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The Semantics and Pragmatics of Echo Questions in Korean

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy

in

Linguistics

by

Seoyeon Jang

Committee in charge:

Professor Ivano Caponigro, Chair
Professor David A. Barner
Professor Emily Clem
Professor Grant Goodall

2024

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University of California San Diego

2024

DEDICATION

In loving memory of

Lee Kyeongjin

(1995–2022)

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LIST OF ABBREVIATIONS

ACC	Accusative
AH	Addressee Honorific
BPQ	Biased Polar Question
CL	Classifier
COMP	Complementizer
CONN	Connective
COP	Copula
DECL	Declarative
EQ	Echo Question
GEN	Genitive
HON	Honorific
HOR	Hortative
IMP	Imperative
IND	Indicative
LAT	Lative
LOC	Locative
MD	Modifier
NEG	Negation
NOM	Nominative
POL	Polite
POSS	Possessive
PRES	Present Tense
PST	Past Tense
Q	Interrogative
QT	Quotative
SAQ	Self-Addressed Question
SH	Speaker Honorific
TEMP	Temporal
TOP	Topic
VOC	Vocative

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While there are lots that I am thankful for, I want to dedicate this space to highlight the importance of community support for those going through a challenging time. Throughout

my Ph.D. program, I've lost some people, close or far, who could not bear this world anymore. It's well known that people in academia experience mental health issues such as depression and anxiety much more than those outside. Unfortunately, academia still seems far off from fixing it, while it is alleged to be full of the brightest minds of the time. Even for those who are privileged enough to have fairly good insurance offered through universities, mental health support is not always accessible financially or physically. Seeking help becomes especially hard in environments where mental health challenges are easily dismissed. I hope we put humanity above numbers. I hope we demand a better welfare system that is accessible to everybody. I hope we care about others' well-being as much as we care about our own. I hope we take responsibility for paying attention to every corner of the world where light hardly reaches. I hope we check in with each other more often. I hope we feel free to say we're not doing okay. I hope we are generous to those who dare to say they're not doing okay. I hope we strive together to make this already dark world at least bearable for everyone, even those in the worst time of their lives. I want to lose anyone no more, and I hope you feel the same.

VITA

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ABSTRACT OF THE DISSERTATION

The Semantics and Pragmatics of Echo Questions in Korean

by

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Doctor of Philosophy in Linguistics

University of California San Diego, 2024

Professor Ivano Caponigro, Chair

This dissertation is the first-ever systematic investigation of the semantics and pragmatics of Echo Questions (EQs) in Korean. EQs are an understudied type of interrogative clause that conveys a question seeking confirmation or repetition of what has been previously said. EQs in Korean provide new insights into the typology and theories of interrogative clauses, as previous analyses of EQs in the most-studied (i.e., Indo-European) languages fail to capture the characterizing properties of EQs in Korean accurately. I propose a novel analysis that treats EQs as semantically identical to and pragmatically distinct from ordinary questions. I show that, while both EQs and ordinary questions denote a set of possible answers, EQs bear the presupposition that there exists at least one possible answer that has already been introduced

in the discourse by uttering a sentence conveying it. I provide five pieces of empirical support from novel descriptive and experimental data from Korean: (i) EQs are overtly distinguished from ordinary questions by *tako*↑, a non-decomposable combination of the clause-final particle (CFP) *tako* and the rising intonation (↑); (ii) the form of EQ CFP must match the speech act of the discourse antecedent; (iii) polar (yes/no) and wh-EQs share the same morpho-syntax except for the presence/absence of a wh-word; (iv) EQs do not require obligatory prosodic stress on echoed wh-words; and (v) EQs with multiple wh-words allow for the same readings—single-pair, pair-list, and functional—as ordinary questions with multiple-wh words. Based on these new empirical generalizations on Korean, I claim that the EQ CFP *tako*↑ triggers the EQ interpretation by introducing the presupposition about what has been said. I show that the properties of EQs in Korean can be most straightforwardly accounted for by my novel analysis using previously established semantic theories and devices used for the analysis of questions without introducing new semantic terms. Ultimately, this dissertation highlights the importance of cross-linguistic examination by enriching the formal theory of questions through previously unnoticed data.

Chapter 1

Introduction

Speakers employ various practices to obtain new information. One practice is to utter a specialized construction or family of constructions capable of conveying the meaning of question—a request for information (Hintikka 1974). Such constructions are called interrogative clauses. Interrogative clauses and questions have been one of the major phenomena of interest within linguistics. A large number of studies has documented the variation in the morpho-syntactic features characterizing prototypical interrogative clauses across languages. For instance, in many Indo-European languages, interrogative clauses are often formed by flipping the order of the subject and the auxiliary verb from the regular declarative order where the subject occurs first (e.g., English, German, French, etc.), as shown in (1-a) and (1-b). Most languages we know of make use of a special set of morphologically marked expressions known as *question words* or *wh-words* to form a large subclass of interrogative clauses.¹ *Wh-words* occur as arguments or adjuncts of the interrogative clause. Some languages obligatorily front one *wh-word* (e.g., English), some languages all (e.g., Romanian), some others none. The latter languages tend to make use of a morphological device such as an affix that overtly indicates that a clause is interrogative without changing the typical declarative word order (e.g., Korean, Mongolian, Japanese, etc.), as shown in (2-a) and (2-b) such that both declarative and polar interrogative clauses share the same word order but a different marker at the end of the sentence (boldfaced).

¹Adyghe and Abaza are two Northwest Caucasian languages that have been reported to convey what *wh*-interrogative clauses convey, i.e., content questions, without making use of *wh*-words ever (Abaza) or in embedded context (Adyghe) (Caponigro & Polinsky 2011; Arkadiev & Caponigro 2021).

In those languages, a question word stays in-situ as in (2-c), where the question word occurs in the same position as the subject in declarative and polar interrogative clauses. Also, there are languages that distinguish polar yes/no interrogative clauses from declarative clauses only by grammatical tones (e.g., Ghòtùò, Igbo, etc.), as shown in (3-b) where the verb ‘lose’ is marked interrogative by the high tone (boldfaced) in contrast to the same verb in the declarative example in (3-a). In (1)-(3), the a-sentences do not convey a question.

(1) English

- a. The books are missing. *declarative*
- b. Are the books missing? *polar interrogative*
- c. What is missing? *wh-interrogative*

(2) Korean

- a. Mina-uy chayk-i epse-ci-ess-**ta**. *declarative*
 Mina-POSS book-NOM not.be-become-PST-DECL
 ‘Mina’s book(s) went missing.’
- b. Mina-uy chayk-i epse-ci-ess-**ni**? *polar interrogative*
 Mina-POSS book-NOM not.be-become-PST-Q
 ‘Did Mina’s book(s) go missing?’
- c. mwue-ka epse-ci-ess-**ni**? *wh-interrogative*
 what-NOM not.be-become-PST-Q
 ‘What went missing?’

(3) Ghòtùò (Omolará & Taiwo 2021)

- a. Ébè ò aghagha. *declarative*
 book the lose
 ‘The books are missing.’
- b. Ébè ò **ághagha**? *polar interrogative*
 book the lose
 ‘Are the books missing?’

As well as the morpho-syntactic properties of interrogative clauses, the notion of a question and

how it ends up being the meaning of an interrogative clause compositionally has been at the center of the work in formal semantics over the past five decades. Soon after Richard Montague fathered formal semantics in the late 60s and early 70s, questions were investigated as one of the core extensions of the framework Montague set. The seminal work by Hamblin (1973) and Karttunen (1977) establishes the now commonly accepted connection between Montague’s compositional mechanism and the intuition that the notion of a question is directly related to its possible answers.² For example, an interrogative sentence, ‘What is missing?’ denotes a question, which is assumed to be the set of propositions that are denoted by the declarative sentences that can be felicitously uttered as an answer to the interrogative sentence. Thus, ‘what is missing?’ may denote the set of propositions as in (4), in which each member of the set is a proposition denoted by a possible answer. The double brackets \llbracket refers to the denotation of the linguistic object in between the brackets.

(4) The denotation of ‘what is missing?’

