction is that for all caseless FQ sentences ((47), (49), (51) and (53)), both the UE and UA verbs would be rated more acceptable than their case-marked counterparts ((48), (50), (62) and (54)).

Third, under Ko's proposal that the case marking of FQs confirmed grammatical judgement differences between UA and UE verbs, the case marked FQs with UE verbs ((52) and (54)) are predicted to be more acceptable than their caseless counterparts ((51) and (53)). Additionally, the caseless FQs with UA verbs ((47) and (49)) are predicted to be more acceptable than their case marked counterparts ((48) and (50)).

Fourth, under the adverb-effect consideration approach, all UA sentences are predicted to be acceptable regardless of the case marking and intervening

adverbs because the case marking of FQs is optional. However, for unergative verbs, the acceptability ratings are predicted to vary. Case marked FQs ((52) and (54)) are predicted to be more acceptable than the caseless FQs ((51) and (53)). Among caseless FQs, a short adverb with UE verbs (51) is predicted to be more acceptable than the long adverb with UE verbs (53). Even though the case marking of FQs is required with UE verbs, a caseless FQ (51) is predicted to be acceptable when there is a short adverb between the subject NP and the floated quantifier.

3.3.3.2 Participants

Thirty two native speakers of Korean volunteered to participate in this experiment. Participants were recruited either through person to person solicitation or through the Internet by emailing personal contacts or the Korean community listserv. All participants were native speakers of Korean and 18 years old or older. The email advertisement that asked for participation is provided in Appendix B. If a participant agreed to participate in this experiment, I sent an email that contained survey instructions, an ID number, and a link to the Informed Consent Form, which was approved by the Institutional Review Board (IRB) at the University of Texas at Arlington (See Appendix C).

3.3.3.3 Verbs Classifications and Distributions

The verbs were selected from the Sejong corpus. The classification of these verbs as either UA or UE is based on their behavior with respect to the

previously claimed five Korean unaccusative diagnostics by Yang (1991). If a verb passed at least two diagnostics, it was identified as a UA verb, but if not, it is a UE verb. The classification as either UA or UE using the diagnostic of the case-marking of oblique nominals is shown in (55).

(55) a. UA

apeci cip-ey/-i cipwung-i mwunecy-ess-ta.

father house-LOC/-NOM roof-NOM collapse-PST-DECL

'At the father's house, the roof collapsed.'

b. UE

wuntongcang-esey/*-i haksayngtul-i ttwi-ess-ta.

playground-LOC /-*NOM students- NOM run-PST-DECL

'Students ran in the playground.'

The 12 unaccusative verbs are *ota* 'to come', *ttelecita* 'to fall', *nalaota* 'come flying', *thecita* 'to burst', *sayngkaknata* 'to come to mind', *sayngkita* 'to come into being', *nathanata* 'to appear', *naota* 'to come out', *issta* 'to exist', *ssulecita* 'to fell down', *salacita* 'to disappear', and *nulta* 'to increase'.

The 12 unergative verbs are *wusta* 'to laugh', *ttwita* 'to run', *nalta* 'to fly', *oychita* 'to shout', *moita* 'to gather', *tallita* 'to run', *kita* 'to crawl', *kongpwuhata* 'to study', *wulta* 'to cry', *ephtulita* 'lay down flat', *ilhata* 'to work', and *wumcikita* 'to move'.

The four different lists were made using the 12 UA and UE verbs. Each list has 6 UA and 6 UE verbs respectively, and 4 conditions per each verb type yielding a total of 48 experimental sentences. So one verb is used twice throughout the four lists. A full list of the complete sentences is presented in Appendix D[5].

3.3.3.4 Procedure

Participants were recruited by emailing an advertisement to personal contacts or to a Korean community listserv. In addition, an email advertisement was sent to acquaintances of my email contacts and to research personnel who meet the research criteria. All of the participants speak Korean as their first language. Participants were excluded if they were under 18 years of age or do not read Korean.

After participants notified me that they would like to participate in the experiment, a detailed description of this experiment was sent to them through a reply email. This included a general description of the experiment, an ID code, and a link to this experiment. Before performing this experiment, participants were directed to the link for the Informed Consent Form by the Institutional Review Board (IRB) at the University of Texas at Arlington. After participants read this form and agreed to participate in this experiment, they could respond to

[5] Sentences of 4 UE and 4 UA verbs were deleted after the experiment since they contain more than one quantifier.

the questionnaire over the Internet. First, in this questionnaire, they were asked to fill in general demographic data. This questionnaire included the survey taking date, gender, age, and level of education of the participants. The general questionnaire is shown in Figure 3-4.

Figure 3-4 General questionnaire

After the participants finished the general questionnaire, they were asked to judge each of the sentences or rate the acceptability of the sentences using a five scale system between 1 (very unacceptable) to 5 (very acceptable). All experimental sentences were presented via Google Docs online survey. The

experimental stimuli consisted of a total of 48 sentences (6 verb types of both UA and UE with eight conditions) along with 4 warm-up sentences with acceptable and unacceptable sentences. The four stimulus lists contained a slightly different order of verbs since I distributed the 12 verbs throughout the four lists. Each list has 6 UA and 6 UE verbs. So, in each list, the order of the 8 conditions were distributed randomly so that each participant rated the sentences in a different condition order. In addition, each list was randomly assigned to a quarter of the participants, so that all the participants evaluated all sentences and each verb was evaluated at least twice by all participants.

The test took approximately 20 minutes. These experimental sentences were designed so that all questionnaires would be together so that participants can go back and forth and compare sentences. In addition, the participants were told in the instructions to take as much time as they wanted (Collins, Guitard and Wood 2009). Some sample experimental sentences are shown in Figure 3-5.

Figure 3-5 Sample sentences for the acceptability ratings experiment

Each participant was asked to rate 46 experimental sentences, which included 8 conditions with 6 verb types. Four lists that recycled 12 UA and 12 UE verbs were used so that the same verb could be rated twice by all the participants. In each list, rather than randomizing the order of the test sentences,

the order of the 8 conditions were randomized considering Collins, Guitard and Wood's method, "Randomizing test sentences across subjects is an idea that does not fit naturally in the generative paradigm for judgment elicitation. Usually, when a syntactician works with an informant, they go over small related groups of sentences (called "paradigms"). Randomizing across subjects would break up these sub-groups of sentences." (2007:6).

3.3.4 Results

An acceptability ratings experiment was conducted to see if the case marking of the floating quantifier can distinguish between the two kinds of intransitive verbs. In addition, I examined whether the case marking of floating quantifier sentences were affected by the long or short adverbs between the host nouns and quantifiers. This experiment is a 2x2x2 manipulating verb type (UA and UE verbs), the case of FQs (caseless and case-marking) and the intervening adverb length (short vs. long) as repeated measures.

For each class of intransitive verbs (UA and UE) , there are four sets of sentences like this schema:

(56) UA and UE

a. a short adverbial, case-marked FQ

b. a short adverbial, caseless FQ

c. a long adverbial, case-marked FQ

d. a long adverbial, caseless FQ

For UA verbs, sentences with caseless or case-marked FQs (a, b, c, d in 56) are all predicted to be acceptable regardless of the adverb length since the case-marking is optional in accordance with Yang's unaccusative diagnostic. If we consider the frequencies of case marking of FQs in the corpus in which the caseless FQs occurred more frequently than the case marked counterparts, it is expected that the caseless FQ sentences (b, d) are predicted to be more acceptable than the case-marked FQ sentences (a, c).

For UE verbs, sentences with case-marked FQs (a, c) are predicted to be more acceptable than those with caseless FQs (b, d) in accordance with Yang's unaccusative dignostics. This prediction would be the opposite if we followed the frequencies of the corpus studies in which the caseless FQs occurred more frequently than the case-marked FQs. Therefore, the caseless FQs (b, d) are more acceptable than the case-marked FQs (a, c). With regards to the adverb length, sentences with the case-marked FQs and a short adverb are more acceptable than the case-marked FQs with a long adverb. (a=c>b>d).

All the experiments were run online. The participants' main task was online ratings of Korean sentences using a five point scale between 1 (very unacceptable) to 5 (very acceptable). A total of 1536 sentences were rated by 32 participants. The results are presented in Table 3-10[6].

[6] For these means reported, I displayed only a by-subjects analysis of variance, collapsing across items. I averaged subject 1's response to the six UA short caseless, to the six UA short case-marked, etc.

Table 3-10 Means for verb type

	UA				UE		
	short	Long	Overall		short	long	Overall
Caseless	3.31	3.19	3.25	Caseless	2.48	2.69	2.48
Case-marked	3.16	3.22	3.19	Case-marked	2.38	3.0	2.69
Overall	3.24	3.20	3.22	Overall	2.45	2.73	2.59

Theses mean values of the acceptability ratings for UA and UE verb type respectively are also illustrated in Figure 3-6 and Figure 3-7 below[7].

[7] Before analyzing the results, the results of the sentences of 4 UA verbs and 4 UE verbs were excluded because they contained two quantifiers such as *hana dwul* 'one two' in Appendix D UA1, UA3, UA 11 and UE 7. To match the numbers of UA and UE verbs, I excluded 4 UA and 4 UE verbs.

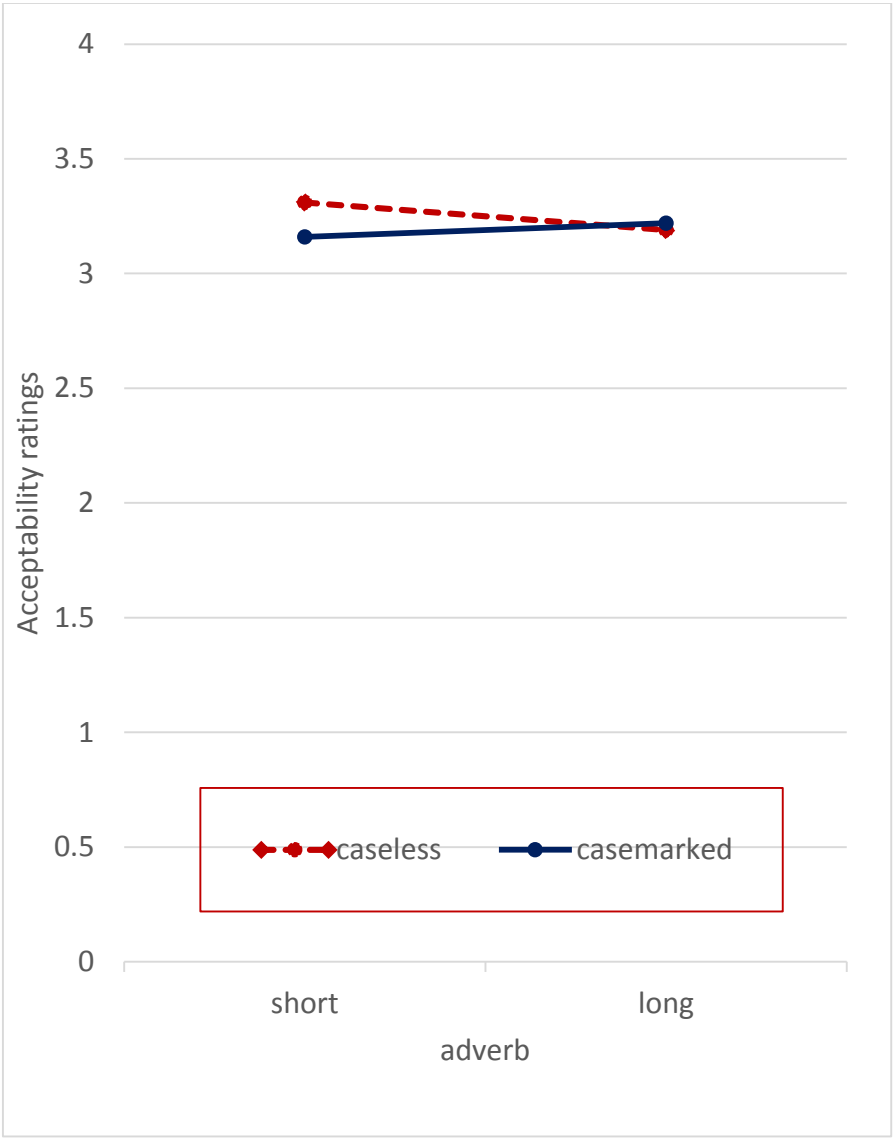

Figure 3-6 Means for UA verbs

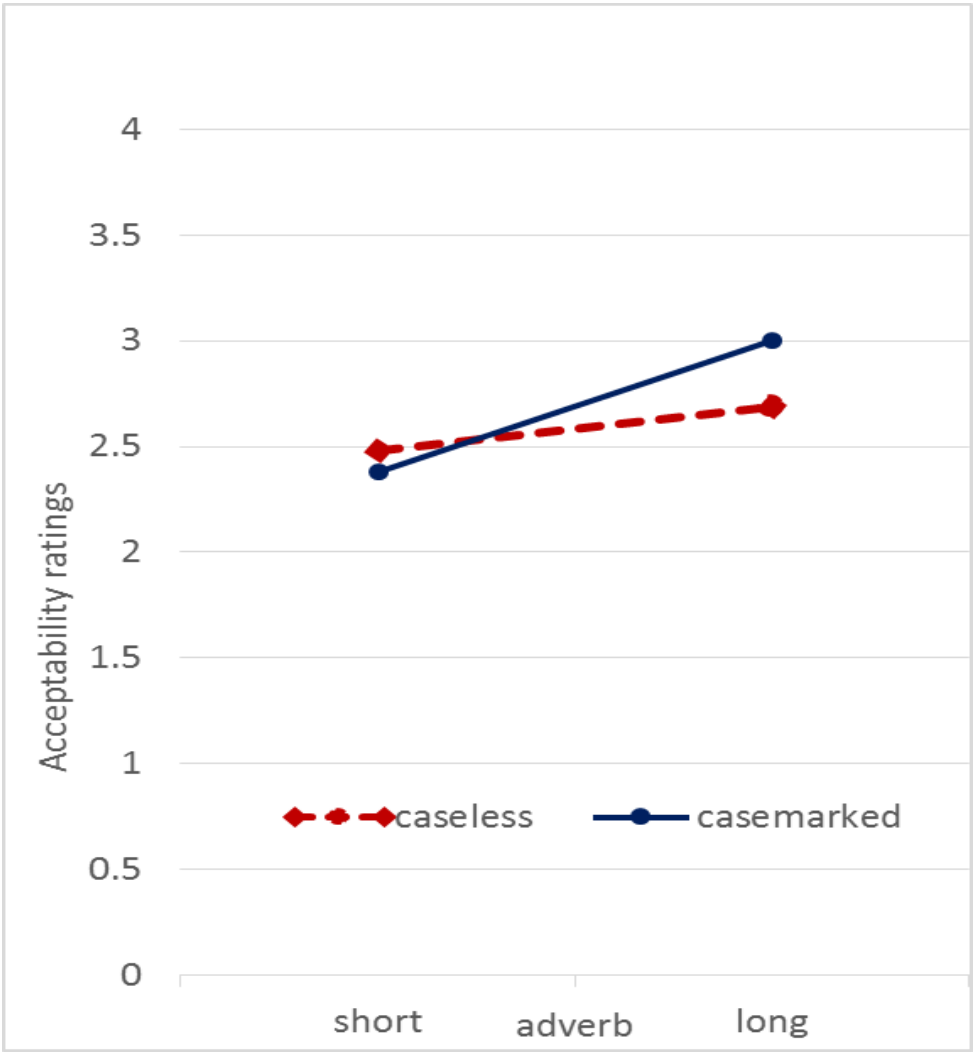

Figure 3-7 Means for UE verbs

Generally, the means for UA verbs are much higher than those for UE verbs. As seen in Figure 3-6 above with UA verbs, for a short adverb type, the mean value of acceptability ratings for caseless FQ sentences (M=3.29) is a little bit higher than those for case-marked FQ sentences (M=3.20); for a long adverb

type, the mean value of acceptability of caseless FQ (M=3.15) is a little bit lower than the mean for case-marked FQ sentences (M=3.39).

With the UE verbs as seen in Figure 3-7 above, for a short adverb, the mean values of caseless FQs (M=2.52) is a little higher than that of case-marked FQs (M=2.38), while for a long adverb, the mean value of case-marked FQ sentences (M=2.90) is much higher than that of the caseless FQ sentences (M=2.72). For UE verbs, the overall acceptability rating for case-marked FQs is a little bit higher than those of their caseless counterparts.