\llbracket what is missing? \rrbracket = {the books are missing, the keys are missing, the forks are missing, the pants are missing, the earrings are missing, ...}

On the other hand, there are non-canonical questions that deviate from the standard information-seeking questions in at least one of the following: (i) in their morpho-syntax, (ii) in the speech act they perform being not restricted to request new information, and (iii) carrying some bias on what is expected to be the answer (e.g., Dayal 2016; Trotzke & Czypionka 2022)). For instance, the sentences in (5) exemplify some well-known types of non-canonical questions that have been studied: a declarative question in (5-a), a rhetorical question in (5-b), and a negative question in (5-c). The declarative question (a.k.a. rising declarative) in (5-a) is characterized by the absence of the subject-verb inversion and the rising intonation at the end (Gunlogson 2002). Declarative questions ask for a piece of information in a biased way that signals that the

²See Dayal (2016) for a systematic and detailed survey on questions from the point of view of formal semantics and related work at the syntax/semantics interface.

speaker is not completely committing to what is being conveyed by the declarative sentence (that it is raining in (5-a)). The sentences in (5-b) exemplify a declarative sentence followed by a rhetorical question. The rhetorical question resembles the morpho-syntax of a standard interrogative sentence such that the *wh*-word ‘who’ is fronted and the verbs ‘could blame’ follows. The speaker of the sentences in (5-b) is biased towards a certain answer: no one can blame the addressee. Similarly, the negative question in (5-c), whose morpho-syntax resembles standard polar interrogative sentences, also conveys a bias such that the speaker believes that there is some vegetarian restaurant around here (Ladd 1981). To summarize, non-canonical questions may resemble the standard interrogative constructions as in (5-b) and (5-c), perform a speech act not limited to questioning as in (5-b), and/or be biased as in (5-a) through (5-c).

(5) Non-canonical questions

- | | | |
|----|---|-----------------------------|
| a. | It is raining? | <i>declarative question</i> |
| b. | No one saw it coming, after all. Who could blame you? | <i>rhetorical question</i> |
| c. | Isn’t there some vegetarian restaurant around here? | <i>negative question</i> |

Non-canonical questions have been analyzed by elaborating and expanding the traditional formal semantic theories of standard declarative and interrogative sentences, as well as formal pragmatic theories of discourse modeling. However, the investigation of non-canonical questions in languages other than the most-studied Indo-European language is still limited. That is, the semantics and pragmatics of non-canonical questions in languages other than Indo-European are still much less known. Thus, this dissertation seeks to fill the gap between our understanding of non-canonical questions in Indo-European languages and those in other less-studied languages. Among many types of non-canonical questions, this dissertation investigates echo questions.

1.1 Background on Echo Questions

Echo Questions (EQs) are a type of interrogative clauses that convey a question whose speaker seeks confirmation or repetition of what has been previously said by fully or partially repeating the previously uttered sentence (cf., Banfield 1982; Sobin 1990; Comorovski 1996; Dayal 1996; Dayal 2016; Noh 1995; Noh 1998; Sudo 2010; Beck & Reis 2018; Biezma, Braun & James 2021; a.o.). The speaker of an EQ seeks confirmation because she has failed to fully understand or been surprised by what has been said. The scenarios in (6) and (7) describe a situation where an EQ is felicitous. In (6), an EQ is uttered because the speaker has failed to understand what has been said earlier, while in (7), the same EQ is uttered because the speaker has been surprised by what has been said earlier. The a-sentences in both scenarios are an interrogative clause that conveys a standard information-seeking question. Then, in the b-sentences, Speaker B answers the preceding question by providing the name of the place she is going by uttering a declarative sentence. In (6), the name of the place is Yeongwol, and in (7), it is Baldur's Gate. In the c-sentences, Speaker A utters an EQ 'you are going WHERE?' that conveys a question seeking confirmation of Speaker B's previous utterance (capital letters indicate prosodic stress). Thus, in the d-sentences, Speaker B (fully or partially) repeats what she has said earlier.

- (6) SCENARIO: Yeongwol is a small rural county in Gangwon Province, Korea. Speaker A does not have enough knowledge of Korean geography to understand Speaker B's answer.
- a. Speaker A: Where are you going over the spring break?
 - b. Speaker B: I am going to Yeongwol.
 - c. Speaker A: You are going WHERE?
 - d. Speaker B: (I am going to) Yeongwol.

- (7) SCENARIO: Baldur's Gate is a fictional place. As far as Speaker A knows, it is impossible for a human being to travel to a fictional place.
- a. Speaker A: Where are you going over the spring break?
 - b. Speaker B: I am going to Baldur's Gate.
 - c. Speaker A: You are going WHERE?
 - d. Speaker B: (I am going to) Baldur's Gate.

EQs have been claimed to share several properties cross-linguistically (cf. English: Dayal 1996, Artstein 2002, Sudo 2010, Ji 2022; German: Reis 2017, Beck & Reis 2018; Greek: Roussou, Vlachos & Papazachariou 2014; Romanian: Comorovski 1996; Spanish: Chernova 2017), some of which are listed in (8).

- (8) Previously claimed shared properties of EQs across languages
- a. EQs require a previously uttered sentence that functions as an antecedent.
 - b. The content and form of EQs are similar to those of the antecedent.
 - c. Echoed elements in EQs bear obligatory prosodic stress, such as higher pitch and volume.
 - d. EQs are licensed by entailment relationship between the base utterance that an EQ is depending upon and the EQ antecedent.
 - e. EQs are relatively free from syntactic constraints that apply to standard interrogative clauses (e.g., *wh*-movement, island constraints, etc.).

All of the above properties have been demonstrated by the examples in (6) and (7). First, in both examples, the b-sentences function as a discourse antecedent of the EQ. EQs always require such a discourse antecedent as they are questions about what has been said, and they cannot be uttered out of the blue to start a new conversation. Next, the EQ 'you are going WHERE?' resembles the antecedent 'I am going to Yeongwol/Baldur's Gate' in the content and form. Except for the

pronoun and the name of the location, both the EQ and its antecedent share the same words and their order: the first person pronoun is changed into the second person pronoun, and the name of the location is replaced with the *wh*-word ‘WHERE.’³ Third, the “echoed” *wh*-word/constituent in EQs receives obligatory prosodic stress, such as higher pitch, as indicated in the examples with capital letters. Fourth, EQs have been claimed to be licensed by entailment defined over information, such that the base utterance of the EQ is entailed by the propositional content, presupposition, or implicature of the antecedent clause (Poschmann 2018; Ji 2022). For instance, the base utterance of the EQ ‘You (Speaker B) are going to WHERE?’ is ‘You (Speaker B) are going somewhere,’ and the EQ is licensed because the propositional content of the antecedent ‘Speaker B is going to Yeongwol/Baldur’s Gate’ entails the base utterance. Lastly, EQs do not obey the grammatical rules that apply to canonical interrogative clauses. A *wh*-word in EQs does not go through overt *wh*-movement and is relatively free from some constraints such as island effects. As shown in the EQ in (6) and (7), the echoed *wh*-word is not fronted (in-situ) in contrast to the ordinary *wh*-word that is required to be fronted in *wh*-interrogative clauses like the a-sentences in (6) and (7). Furthermore, EQs are insensitive to some syntactic constraints like the superiority constraint, as exemplified by the sentence in (9-b) accepted only as an EQ but not as a standard interrogative sentence as in (9-c).

(9) Sobin 1990, p. 160

- | | | |
|----|------------------------------------|-------------------|
| a. | What does Mary think Mozart baked? | <i>antecedent</i> |
| b. | What does Mary think WHO baked? | <i>EQ</i> |
| c. | *What does Mary think who baked? | |

EQs have been outside the spotlight of semantic analyses of questions for a long while, although

³Sobin (1990) has claimed that this syntactic resemblance between an EQ and its antecedent is due to COMP-freezing, which requires the CP structure of the antecedent (SpecCP, C, and C') to be “frozen” to be copied by the EQ. On the other hand, COMP-freezing fails to account for felicitous antecedent-EQ pairs where some elements inside the CP are not frozen, e.g., ‘Which books about linguistics sell like mad?’-‘which books about WHAT sell like mad?’ (Ji 2022).

their existence has been acknowledged in the classic literature. For instance, in Karttunen (1977), EQs are briefly mentioned as an exception that accepts an “anomalous” sentence in which an object *wh*-word is not fronted (p. 12). Systematic formal semantic and pragmatic analyses of EQs have emerged only recently (cf., Artstein 2002; Cohen 2007; Sudo 2010; Beck & Reis 2018; Biezma, Braun & James 2021; Ji 2022; a.o.), and the majority of existing studies on EQs has understood EQs as a completely different construction from canonical interrogative clauses due to the abovementioned properties of EQs. Nevertheless, existing studies have heavily relied upon the most-studied Indo-European languages like English and German. Therefore, it is an open issue whether the previous generalization accurately represents cross-linguistic variation in EQs in a language outside of Indo-European: Korean.

Among the properties listed in (8), at least two are not attested in Korean: (8-c) and (8-e). That is, EQs in Korean do not require obligatory stress on echoed *wh*-words, and they do not show any syntactic “anomalies” with respect to the “normal” behaviors of interrogative clauses as the language is *wh*-in-situ. Furthermore, unlike previously studied languages, Korean has a special morpho-syntactic device in every clause that clearly distinguishes the type of the sentence, as shown in the sentences in (2). EQs in Korean are obligatorily marked by a sentence-final marker *tako*↑ that is unique to EQs and different from the sentence-final markers in declarative and interrogative clauses in (2). Except for the sentence-final marker, all types of sentences share the same word order, and a *wh*-phrase remains in-situ. Therefore, the sentence-final marker is the most prominent and reliable indicator of what kind of meaning is conveyed by a sentence. Such a clear and overt distinction can reveal the nature of EQs more transparently because it allows close investigation of the precise trigger and the content of the distinction between EQs and other types of sentences. Thus, as the first thorough investigation of Korean EQs, this study makes an important contribution to broadening our understanding of the semantics and pragmatics of questions let alone EQs, which are still largely unknown. Furthermore, it promotes linguistic diversity by enriching formal theories and introducing new language data to the field. Ultimately, it contributes to broadening the typology of EQs across languages and sheds new

light on theoretical approaches to the semantics and pragmatics of EQs.

1.2 Contents of the dissertation

This dissertation aims to address the following main issues. What are the differences between the forms, meanings, and functions of EQs and canonical interrogative clauses? Do the differences result from semantics or pragmatics? What is the precise mechanism that can account for the differences? I aim to answer those questions by proposing a novel compositional semantic and pragmatic analysis of EQs based on data from Korean, a language that has not been at the center of the investigation of formal semantics so far.

This dissertation is composed of six chapters. Following the introduction, Chapter 2 describes general properties of Korean grammar that are necessary to understand the EQ constructions in Korean to demonstrate what morpho-syntactic element triggers the meaning difference between ordinary interrogative clauses and EQs. I first discuss simple constructions that consist of a single clause, as well as complex constructions that consist of embedded and matrix clauses. I introduce readers to the Korean clause-marking system and clause-final particles, which is the label I use to refer to the morpho-syntactic device that overtly distinguishes the types of clauses, as the boldfaced suffixes in (2). Once I establish how the clause-final marking system works, I narrow down the focus to interrogative clauses: canonical, non-canonical, and EQs. I explore the properties of canonical interrogative clauses with and without a *wh*-word. The properties of non-canonical interrogative clauses are then presented to show that some of them share the same grammatical form as canonical interrogative clauses while others have a different form. The last section is dedicated to EQs, and I provide a comprehensive exploration of the morpho-syntactic, intonational, semantic, and pragmatic properties that characterize them.

Chapter 3 proposes a novel semantic and pragmatic analysis of two basic forms of Korean EQs: single-*wh* and polar (yes/no) EQs. I first propose and defend two main assumptions: ordinary interrogative clauses and EQs share the same morpho-syntax up to the sentence-final

marker, and the sentence-final marker in EQs together with a rising sentence-final intonation (*tako*↑) is responsible for the EQ interpretation. I propose that EQs are semantically identical to ordinary interrogative clauses, while they differ pragmatically by triggering a characterizing presupposition: one of their possible answers must have been uttered in the discourse before EQs are uttered. I argue that *tako*↑, the sentence-final marker for EQs, is the presupposition trigger. The analyses in this chapter demonstrate that the aforementioned classic semantic theories of question are sufficient to account for EQs in Korean, and there is no need to complicate the picture by introducing a new operation and rule.

Chapter 4 delves into a more complicated type of EQs: EQs with multiple *wh*-words (multiple-*wh* EQs). I show that the assumptions made in Chapter 3 can be extended to multiple-*wh* EQs by providing the analysis of multiple-*wh* EQs with a single-pair reading, e.g., ‘WHO is going WHERE?’ whose previous utterance is ‘Mina is going to Yeongwol.’ Then, I report findings from the first-ever acceptability judgment experiments on multiple-*wh* EQs and their three possible readings. The findings show that single-pair is not the only available reading of multiple-*wh* EQs, contra previous generalization on EQs in other languages, and Korean EQs can also receive so-called pair-list and functional readings. The empirical evidence further supports my claim in Chapter 3 that EQs and ordinary interrogative clauses are semantically identical by proving that they allow for the same types of readings/answers, at least in Korean. I sketch how my analysis can account for the meaning of multiple-*wh* EQs when they receive a pair-list reading or a functional reading.

Chapter 5 discusses existing analyses of EQs to argue that none of them can adequately account for EQs in Korean. Thus, a new approach is needed to precisely account for them. First, I discuss why the sentence-final particle for EQs *tako*↑ needs to be assumed as a non-compositional whole to account for a sound semantic and pragmatic analysis of EQs in Korean. Then, I argue against previous studies that have focused only on EQs in Korean by showing that their claim that EQs are a sub-type of embedded interrogative constructions does not match the meaning of EQs. Additionally, I provide an overview of previous formal analyses of the semantics of EQs in

languages other than Korean (mainly Indo-European languages) to demonstrate that all of them are at odds with at least one characterizing properties of EQs in Korean described in Chapter 2.

Lastly, Chapter 6 summarizes my proposal and the insights it provides for the understanding of the semantics of questions, which in turn highlights the importance of cross-linguistic analysis. Then, I briefly sketch how my analysis can be further expanded to EQs whose antecedent in the discourse is a sentence other than a declarative (i.e., interrogative, imperative, and hortative). In addition, I lay out several open issues that deserve further investigation.

Chapter 2

Clause Structure and Echo Questions in Korean

This chapter first introduces the main features of Korean morpho-syntax (§2.1) and canonical interrogative clauses (§2.2) that are relevant to characterize EQs. Then I discuss the morpho-syntactic, prosodic, semantic, and pragmatic properties that characterize Korean EQs (§2.3). Lastly, I briefly touch on non-canonical interrogative clauses other than EQs (§2.4) to show that EQs are different from other kinds of non-canonical interrogative clauses and, as such, cannot be subsumed into any of those.

2.1 Clause structure and clause-final particles

Korean is an agglutinative, strictly verb-final SOV language that requires a *clause-final particle*¹ (CFP) as the right-most suffix on the verb complex in every clause. The complex can consist of a single verb or multiple verbs. In the cases where the verb complex consists of two or more verbs, the CFP attaches to the right-most one (not necessarily, but often a functional/auxiliary verb). One or more inflectional suffixes occur in between the verb stem and the CFP, performing a variety of morpho-syntactic and semantic functions such as tense/mood

¹Traditionally, there have been multiple labels to refer to the morphological objects that occur at the end of a clause/sentence, carrying several syntactic and semantic functions. To name some: *final endings*, *sentence-final particles*, *utterance-final particles*, *sentence-ending suffixes*, *clause-final suffixes*, *clause-type markers*. In this paper, I use the term *clause-final particles* to accommodate the following properties: (i) this object can occur in embedded and matrix clauses, which in turn construct sentences and utterances; (ii) its function is not limited to clause typing.

marking, honorification, and clause typing. Pre-verbal constituents are often Case-marked² and can be scrambled quite freely, but the verb(s) can only occur in the clause-final position. For example, (1-a) and (1-b) illustrate a well-formed simple declarative clause with its CFP in a circle, with the verbal complex that consists of a single verb ‘buy’ or multiple verbs ‘do want to buy,’ respectively. (1-c) and (1-d) illustrate ill-formed clauses because the verb is not in the clause-final position.³

- (1) a. Mina-ka sakwa-lul sa-n-*(ta). *declarative*
 Mina-NOM apple-ACC buy-IND-DECL
 ‘Mina buys the⁴ apples.’
- b. Mina-ka sakwa-lul sa-ko siph-e ha-n-*(ta). *declarative*
 Mina-NOM apple-ACC buy-CONN want-CONN do-IND-DECL
 ‘Mina does want to buy the apples.’
- c. *Mina-ka sa-n-ta sakwa-lul.
 Mina-NOM buy-IND-DECL apple-ACC
 Intended: ‘Mina buys the apples.’
- d. *sa-n-ta Mina-ka sakwa-lul .
 buy-IND-DECL Mina-NOM apple-ACC
 Intended: ‘Mina buys the apples.’