I ran ANOVAs with three independent factors and one dependent factor. Each independent factor has two levels, resulting in a 2x2x2 design: verb type (UE or UE), adverb length (long or short), and case (caseless or case-marked). Two analyses of variance were performed on both by-subject analysis and by-item analysis. The by-subject analysis(F1) was conducted by a 3-way repeated measures (2x2x2) ANOVA, with Verb type (UE, UA), Adverb length (Short, Long), and Case (Caseless, Case-marked) as repeated measures, and Acceptability ratings as the dependent variable (DV). The by-item analysis (F2) was conducted by a 2x(2x2) mixed model ANOVA with Verb type as a non-repeated factor and with Adverb length and Case as repeated measures. Table 3.11 below displays the three-way repeated measures ANOVA results.

Table 3-11 ANOVA summary table[8]

Response~ ratings	F	Sum Sq	Mean Sq	F	Pr (>F)
Verb	1	35.98	25.978	41.32	3.65e-07***[9]
Residuals	31	19.49	0.629		
Adverb	1	0.969	0.09690	2.227	0.146
Residuals	31	13.487	0.4351		
Case	1	0.39	0.3945	0.364	0.551
Residuals	31	33.65	1.0854		
verb: adverb	1	1.448	1.4475	5.795	0.022*
Residuals	31	7.743	0.2498		
adverb: case	1	2.901	2.9006	18.16	0.000175***
Residuals	31	4.950	0.1575		
verb: case	1	1.149	1.1489	3.951	0.0557
Residuals	31	9.015	0.2908		
verb: adverb: case	1	0.994	0.9938	6.171	0.0186*
Residuals	31	4.992	0.1610		

There was a significant main effect of verb type in both the by-subject and the by-item analyses: F1 (1, 31) =41.32, P<0, 05; F2 (1, 14) =5.90, P<0.05, but no

[8] This table displays the results of the by-subject analysis (F1).
[9] Significance codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' '1

main effects of either case or adverb. On the whole, the 32 participants exhibited higher acceptability ratings for unaccusative verbs. This indicates that the ratings of acceptability on the unaccusative verbs are significantly higher than with those of unergative verbs.

In addition, there was a significant main interaction between adverb and case by both the by-subjects and by-items analyses: $F1\ (1, 31) = 18.16$, $P<0.05$; $F2\ (1, 14) = 5.69$, $P<0.05$. To see the interaction between adverb and case on each verb type, a follow-up 2x2 ANOVA was conducted on each verb type.

For UA verbs, there is no main effect or no main interaction. However, for UE verbs, the adverb condition shows a significant main effect ($F\ (1, 31) = 6.01$, $p<0.05$) and there is a significant main interaction between the adverb and case ($F(1,31)=15.67$, $p<0.05$). On the whole with UE verbs, long adverbs were rated higher, but this effect is dependent on the level of case such that it is really pronounced with case-marked FQ.

There is a significant main interaction between verb and adverb only in the by-subject analysis ($F1\ (1, 31) = 5.80$, $p<0.05$), but not by items ($F2\ (1, 14) = 0.70$, $p=0.41$).

Two planned pairwise comparisons were also conducted to see the differences of means for adverb and case with each verb type. With UA verbs, Figure below shows pairwise comparisons for both the short and long adverb types.

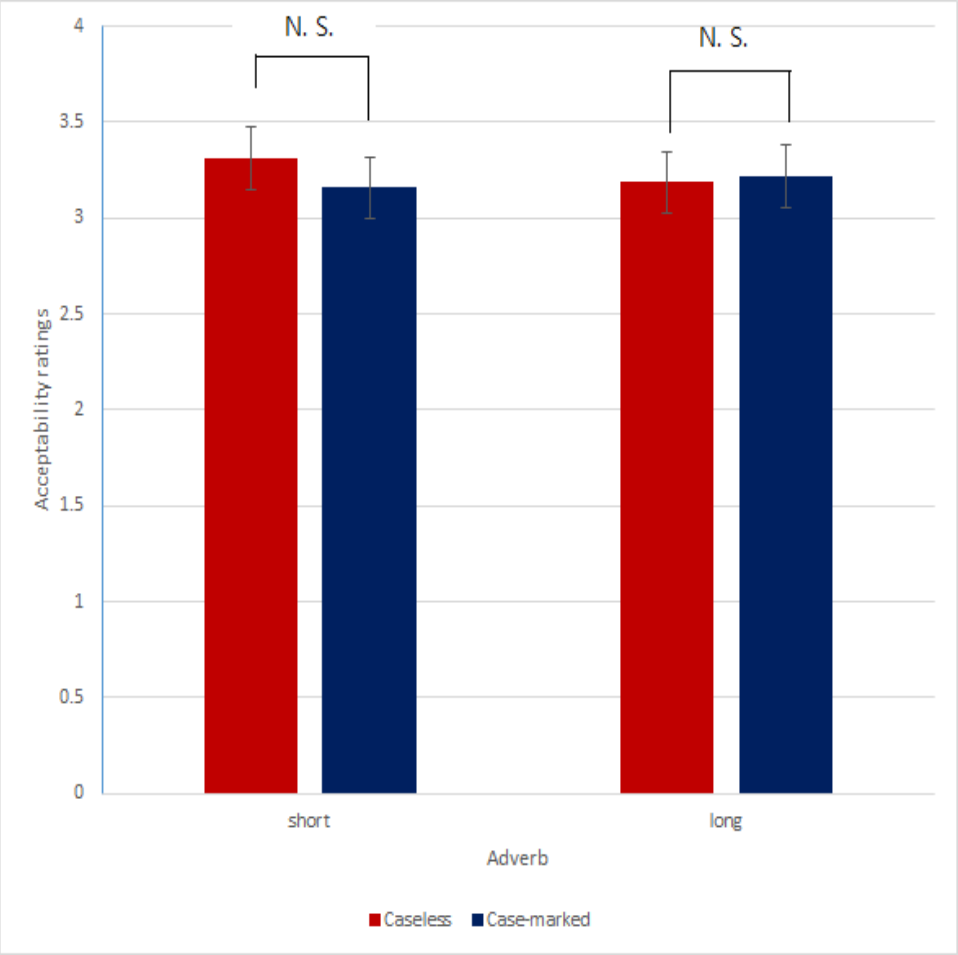

Figure 3-8 Pairwise comparisons for both the short and long adverb types with UA verbs

For the short adverb type, the difference between caseless FQs and case-marked FQs is not significant: t=1.00; df =31; p=0.32. For the long adverb type, the difference between caseless FQs and case-marked FQs is also not significant: t=-0.19; df =31, p=0.85). Pairwise comparisons of the means show that, the mean

acceptability of caseless and case-marked FQ on both short adverb and long adverb are not significantly different from each other.

With UE verbs, Figure below shows a pairwise comparison for both short and long adverb types.

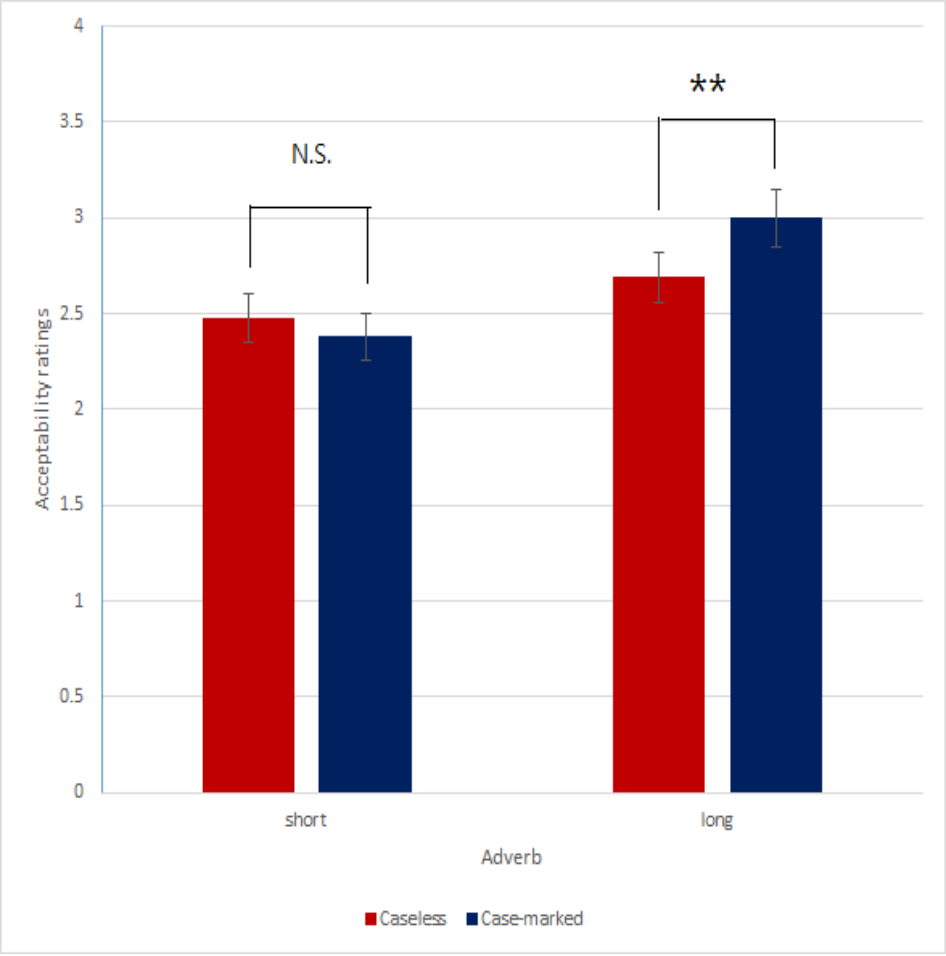

Figure 3-9 Pairwise comparisons for both the short and long adverb types with UE verbs

For the short adverb type, the difference between caseless FQs and case-marked FQs is not significant: t=0.73; df =31; p=0.47. For the long adverb type, the difference between caseless FQs and case-marked FQs is significant: t=-3.39 df =31; $p<0.05$. Pairwise comparisons of the means show that the mean acceptability of caseless and case-marked FQ on short adverb are not significantly different from each other. However, the mean acceptability of caseless and case-marked FQ on long adverb are significantly different from each other. Thus, adverb factor may play a role in determining the acceptability of ratings of UE verbs.

3.3.4 Summary

In this section, an online survey for an acceptability ratings experiment was conducted to determine the acceptability judgments of one Korean unaccusative diagnostic: the case marking of floating quantifiers. Yang claims that the case marking of floating quantifiers is a Korean unaccusative diagnostic which can distinguish between UA and UE verbs. When the quantifiers float, case marking of this quantifier is optional when the verb is an UA verb, but this floating quantifier is obligatorily marked with nominative case when the verb is an UE verb.

In this section, I adopted another empirical approach to the case marking of floating quantifiers to see if this diagnostic is an applicable diagnostic through an acceptability ratings experiment. Yang briefly mentioned that for UE verbs, the intervening adverbs also play a role in determining the acceptability of floating

quantifier sentences. When there are no long or short adverbs between the host noun and the floating quantifiers, these sentences without any case marking would be acceptable sentences, but when there are long adverbs between them, the case marking of FQs is obligatory. Without the case marking, these sentences should be ungrammatical. Taking into account this effect of the intervening adverbs, I examined native Korean speakers' online ratings of the case marking of floating quantifier sentences. Thirty two native speakers of Korean volunteered for this experiment. The verbs which passed the case marking of oblique nominal diagnostic were chosen for the experiment. Then 12 pairs of unaccusative and unergative verbs were chosen for a 2x2x2 factorial design and these verbs were recycled throughout the four lists. With verb type (UE and UA), adverb length (short and long), and case (caseless and case-marked) manipulations, each verb has 8 different conditions, and each of these conditions include 6 sets of sentences. This yields a total of 48 experimental sentences. This experiment was done via a Google Docs online survey. Four stimulus lists were distributed with a different order of sentences and randomized examples of eight conditions.

A 2 (type of verb) x 2 (length of adverb) x 2 (case of floating quantifier) repeated measures of analysis of variance (ANOVA) was conducted. The results indicate that there was a significant main effect of verb type. The mean of acceptability ratings with the UA verb type is significantly higher than those of the UE verb type. In addition, there is a significant main interaction between

adverb and case. A follow-up 2x2 ANOVA on each verb revealed that for UE verbs, adverb condition shows a significant main effect and there is a significant main interaction between adverb and case. On the whole, long adverbs were rated higher, but this effect is dependent on the level of case such that it is really pronounced with case-marked FQ.

Planned pairwise comparisons were also conducted on each verb type. For UA verbs, the mean acceptability ratings of caseless FQs are not significantly higher than those of case-marked FQs on both short and long adverb type. For UE verbs, the mean acceptability ratings of caseless FQs did not differ from those of case-marked FQs on short adverb type, but .the mean acceptability ratings of caseless FQs did differ from those of case-marked FQs on long adverb type. People rated higher the acceptability of case-marked FQs than those of caseless FQs.

3.4 Conclusion

In this chapter, I presented the case marking of floating quantifiers as an unaccusative diagnostic through both a corpus-based analysis and an acceptability ratings experiment. For the corpus investigation into the distinction between unaccusative and unergative verbs with regards to the case marking of floating quantifiers, a morphologically part of speech (POS) tagged corpus of Modern Korean from the 21st Century Sejong project was used. Two numerals (*hana* 'one' and *twul* 'two') and four numeral classifiers (*myeong*, *kay*, *kaci*, *mari*) were

chosen to see the case marking of floating quantifier constructions. AntConc software was used to extract the floating quantifier constructions.

From a total of 303 floating quantifier constructions, the results show that caseless FQ sentences predominantly occurred with both UA (80%) and UE verbs (6%) . According to Yang's unaccusative diagnostics, it would be expected that UA verbs can occur with or without the nominative case marking of FQs, but that UE verbs can only occur with the nominative case marking of FQs. However, most unergative verbs(95%) were found without case marking of FQs.

The top five frequent verbs with this constructions are all UA verbs including passive verbs such as *issta* 'to be, to exist', *sayngkita* 'to come into being', *tallita* 'to be hung', *moita* 'to be gathered' and *nohita* 'to be put.' Most of these unaccusative verbs exhibit strongly that they prefer no case marking with the floating quantifier construction. Even though the case marking is optional for UA verbs, the corpus-based verb-specific investigation indicates that UA verbs mostly occurred without a case marking with FQ sentences.

For the acceptability ratings experiment on the case-marking of oblique nominals, the 33 native Korean speakers participated in the online survey of acceptability ratings of unaccusative and unergative verbs. The 12 UA and 12 UE experimental sentences were distributed across four experimental lists. Each list included only 6 UA and 6 UE verbs yielding a total of 48 sentences per list. The participants were asked to rate the acceptability of these sentences by using a 5

point scale ranging from very unacceptable (corresponding to 1) to very acceptable (corresponding to 5). Then 2x2x2 ANOVAs were conducted for both participant (F1) and item means (F2).

The results indicate that there was a significant main effect of verb type. The mean of acceptability ratings with the UA verb type is significantly higher than those of the UE verb type. In addition, there is a significant main interaction between adverb and case.

Follow-up two-by-two ANOVAs and planned pairwise comparisons showed that on the whole, for UE verbs, long adverbs were rated higher, but this effect is dependent on the level of case such that it is really pronounced with case-marked FQ. People rated significantly higher the acceptability of case-marked FQs than those of caseless FQs with UE verbs. The acceptability ratings experiment showed that the adverb factor may have an influence on the acceptability of UE verbs.

These results support the prediction under the adverb-consideration approach in which all UA sentences are predicted to be acceptable regardless of the case marking and intervening adverbs. According to the prediction of this approach, for unergative verbs, the acceptability ratings are predicted to vary. Case marked FQs are predicted to be more acceptable than the caseless FQs. Among caseless FQs, a short adverb with UE verbs is predicted to be more acceptable than a long adverb with UE verbs. Even though the case marking of

FQs is required with UE verbs, a caseless FQ is predicted to be acceptable when there is a short adverb between the subject NP and the floated quantifier.

This study contributes to a better understanding of the Korean unaccusative diagnostics in that the diagnostic of the case-marking of floating quantifier needs to constrained with further consideration of the adverb factor. Even though Ko's experiment and my corpus studies do not consider the adverb factor, the acceptability ratings experiment shows that the adverb factor may play a role in the acceptability ratings for UE verbs. This point provides complementary insights into future corpus studies in which the examples would be the same as the samples in the acceptability ratings experiment. In this dissertation, there is a limitation of synchronization of the corpus studies and acceptability ratings experiment. My corpus studies in this dissertation were intended to find patterns in the case-marking of floating quantifier construction and see the verbs within this pattern. If the test sentences in the acceptability ratings experiment were derived from the corpus data, the results from both studies would provide more solid evidence.