There are two main groups of CFPs: the ones that occur in the sentence-final position and those that still occur clause-finally but in between two clauses in a multi-clausal sentence. Sentence-final CFPs can be further subcategorized into four kinds based on clause types: declarative, as shown in (1-a); interrogative, as shown in (2-a); imperative, as shown in (2-b); and hortative, as

²Case markers are allowed to be elided especially in colloquial discourses when the grammatical case of a constituent is clear in the context.

³Scrambled sentences like (1-c) and (1-d) may be accepted under limited circumstances if appropriate prosody is involved, such as a pause between the verb and the following constituents, which in turn causes contrastive focus on the following constituents (Song 2005). Nevertheless, in general, the verb needs to come clause-final to form a canonical, well-formed clause.

⁴Korean bare common nouns are inherently ambiguous in (in)definiteness and plurality, e.g., *sakwa* ‘the apple(s)/an apple/apples,’ and marking is not obligatory. In the examples in this dissertation, bare common nouns are translated into a definite singular noun unless an indefinite (plural) form better suits the English translation of the whole sentence in terms of grammar and context. See Kang (2021) for an overview of definiteness marking in Korean.

shown in (2-c).

- | | | |
|-----|---|----------------------|
| (2) | <p>a. Mina-ka sakwa-lul sa-[*](ni) ?
 Mina-NOM apple-ACC buy-Q
 ‘Does Mina buy the apples?’</p> | <i>interrogative</i> |
| | <p>b. Mina-ya, sakwa-lul sa-[*](la) .
 Mina-VOC apple-ACC buy-IMP
 ‘Mina, buy the apples.’</p> | <i>imperative</i> |
| | <p>c. Mina-ya, sakwa-lul sa-[*](ca) .
 Mina-VOC apple-ACC buy-HOR
 ‘Mina, let’s buy the apples.’</p> | <i>hortative</i> |

All CFPs in (1) and (2), *ta*, *ni*, *la*, and *ca* convey multiple pieces of information about the sentence itself and the context. First of all, they determine the clause type. The CFP *ta* in (1-a) indicates that the whole (1-a) is a declarative clause; the CFP *ni* in (2-a) indicates that the whole (2-a) is an interrogative clause; the CFP *la* in (2-b) indicates that the whole (2-b) is an imperative clause; and the CFP *ca* in (2-c) indicates that the whole (2-c) is a hortative clause. Moreover, all those four CFPs express that the discourse setting is not formal and that the speech-level is plain, i.e., the speaker has a social rank (e.g., age, seniority, etc.) higher than or the same as the addressee’s social rank. If a graduate student uttered any of the above four sentences to their academic advisor, it would be pragmatically awkward because they would be violating social norms, but not ungrammatical nor uninterpretable. Thus, sentence-final CFPs vary according to formality and speech level, as shown in Table 2.1 (Song 2005; H.-m. Sohn 2020).⁵ The CFPs in Table 2.1 only appear sentence-finally.

⁵For the sake of simplicity, Korean examples henceforth will involve either plain or intimate level CFPs, given that the plain level CFPs are the most basic and neutral ones and the intimate level CFPs are the most frequently used ones in colloquial Korean (S. Han 2020).

Table 2.1. Canonical sentence-final CFPs in Korean
(Columns: clause types; rows: speech levels)

	Declarative	Interrogative	Imperative	Hortative
Plain	- <i>ta</i>	- <i>ni/nya</i>	- <i>la</i>	- <i>ca</i>
Intimate	- <i>a/-e</i>	- <i>a/e/ay</i>	- <i>a/-e</i>	- <i>a/-e</i>
Familiar	- <i>ney</i>	- <i>na/-nun-ka</i>	- <i>key</i>	- <i>sey</i>
Blunt/semi-formal	- <i>(s)o/-(s)wu</i>	- <i>(s)o/(s)wu</i>	- <i>(u)o/-wu</i>	- <i>(u)p-si-ta</i>
Polite	- <i>yo</i>	- <i>yo</i>	- <i>yo</i>	- <i>yo</i>
Deferential/formal	- <i>(su)p-ni-ta</i>	- <i>(su)p-ni-kka</i>	- <i>sip-si-o</i>	- <i>sip-si-ta</i>

Inter-clausal CFPs, instead, convey information about the relation between two adjacent clauses, such as causality, temporality, coordination, and so on. A multi-clausal declarative sentence is presented in (3) as an example. Inter-clausal CFPs are underlined while sentence-final CFPs are circled, and all inter-clausal CFPs are glossed as a connective (CONN) because their shared syntactic function is to connect two adjacent clauses. The clause ending with the CFP *se* sets up a causal relation where it provides a cause for what is conveyed in the following clause (Yoo 2021), while the clause ending with the CFP *nuntey* provides background information relevant to the following clause (Y.-Y. Park 1999).

- (3) Mina-ka [[ttek-ul mek-ess-nuntey] paythal-i na-se]
 Mina-NOM [[rice cake-ACC eat-PST-CONN] stomachache-NOM happen-CONN]
 pyengwen-ey ka-ss-(ta).
 hospital-to go-PST-(DECL)
 ‘Mina went to the hospital because she got a stomachache after eating the rice cake.’

Some inter-clausal CFPs seem to be attested in the sentence-final position, as in (4-a). The sentence-final CFP *nuntey* in (4-a) and the inter-clausal CFP *nuntey* in (3) are identical morpho-phonologically, but each of them exhibit different discourse-pragmatic effects. While *nuntey* in (3) only conveys the fact that Mina ate a rice cake as a piece of background information

for what follows, *nuntey* in (4-a) performs a different function than a connective; it adds extra discourse-pragmatic effect to the core meaning of the clause. By uttering (4-a), the speaker can indirectly express that she thinks Mina is in a better situation than herself because Mina was given a rice cake, as well as that she also wants to eat something that is tantamount to rice cake but she does not want to explicitly ask for it. Such effect is absent when the sentence-final declarative CFP *ta* replaces *nuntey* in (4), although the propositional meaning ‘Mina ate the rice cake’ would remain. Also, unlike *nuntey* and similar CFPs, no sentence-final CFPs in Table 2.1 can occur in the inter-clausal position (Suh 2016). For instance, replacing the inter-clausal CFP *se* in (3) with the canonical sentence-final plain CFPs results in an ill-formed sentence like (4-b).

- (4) a. Mina-nun ttek-ul mek-ess-nuntey .
 Mina-TOP rice cake-ACC eat-PST-NUNTEY
 ‘Mina ate the rice cake. [the speaker indirectly demands something to eat.]’
- b. *[...] paythal-i na-{ta/ni/la/ca} pyengwen-ey ka-ss-ta.
 stomachache-NOM happen-DECL/Q/IMP/HOR hospital-to go-PST-DECL

To summarize, Korean is a SOV language that requires a CFP at the right edge of every clause. Since CFPs bear multiple functions including clause typing and indicating formality and speech level of the discourse, choosing the right CFP is crucial for building a grammatically well-formed and pragmatically acceptable sentence.

2.2 Canonical interrogative clauses

By *canonical interrogative clauses* (INTs), I refer to interrogative clauses whose primary purpose is to convey ordinary information-seeking questions without any bias or extra pragmatic restriction. They exhibit the most common morpho-syntactic and phonological patterns and do not bear any extra discourse-pragmatic function other than performing the speech act of questioning.

As briefly illustrated in the previous section, Korean INTs have the same word order as

declarative clauses, regardless of the presence of a *wh*-word. If an INT contains one or more *wh*-words, they occur in-situ, i.e., in the same position as the corresponding non-*wh* constituent. Thus, the characterizing property of Korean canonical INTs is that they always involve one of the canonical sentence-final CFPs that mark interrogative clauses in Table 2.2 (cut from Table 2.1).

Table 2.2. INT CFPs

Speech level	Allomorphs
Plain	<i>-ni/nya</i>
Intimate	<i>-a/e/ay</i>
Familiar	<i>-na/-nun-ka</i>
Blunt/semi-formal	<i>-(s)o/(s)wu</i>
Polite	<i>-yo</i>
Deferential/formal	<i>-(su)p-ni-kka</i>

Another characterizing property is that INTs are prosodically distinct from declarative clauses. According to Jun's (2005) overview of Korean intonational structure, Korean has two prosodic units: the Intonational Phrase (IP) and the Accentual Phrase (AP). The IP consists of several APs, and the IP-final syllable bears a boundary tone that often indicates a pragmatic meaning of the phrase. While declarative clauses bear a level ending or a falling boundary tone (L% or HL%) on the CFP, INTs bear a rising boundary tone (H%) in case of polar INTs and a falling tone (HL%) in case of *wh*-INTs. I will use the symbols \uparrow to indicate the rising boundary tone and \downarrow to indicate the falling boundary tone. First, examples in (5) present clauses without a *wh*-word: a polar INT (5-a) and a declarative clause (5-b). They are distinguished from each other by the CFP and the final intonation. In (5-a), the canonical INT CFP *ni* is accompanied by the intonation \uparrow , while in (5-b), the canonical declarative CFP *ta* is accompanied by the intonation \downarrow .

- (5) a. Mina-ka sakwa-lul sa-ss- $\boxed{\text{ni}\uparrow}$? *polar INT*
 Mina-NOM apple-ACC buy-PST- $\boxed{\text{Q}}$

‘Did Mina buy the apples?’

- b. Mina-ka sakwa-lul sa-ss-(ta↓). *declarative*
Mina-NOM apple-ACC buy-PST-(DECL)
‘Mina bought the apples.’

Next, examples in (6) present clauses with a *wh*-word: a single-*wh* INT (6-a), a polar INT (6-b), and a declarative (6-c). Korean *wh*-words allow both *wh*-interrogative and *wh*-indefinite readings, although Korean has a morphological device, the suffix *-nka*, that turns a *wh*-word into a *wh*-indefinite (e.g., *mwue* ‘what/something’ vs. *mwue-nka* ‘something’). If a bare *wh*-word occurs inside a clause that has a declarative sentence-final CFP such as *ta* as in (6-c), morpho-syntax makes clear that the interrogative reading is absent. However, in the case of INTs that share the same INT CFP, such as (6-a) and (6-b), morpho-syntax is not enough to precisely understand the interpretation the *wh*-word receives. In such cases, prosodic features such as IP boundary tone and post-*wh* tone have been claimed to be responsible for disambiguating the interpretation of the *wh*-word (e.g., H.-Y. Lee 1997; Yun & H.-S. Lee 2022; Yun 2023), and recent findings in Yun (2023) indicate that the primary intonational factor for the indeterminate reading is post-*wh* dephrasing, which is the deletion of the prosodic phrase boundary that follows the *wh*-word. In (6-a), the final intonation is ↓ and the *wh*-word receives the interrogative reading, while in (6-b), similarly to the polar INT (5-b), the final intonation is ↑ and the *wh*-word receives the indefinite reading. Throughout the remainder of this dissertation, *wh*-words in Korean examples will be considered as interpreted interrogatively unless mentioned otherwise.

- (6) a. Mina-ka mwue-lul sa-ss-ni(↓) ? *single-wh INT*
Mina-NOM what-ACC buy-PST-Q
‘What did Mina buy?’
- b. Mina-ka mwue-lul sa-ss-ni(↑) ? *polar INT*
Mina-NOM something-ACC buy-PST-Q
‘Did Mina buy something?’
- c. Mina-ka mwue-lul sa-ss-(ta↓). *declarative*
Mina-NOM something-ACC buy-PST-(DECL)
‘Mina bought something.’

As for multiple-*wh* INTs, Korean does not restrict the number of *wh*- words that can occur in a single INT; *wh*-words can occur as many as needed from at least two, no matter argument or adjunct. Multiple-*wh* INTs are exemplified below: (7-a) with two argument *wh*-words, (7-b) with two argument *wh*-indefinites, and (7-c) with a total of seven argument and adjunct *wh*-words, although (7-c) cannot be translated into a single grammatical sentence in English. Multiple-*wh* INTs with *wh*-interrogatives bear the falling final intonation, while polar INTs with multiple *wh*-indefinites bear the rising final intonation. Multiple-*wh* INTs with three or more *wh*-words like (7-c) can be felicitous under situations where the speaker asks the addressee to summarize a story/incident/etc. and can be answered with a sentence like ‘Mina bought the apples with cash at the farmer’s market she went o with Jihyo on Sunday morning to make the apple pie.’ In all three INTs, the canonical INT CFP *ni* is used.

- (7) a. nwuka mwue-lul sa-ss-ni \downarrow ?
 who.NOM what-ACC buy-PST-Q
 ‘Who bought what?’
- b. nwuka mwue-lul sa-ss-ni \uparrow ?
 someone.NOM something-ACC buy-PST-Q
 ‘Did someone buy something?’
- c. nwuka nwukwu-lang way encey eti-eyse mwue-lul ettehkey sa-ss-ni \downarrow ?
 who.NOM who-with why when where-LOC what-ACC how buy-PST-Q
 ‘Why and how did who buy what with whom at where at when?’ (ungrammatical in English)

Multiple-*wh* INTs in Korean allow for multiple available readings, as previously claimed for other languages (cf. Chierchia 1993; Comorovski 1996; Dayal 1996; Dayal 2016; Hagstrom 1998; a. o.). For instance, the example in (7-a) can be answered with the three types of answers below. The declarative sentence in (8-a) is called a “single-pair answer” to the question conveyed by the INT in (7-a) because it contains two pieces of new information with respect to the INT or, equivalently, replaces the two *wh*-words in the INT with two regular (non-*wh*) nominals: ‘Mina’ and ‘the apples.’ The individual ‘Mina’ refers to and the individual ‘the apples’ refers to together

form the pair of individuals ⟨Mina, apples⟩.⁶ The answer in (8-b) is called a “pair-list answer” to (7-a) because it consists of a list of declarative clauses, each of the same kind as (8-a), i.e., each providing two, or “a pair of,” pieces of new information. All the declarative clauses together, i.e., the full answer, can be seen as providing a list of pairs of pieces of new information: ⟨Mina, apples⟩, ⟨Jihyo, pears⟩, ⟨Taeyang, oranges⟩. The answer in (8-c) is called a “functional answer” to (7-a) because it consists of one declarative sentence in which the two *wh*-words in (7-a) have been replaced with two nominals neither of which is referential, unlike (8-a): one nominal ‘each student’ is quantificational, while the other, ‘their favorite fruits,’ contains a pronominal ‘their’ that is bound by the previous quantificational nominal. The denotation of the object ‘their favorite fruits’ in (8-c) is not one specific plural individual (i.e., it is not like ‘the apples’ in (8-a)), but it denotes different individuals depending on the interpretation of the pronoun ‘their,’ i.e., the answer (8-c) conveys a functional dependency between students and their favorite fruits. (9-a) and (9-b) make it fully explicit by providing the logical translation of the nominal in the object position in (8-c) and the whole sentence (8-c).⁷

- (8) a. Mina-ka sakwa-lul sa-ss-e. *single-pair*
 Mina-NOM apple-ACC buy-PST-DECL
 ‘Mina bought the apples.’
- b. Mina-ka sakwa-lul sa-ss-ko, Jihyo-ka pay-lul sa-ss-ko,
 Mina-NOM apple-ACC buy-PST-CONN Jihyo-NOM pear-ACC buy-PST-CONN

⁶I am assuming the existence of both atomic and plural individuals in the ontology.