Chapter 4

The Case-marking of Oblique Nominals: A Corpus-based Approach

4.1 Introduction

As noted in Chapters 3, the Korean case marking system with certain grammatical constructions such as floating quantifiers is claimed to provide an unaccusative diagnostic to distinguish unaccusatives from unergatives. In chapter 3, I examined the case marking of floating quantifiers as an applicable unaccusative diagnostic through both the corpus data and an acceptability ratings experiment. In this chapter, I look at another Korean diagnostic which is related to the case marking system: the case marking of oblique nominals (CON) (Yang 1991). I investigate whether there is evidence that Korean case marking with oblique nominal constructions can serve as an applicable unaccusative diagnostic based on the data from the Korean corpus files.

In Korean, semantically oblique nominals may appear with dative (*-eykey*) or other oblique case markers (*-ey*,*-eyse*) as shown in (57).

(57) a. Cheli-eykey ton-i i-ss-ta. (Yoon 2004:1)
Cheli-DAT money-NOM exist-PST-DECL
'Cheli has money.'

b. cinan ilyoil-ey nwun-i manhi nayly-ess-ta.
last sunday-OBL snow-NOM lot fall-PST-DECL
'It snowed a lot last Sunday.' (Yang 1991: 21)

c. kongchang-eyse pwul-i na-ss-ta.

factory-LOC fire-NOM break.out- PST-DECL

'A fire broke out in this factory.'

Yang (1991) claimed that the case marking of oblique nominals is one of the unaccusative diagnostics for Korean. These oblique nominals can alternate their cases between OBL and NOM case markers[10]. It is proposed that this case alternation is possible only with unaccusative verbs, but is not allowed with unergative verbs. The case alternation of oblique nominals with the UA verb *nata* 'to break out' is shown in example (58) in which the oblique nominal *kongchang* 'factory' can alternate its case between locative case in (58a) and nominative case in (59b).

(58) The case alternation of oblique nominal (CON)

a. OBL

i kongchang-eyse pwul-i na-ss-ta.

this factory-LOC fire-NOM break.out- PST-DECL

'A fire broke out in this factory.'

b. NOM

i kongchang-i pwul-i na-ss-ta.

this factory-NOM fire-NOM break.out-PST-DECL

[10] I include dative case into oblique case marker.

'A fire broke out in this factory.'

However, this case alternation between OBL and NOM is not allowed with unergative verbs. The inability of case alternation of oblique nominals with the UE verb *ilha* 'to work' is shown in example (59) and therefore, the nominative case marking of an oblique nominal results in an ungrammatical sentence as in (59b) (marked with *).

(59) The case alternation of oblique nominal (CON)

a. OBL

I kongcang-eyse Chelswu-ka ilha-yess-ta.

this factory-LOC Chelswu-NOM work-PST-DECL

'Chelswu worked in this factory.'

b. DNC

I kongcang-*i Chelswu-ka ilha-yess-ta.

this factory-*NOM Chelswu-NOM work- PST-DECL

'*Chelswu worked in this factory.'

In this chapter, taking a corpus-based approach, I first examine the Case-marking of Oblique Nominals for Unaccusativity (CON) pattern sentences to see if their case alternations function as an unaccusative diagnostic in Korean. In the remainder of this chapter, I provide a corpus-based analysis of the CON pattern organized as follows. Section 4.2 provides the background for the CON as an unaccusative diagnostic. In section 4.3, the methodological issues with the

corpus, tools, and processing is described. Section 4.4 provides the results of the corpus analyses and a discussion. Finally, a discussion and conclusions are made in section 4.5.

4.2 Background

The case marking of oblique nominals has been studied by several Korean linguists from a variety of perspectives and with slightly different names (Yang 1991, Gerdts and Youn 1988, Yoon 2004). Gerdts and Youn (1988) called oblique nominals "Non-Nominative Subjects" (NNSs) which refers to sentential subjects that have a case marker other than the subject case marker. They claimed that the NNS can appear with a sub-class of unaccusative verbs in the semantically oblique nominals in the dative case as seen in (60a), or in other oblique cases as seen in (60b).

(60) a. Cheli-eykey ton-i i-ss-ta.
Cheli-DAT money-NOM exist-PST-DECL
'Cheli has money.'

b. i kongchang-eyse pwul-i na-ss-ta
this factory-LOC fire-NOM break.out-PST-DECL
'A fire broke out in this factory.' (Gerdts and Youn 1989:1)

They claimed that the oblique nominals are advanced to the subject position in unaccusative clauses, while unergative clauses do not involve this advancement of oblique nominals.

Yang (1991) further extended these non-nominative subjects claiming that the case alternation of the oblique nominals between OBL and NOM is only possible with unaccusatives, but not with unergatives. He claimed the Case-marking of Oblique Nominals for Unaccusativity (CON) as one of the unaccusative diagnostics. Unaccusative sentences such as (61) below can mark the first oblique nominal NP (*kongchang* 'facory') with either the OBL case marker (*-eyse*) as in (61a), or the NOM case marker (*-i*) as in (61b).

(61) Unaccusative

a. OBL

I kongchang-eyse pwul-i na-ss-ta.

this factory-LOC fire-NOM break.out-PST-DECL

'A fire broke out in this factory.'

b. DNC

I kongchang-i pwul-i na-ss-ta.

this factory-NOM fire-NOM break.out-PST-DECL

'A fire broke out in this factory.'

However, unergative verbs can only occur with the OBL case marker on the first oblique NP (*kongchang* 'factory'), not with the NOM case marker as seen in (62).

(62) Unergative

a. OBL

I kongcang-eyse Chelswu-ka ilha-yess-ta.

this factory-LOC Chelswu-NOM work-PST-DECL

'Chelswu worked in this factory.'

b. DNC

I kongcang-*i Chelswu-ka ilha-yess-ta.

this factory-*NOM Chelswu-NOM work-PST-DECL

'*Chelswu worked in this factory.'

Therefore, the case alternation between OBL and NOM is only possible with UA verbs, but not with UE verbs.

Despite this claim, there has been no analysis of the distributional characteristics of the CON patterns, and the set of verbs occurring with both constructions has not been described. Therefore, using corpus data, this study attempts to examine the distributional characteristics of the CON patterns, and attest the set of verbs occurring with these constructions in real language data.

The following is a discussion of the two corpus-based studies that were performed to examine the case marking of oblique nominals as an unaccusative diagnostic. If this is an applicable unaccusative diagnostic, then it is expected that the case alternation of oblique nominals is only possible with UA verbs, but not with UE verbs in actual corpus data.

4.3 Corpus Studies

The data for this study were extracted from the Korean morphologically tagged corpus. Two corpus studies were conducted. First, in section 4.3.1, I

analyzed the corpus data in which the case marking of oblique nominals is marked with the nominative case marking, and then checked them manually for the case alternation to the oblique case marker. The corpus used in this study will be described in section 4.3.1.1, and the tools and processing of extracted sentences are described in section 4.3.1.2.

Second, in section 4.3.2, I analyzed the corpus data in which the case marking of oblique nominals is marked with the oblique cases, and then checked them manually for the case alternation to the nominative case marker. The corpus used in this study is described in section 4.3.2.1, and the tools and the processing of extracted sentences are described in section 4.3.2.2.

4.3.1 The Case-marking of Oblique Nominal : A Corpus Study 1

4.3.1.1 The Corpus

The corpus for this study consisted of parts of the corpora from the Korean 21st Sejong project which has a raw corpus, a morph tagged corpus, and a sense tagged corpus. The morph tagged corpus was downloaded from the website of the National Institute of Korean Language (http://www.korean.go.kr). For this study, 197 files were downloaded, and these files contained 4,506,545 eojuls.

The following table enumerates the details of this corpus for this study. As Table 4-1 shows, this study intended to collect a balanced corpus by downloading a variety of genres from written and spoken texts. The written texts were chosen from different genres such as newspapers, books, and magazines. The spoken

corpora were selected from the transcriptions from screen media and audial media.

Table 4-1 Details of the tagged corpus

Fields		Genre	Formats	Amount (unit: files)	Amount (unit: eojuls)
Modern Korean	Written	Newspapers	Tagged	53	1,625,713
		Magazines	Tagged	34	936,350
		books	Tagged	40	1,641,788
	Spoken	Transcription from screen media	Tagged	40	105,847
		Transcription from audial media	Tagged	40	196,847
Total				207	4,506,545

4.3.1.2 Tools and Processing

For the data of the case marking of oblique nominals (CON), it is difficult to extract all the oblique case markers in the corpus since all these oblique cases

are tagged as one category of adverbial case (Tagged as JKB). The category of adverbial case in the Sejong morph tagged corpus includes a variety of different kinds of cases which consist of 141 different cases. Instead of extracting all the oblique cases, conversely, I extracted the nominative case marking of the first oblique nominal. If case alternation of this nominative case construction is possible with the dative or other oblique case markers, this sentence can be regarded as an unaccusative sentence. Therefore, the overall construction of the extracted sentences are the double nominative sentences shown in (63).

(63) Mary-ka ton-i sayngki-ta.
Mary-NOM money-NOM come into being-DECL
'To Mary, money come into being.'

In order to extract two nominative case marked NPs in one sentence, several wild cards were used in the global setting. Since the nominative case marking is tagged as JKS, two words tagged with JKS should be included as shown in Figure 4-1.

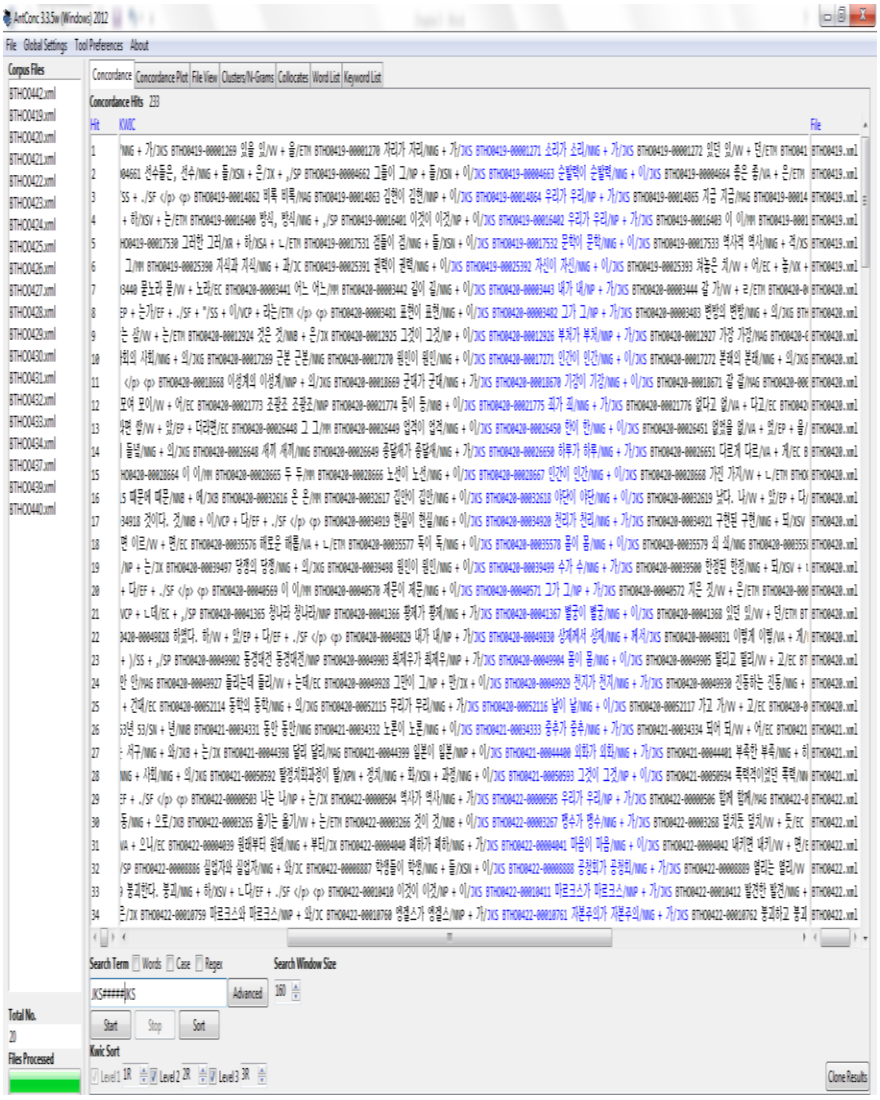

Figure 4-1 Concordance line of nominative case with oblique nominals

After I examined all the double nominative constructions in the concordance line manually, I saved the sentences in an Access database and then manually checked the case alternation of the first nominative case marker. If the first nominative case marker can be alternated with the dative or other oblique nominative cases, then the sentence can be divided into three types depending on

the type of the first NP's oblique nominal: 1) a Dative nominal in which the case of oblique nominal can alternate with DAT case as in (64a); 2) a Locative nominal in which the case of the oblique nominal can alternate with LOC case as in (64b); 3) an Existential nominal in which the case of the oblique nominal can alternate with either the DAT case or the LOC case as in (64c) (Lee 2007).

(64) a. Dative nominal

Mary-ka/-ekey ton-i sayngki-ta.

Mary-NOM/-DAT money-nom come into being-decl

'To Mary, money come into being.'

b. Locative nominal

son-i/-ey phi-ka mwut-ess-ta.

hand-NOM/-LOC blood-NOM stain-PST-DECL

'Blood was stained in the hand.' or 'The hand was stained with blood.'

c. Existential nominal

Chelswu-ka/-ekey ton-i iss-ta.

Chelswu-NOM/-DAT money-NOM exist-DECL

'Chelswu has money.'

Ihwayetay-ka /-ey pwunkyo-ka iss-ta.

Ihwas women's university-NOM/-LOC branch-NOM exist-DECL

'Ihwa somen's university has a branch school.'

The sentences of oblique nominal with the double nominative constituents in which the two nouns are in dative/locative/existential relationships as seen above in (64) were extracted from the Korean parsed corpora of the 21st Sejong project.

The sentence in (65) below is an example of an extracted nominative marked oblique nominal in which the first NP and the second NP are in a semantically oblique relationship. In this example, the first NP *kyoyukcang* + *an* 'inside education center' is followed by the subject case marker (-*i* tagged as JKS), and this nominal represents a semantically oblique nominal indicating where the second NP (*nanli* 'fuss') occurred. In addition, the second nominal *nanli* 'fuss' is followed by the subject marker (-*ka* tagged as JKS).

(65) 교육장/NNG 안/NNG + 이/JKS 난리/NNG + 가/JKS 나/VV +
았/EP + 다/EF + ./SF </p>
'In the inside of the education center occurred a fuss.'

Then, I manually checked if this nominative marked oblique nominal can alternate with the dative or the OBL case markers as shown in (66).

(66) The case alternation of oblique nominals (CON)
kyoyukcang an-i /-esey nanli-ka na-ss-ta.
education center inside-NOM/-LOC fuss-NOM occure-PST-DECL
'In the inside of Education center occurred a fuss.

This extraction process procedure can be summarized as follows. First, examples of the nominative case marking of oblique nominal sentences such as NP+subject case marker… NP+subject case marker sentences (e.g., NP /JKS###NP/ JKS) were collected from the Korean parsed corpus of the 21st Sejong project. Even though the double nominative pattern (DNC) is possible in a single sentence, some bi-clausal constructions such as relative clauses, adverbial clauses, and complement clauses are also marked with the same DNC pattern. So I manually searched for this DNC pattern among the results of the concordances of the DNC sentences.

Second, extracting all these double nominative sentences was conducted using AntConc 3.3.5w (Windows) concordance program developed by Laurence Anthony (2012). Third, the retrieved data were manually coded and analyzed with the use of Microsoft Excel and Access. Each extracted sentence was coded with several types of information as follows:

- Source file: the source file in which the extracted sentence occurred: e. g., BTEO0321-00006577(automatically retrieved from the corpus files).
- Original eojuls: words without POS tags: e.g.,물건이 (automatically retrieved from the corpus files).
- Tagged eojuls: words with POS tags: e.g.,물건/NNG + 이/JKS (automatically retrieved from the corpus files).

- V-lemma: Verb Lemma form : e.g., *naota* ‘come out’ (The verb form was retrieved automatically form the corpus files, the lemmatization was done by myself, and this coding task was performed semi automatically with the Excel program applied to the output of the AntConc program).
- Diagnostics: Application of unaccusative diagnostics: e.g., PAU, CON, DFC, LAL and N/A (Non applicable). I applied Yang’s four other diagnostic tests to see whether each verb passes them (this application of the diagnostics was done by myself).
- Verb categories: with regards to verb categories of intransitive verbs, this study used the verbal categories of the corresponding verb classes of the Split Intransitive Hierarchy (SIH) by Sorace (Sorace, 2000). Sorace (2000) proposed the Split Intransitivity Hierarchy (SIH), which shows a continuum classification of intransitive verbs. The auxiliary selection (*Be* or *Have* auxiliary) in some European languages exhibit a gradient behavior with respect to the aspectual/thematic properties of the verb classes. Within this hierarchy, the verbs at one end consistently take the *be* auxiliary, and the verbs at the other end take the *have* auxiliary. These two ends are called Core UA verbs taking the *be* auxiliary, and Core UE verbs taking the *have* auxiliary. The verbs which are in the

middle region show that they take either the *be* or *have* auxiliary. They are called peripheral UA and peripheral UE verbs. The core UA includes change of location verbs such as *fall* and *arrive*. The peripheral UA verbs include change of state verbs such as *decay* and *appear*, and stative verbs include *exist* and *remain*. The peripheral UE verbs include uncontrolled process such as *shiver* and *hiccup*, and controlled motional process such as *run* and *jump*. The Core UE verbs include the verbs of controlled non-motional process such as *work* and *play*.

4.3.2 The Case-marking of Oblique Nominals: A Corpus Study 2

4.3.2.1 The Corpus

The corpus files were the same files described in section 4.3.1.1, but I only chose the same number of sentences with the corpus study of the case marking of oblique nominal 1.

4.3.2.2 Tools and Processing

The tools and processing were same as the corpus study of the case marking of oblique nominal 1.

4.3.3 Corpus-based Findings

This section reports the major findings from the corpus studies. These findings include the corpus-based results on the distinction between unaccusative and unergative verbs in Korean. Section 4.3.3.1 begins by providing the corpus

results of the case marking of oblique nominal study 1 showing both its overall general distribution and the verb specific investigation. In section 4.3.3.2, I provide the corpus results of the case marking of oblique nominal study 2 showing both its overall general distributions, and the verb specific investigation.

4.3.3.1. The Case-marking of Oblique Nominals: A Corpus Study 1

Overall Distributional Characteristics

According to Yang's unaccusativity diagnostics, it is expected that only unaccusative verbs can alternate an oblique nominal between the OBL and NOM case markers, but this case alternation is impossible with unergative verbs as shown in (67) again.

(67) The case alternation between OBL and NOM

a. UA

I kongchang-eyse/-i pwul-i na-ss-ta.

this factory-LOC/-NOM fire-NOM break out-PST-DECL

'A fire broke out in this factory.'

b. UE

I kongcang-eyse/-*i Chelswu-ka ilha-yess-ta.

this factory- LOC/-*NOM Chelswu-NOM work-PST-DECL

'*Chelswu worked in this factory.'

I evaluated Yang's case alternation of oblique nominal unaccusative diagnostic based on the corpus data. A total of 251 sentences which are marked

with the nominative case with an oblique nominal were extracted from the corpus, and then the case alternation between nominative case and oblique cases were checked manually. Table below shows the raw frequencies of the sentences in which the oblique nominals are marked with the nominative case and their case alternation between oblique case and nominative case.

Table 4-2 Frequencies of a case alternation of CON

Verbs	Type	Frequencies	Case alternation
UA	Dative Oblique Nominals	98 (39%)	98 (39%)
	Locative Oblique Nominals	114 (45%)	114 (45%)
	Existential Oblique Nominals	36 (19%)	36 (19%)
UE		0 (0%)	0 (0%)
Passive		3 (2%)	3 (2%)
Column Total		251	251

In this data, the possible case alternation can be found with UA verbs (98%) including passive verbs (2%), but not with UE verbs (0%). Figure 4-2 below shows the frequency of the different types of oblique nominals which are possible with their case alternation between nominative case and the dative or oblique case markers.

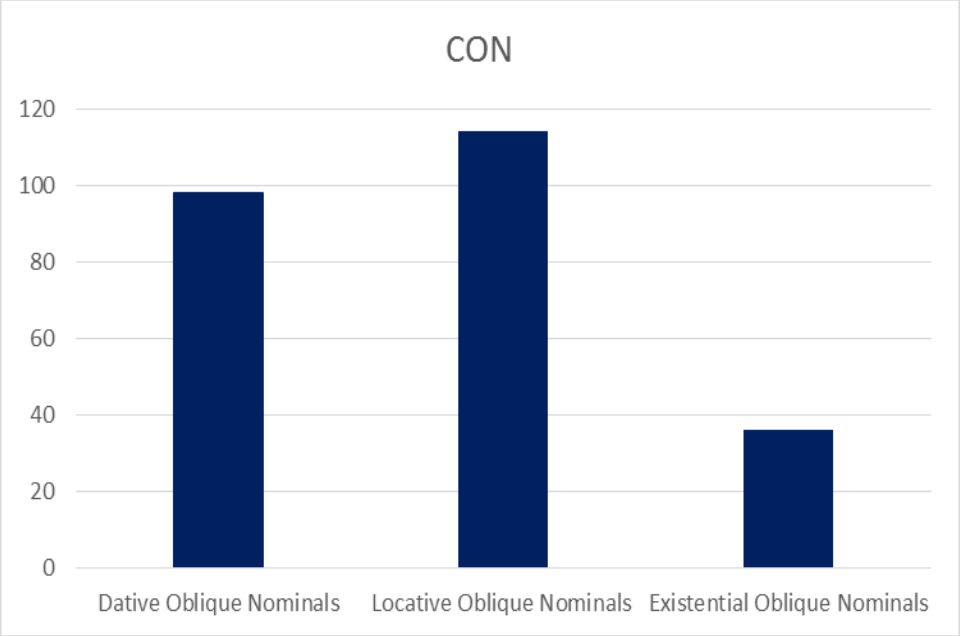

Figure 4-2 Frequencies of a case alternation of CON

Among the three different types of oblique nominals, locative oblique nominals occur most frequently, followed by dative oblique noiminals, and existential oblique forms. Some examples of locative oblique nominals from the corpus are shown in (68).

(68) a. 온/MM 집안/NNG + 이/JKS 야단/NNG + 이/JKS 나/VV + 았/EP + 다/EF + ./SF

'In every inside of house, fuss came.'

b. 집/NNG+이/JKS 통제/NNG+가/JKS 심하/VA+거든요/EF+?/SF

'At the house, regulation is severe.'

As indicated by the locative nominal, the first nouns in these constructions include the location places such as *house*, *apartment*, *everywhere*, etc. Verbs occurring with these locative nominals are *nata* ‘to occur’, *sayngkita* ‘to come into being’, and adjectives such as *cohta* ‘good’, *manhta* ‘ a lot’, and *nophta* ‘high’. The example in (69) shows an adjective with an oblique nominal. The case marking of these oblique nominals are possible between OBL and NOM as shown in (708), some adjectives describing stative conditions such as *good*, *high*, and *right* in Korean can be regarded as UA verbs.

(69) 거기/NP+가/JKS 베스트/NNG+가/JK 훨씬/MAG 많/VA+아요/EF

‘Over there, there are a lot of best things.’

(70) The case alternation of Oblique Nominals

ke	ki-ey/-ka	peysuthu-ka	hwelssin	manh-ayo.
that	place-LOC/-NOM	best-NOM	by far	a lot-DECL

‘Over there, there are a lot of best things.’

As for dative oblique nominals, the first noun in these constructions are usually pronouns such as *na* ‘I’, *ce* ‘I (humble form)’, and a person’s general title such as *sensayngnim* ‘teacher’ or *haksayngtul* ‘students’. Some examples from the corpus are shown in (71).

(71) 할머니/NNG+가/JKS 골다공증/NNG+이/JKS

있/VA+는/ETM+,/SP

'Grandmother has osteoporosis.'

Verbs with dative oblique nomimals are usually *natanata* 'appear', *pwucokhata* 'need', and *issta* 'exist'. Also this dative case can alternate with nominative case as in (72).

(72) The case alternation of Dative Nominals

aitul-eykey/-i hyokwa-ka nathana-ta.

kids- DAT/-NOM effect-NOM appear-DECL

'Medicine took effects on the kids.'

As for existential oblique nominals, the case alternation is also possible as shown in (73), and verbs with this category are mostly existential verbs such as *issta* 'exist'.

(73) The case alternation of Existential Nominals

cachey-e/-ka mwuncey-ka iss-ta.

itself-OBL/-NOM problem-NOM exist-DECL

'Itself has a problem.'

For the passive verbs, verbs such as *caphita* (to be caught) and *twullita* (to be drawn) are possible with the case alternation (2%). An example with a passive verb is shown in (74) below.

(74) The case alternation of passive verbs

Isengkyey-uy kwuntay-ka kikang-i cal cap-hi-ta.

Isengkyey-POSS army-NOM discipline-NOM well tighten-PAS-DECL

'Isengkyey's army's discipline was tightened well.'

To summarize the corpus-based findings, the case alternation of oblique nominals between OBL and NOM is only possible with UA verbs and passives. The most frequent oblique nominals are locative oblique nominals (45%), followed by dative oblique nominals (39%), existential oblique nominals (19%), and passive verbs (2%). The following section describes the verb specific investigation of the case marking of oblique nominals.

Verb Specific Investigation

The results of the overall frequencies of the case marking of oblique nominals in the corpus data above are similar with the expectations based on Yang's unaccusative diagnostics. Thus, these data support this unaccusative diagnostic claim. To see the verbs which can alternate their cases between OBL and NOM, the top five UA verbs in the present data are shown in Table 4-3.

Table 4-3 Top five verbs with the case alternation of CON

Rank	Verb	UA/UE	Frequencies	Percentages
1	issta 'exist'	UA	64	23%
2	nada 'come into being'	UA	36	13%
3	epsta 'not exist'	UA	36	13%
4	toyta 'become'	UA	33	12%
5	manhta 'a lot'	UA	10	4%

The verb most frequently found in the data is the verb *issta* ‘to be, exist’. This result is the same as the result in chapter 3 in which the verb *issta* ‘to be, exist’ is highly frequent with the case marking of floating quantifiers. Some examples with this verb are shown in (75).

(75) a. 멋/NNG + 이/JKS 특색/NNG + 이/JKS 있/VV + 다/EF + ./SF

‘The style has a characteristic.’

b. 딸/NNG + 이/JKS 붙임성/NNG + 이/JKS 있/VV + 어서/EC + 라고/EC

‘The daughter is sociable.’

4.3.3.2 The Case-marking of Oblique Nominals: A Corpus Study 2

Overall Distributional Characteristics

Conversely to the corpus study of the CON pattern 1, in which I extracted the nominatively marked oblique nominals, and then later checked their case alternation between nominative case and oblique case, in this study I extracted the sentences in which the oblique nominals were marked with oblique cases and then manually checked the case alternation of this oblique nominal between the nominative case and the dative or oblique cases. For this study, I chose three types of oblique cases: one dative case marker -*eykey* and two oblique case markers -*e* and -*eyse.*

From a total of 251 sentences, the frequencies for the case marking of oblique nominals and their case alternations are shown in Table 4-4.

Table 4-4 Frequencies of the case alternation of CON

Verbs	Type	Frequencies	Case alternation
UA	Dative Oblique Nominals	20	20
	Locative Oblique Nominals	184	163
	Existential Oblique Nominals	18	18
UE		18	0
Passive		11	10
Column Total		251	211

The general distribution of the case markings of oblique nominals and their case alternations appear to be a valid unaccusative diagnostic claim; the case alternations do distinguish unaccusative verbs from unergative verbs. For unaccusative verbs, locative oblique nominals occur most frequently, followed by dative and existential oblique nominals. In addition, passive verbs also can alternate their case between the nominative case and the oblique cases. For unergative verbs, the case alternation of an oblique nominal is not possible. An unergative verb with an oblique nominal that is marked with the oblique case cannot alternate its case with the nominative case as shown in (76).

(76) a. 가정/NNG + 에서/JKB 어머니/NNG + 가/JKS 실수/NNG +

하/XSV + 았/EP + 을/ETM

'At home, mother would make a mistake.'

b. case alternation

kaceng-eyse/-*i emeni-ka silswuhay-ss-ta.

home-LOC/-NOM mother-NOM mistake-PST-DECL

'At home, mother made a mistake.'

These results are consistent with corpus study #1 of the case marking of oblique nominals in that the case alternation of the oblique nominal is only possible with unaccusative verbs, not with unergative verbs. However, there is an outstanding issue. As seen in Table 4-4 above, the case alternation is not possible with all of the unaccusative verbs. Some unaccusative verbs with locative oblique nominals and the passive verbs cannot alternate their case between the nominative case and the oblique cases. A typical instance of this construction is given in (77). In this sentence, the locative case marked oblique nominal *pawisok* 'inside a rock' cannot alternate its case between OBL and NOM as seen in (91).

(77) pawi sok-eyse salam-i nao-n-ta.

rock inside-LOC person-NOM come out-PRES-DECL

'A person comes out from inside a rock.'

A case alternation

pawi sok-eyse/-*i salam-i nao-n-ta.

rock inside-LOC/-NOM person-NOM come out-PRES-DECL

'A person comes out from inside a rock.'

It seems that there is a restriction that a locative case marked oblique cannot always change its case marker. This example appeared with some verbs of change of location. The verb category of change of location will be discussed in the next chapter in the verbal category in 5.2 section.

Verb Specific Investigation

The top five most frequent verbs which occur with the case alternation of oblique nominals between the nominative case and the oblique case markers are shown in Table 4-5.

Table 4-5 Top five verbs with the case alternation of CON

Rank	Verb	UA/UE	Frequencies	Percentages
1	issta 'exist'	UA	44	21%
2	epsta 'not exist'	UA	15	7%
3	nata 'come into being'	UA	11	5%
4	naota 'come out '	UA	7	3%
5	ota 'come'	UA	5	2%

These results are similar with those of corpus study #1 of the case marking of oblique nominals. The top five most frequent verbs found in the sentences

which were marked with oblique cases and can alternate their cases with the nominative case are the verb *issta* ‘to be, to exist’, *epsta* ‘to not exist, *nata* ‘to come into being’, *naota* ‘to come out’ and *ota* ‘to come’.

4.3.4 Discussion

In the previous section, I examined whether there is evidence that Korean case marking with oblique nominal constructions can serve as an applicable unaccusative diagnostic based on the data from the Korean corpus. Yang (1991) claimed that the case marking of oblique nominals is one of the Korean unaccusative diagnostics. According to him, unaccusative verbs can alternate the case of oblique nominals between nominative case and oblique case, but unergative verbs cannot alternate the case of an oblique nominal. In the two corpus studies done for this research, I first extracted Korean sentences in which the first oblique nominal is marked with the nominative case marker, and then manually checked their case alternation into the dative or other oblique case markings as shown in (78a). Second, I extracted Korean sentences in which the first oblique nominal is marked with an oblique case, and then manually checked their case alternation into the nominative case marker as in (78b)

(78) a. aitul-i hyokwa-ka nathana-ta.
kids-NOM effect-NOM appear-DECL
‘It took effects on kids.’

b. swutokkokci-eyse mwul-i hulu-ta

faucet-LOC water-NOM drift-DECL

'Water drips from a faucet.'

Both studies showed that the case alternation of oblique nominals is only possible with unaccusative verbs, but not with unergative verbs. Therefore the Double Nominative Construction (DNC) is only possible with unaccusative sentences (UA), not with unergative sentences (UE)[11]. If the case alternation of oblique nominals between OBL and NOM is only possible with UA verbs, and DNC is only possible with UA verbs, then it would seem that the case marking of oblique nominals (CON) and DNC might both serve as syntactic unaccusative tests. However, there has been no study to examine these diagnostics together, and there has been no affirmative syntactic analysis of the DNC as an unaccusative diagnostic in Korean literature. In the following discussion, I further extend the corpus studies to see whether the double nominative construction can be an unaccusative diagnostic, and I examine the distributional characteristics of the double nominative construction (DNC).

4.3.4.1 Overall Distributional Characteristics

The corpus files, tools, and processing of extracting DNC sentences were the same as in corpus study #1 described in section 4.3. I further extended my

[11] Two noun phrases can be marked with the same nominative case marker *i*/*ka* within a single sentence and this is called the Double Nominative Construction (DNC). This can be characterized as "NP *i*/*ka* NP *i*/*ka* V" word order.

examination into all types of DNCs to see if DNC can be claimed as an unaccusative diagnostic which distinguishes unaccusatives from unergatives. As seen in the frequencies column of Table below, the DNC is only found with UA verbs, not UE verbs. In addition, DNC can be classified into several types based on the grammatical or semantic relationship between the two noun phrases as shown in (79) (Lee 2007).

(79) a. Possessive construction

ai-ka i-ka na-ss-ta.

Child-NOM tooth-NOM come.out-PST-DECL

'A child's tooth came out.'

b. Dative/Locative/Existential construction

Mary-ka ton-i sayngki-ta

Mary-NOM money-NOM come into being-DECL

'To Mary, money come into being.' (Dative)

son-i phi-ka mwut-ess-ta.

hand-NOM blood-NOM stain-PST-DECL

'The hand was stained with blood.'(Locative)

Chelswu-ka ton-i iss-ta.