⁷Korean also allows for a more ‘radical’ type of answer in which two or more types of answers in (8) are “mixed” within the same sentence as in (i), which has not yet been reported to occur in any language. The sentence in (i) is fully acceptable as an answer to a multiple-*wh* INT like (7-a). For the sake of simplicity, I do not discuss it further.

- (i) SCENARIO: the instructor (Mina), the TA (Rowoon), and students have prepared for a year-end celebration party for everyone in class.
- a. Mina-ka kwaca-ul sa-ss-ko, (Rowoon-ika phwungsen-ul sa-ss-ko,)
 Mina-NOM snack-ACC buy-PST-CONN (Rowoon-NOM balloon-ACC buy-PST-CONN)
 haksayng-tul-un kakca kaki-ka kancang coha.ha-nun umlyoswu-lul sa-ss-ta.
 student-PL-TOP each one’s own-NOM most like.do-IND-MD drink-ACC buy-PST-DECL
 ‘Mina bought the snacks, (Rowoon bought the balloons,) and each student bought their favorite drink.’

Taeyang-ika oleynci-lul sa-ss-e. *pair-list*
 Taeyang-NOM orange-ACC buy-PST-DECL
 ‘Mina bought the apples, Jihyo bought the pears, and Taeyang bought the oranges.’

c. haksayng kakca-ka caki-ka kacang coha.ha-nu-n kwail-ul
 student each-NOM one’s own-NOM most like.do-IND-MD fruit-ACC
 sa-ss-e. *functional*
 buy-PST-DECL
 ‘Each student bought their favorite fruits.’

- (9) a. ‘their favorite fruits’ \rightsquigarrow *x’s-favorite-fruits*
 b. (8-c) \rightsquigarrow $\forall x[\textit{student}(x) \rightarrow \textit{bought}(x, \textit{x’s-favorite-fruits})]$

INTs can also be embedded inside a matrix clause of any type. Each of the examples in (10) has an embedded *wh*-INT ‘what Mina bought’ as the clausal complement of the matrix verb.⁸ The matrix interrogative clauses in (10-b) and (10-d) bear the falling final intonation \downarrow on the INT CFP; thus they are a *wh*-INT seeking for a constituent answer like ‘the apples’; if the intonation is rising \uparrow , they will turn into a polar INT seeking for a yes/no answer. Although the form of the embedded clause may look alike to a well-formed INT, deriving the question meaning from the embedded clause crucially depends on whether an appropriate question-embedding CFP is used instead of canonical sentence-final INT CFPs. Korean has been reported to have several different question-embedding CFPs, such as (*nu*)*nci*, *na*, (*u*)*lkka*, and *nyako* (M.-K. Park 2021). INT clausal complements are required to have one of those question-embedding CFPs, which are sensitive to the type of the matrix verb. For instance, *nyako* is compatible only with verbs of saying and asking like in (10-c) and (10-d) as using *nyako* as the embedded INT CFP in (10-a) and (10-b) causes ungrammaticality except for when the matrix verb is *mal.ha* ‘say.’ However, *nunci*, *na*, and *ulkka* are compatible with verbs of cognition and perception as well as verbs of saying like in (10-a) and (10-b). The precise morpho-syntactic and semantic functions involved in each and every question-embedding CFP have not yet been fully investigated. Since such an

⁸Polar INTs can also be embedded; replacing the *wh*-word in the examples (10) with a noun such as *sakwa* ‘the apples’ maintains the grammaticality of each sentence. The embedded INT will then be translated into ‘whether Mina bought the apples.’

investigation falls well beyond the goals of the present study, I will leave it for future research.

- (10) a. Jihyo-nun [Mina-ka mwue-lul sa-ss-nunci/na/ulkka]]
 Jihyo-TOP [Mina-NOM what-ACC buy-PST-COMP]]
 kwungkum.ha/tul/al/mal.ha/-yss-ta .
 wonder.do/hear/know/say-PST-DECL
 ‘Jihyo wondered/heard/knew/said what Mina bought.’
- b. Jihyo-nun [Mina-ka mwue-lul sa-ss-nunci/na/ulkka]]
 Jihyo-TOP [Mina-NOM what-ACC buy-PST-COMP]]
 kwungkum.ha/tul/al/mal.ha-yss-ni↓ ?
 wonder.do/hear/know/say-PST-Q
 ‘What did Jihyo wonder/hear/know/say that Mina bought?’
- c. Jihyo-nun [Mina-ka mwue-lul sa-ss-nyako]] mal.ha/solici/mwul-ess-ta .
 Jihyo-TOP [Mina-NOM what-ACC buy-PST-COMP]] say/yell/ask-PST-DECL
 ‘Jihyo said/yelled/asked what Mina bought.’
- d. Jihyo-nun [Mina-ka mwue-lul sa-ss-nyako]]
 Jihyo-TOP [Mina-NOM what-ACC buy-PST-COMP]]
 mal.ha/solici/mwul-ess-ni↓ ?
 say/yell/ask-PST-Q
 ‘What did Jihyo say/yell/ask that Mina bought?’

In sum, Korean canonical INTs are characterized by the use of one of the six canonical INT-final CFPs in Table 2.2 above and relevant prosodic pattern that is associated with either polar- or *wh*-INT interpretation. Also, Korean allows INTs to be embedded by accompanying a question-embedding CFP at the end of the embedded INT, and the question-embedding CFPs are sensitive to the matrix verb.

2.3 Echo questions

In this section, I introduce EQs in Korean and their main properties, argue that they are true EQs, and highlight similarities and differences with EQs in the languages in which they have been studied most extensively so far. In doing so, I broaden the typological landscape of EQs by bringing to light features of EQs cross-linguistically that had not been noticed before.

As EQs in other languages, EQs in Korean are felicitous under situations where the

speaker has failed to fully understand or been surprised by what has been said. The scenario in (11) and (12) describe a situation where two Korean speakers are discussing their plans for the spring break, similar to the scenario for EQs in English in (6) and (7) in Section 1.1. In the a-sentences, Speaker A utters an INT that conveys a standard information-seeking question. The INT is marked by the CFP *ni* accompanied with the typical falling intonation for *wh*-INTs. In the b-sentences, Speaker B provides an answer by uttering a declarative sentence that is marked by the canonical declarative CFP *ta* accompanied by the falling intonation. Each of the b-sentences contains information about the place she is going: Ojai in (11-b) and Baldur’s Gate in (12-b). The c-sentences show the same EQ ‘(you are) going to WHERE?’ which conveys a question that seeks confirmation of what has been said previously. Regardless of whether an EQ is uttered out of failure to understand as in (11) or out of surprise as in (12), it is always marked by the CFP *tako* and the rising intonation ↑. Speaker B (fully or partially) repeats what she has said earlier.

(11) SCENARIO: Ojai is a small city in Southern California. Speaker A does not have enough knowledge of California geography to understand Speaker B’s answer.

- a. Speaker A: pom panghak-tongan eti-ey ka-ni↓?
 spring break-during where-to go-Q
 ‘Where are you going over the spring break?’
- b. Speaker B: Ojai-ey ka-n-ta↓.
 Ojai-to go-IND-DECL
 ‘(I am) going to Ojai.’
- c. Speaker A: eti-ey ka-n-(tako↑) ?
 where-to go-IND-(EQ)
 ‘(You are) going WHERE?’
- d. Speaker B: Ojai(-ey ka-n-ta).
 Ojai(-to go-IND-DECL)
 ‘(I am going to) Ojai.’