Chelswu-NOM money- NOM exist-DECL

'Chelswu has money.'

c. Chang of state construction

olchayngi-ka kaykwuli-ka toy-ta

tadpole- NOM frog- NOM become-DECL

'Tadpoles become frogs.'

d. Passive

mwutang-tul-i sin-i tul-lye-ss-ta

shaman-PL-NOM god-NOM get in-PAS-PST-DECL

'Shamen got in by a god.'

The frequencies of the types of DNCs that were attested in the corpus are shown in Table 4-6.

Table 4-6 Frequencies of different types of DNCs

Verbs	Types of DNCs		Frequencies	Percentage
UA	Change of state		57	12.3%
	Oblique Nominals	Dative	98	21.1 %
		Locative	114	24.5 %
		Existential	36	7.7 %
	Possessive		153	32.9 %
	Passive		7	1.5 %
UE			0	0
Total			465	100%

As seen in Table 4-6, the DNC is possible with four types of grammatical or semantic relationships between the two noun phrases. First, oblique nominals such as Dative/Locative/Existential DNCs are generally more frequent than any other types of DNCs. From the previous analysis of Case marking of oblique nominals in sections 4.3.1 and 4.3.2, this type of DNC can be claimed as an unaccusative diagnostic. Verbs with DNC in this category are the typical type of unaccusative verb such as *nata* 'to come into being', *issta* 'to exist', and *epsta* 'to not exist.'

Second, the DNC of possessive relationships is also frequent and a typical example is shown in (80).

(80) Possessive DNC

ai-ka i-ka na-ss-ta.

child-NOM tooth-NOM come.out-PST-DECL

'A child's tooth came out.'

For all of the verbs in these DNCs, the first NP can alternate its case between NOM and GEN without changing the meaning as shown in (81).

(81) A case alternation between NOM and GEN

ai-ka/-uy i-ka na-ss-ta.

child-NOM /-GEN tooth- NOM come.out-PST-DECL

'A child's tooth came out.'

Yang also claimed that the first NP that is a possessor ascends from its possessive phrase, and this possessor ascension is one of the unaccusative diagnostics (1991). He named this process Possessor Ascension. If we follow his claim, this type of DNC is itself also found with only the claimed unaccusative verbs.

Third, DNCs in the change of state type are found with only one verb *toyta* 'to become' as shown again in (82).

(82) a. mikkwulaci-ka yong-i toy-ess-ta
loach-NOM dragon-NOM become-PST-DECL
'One loach became a dragon.'

b. nolye-ki mwulkephwum-i toy-ess-ta
effort-NOM bubble-NOM become-PST-DECL
'Efforts became bubbles.' or 'All of my efforts were in vain.'

The Korean verb *toyta* 'to become' can be used to make a passive construction, and the verb itself is an unaccusative verb (Kang 1997). Thus, this type of DNC appears with unaccusative verbs.

Fourth, even though it is not frequent, the corpus data show that the DNC is possible with passive verbs. The Unaccusative Hypothesis predicts that passive and unaccusative verbs are regarded as the same category since for passives, the subjects are raised from oblique nominals, possessives, etc., and these are marked with the nominative case marker (Kim 1999). Passive verbs such as *caphita* 'to be

held', *phallita* 'to be sold' with DNC are shown in (83), and these verbs can be included in the category of UA verbs.

(83) Passive verbs with DNC

a. ike-i thul-i cap-hye-ga-ta
this-NOM shape-NOM hold-PASS-PROG-DECL
'This was setting into shape.'

b. saram-i jip-i an-pa-li-e
person-NOM house-NOM NEG-sell-PASS-CONN
'For a person, a house was not sold…'

Fifth, in contrast to the unaccusative verbs and passive verbs, unergative verbs did not appear with the DNC. The DNC was never found with the subject of transitive verbs or unergative verbs, which suggests that they occupy the subject position at D-Structure (Kim 1999). Thus, the corpus data provided an insight: subjects of transitive verbs and unergative verbs cannot form the double nominative construction. If the DNC were to occur with the subject of an unergative verb, it would be ungrammatical as suggested by Kim (1999) and shown in (84).

(84) John -uy/-*i hyeng -i talyeka-ss-ta
John-GEN/*NOM brother-NOM run-PST-DECL
'John's brother ran.'

Therefore, the DNC appears to be a valid unaccusative diagnostic in Korean; it can distinguish unaccusative verbs from unergative verbs.

4.3.4.2 Verb Specific Investigation

The results of the top five verbs occurring in the DNC in the corpus are similar with those of the case marking of oblique nominals described above in section Table 4-7 below provides the frequencies of the top five most frequent verbs with the DNC. The typical verbs with the DNC bear a resemblance to the results of corpus study #1 of the case marking of oblique nominal.

Table 4-7 Top five verbs with the DNC

Rank	Verb	UA/UE	Frequencies	Percentages
1	issta ‘exist’	UA	79	16.99
2	toyta ‘become’	UA	66	14.19
3	nada ‘come into being’	UA	45	9.68
4	epsta ‘not exist’	UA	41	8.82
5	manhta ‘a lot’	UA	14	3.01

4.4 Conclusion

When I examine the distribution of the verbs that occur with both the case marking of oblique nominals, these patterns are found with a class of verbs that are claimed as UA, but not found with any class of verbs that are claimed as UE. Therefore, CON patterns are able to distinguish UA from UE, and can account for

the contrasting behaviors of UE and UA verbs. However, the verbs with both CON do not include all the categories of verbs. Particularly the verbs in the category of change of location, which are claimed as a core UA verbs across languages, were not found with these patterns, and the case alternation is not always possible with the case marking of oblique nominals. From the corpus results of CON, I can make the following generalizations:

- First, unaccusative verbs can only appear with CON, whereas unergative verbs cannot appear with CON. Therefore, CON can serve as applicable unaccusative diagnostics.
- Second, verbs with CON occur mostly with the categories of change of state such as *nata* 'to come into being', *toyta* 'to become', or stative verbs such as *issta* 'to exist' and *epsta* 'to not exist'. This diagnostic is very compatible with verbs of change of state and stative verbs.

Further, I also presented a preliminary claim that the Korean DNC construction may serve as an unaccusative diagnostic. Since the case alternation of oblique nominals is possible between NOM and OBL with unaccusative verbs, and the nominative case marked oblique nominals yield to the DNC pattern, then there seems to be some connection between these two constructions. Although the corpus-based investigation of DNC revealed that DNC can occur with UA verbs, but not with UE verbs, the important question left for further research is the syntactic connection between both CON and DNC.

Chapter 5

Two Korean Diagnostics with Split Intransitive Hierarchy Approach

As noted in Chapters 3 and Chapter 4, the Korean case marking system with certain grammatical constructions such as floating quantifiers and oblique nominals is claimed to provide an unaccusative diagnostic to distinguish unaccusatives from unergatives. In chapters 3, I examined the case marking of floating quantifiers through both the corpus data and an acceptability ratings experiment. In chapter 4, I examined the case marking of oblique nominals through the corpus data. In this chapter, I look these two Korean unaccusative diagnostics along Split Intransitive Hierarchy (SIH) by examining the unaccusative/unergative distinction and the gradient characteristics of the UH. I provide the results and discussion of two diagnostics along with the SIH and their sensitivity to the SIH.

5.1 The Case-marking of Floating Quantifier with SIH

In this section, I evaluate the Korean unaccusative diagnostic of the case-marking of floating quantifier to see if it is sensitive to the hierarchy of intransitive verbs suggested by Sorace's gradient characteristics of the unaccusative/unergative distinction. Instead of distinguishing between the two types of intransitive verbs and developing an unaccusative (UA)-unergative (UE) dichotomy, Sorace (2000) takes the Split Intransitive Hierarchy or Auxiliary Selection Hierarchy (ASH) as a basic framework. Sorace (2000) proposed the

Split Intransitivity Hierarchy (SIH), which shows a continuum classification of intransitive verbs. Sorace and Keller (2000) provided a hierarchy of semantic verbal classes with regards to the auxiliary selection (*Be* or *Have* auxiliary) in some European languages. "Verbs at the BE end of the Auxiliary Selection Hierarchy are core unaccusatives and denote telic change; verbs at the HAVE end are core unergatives and denote agentive activity in which the subject is unaffected. Intermediate verbs between the two extremes incorporate telicity and agentivity to lesser degrees, and tend to have a less specified (basically stative) event structure" (Sorace 2000:5).

With this hierarchy, UA core verbs, which denote "telic change" (Sorace 2000:863) consistently select the *Be* auxiliary, while UE core verbs, which denote "agentive process" (Sorace 2000:964) consistently select the *Have* auxiliary. The two core categories of verbs are defined at each extreme of the continuum. The peripheral verbs which exhibit variability in the selections of these auxiliaries are in the middle of both extremes. I examined the case marking of floating quantifier along with the SIH. The total frequencies of FQs with each verb category of the Split Intransitive Hierarchy (SIH) are provided in Table 5-1.

Table 5-1 Frequencies of the case marking of FQs with SIH

SIH	Category of verb	Frequencies	
		Caseless FQs	Case-marked FQs
Core UA	Change of location	14	4
Peripheral UA	Change of state	46	3
	Stative	164 (12 if *issta* 'exist' excluded)	30 (2 if *issta* 'exist' excluded)
Peripheral UE	Uncontrolled process	3	0
	Controlled motional process	17	1
Core UE	Controlled non-motional process	0	0

An alternative view of these results is provided in Figure 5-1.

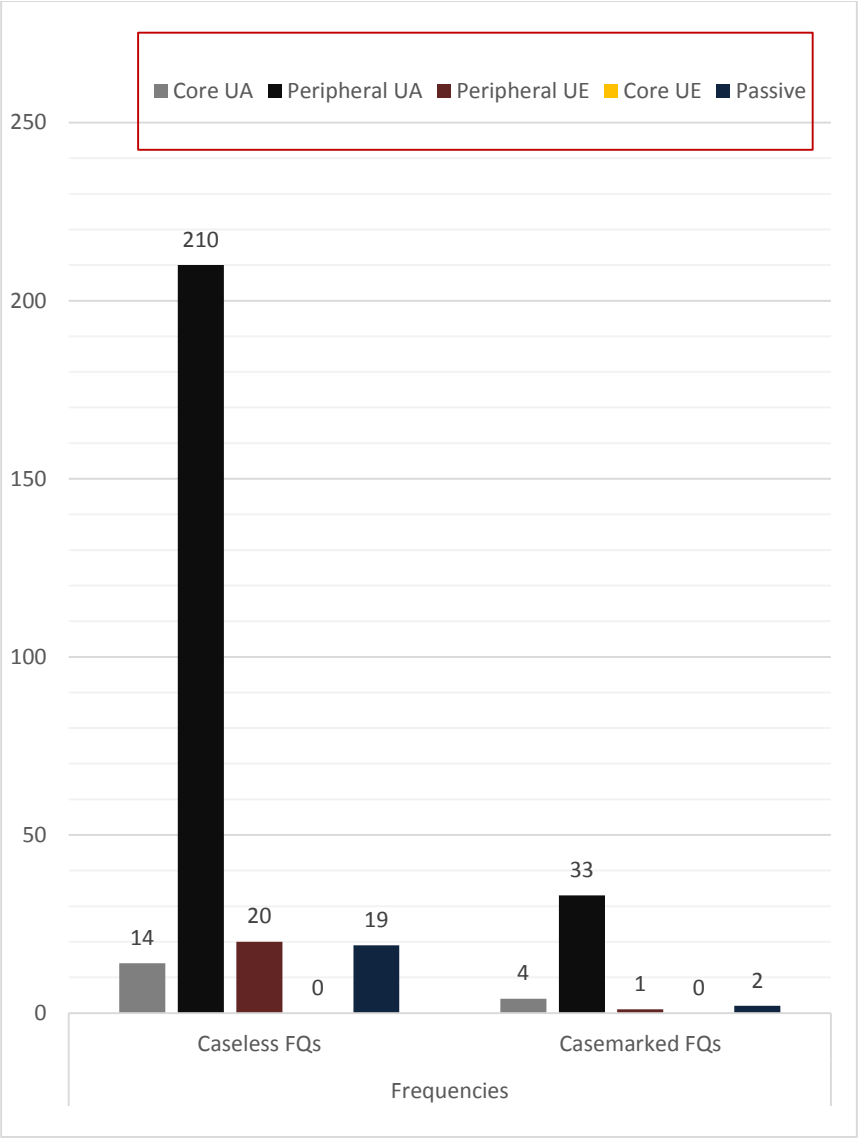

Figure 5-1 Frequencies of the case marking of FQs with SIH

5.1.1 Core UA verbs

Verbs such as *ota* 'to come', *nalaota* 'to come flying', *moita* 'to gather' which Sorace categorized as "change of location" verbs gave an interesting point. Some of the verbs in this category show "variable behaviors" (Levin and

Rappaport Hovav 1995:10). When some of these verbs occurred with animate subjects, these verbs were not classified as UA, but were classified as UE verbs because they did not pass the unaccusative diagnostics. However, when these verbs occurred with inanimate subjects, they were classified as UA verbs because they did pass the unaccusative diagnostics.

Consider the following examples. Although the set of "change of location" verbs such as *come* and *arrive* are regarded as Core UA verbs in the Western European languages (Sorace, 2000) regardless of animacy of subjects, some verbs of change of location category can be identified both as UE and UA verbs in Korean. For example, the UA verb *ota* 'to come' can take both an animate and an inanimate subject. When the *ota* verb takes an animate N, this is regarded as an UE verb in (85) since this sentence does not pass any unaccusative diagnostics as shown in (86).

(85) *ota* 'to come' as an UE verb

ay-ka han myeng-i w-ass-ta

child-NOM one CL-NOM come-PST-DECL

'One child came.'

(86) a. cwungang-ey/-*i ai-ka han myeng-i w-ass-ta

middle-LOC/-*NOM child-NOM one CL-NOM come-PST-DECL

'One child came in the middle.'

b. emeni-uy/-*ka ai-ka han myeng-i w-ass-ta

mom-GEN/-*NOM child-NOM one CL-NOM come-PST-DECL

'One of Mom's children came.'

However, when the *ota* 'to come' *verb* takes an inanimate NP as in (87), this verb can pass unaccusative diagnostics, as shown in (88), and be regarded as an UA verb.

(87) swuso-ka ney kay-ka w-ass-ta

hydrogen-NOM 4 CL-NOM come-PST-DECL

'Four hydrogen atoms came in the middle.'

(88) cwungang-ey/-i swuso-ka ney kay-ka w-ass-ta.

middle-LOC/-NOM hydrogen-NOM 4 cl-NOM come-PST-DECL

'Four hydrogen atoms came in the middle.'

Therefore, the animacy of the subjects of UA verbs plays a role for the distinctions between UA and UE verbs. For this core UA, case marking is optional and the corpus data shows that core UA verbs occurred with caseless FQs (78%) more often than the case marked FQs. This result indicates that even though case marking of FQ is optional for core UA verbs, caseless FQs are unmarked forms and core UA verbs are preferable to the caseless FQs than case marked FQs.

5.1.2 Peripheral UA

The peripheral UA categories such as "change of state" and stative verbs occurred mostly with FQs. Among them, verbs such as *issta* 'to exist', *natanata*

‘to appear’ and *sanggita* ‘to occur’ verbs mostly occurred without nominative case marking. Thus, this category also demonstrated that when case marking is optional, they preferred not to be marked with the case marking in the same way as the core UA verbs.

5.1.3 Peripheral UE

If we examine the verbs in the categories of peripheral UE such as “uncontrolled process” and “controlled motional process,” the frequency of verbs in the uncontrolled process category demonstrate that all verbs were identified as UA verbs instead of UE. For example, the verb *sayngkaknata* ‘to remind of’ as in (89) can be identified as an UA verb since it passes an unaccusative diagnostic (such as CON) shown in (90).

(89)

일/NNG + 이/JKS 한/MM 가지/ NNB 생각/NNG + 나/VV + ㄴ다/EF + ./SF ‘One thing reminds me.’

(90)

na-eykey/-ka	il-i	han-kaci	sayngkakna-ss-ta.
I-DAT/-NOM	thing-NOM	one-CL	remind-PRES-DECL.

‘one thing reminds to me’

Although the verbs in this category are regarded as the periperal UE verbs in the Western European languages (Sorace 2000), the claimed diagnostics

suggest that this category may be the peripheral UA in Korean instead of peripheral UE.

5.1.4 Core UE

For the core UE verbs, there is no attested example of both caseless FQs and case-marked FQs in the Core UE category (Controlled non-motional process). According to the SIH, all verbs in this category are expected to have case marked FQs. However, in the corpus, no examples of verbs in this category occurred.

The above table shows that the results of FQs with or without a nominative case construction a did not provide the expected results when taken into consideration with the SIH. With the SIH, it is expected that verbs at the HAVE end of the SIH (Controlled non-motional process), FQs should be marked with the nominative case, and for verbs at the BE end of the SIH (Change of location), FQs should be marked either nominative or without nominative case. However, these results show that peripheral UE verbs preferred to have caseless FQs, and there is no attested example of Core UE verbs with FQs. If the most frequent verb *issta* 'to be, to exist' is excluded from the tally of the stative verb category, the results of the case marking of FQs seems to go against the unaccusative claim that UA core verbs are more often marked with the nominative case with FQs than UE core verbs.

The frequencies of this diagnostic along with the SIH categories are summarized as follows.

- For the verbs in the core UA category (change of location), the case marking is optional. The corpus data showed that they occurred with caseless FQs more often than with case marked FQs. This result indicates that even though case marking of FQs is optional for core UA verbs, caseless FQs are unmarked forms and core UA verbs prefer the caseless FQs rather than the case marked FQs.
- The verbs in the categories of peripheral UA (change of state and stative) appeared mostly frequently with FQ sentences (85%). Among them, the verb *iss* 'to exist' is the mostly frequently occrruing word in the corpus (54%), and occurred mostly without a nominative case marker. Thus, these categories also demonstrated that when the case marking is optional, they prefer not to be marked for cas in the same way that core UA verbs preferred not to be marked.
- For the verbs in the peripheral UE categories such as uncontrolled process and controlled motional process, the frequency of verbs shows that they mostly appeared without a case marked FQ. Although the verbs in these categories were expected to have a case-marked FQ, the results show that they occurred most frequently without any case marking on the FQ.
- For the core UE verbs such as the controlled non-motional process category, there were no attested examples in the corpus of either caseless

FQs or case-marked FQs. All the verbs in this category are expected to have case marked FQs according to the SIH.

To summarize, the case marking of floating quantifiers as an unaccusative diagnostic occurred with verbs in the following categories: Core UA , peripheral UA, and peripheral UE, but not with Core UE verbs. When the FQs occurred with these categories, they preferred to have no case marking on the FQ. In addition, floating quantifier constructions occurred primarily with certain verbs such as those in the change of state category, and they preferred no case marking. "It seems that this diagnostic does not simplistically pick out the same verb whose equivalents in other Western European languages are defined as unaccusative by the auxiliary selection diagnostic, therefore." (Baker 2013: 6).

In the following section 5.2, I examine the case-marking of oblique nominals along with the verbal categories suggested by the Split Intransitive Hierarchy to see whether this diagnostic is sensitive to this hierarchy. I provide the results of the corpus-based findings on the case marking of oblique nominals along with determining the verbal hierarchy

5.2 The Case-marking of Oblique Nominals with SIH

I investigated the distribution of the case-marking of oblique nominals and attest the set of verbs occurring with these constructions in corpus data along with SIH. Section 5.2.1, 1 begins by providing the corpus results of the case marking of oblique nominal study 1 showing verb categories and the SIH

sensitivity. In section 5.2,2, I provide the corpus results of the case marking of oblique nominal study 2 showing verb categories and the SIH sensitivity.

5.2.1 The Case-marking of Oblique Nominals: A Corpus Study 1 with SIH

The total frequencies of the possible case alternations between OBL and NOM with oblique nominals with each verb categorized by Sorece's hierarchy is provided in Table 5-2.

Table 5-2 Frequencies of CON with SIH: A Corpus Study 1

SIH continuum	Category of verb	Frequencies
Core UA	Change of location	0
Peripheral UA	Change of state	80
	Stative	158
Peripheral UE	Uncontrolled process	10
	Controlled motional process	0
Core UE	Controlled non-motional process	0
Total		248

An alternative view of this corpus-based findings is provided in Figure 5-2.

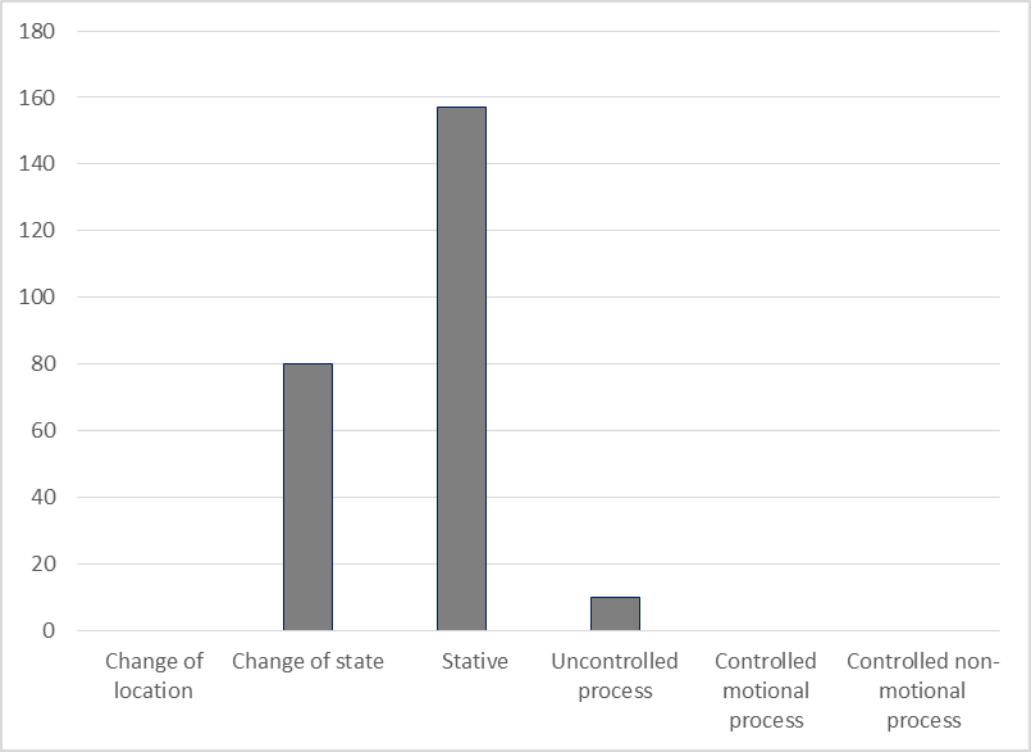

Figure 5-2 Frequencies of CON with SIH: A Corpus Study 1

As seen in Figure 5-2, the case alternation between OBL and NOM are most likely with the peripheral UA verbs, but not with UE verbs except for the category of uncontrolled process, which Sorace lists as peripheral UE. If we examine the verbs occurring in this data, the distributional characteristics are as follows: First, not all sets of unaccusative verbs are found with the ability of case alternation of the oblique nominal. In particular, only semantically coherent subclasses of UA verbs such as stative verbs, verbs of change of state, uncontrolled process, and passive verbs were able to alternate the case. Unaccusative verbs in the category of change of location (*arrive* and *fall*, etc.) are not able to alternate the case of the

oblique nominal. The verbs in this category are claimed to be core UA verbs across languages, but the corpus data shows no attested examples of verbs in this category. Indeed, if I make up sentences which contain a verb in the category of a change of location such as *tochakhata* 'to arrive' and *ttellecyta* 'to fall,' these sentences are marginally acceptable as in (91a), or become ungrammatical as shown in (91b) [12].

(91) a. Sewulyek-ey/#-i kicha-ka tochakha-yess-ta.
Seoul station-LOC/-#NOM train-NOM arrive-PST-DECL
'A train arrived at Seoul station.'

b. changko-ey/*-ka kaul iph-i ttelecy-ess-ta.
storage-LOC/-*NOM fall leaf-NOM fall-PST-DECL
'A fall leaf fell on to the storage.'

The case alternation is possible with only three categories of verbs such as verbs of change of state, such as *nata* 'to come into being' and *kamsohata* 'to decrease' as in (92), stative verbs such as *issta* 'to exist' and *epsta* 'to not exist' as in (93), and verbs of uncontrolled process such as *selita* 'to fog' and *chwihata* 'to be intoxicated' as in (94).

(92) Verbs of change of state

a. 외국인/NNG + 들/XSN + 이/**JKS** 난리/NNG + 가/**JKS**

[12] This sentence is marginally acceptable in the situation where the first locative NP is focused.

나/**VV** + 았/EP + 다/EF + ./SF </p>

'A fuss came into being to foreigners.'

b. 매점/NNG + 은/JX 40/SN + ./SP + 7/SN + %/SW + **가/JKS**

매출/NNG + **이/JKS** 감소/NNG + 하/**XSV** + 았/EP + 다고/EC

'Sales at a canteen decreased by 4.7%.'

(93) Stative verbs

a. 모든/MM 것/NNB + 이/JKS 생명/NNG + 이/JKS

있/VV 다는/ETM

'Life is in everything.'

b. "/SS + 피해자/NNG + **가/JKS** 상처/NNG + **가/JKS** 없/VA

+으니/EC

'There is no injury to the victim.'

(94) Verbs of uncontrolled process

a. 표면/NNG + **이/JKS** 안개/NNG + **가/JKS** **서리/VV** + ㄴ/ETM

'It fogged at the surface.'

b. 장/NNP + 씨/NNB + **가/JKS** 술/NNG + **이/JKS** **취하/VV** + 아/EC

'Mr. Chang is intoxicated with alcohol.

Second, verbs of uncontrolled process (*shiver*, *cough*, *vomit*, etc.), which are peripheral UE verbs in western European languages, are also possible with the case alternation. Verbs in this category include weather verbs such as *selita* ' to

fog' as in (95a), and verbs denoting involuntary functions/reactions such as *tulta* 'got into' as in (95b) below. Considering the previous claim that verbs in this category are highly variable across languages (Sorace 2000), since the case alternation of oblique nominals is possible with verbs of uncontrolled process as shown in (95), this category seems to belong to UA rather than UE in Korean .

(95) The case alternation between OBL and NOM

a. phyomyen-i /-ey ankay-ka seli-ta.
surface-NOM/-LOC fog-NOM fog up-DECL
'It fogs on the surface.'

b. ai-ka/-ekey cami tul-ta.
child-NOM/-DAT sleep-NOM come-DECL
'A child fell asleep.'

Third, there were no attested examples with categories of peripheral UE verbs such as controlled motional process, and there were no examples with core UE verbs such as controlled non-motional process.

To summarize the observations from the corpus data, not all verbs can alternate the case of an oblique nominal between nominative case and oblique case. Verbs of change of location such as *arrive*, *come*, and *go* were not found with this case alternation. Only sets of verbs in categories such as change of state, stative, and uncontrolled process verbs can alternate the oblique nominal pattern. Although the verbs in the uncontrolled process category are classified as

peripheral UE verbs in the western European languages, they behave like UA verbs in Korean.

If we follow the hierarchy proposed by Sorace (2000), it is expected that the verbs at one end of the hierarchy, which are in the category of change of location above, should consistently exhibit a strong case alternation of oblique nominal, while verbs at the other end of the hierarchy, which are controlled non-motional processes, should consistently not have this case alternation, and verbs in the middle of the hierarchy should show variable behavior with regards to this case alternation. However, Table 5-2 above shows that verbs at one end of the hierarchy, which are core UA verbs, were not attested in the case alternation. Thus, it seems that this diagnostic did not pick out the same verbs of SIH proposed by Sorace from Western European languages, and this diagnostic is not sensitive to the verbal categories of the Split Intransitive Hierarchy.

5.2.2 The Case-marking of Oblique Nominals: Corpus Study 2 with SIH

The total frequencies for corpus study #2 of the case-marking of oblique nominals with each verb categorized by Sorace's hierarchy is provided in Table 5-3.

Table 5-3 Frequencies of CON with SIH: A Corpus Study 2

SIH continuum	Category of verb	Frequencies
Core UA	Change of location	9
Peripheral UA	Change of state	109
	Stative	78
Peripheral UE	Uncontrolled process	5
	Controlled motional process	0
Core UE	Controlled non-motional process	0
Total		201

An alternative view of this corpus-based findings is provided in Figure 5-3.

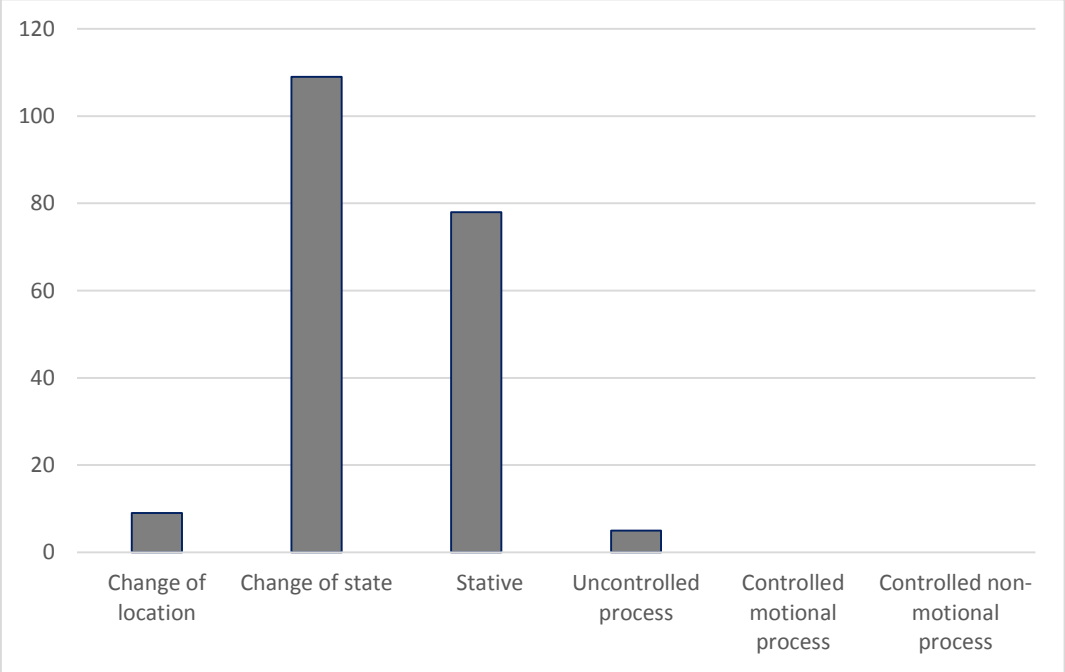

Figure 5-3 Frequencies of CON with SIH: A Corpus Study 2

If we examine the verbs from corpus study #2, the results are slightly different from those of corpus study #1 which examined the case marking of oblique nominals. First, almost all of the categories of unaccusative verbs were found with the CON patterns. In particular, unlike the results of corpus study #1 which examined the case marking of oblique nominals, verbs in the category of change of location such as *ota* ‘ to come’ occurred in this data. However, among verbs in this category, the case alternation is possible with some verbs, while the case alternation is not possible with other verbs. Examples are shown in (96) and (97) respectively.

(96) oppa-eykey/-ka phyenci-ka wa-sst-a.

big brother-DAT/-NOM letter-NOM come-PST-DECL

'A letter came to a big brother.'

(97) cethayk-ey/-*i siin-i wa-yo.

big house-LOC/-*NOM poet -NOM come-DECL

'A poet comes to the big house.'

Therefore, not all the verbs in the change of location category can change the case of the oblique nominal between OBL and NOM.

Second, verbs in the category of change of state are the most frequent type in corpus study #2 of the case-marking of oblique nominals, while verbs in the category of stative are the most frequent type in corpus study #1.

Except for these two differences, the overall results of corpus study #2 are similar to the results of corpus study #1. Corpus study #1 examined the case marking of oblique nominals, and confirmed that this diagnostic did not pick out the same verbs of the SIH proposed by Sorace from Western European languages. That study also confirmed that this diagnostic is not sensitive to the verbal categories of the Split Intransitive Hierarchy.

5.3 Discussion

I considered two proposed Korean unaccusative diagnostics by Yang, and examined them to see if they are sensitive to the SIH hierarchy classes (Sorace 2000). First, I evaluated the case marking of floating quantifiers. Yang (1991:40) proposed that "If a quantifier with numeral classifier can float without a case

marker in an intransitive clause, the clause is unaccusative." According to Yang's syntactic unaccusative diagnostic, an unaccusative verb can occur with or without a nominative case marker on the FQs, while an unergative verb must occur with the nominative case marker on the FQs. Thus, the case marker of the FQs is obligatory with unergatives.

To summarize, the case marking of floating quantifiers as an unaccusative diagnostic occurred with verbs in the following categories: Core UA , peripheral UA, and peripheral UE, but not with Core UE verbs. When the FQs occurred with these categories, they preferred to have no case marking on the FQ. In addition, floating quantifier constructions occurred primarily with certain verbs such as those in the change of state category, and they preferred no case marking. "It seems that this diagnostic does not simplistically pick out the same verb whose equivalents in other Western European languages are defined as unaccusative by the auxiliary selection diagnostic, therefore." (Baker 2013: 6).