- (12) SCENARIO: Baldur's Gate is a fictional place. As far as Speaker A knows, it is impossible for a human being to travel to a fictional place.
- a. Speaker A: pom panghak-tongan eti-ey ka-ni↓?
spring break-during where-to go-Q
'Where are you going over the spring break?'
 - b. Speaker B: Baldur's Gate-ey ka-n-ta↓.
Baldur's Gate-to go-IND-DECL
'(I am) going to Baldur's Gate.'
 - c. Speaker A: eti-ey ka-n-(tako↑) ?
where-to go-IND-(EQ)
'(You are) going WHERE?'
 - d. Speaker B: Baldur's Gate(-ey ka-n-ta).
Baldur's Gate(-to go-IND-DECL)
'(I am going to) Baldur's Gate.'

Korean EQs, in general (including the c-sentences in (12) and (11)), share most of the properties that have been assigned to EQs cross-linguistically that I have discussed in Chapter 1 Section 1.1, repeated below in (13) for convenience. Korean EQs do require a previous utterance as the antecedent, share a similar content and form with the antecedent, and are also licensed by entailment. However, Korean EQs do not require obligatory stress on echoed elements, and word order remains identical to the canonical SOV order like any other clauses being Korean, a *wh*-in-situ language. At the same time, Korean EQs exhibit significant differences from the EQs in other languages that have been investigated in the literature so far, as listed in (14). I discuss each in turn.

- (13) Previously claimed shared properties of EQs across languages
- a. EQs require a previously uttered sentence that functions as an antecedent.
 - b. The content and form of EQs tend to be similar to those of the antecedent.
 - c. Echoed elements in EQs bear obligatory prosodic stress, such as higher pitch and volume.

- d. EQs are licensed by entailment relationship between the base utterance that an EQ is depending upon and the EQ antecedent.
- e. EQs are relatively free from syntactic constraints that apply to standard interrogative clauses (e.g., *wh*-movement, island constraints, etc.).

(14) Characterizing properties of Korean EQs

- a. Korean EQs exhibit a combination of certain CFPs and rising final intonation (H% on the final syllable; Jun 2005) that is not observed in any other construction in the language.
- b. The CFP in a Korean EQ depends on the CFP and the speech act in the sentence acting as its discourse antecedent.
- c. Polar- and *wh*-EQs use the same CFP iff their antecedent is of the same clause type.
- d. Echoed *wh*-words are not different from ordinary *wh*-words prosodically and morpho-syntactically.
- e. Korean multiple-*wh* EQs allow for a pair-list reading.
- f. Korean EQs are not required to immediately follow their discourse antecedent.

Property 1: a unique combination of the EQ CFP and final rising intonation (14-a)

Korean distinguishes EQs from other types of clauses by means of overt morpho-syntactic marking through the CFP and the final intonation. The examples in (15) show a declarative clause and a single-*wh* EQ. The declarative clause in (15-a), marked by the declarative CFP *ta* and the final falling intonation ↓, serves as the antecedent of the single-*wh* EQ in (15-b), marked by the CFP *tako* and the final rising intonation ↑.⁹ From the EQ in (15-b), we can infer that the speaker has a position on the societal hierarchy (e.g., age, rank, etc.) that is higher than or the

⁹Sun-Ah Jun (*p.c.*) has speculated that EQs out of surprise would involve the LH% rise on the final syllable, whereas EQs out of auditory failure would involve the H% rise. Further examination is needed to confirm it.

same as the addressee because the politeness marker *yo* is absent in the EQ.¹⁰

- (15) a. Mina-ka sakwa-lul sa-ss-ta↓. *declarative antecedent*
 Mina-NOM apples-ACC buy-PST-DECL
 ‘Mina bought the apples.’
- b. Mina-ka mwue-lul sa-ss-(tako↑) ? *single-wh EQ*
 Mina-NOM what-ACC buy-PST-(EQ)
 ‘Mina bought WHAT?’

When the echoed *wh*-word in an EQ is inside an embedded clause, the EQ CFP *tako*↑ still surfaces in the matrix clause at the right edge of its verbal complex. The embedded clause in an EQ must be marked by the same CFP used in the embedded clause in the antecedent. For instance, the declarative sentence in (16-b) is an answer to the INT in (16-a) where the *wh*-word *mwue* ‘what’ occurs inside the first clause connected to the second clause by the inter-clausal CFP *nuntey*. The EQ in (16-c) seeks confirmation of the preceding declarative sentence (16-b). All three sentences in (16) share the same inter-clausal CFPs, and the only difference between them (except for the presence/absence of the *wh*-word) is the sentence-final CFP on the matrix predicate: *ta* in the declarative, *ni* in the INT, and *tako*↑ in the EQ. That is, in order to create a well-formed EQ, the EQ CFP *tako*↑ must occur in the matrix clause as circled in (16-c), regardless of whether the echoed *wh*-word is inside the embedded clause or not.

- (16) a. [[mwue-lul mek-ess-nuntey] paythal-i na-se] pyengwen-ey
 what-ACC eat-PST-CONN stomachache-NOM happen-CONN hospital-to
 ka-ss-ni↓? *INT*
 go-PST-Q
 ‘What did you eat so you went to the hospital because you got stomachache after eating it?’

¹⁰In order to create a polite form of clauses with a non-canonical CFP such as *tako*, the politeness marker *yo* needs to be attached after the CFP, e.g., *tako* vs. *tako-yo*. If (15-b) is uttered in a polite form with *tako-yo* at the end, the politeness marker *yo* receives the rising final intonation, as *tako-yo*↑. Polite forms are not discussed further for simplicity, and I stay agnostic on the morpho-syntactic identity of the politeness marker *yo* and the morpho-syntactic and semantic derivation of the polite form of EQs.

- b. [[ttek-ul mek-ess-**nuntey**] paythal-i na-se] pyengwen-ey
 rice cake-ACC eat-PST-CONN stomachache-NOM happen-CONN hospital-to
 ka-ss-ta. *declarative*
 go-PST-DECL
 ‘(I) went to the hospital because (I) got stomachache after eating the rice cake.’
- c. [[mwue-lul mek-ess-**nuntey**/*tako↑] paythal-i na-se/*tako↑]
 what-ACC eat-PST-CONN stomachache-NOM happen-CONN
 pyengwen-ey ka-ss-(tako↑) ? *EQ*
 hospital-to go-PST-(EQ)
 ‘(You) went to the hospital because (you) got stomachache after eating WHAT?’

Replacing the CFP *tako* with some other CFP and the rising final intonation with some other contour turns the construction into something other than an EQ. For instance, the sentences in (17) closely resemble the single-*wh* EQ in (16-c), although (17-a) has a different intonation (falling rather than rising) while (17-b) has a different CFP (*ni*, the one occurring in canonical INTs, rather than *tako*). Neither sentence can ever be interpreted as an EQ. (17-a) is interpreted as truth-conditionally equivalent to the declarative sentence ‘Mina bought nothing,’ while (17-b) is interpreted as equivalent to the polar INT ‘did Mina buy something?’.¹¹ In conclusion, it is the combination of a specific CFP (*tako*) and a specific intonational pattern (↑) that uniquely characterizes EQs in Korean, although each element of *tako*↑, the CFP *tako* and ↑, is used in other types of clauses independent of EQs (further discussion in §3.2.).

- (17) a. Mina-ka mwue-lul sa-ss-tako↓
 Mina-NOM what-ACC buy-PST-TAKO
 ‘Mina bought nothing. (*lit.* Mina bought what.)’
- b. Mina-ka mwue-lul sa-ss-(ni)↑
 Mina-NOM something-ACC buy-PST-(Q)
 ‘Did Mina buy something?’

Property 2: the match between the EQ CFP and the speech act in the antecedent (14-b)

The EQ CFP is sensitive to the speech act performed by the antecedent, as described in the

¹¹The *wh*-word is interpreted as an indefinite due to the intonation accompanied by the CFP *ni*. See the discussion regarding the ambiguity of bare *wh*-words in §2.2.

property in (14-b). As discussed in §2.1, Korean sentence-final CFPs take different forms according to formality and register. For instance, there are at least five forms of the canonical declarative CFP other than *ta*, as shown in Table 2.3 (cut from Table 2.1).