Second, I evaluated the case marking of oblique nominals. In study #1, the alternation is possible only with verbs in the following categories: stative verbs, verbs of change of state, and uncontrolled process verbs, but not with change of location verbs. There are no attested examples with verbs in UE category such as controlled motional process or controlled non-motional process. In study #2, the CON pattern is possible with all the categories of unaccusative verbs. In particularl, the change of location verbs such as *ota* ' to come' occurred in this

data. However, among the verbs in this category, the case alternation is possible with some verbs, while the case alternation is not possible with other verbs. In all, not all UA verbs are able to take the case alternation.

To summarize the results of these two Korean unaccusative diagnostics' behaviors with respect to the gradient approach to the Split Intransitive Hierarchy (Sorace 2000), this hierarchy has limited application to the two proposed Korean diagnostics. To conclude, I agree with the result from James' (2013:1) corpus studies of English unaccusative diagnostics that "unaccusativity does not exist as a unified phenomenon either cross-linguistically or within a given language." studies of English unaccusative diagnostics that "unaccusativity does not exist as a unified phenomenon either cross-linguistically or within a given language.".

Chapter 6

Conclusion

This section provides a discussion and conclusion of the empirical research with regard to two Korean unaccusative diagnostics which distinguish unaccusative verbs from unergative verbs: the case marking of floating quantifiers and the case marking of oblique nominals. First, in section 6.1, I briefly present the results of the case marking of Floating Quantifiers (FQ) based on both the corpus-based findings in the first section of chapter 3 and also the experimental results of an online acceptability ratings experiment that was described in the second part of chapter 3. In section 6.2, I provide the results of the corpus-based findings on the case marking of oblique nominals. In Section 6.3 I provide these two diagnostics along with determining the verbal hierarchy in accordance with the Split Intransitive Hierarchy (SIH) suggested by Sorace (2000). Finally, I wdiscuss further research issues and implications of Korean unaccusativity in section 6.4.

6.1 The Case-marking of Floating Quantifier

The case-marking of Floating Quantifiers (CFQ) was examined based on both the corpus data and the acceptability ratings experiment. The case marking of Floating Quantifiers has been claimed to be an unaccusative diagnostic in Korean (Yang 1991, Oshita 1997). Yang claimed that when the quantifiers float, unaccusatives can occur either with or without a nominative case marker on the

quantifier, while the nominative case marking of the quantifier is obligatory for unergatives. I examined this diagnostic through both the corpus data and an acceptability ratings experiment. Yang's unaccusative diagnostic predicts that UA verbs can occur with or without the nominative case marker of FQs, but that UE verbs only occur with the nominative case marker of FQs.

However, a corpus study of the case marking of FQs shows that although the case marking of FQs with unaccusatives is optional, they predominantly prefer caseless FQs. The frequency of the corpus data shows that sentences with caseless FQs predominate with unaccusative verbs (74%). The corpus study showed that although the case marking of FQs is required for unergative verbs, unergative verbs occurred most frequently with FQs that did not have a nominative case marker. The frequency of the corpus data shows that sentences with caseless FQs predominate with unergative verbs (95%). For unergative verbs, the caseless FQ is also a preferred construction in the corpus.

However, the distance between the head nouns and quantifiers of FQs may influence the requirement as an unaccusative diagnostic. With the acceptability ratings experiment which took into account this factor, the overall acceptability of UA verbs was significantly higher than that of UE verbs. The 32 participants generally rated the acceptability of UA verbs higher than UE verbs. For UA verbs, there is no main effect on the condition of both adverb and case. The

differences of all four conditions were not significantly different from one another.

For unergative verbs, long adverbs were rated higher than short adverbs, but this effect is dependent on the condition of case such that it is really pronounced with case-marked FQ. Thus, adverb factor influenced the acceptability ratings of UE verbs.

The empirical results combined with the corpus and acceptability ratings experiment suggest that generally, there is a difference between the two classes of intransitive verbs and that they can be distinguished by the case-marking of oblique nominal diagnostic. However, according to the acceptability ratings experiment, the case-marking of floating quantifier diagnostic seems to be influenced by the adverb factor. When there is a long adverb between the head noun and the quantifier with unergative verbs, the case-marked FQs were rated more acceptable than caseless FQs. Thus, the diagnostic of the case-marking of floating quantifier needs to be complemented with a further constraint on the adverb factor. When there is nothing or a short adverb between the head noun and quantifier, the caseless FQ construction is the preferred construction for both UA and UE verbs in the corpus.

The examined corpus data consisted of FQs which include nothing or a short adverb between the head noun and the quantifier, and thus they do not contain FQs which include long adverbs. So if the diagnostic of the case-marking

of Floating quantifier suggested by Yang assumes that all of the data needs be FQs which have sufficiently long adverbs between the head noun and quantifier, the corpus data examined in this study are not adequate to evaluate this diagnostic. However, the main purpose of using these two different methods is so that both methods can contribute to complementing the understanding of the Unaccusative Hypothesis and Korean unaccusative diagnostics (Arppe and Juhani 2007). In the following, I discuss briefly how each study contributes to the Korean unaccusative diagnostics and to the consideration of future research.

First, there is a distinction between unaccusative verbs and unergative verbs with regard to the case-marking of floating quantifiers in the corpus. Even though the adverb factor needs to be taken into consideration, the UA verbs are more frequent than the UE verbs. In the acceptability ratings experiment, there are different acceptability ratings between the UA and UE verbs. People rated UA verb significantly higher than the UE verbs. Thus, the higher frequency and the higher ratings for UA verbs rather than UE verbs indicate that there may be differences in terms of the usage of floating quantifiers.

Second, with regards to the previous studies, the results show a similar pattern with those of Ko's experiment. There are judgmental differences regarding the case marking of FQs between UA verbs and UE verbs. Generally, unaccusatives were judged more grammatical than unergatives. For UA verbs, both caseless and case-marked FQs were judged grammatical, while for UE verbs,

case-marked FQs were judged more grammatical than caseless FQS. In this experiment, for UA verbs, neither adverb nor case played a role in the acceptability ratings. However, the case-marked long FQs were rated more acceptable than the counterpart of the caseless. For a short adverb, the case-marking did not play a role in the different acceptability ratings. Even though Ko's experiment and my corpus studies do not consider the adverb factor, these acceptability ratings show that the adverb factor may play a role in acceptability ratings for UE verbs. This gives a complementary point for further research in another corpus study. In this dissertation, there is a limitation of synchronization of the corpus studies and acceptability ratings experiment. My corpus studies in this dissertation was intended to find patterns of the case-marking of floating quantifier construction and see the verbs within this pattern; they were not intended to provide a model for experimental sentences for acceptability ratings experiments. If the test sentences in the acceptability ratings experiment were derived from the corpus data, both studies with the same constructions would provide strong evidence for the examined phenomenon.

6.2 The Case-marking of Oblique Nominals

In chapter 4, I investigated the distribution of the case-marking of oblique nominals in the corpus data. In Korean, semantically olique nominals can occur with dative or other oblique cases. Yang claimed that this case marking of oblique nominals is one of the unaccusative diagnostics (1991). These oblique case

marker can alternate between OBL and NOM. However, this case alternation is only allowed with unaccusative verbs, not with unergative verbs.

In corpus study #1, I extracted the sentences in which the case of the oblique nominals is nominative, and then checked them manually for the ability to alternate their case. Conversely, in corpus study #2, I extracted the sentences in which the case of the oblique nominals is oblique, and then checked them manually the possibility of a case alternation into a nominative case.

In study #1, the case alternation is possible only with UA verbs (98%) including passive verbs (2%), but not with UE verbs (0%). Among the different types of oblique nominals, locative nominals are the mostly frequent alternated (45%), followed by dative oblique nominals (39%), and existential oblique nominals (19%).

In study #2, the results were consistent with those of study #1 in that the case alternation is only possible with unaccusative verbs (80%) including passive verbs(4%), but not with UE verbs (0%). Among the three types of oblique nominals, locative oblique nominals are the most frequently alternated, followed by dative oblique nominals, and then existential oblique nominals.

In both studies the verbs occurring most frequently within these constructions were *issta* 'to exist', *upsta* 'to not exist', *nada* 'to come into being.' The overall result confirms Yang's unaccusative diagnostic.

6.3 Sensitivity to the SIH

I considered two proposed Korean unaccusative diagnostics by Yang: the case-marking of floating quantifier and the case-marking of oblique nominals, and examined them along the SIH to see if they are sensitive to the SIH hierarchy classes (Sorace 2000). First, I evaluated the case marking of floating quantifiers. Yang (1991:40) proposed that "If a quantifier with numeral classifier can float without a case marker in an intransitive clause, the clause is unaccusative." According to Yang's syntactic unaccusative diagnostic, an unaccusative verb can occur with or without a nominative case marker on the FQs, while an unergative verb must occur with the nominative case marker on the FQs. Thus, the case marker of the FQs is obligatory with unergatives. The frequencies of this diagnostic along with the SIH categories are that 1)for the core UA verbs, the caseless FQs are preferred construction. The corpus data showed the following four points: 1) They occurred with caseless FQs more often than with case marked FQs. 2) The verbs in the categories of peripheral UA (change of state and stative) appeared most frequently with FQ sentences (85%). Among them, the verb *iss* 'to exist' is the mostly frequently occurring word in the corpus (54%), and occurred mostly without a nominative case marker. Thus, these categories also demonstrate that when the case marking is optional, they prefer not to be marked for case in the same way that core UA verbs prefer not to be marked. 3) For the verbs in the peripheral UE categories such as uncontrolled process and

controlled motional process, the frequency of verbs shows that they mostly appeared without a case marked FQ. Although the verbs in these categories were expected to have a case-marked FQ, the results show that they occurred most frequently without any case marking on the FQ. 4) For the core UE verbs such as the controlled non-motional process category, there were no attested examples in the corpus of either caseless FQs or case-marked FQs. All the verbs in this category are expected to have case marked FQs according to the SIH.

To summarize, the case-marking of floating quantifiers as an unaccusative diagnostic occurred with verbs in the following categories: Core UA , peripheral UA, and peripheral UE, but not with Core UE verbs. When the FQs occurred with these categories, they preferred to have no case marking on the FQ. In addition, the floating quantifier constructions occurred primarily with certain verbs such as those in the change of state category, and they preferred no case marking.

Second, I evaluated the case marking of oblique nominals. In study #1, the alternation is possible only with verbs in the following categories: stative verbs, verbs of change of state, and uncontrolled process verbs, but not with change of location verbs. There are no attested examples with verbs in UE category such as controlled motional process or controlled non-motional process. In study #2, the CON pattern is possible with all the categories of unaccusative verbs. In particularly, the change of location verbs such as *ota* ‘ to come’ occurred in this data. However, among the verbs in this category, the case alternation is possible

with some verbs, while the case alternation is not possible with other verbs. In all, not all UA verbs are able to take the case alternation.

To summarize the results of these two Korean unaccusative diagnostics' behaviors with respect to the gradient approach to the Split Intransitive Hierarchy (Sorace 2000), this hierarchy has limited application to the two proposed Korean diagnostics. To conclude, I agree with the result from James' (2013:1) corpus studies of English unaccusative diagnostics that "unaccusativity does not exist as a unified phenomenon either cross-linguistically or within a given language."

6.4. Further Research and Implications

In this dissertation, I attempted to provide empirical data and "a useful probe into theoretical concern" (Ko 2010:13). I examined two proposed Korean unaccusative diagnostics from an empirical perspective through the corpus-based analysis and the acceptability ratings experiment with the regard to the two proposed Korean unaccusative diagnostics.

Even though two studies did not directly deal the same sentences structures, two methods gives the better understanding about Unaccusative Hypothesis and Korean unaccusative diagnostics. Generally we can see the differences between unaccusative verbs and unergatives in the corpus and in an acceptability rating experiment regarding the case-marking of floating quantifier.

Although the empirical data above provides a useful tool to evaluate the proposed unaccusative diagnostics in Korean, many issues related to the Korea

unaccusative diagnostics and intransitive verb classes discussed above are unanswered and worthy of further investigation.

Appendix A

List of Tags

Categories	Subcategories	Tags
noun	common noun proper noun bound noun	NNG NNP NNB
pronoun		NP
numeral		NR
verb		VV
adjective		VA
auxiliary		VX
"be"	positive negative	VCP VCN
determiner		MM
adverb	general, manner conjunctive	MAG MAJ
interjection		IC
case marker	subject complement genitive object adverbial vocative quotation	JKS JKC JKG JKO JKB JKV JKQ
particle	discourse conjunctive	JX JC
ending	prefinal final connective nominal modificational	EP EF EC ETN ETM
prefix		XP
suffix	noun-derived verb-derived adjective-derived	XSN XSV XSA
base (root)		XR
miscellaneous symbols	foreign alphabet	SL

Appendix B

Recruitment Email in English and in Korean

Recruitment Email

Hello,

I am a student who is studying linguistics at the University of Texas at Arlington. I am conducting a survey questionnaire looking into how Korean speakers judge certain sentences and we are interested in your ratings concerning the acceptability or naturalness of them. This study has been approved by the Institutional Review Board at the University of Texas at Arlington where I am a doctoral student.

This survey has approximately 50 sentences and will take around 20 minutes.

*Requirement:

Native speakers of Korean who can read Korean and are over 18 years old.

*Methods:

If you agree to participate this survey, please email this address lee_jung_ae@hotmail.com. Then I will send ID # and online link that you can conduct this survey. You can take this survey online from anywhere you can access the Internet without any time limit.

*Test sentences:

During the study, you will (i) be asked some demographic questions about yourself (for example, age and level of education) and then (ii) be asked to make judgment on certain Korean sentences on their acceptability or naturalness (for example, After reading each sentence, would you please mark the most acceptable sentences among from 1 (most unacceptable) to 5(most acceptable).)

Before beginning the study you will be asked to read an Informed Consent Document. If you decide to participate in the study after reading this document, the study will begin with the decision task discussed above.

Your participation in this study is voluntary. Please click on the link below if you would like to participate in this study. Otherwise, you may disregard this email.

Thank you.

(*insert link here*)

Best Regards,

JungAe Lee Allman

The Department of Linguistics and TESOL

at The University of Texas at Arlington

Ph. D. in Linguistics

참여 이맬

안녕하세요?

저는 텍사스 알링턴 주립대학에서 언어학을 공부하는 학생입니다. 저는 현재 한국어 동사와 한국어 조사에 대해 연구하고 있습니다. 이번에 이와 관련된 설문지 조사를 하고 있으며 이 설문지는 한국 문장을 읽고 여러분의 의견으로 평가를 하는 것입니다.이 실험은 제가 언어학 박사과정으로 공부하고 있는 텍사스 알링턴 주립대학 임상시험심사위원회 (the Institutional Review Board)에서 승인되었습니다.

문장은 약 50 문장이며 약 20 분 정도 소요됩니다.

*참여 조건 : 한국어가 모국어이고 18 세 이상이어야 합니다.

*실험 방법 : 참여을 원하시는 분은 lee_jung_ae@hotmail.com 로 이매일를 보내어 참여 희망을 알려주시면 실험 참여를 하실 수 있는 온라인 링크와 ID #를 보내드리겠습니다. 이 실험은 구글 온라인으로 이루어지며 인터넷이 있는 곳에서는 어디서든지 할 수 있으며 시간 제한도 없습니다.

*실험문항: 언어학 실험 전 일반 사항에 관한 설문조사가 시작됩니다. (예를 들면 성별 이나 나이). 다음으로 한국어 문장 평가가 시작됩니다 (예를 들면,

다음의 문장이 사용하기에 적절한지 알맞은 정도 (Acceptability: 수용가능성) 에 대하여 1(매우 부적절하다) 에서 5(매우 적절하다) 중에서 하나를 표시해 주세요.).

설문지가 시작되기 전에 피험자 동의서를 읽어주세요. 이 피험자 동의서를 읽으시고 난 후 여전히 이 설문지에 응하시기를 원하시면 다음의 링크를 클릭해 주세요.

이 설문지는 전적으로 자발적이며 언제든지 그만두실 수 있으며 질문사항이 있으시며 아래 주소로 이맬를 보내주세요. 한국어 동사와 조사에 좀 더 나은 언어학 연구가 될 실험에 많은 관심과 참여를 보여주심에 진심으로 감사드립니다.

(링크 삽입)

이정애

lee_jung_ae@hotmail.com

텍사스 알링턴 주립대학

언어학 및 테솔 학부

언어학 박사 과정

Appendix C

Institutional Review Board (IRB) Approval Letter

UNIVERSITY OF TEXAS ARLINGTON | OFFICE OF RESEARCH ADMINISTRATION
REGULATORY SERVICES

Institutional Review Board
Notification of Exemption

April 16, 2015

Jungae Allman
Dr. Laurel Stvan
Linguistics

Protocol Number: 2015-0701

Protocol Title: *Acceptability Judgment Ratings of Korean Sentences*

EXEMPTION DETERMINATION

The UT Arlington Institutional Review Board (IRB) Chair, or designee, has reviewed the above referenced study and found that it qualified for exemption under the federal guidelines for the protection of human subjects as referenced at Title 45CFR Part 46.101(b)(2).

- (2)Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:(i) information obtained is recorded in such a manner that human subjects can be identified, either directly or through identifiers linked to the subject; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

You are therefore authorized to begin the research as of **April 16, 2015**.

Pursuant to Title 45 CFR 46.103(b)(4)(iii), investigators are required to, "promptly report to the IRB ***any*** proposed changes in the research activity, and to ensure that such changes in approved research, during the period for which IRB approval has already been given, are **not initiated without prior IRB review and approval** except when necessary to eliminate apparent immediate hazards to the subject." Please be advised that as the principal investigator, you are required to report local adverse (unanticipated) events to the Office of Research Administration; Regulatory Services within 24 hours of the occurrence or upon acknowledgement of the occurrence. All investigators and key personnel identified in the protocol must have documented Human Subject Protection (HSP) Training on file with this office. Completion certificates are valid for 2 years from completion date.

The UT Arlington Office of Research Administration; Regulatory Services appreciates your continuing commitment to the protection of human subjects in research. Should you have questions, or need to report completion of study procedures, please contact Alyson Stearns at 817-272-9329 or astearns@uta.edu. You may also contact Regulatory Services at 817-272-3723 or regulatoryservices@uta.edu.

REGULATORY SERVICES
SERVICES

The University of Texas at Arlington, Center for Innovation
202 E. Border Street, Ste. 201, Arlington, Texas 76010, Box#19188
(T) 817-272-3723 (F) 817-272-5808 (E) regulatoryservices@uta.edu (W) www.uta.edu/rs

Appendix D

Experimental sentences

Experimental sentences.

Unaccusative verbs

UA1. 떨어지다[13]

UA2. 오다

ASO2. 소포들이 우리 집에 여러 개 왔다.

ASM2. 소포들이 우리 집에 여러 개가 왔다.

ALO2. 소포들이 우리 집에 한꺼번에 여러 개 왔다.

ALM2. 소포들이 우리 집에 한꺼번에 여러 개가 왔다.

UA3. 날아오다

ASO3.조약돌이 갑자기 하나 날아왔다

ASM3. 조약돌이 갑자기 하나가 날아왔다

ALO3. 조약돌이 건너편에서 갑자기 하나 날아왔다

ALM3. 조약돌이 건너편에서 갑자기 하나가 날아왔다

UA4. 나타나다 .

UA5. 생기다

ASO5. 새 둥지가 나무 위에 두 개 생겼다.

ASM5. 새 둥지가 나무 위에 두 개가 생겼다.

ALO5. 새 둥지가 나무 위에 어느 덧 두 개 생겼다.

[13] I excluded sentences using this verb since they contain two quantifiers as UA 1, UA 4, UA5, UA 11 and UE 7 in Appendix D.

ALM5. 새 둥지가 나무 위에 어느 덧 두 개가 생겼다.

UA6. 있다

ASO6. 강아지가 이모 집에 한 마리 있었다.

ASM6. 강아지가 이모 집에 한 마리가 있었다.

ALO6. 강아지가 오랫동안 이모 집에 한 마리 있었다.

ALM6. 강아지가 오랫동안 이모 집에 한 마리가 있었다.

UA7. 터지다

ASO7. 일이 도중에 하나 터졌다.

ASM7. 일이 도중에 하나가 터졌다.

ALO7. 일이 도중에 기어코 하나 터졌다.

ALM7. 일이 도중에 기어코 하나가 터졌다.

UA8. 생각나다

ASO8. 할 일들이 갑작스럽게 두 가지 생각났다.

ASM8. 할 일들이 갑작스럽게 두 가지가 생각났다.

ALO8. 할 일들이 운동장에서 갑작스럽게 두 가지 생각났다.

ALM8. 할 일들이 운동장에서 갑작스럽게 두 가지가 생각났다.

UA9. 쓰러지다

ASO9. 아주머니들이 옆에서 두 분 쓰러지셨다.

ASM9. 아주머니들이 옆에서 두 분이 쓰러지셨다.

ALO9. 아주머니들이 옆에서 힘없이 두 분 쓰러지셨다.

ALM9. 아주머니들이 옆에서 힘없이 두 분이 쓰러지셨다.

UA10. 나오다

ASO10. 새 상품이 백화점에 두 개 나왔다.

ASM10. 새 상품이 백화점에 두 개가 나왔다.

ALO10. 새 상품이 백화점에 드디어 두 개 나왔다.

ALM10. 새 상품이 백화점에 드디어 두 개가 나왔다.

UA11. 사라지다

UA12. 늘다

ASO12. 참가자가 행사장에서 네 명 늘었다.

ASM12. 참가자가 행사장에서 네 명이 늘었다.

ALO12. 참가자가 행사장에서 갑작스레 네 명 늘었다.

ALM12. 참가자가 행사장에서 갑작스레 네 명이 늘었다.

Unergative verbs

UE1. 웃다

ESO1. 학생들이 교실에서 세 명 웃었다.

ESM1. 학생들이 교실에서 세 명이 웃었다.

ELO1. 학생들이 교실에서 즐겁게 세 명 웃었다.

ELM1. 학생들이 교실에서 즐겁게 세 명이 웃었다.

UE2. 뛰다

ESO2. 말이 들판에서 한 마리 뛰었다.

ESM2. 성난 말이 들판에서 한 마리가 뛰었다.

ELO2. 말이 들판에서 펄쩍 펄쩍 한 마리 뛰었다.

ELM2. 말이 들판에서 펄쩍 펄쩍 한 마리가 뛰었다.

UE3. 날다

ESO3. 독수리가 창공에서 두 마리 날았다.

ESM3. 독수리가 창공에서 두 마리가 날았다.

ELO3. 독수리가 창공에서 천천히 두 마리 날았다.

ELM3. 독수리가 창공에서 천천히 두 마리가 날았다.

UE4. 외치다

ELO4. 남자들이 골목길에서 서너 명 외쳤다.

ESM4. 남자들이 골목길에서 서너 명이 외쳤다.

ELO4. 남자들이 골목길에서 큰 소리로 서너 명 외쳤다.

ELM4. 남자들이 골목길에서 큰 소리로 서너 명이 외쳤다.

UE5. 기다

ESO5. 아이들이 동굴 속에서 두 명 기었다.

ESM5. 아이들이 동굴 속에서 두 명이 기었다.

ELO5. 아이들이 동굴 속에서 엉금엉금 두 명 기었다.

ELM5. 아이들이 동굴 속에서 엉금엉금 두 명이 기었다.

UE6. 달리다

ESO6. 아이들이 운동장에서 여러 명 달렸다.

ESM6. 아이들이 운동장에서 여러 명이 달렸다.

ELO6. 아이들이 운동장에서 열을 지어 여러 명 달렸다.

ELM6. 아이들이 운동장에서 열을 지어 여러 명이 달렸다.

UE 7. 모이다

UE8. 공부하다

ESO8. 학생들이 도서관에서 네 명 공부했다.

ESM8. 학생들이도서관에서 네 명이 공부했다.

ELO8. 학생들이 도서관에서 열심히 네 명 공부했다.

ELM8. 학생들이 도서관에서 열심히 네 명이 공부했다.

UE9. 일하다

ESO9. 인부들이 공사장에서 서너 명 일했다.

ESM9. 인부들이 공사장에서 서너 명이 일했다.

ELO9. 인부들이 공사장에서 힘들게 서너 명 일했다.

ELM9. 인부들이 공사장에서 힘들게 서너 명이 일했다.

UE10. 울다

ESO10. 꼬마가 밖에서 한 명 울었다.

ESM10. 꼬마가 밖에서 한 명이 울었다.

ELO10. 꼬마가 밖에서 슬프게 한 명 울었다.

ELM10. 꼬마가 밖에서 슬프게 한 명이 울었다.

UE11. 엎드리다

ESO11. 노인들이 사랑방에 네 명 엎드렸다.

ESM11. 노인들이 사랑방에 네 명이 엎드렸다.

ELO11. 노인들이 사랑방에 납작 네 명 엎드렸다.

ELM11. 노인들이 사랑방에   납작 네 명이 엎드렸다.

UE12. 움직이다

ESO12. 상인들이 길가에서 여러 명 움직였다

ESM12. 상인들이 길가에서 여러 명이 움직였다

ELO12. 상인들이 길가에서 바쁘게 여러 명 움직였다

ELM12. 상인들이 길가에서 바쁘게여러 명이 움직였다

References

Arppe, Antti and Juhani Järvikivi. 2007. Every method counts: combining corpus-based and experimental evidence in the study of synonymy.Corpus Linguistics and Linguistic Theory 3.2. 131-159.

Acartürk, Cengiz. 2005. Gradient Characteristics of the Unaccusative/Unergative Distinction in Turkish: An Experimental Investigation.

Anthony, Laurence. 2014. AntConc (Version 3.4.3) [Computer Software]. Tokyo, Japan: Waseda University. Available from http://www.laurenceanthony.net/

Aoshima, Sachiko, Phillips, Colin and Weinberg, Amy. 2004. Processing filler-gap dependencies in a head-final language. Journal of Memory and Language 51. 23-54.

Baker, James. Diagnostics of unaccusativity in English and the Auxiliary Selection Hierarchy.

Belletti, Adriana. 1988. The Case of Unaccusatives. Linguistic Inquiry 19. pp. 1-34.

Bever, Thomas G. and Sanz, Montserrat. 1997. Empty Categories Access Their Antecedents during Comprehension: Unaccusatives in Spanish. Linguistic Inquiry 28. 69-91.

Burzio, Luigi. 1986. ITALIAN SYNTAX: A GOVERNMENT-BINDING APPROACH. Dordrecht, The Netherlands: D. Reidel Publishing Co.

Collins, Chris, Guitard, Stephanie and Wood, Jim. 2009. Imposters: An online survey of grammaticality judgments.

David M. Perlmutter. 1978. Impersonal Passives and the Unaccusative Hypothesis. Proceedings of the 4th Annual Meeting of the Berkeley Linguistics. 157-90.

Friedmann, Naama, Taranto, Gina, Shapiro, Lewis P. and Swinney, David. 2008. The Leaf Fell (the Leaf): The Online Processing of Unaccusatives. Linguistic Inquiry 39. 355-77.

Fukuda, Shin and Polinsky, Maria. 2014. Licensing of Floating Nominal Modifiers and Unaccusativity in Japanese.

Gahl, Susanne. 1998. Unergative, Unaccusative, (In) transitive and (In) frequent. Papers from the Regional Meetings, Chicago Linguistic Society 34. 185-93.

Gerdts, Donna B., and Young, Cheong. 1989. Non-nominative subjects in Korean. Harvard Studies in Korean Linguistics 3. 235-247.

Gese, Helga, Maienborn, Claudia and Stolterfoht, Britta. 2011. Adjectival Conversion of Unaccusatives in German. Journal of Germanic Linguistics 23. 101-40.

Gries, Stefan. 2005. Syntactic Priming: A Corpus-based Approach. Journal of psycholinguistic research 34. 365-99.

Gries, Stefan and Wulff, Stefanie. 2009. Psycholinguistic and corpus-linguistic evidence for L2 constructions. Annual Review of Cognitive Linguistics 7. 163-86.

Haegeman, Liliane M. V. 1994. Introduction to government and binding theory 1. 701.

Kang, Beom-mo and Kim, Hunggyu. Sejong Korean Corpora in the Making.

Kang, Sun-Young. 1996. Unaccusative Verbs in Korean–with a special reference to the verbs ci-and toy.

Kang, Beom-Mo. 2002. Categories and Meanings of Korean Floating Quantifiers: With Some Reference to Japanese. Journal of East Asian Linguistics 11. 375-98.

Keller, Frank and Sorace, Antonella. 2003. Gradient Auxiliary Selection and Impersonal Passivization in German: An Experimental Investigation. Journal of Linguistics 39. pp. 57-108.

Kim, Eunsun.1989.Unaccusativity in Korean. Stanford, CA: Stanford University MA thesis.

Kim, Jong-Bok and Yang, Jaehyung. 2006. Processing Korean Numeral Classifier Constructions in a Typed Feature Structure Grammar. Text, Speech and Dialogue, eds. Petr Sojka, Ivan Kopecek and Karel Pala, 103-110: Springer Berlin / Heidelberg.

Kim, Young-Kook .1995. Double nominative constructions in Korean.

Kishimoto, Hideki. 1996. Split Intransitivity in Japanese and the Unaccusative Hypothesis. Language 72. pp. 248-286.

Kneževic, Božna and Brdar, Irena. 2010. On the Nature of Adjectival Resultatives -- Corpus--based Evidence. Suvremena Lingvistika 36. 209-28.

Kobuchi-Philip, Mana. 2003. Distributivity and the Japanese floating numeral quantifier. City University of New York: United States -- New York dissertation.

Koring, Loes, Mak, Pim and Reuland, Eric. 2012. The time course of argument reactivation revealed: Using the visual world paradigm. Cognition 123. 361-79.

Koring, Loes, Mak, Pim and Reuland, Eric. 2012. The time course of argument reactivation revealed: Using the visual world paradigm. Cognition 123. 361-79.

Lee, Junkyu and Lee, Chungmin. 2003. Korean resultative constructions. 169-86.

Lee, Eunhee. 2008. Argument structure and event structure: the case of Korean imperfective constructions. Journal of East Asian Linguistics 17. 117-39.

Lee, Jiyeon and Thompson, Cynthia K. 2011. Real-time production of unergative and unaccusative sentences in normal and agrammatic speakers: An eyetracking study. Aphasiology 25. 813-25.

Lee, Mijung. Resultative Constructions in Korean dissertation.

Lee, Mijung. 2004. Resultative constructions in Korean. University of Hawai'i: United States -- Hawaii dissertation.

Levin, Beth and Rappaport Hovav, Malka. (eds.) 1995. Unaccusativity: at the syntax-lexical semantics interface. MIT Press,

Levin, Beth and Hovav, Malka Rappaport. 1995. Unaccusativity: at the syntax-lexical semantics interface. MIT Press: Cambridge, Mass.

Mazuka, Reiko. 1991. Processing of Empty Categories in Japanese. Journal of psycholinguistic research 20. 215-32.

Miyamoto, Edson T. 2002. Case Markers as Clause Boundary Inducers in Japanese. Journal of psycholinguistic research 31. 307-47.

Moed, Danielle T., Kuperman, Victor and Kučerová, Ivona. 2013. A psycholinguistic analysis of NP-movement in English.

Oshita, H. 2000. What is happened may not be what appears to be happening: a corpus study of 'passive' unaccusatives in L2 English. Second Language Research 16. 293-324.

Oshita, Hiroyuki. 1997. "The unaccusative trap": L2 acquisition of English intransitive verbs. University of Southern California: United States -- California dissertation.

Oshita, Hiroyuki. 2001. The Unaccusative Trap in Second Language Acquisition. Studies in Second Language Acquisition 23. 279-304.

Osterhout, Lee and Swinney, David A. 1993. On the temporal course of gap-filling during comprehension of verbal passives. Journal of Psycholinguistic Research 22. 273-86.

Poirier, Josée, Walenski, Matthew and Shapiro, Lewis P. 2012. The role of parallelism in the real-time processing of anaphora. Language & Cognitive Processes 27. 868-86.

Poirier, Josée, Wolfinger, Katie, Spellman, Lisa and Shapiro, Lewis P. 2010. The Real-Time Processing of Sluiced Sentences. Journal of psycholinguistic research 39. 411-27.

Roland, Douglas, Dick, Frederic and Elman, Jeffrey L. 2007. Frequency of basic English grammatical structures: A corpus analysis. Journal of Memory and Language 57. 348-79.

Sorace, Antonella and Keller. 11. Gradience in Linguistic Data. Lingua 115. 1497; 1497.

Sorace, Antonella. 2000. Gradients in Auxiliary Selection with Intransitive Verbs. Language 76. pp. 859-890.

Tarlinskaja, Marina and Myong-Ho, Kim. 1989. Metrical Typology of English and Korean Verse: Iambic Hexameter and Septameter/Sijo and Kasa. Language and Style 22. 307-28.

Witzel, Jeffrey, Witzel, Naoko and Nicol, Janet. 2012. Deeper than shallow: Evidence for structure-based parsing biases in second-language sentence processing. Applied Psycholinguistics 33. 419.

Yamashita, Hiroko. 1995. Verb Argument Information Used in a Prodrop Language: An Experimental Study in Japanese. Journal of psycholinguistic research 24. 333.

Yang, Byong-seon. 1991. Diagnostics for unaccusativity in Korean. The graduate School of the State University of New York at Buffalo dissertation.

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