Table 2.3. Declarative CFPs

Speech level	Allomorphs
Plain	<i>-ta</i>
Intimate	<i>-a/-e</i>
Familiar	<i>-ney</i>
Blunt/semi-formal	<i>-(s)o/- (s)wu</i>
Polite	<i>-yo</i>
Deferential/formal	<i>-(su)p-ni-ta</i>

The EQ CFP must be in accordance with the speech act of the antecedent clause rather than the morphological form of the antecedent. Regardless of which CFP is used in the antecedent declarative clause in (18-a), the EQ asking about the antecedent declarative clause, whose speech act is an assertion, is always marked by *tako*↑, as exemplified in (18-b). Furthermore, when the antecedent clause performs a different speech act, e.g., a question indicated by the INT CFP as in (19-a), it is infelicitous if the corresponding EQ is marked by the CFP *tako*↑; instead, the EQ needs to be marked by another CFP *nyako*↑, as in (19-b). Likewise, replacing the EQ CFP in (18-b) with *nyako*↑ will trigger infelicity.

- (18) a. Mina-ka sakwa-lul sa-ss- [any CFP in Table 2.3] *declarative*
 Mina-NOM apple-ACC buy-PST- DECL
 ‘Mina bought the apples.’
- b. Mina-ka mwue-lul sa-ss-(tako)↑ ? *EQ*
 Mina-NOM what-ACC buy-PST-(EQ)
 ‘Mina bought WHAT?’

- (19) a. Mina-ka sakwa-lul sa-ss- [any INT CFP] *interrogative*
 Mina-NOM apple-ACC buy-PST- Q
 ‘Did Mina buy the apples?’
- b. Mina-ka mwue-lul sa-ss- (#tako↑/√ nyako↑) ? *EQ*
 Mina-NOM what-ACC buy-PST- (EQ)
 ‘Did Mina buy WHAT?’

That is, Korean speakers need to choose an appropriate EQ CFP that matches to the speech act conveyed by the antecedent clause: *tako*↑ in EQs whose declarative antecedent performs a speech act of asserting, and *nyako*↑ in EQs whose interrogative antecedent performs a speech act of questioning as in (19).¹²

Although this overt EQ marking is not unique to Korean, the richness of variation of EQ markers has not yet been attested in any other languages. For example, Japanese is similar to Korean in that it is a *wh*-in-situ language that requires overt clause marking, and the language marks EQs by the quotative particle *tte* that follows the copy of the antecedent clause (cf. Ueki 1989; Sudo 2010). However, the particle *tte* seems to be used uniformly across clause types, as shown in the examples below: two Japanese EQs, (20-b) and (20-d), where the antecedent of (20-b) is a declarative clause (20-a) whereas the antecedent of (20-d) is an interrogative clause (20-c).

- (20) Japanese EQs (based on Ueki 1989)
- a. kore-ga honto-no sake-desu. *declarative*
 this-NOM real-GEN wine-COP
 ‘This is a real wine.’
- b. nani-ga honto-no sake-desu **tte**↑? *EQ*
 what-NOM real-GEN wine-COP EQ
 ‘WHAT is a real wine?’
- c. Mina-ga ringo-wo kai-mashi-ta ka? *interrogative*
 Mina-NOM apple-ACC buy-COP-PST Q

¹²There are two other EQ CFPs in Korean: *lako*↑ in EQs whose imperative antecedent performs a speech act of commanding, and *cako*↑ in EQs whose hortative antecedent performs a speech act of proposing/suggesting. I will briefly touch on how to account for these two EQ CFPs in Chapter 6.

‘Did Mina buy the apples?’

- d. Mina-ga nani-wo kai-mashi-ta ka **tte**↑? *EQ*
Mina-NOM what-ACC buy-COP-PST Q EQ
‘Did Mina buy WHAT?’

Property 3: one CFP for both polar and *wh*-EQs (14-c)

Korean EQ CFPs do not distinguish polar and *wh*-EQs. Once an EQ makes use of an EQ CFP in accordance with the antecedent clause and appropriate intonation (↑), the distinction between polar and *wh*-EQs relies on whether the EQ contains a *wh*-word and whether the *wh*-word is interpreted interrogatively or not. Examples in (21) show a declarative clause antecedent (21-a) and EQs that follow: a polar EQ without any *wh*-word (21-b), a single-*wh* EQ with a *wh*-interrogative (21-c), and a polar EQ with a *wh*-indefinite (21-d). Since the antecedent is marked declarative by the sentence-final CFP *ta*, EQs are required to be marked by the CFP *tako*. In terms of the distinction between EQs with a *wh*-interrogative versus *wh*-indefinite like (21-c) and (21-d), I speculate that the prosody on the boundary after the *wh*-word will differ based on previous findings mentioned in §2.2.

- (21) a. Mina-ka sakwa-lul sa-ss-ta↓. *declarative*
Mina-NOM apples-ACC buy-PST-DECL
‘Mina bought the apples.’
- b. Mina-ka sakwa-lul sa-ss-(**tako**↑) ? *polar EQ*
Mina-NOM apple-ACC buy-PST-(EQ)
‘Mina bought THE APPLES?’
- c. Mina-ka mwue-lul sa-ss-(**tako**↑) ? *single-wh EQ*
Mina-NOM what-ACC buy-PST-(EQ)
‘Mina bought WHAT?’
- d. Mina-ka mwue-lul sa-ss-(**tako**↑) ? *polar EQ*
Mina-NOM something-ACC buy-PST-(EQ)
‘Mina bought SOMETHING?’

This property pertains to all EQ CFPs, not only *tako*, as the CFP itself does not make any

distinction between polar and *wh*-EQs. That is, regardless of whether a constituent in the antecedent clause is replaced with a *wh*-word or not, an EQ will be marked by one of the EQ CFPs that corresponds to the antecedent clause type. The sentences in (22) exemplify an interrogative clause antecedent that conveys a polar question (22-a), an EQ in which all constituents in the antecedent clause are maintained (22-b), and an EQ in which one of the constituents in the antecedent clause is replaced with a *wh*-word (22-c). In the antecedent clause, the INT CFP *ni* is used combined with ↑, indicating that the clause conveys a polar question. Both EQs are thus marked by *nyako*↑ because the antecedent clause is interrogative.

- (22) a. Mina-ka sakwa-lul sa-ss-ni↑? *interrogative antecedent*
 Mina-NOM apple-ACC buy-PST-Q
 ‘Did Mina buy the apples?’
- b. Mina-ka sakwa-lul sa-ss-nyako↑? *polar EQ*
 Mina-NOM apple-ACC buy-PST-EQ
 ‘Did Mina buy THE APPLES?’
- c. Mina-ka mwue-lul sa-ss-nyako↑? *single-wh EQ*
 Mina-NOM what-ACC buy-PST-EQ
 ‘Did Mina buy WHAT?’

Property 4: no distinction between echoed and non-echoed *wh*-words (14-d)

Korean does not exhibit any prosodic and syntactic distinctions between echoed and non-echoed *wh*-words, unlike EQs in languages like English where echoed *wh*-words exhibit significant differences from non-echoed ones in terms of prosody and syntax.

As for prosody, there is no particular prosodic pattern that Korean speakers perceive to distinctively characterize EQs besides the rising final intonation that co-occurs with the EQ CFP. Also, the rising final intonation is associated with the EQ meaning iff the EQ CFP is present. Although the prosody of Korean EQs has not yet been fully investigated, “incredulity questions” have been studied in comparison with polar- and *wh*-INTs (Jun & M. Oh 1996). According to the study, Korean speakers produced incredulity questions (which the authors defined as “a kind of

echo question” that is uttered when the speaker is surprised by what has been said) with a higher pitch on the *wh*-word compared to the pitch on the *wh*-words in *wh*-INTs in their production experiment. However, in their perception experiment, incredulity questions were often incorrectly perceived as *wh*-INTs despite the stress on the *wh*-word. Also, they have found that the F0 value of the boundary tone (i.e., sentence-final tone) plays the most significant role in distinguishing incredulity questions and *wh*-INTs. The results imply that the prosodic features on *wh*-words in incredulity questions are not a reliable cue for the incredulity interpretation.¹³

As for syntax, syntactic constraints on *wh*-words (or lack thereof) apply to both echoed and non-echoed ordinary *wh*-words in parallel, in contrast to EQs in other *wh*-ex-situ languages where echoed *wh*-words are claimed to be less sensitive to the syntactic constraints on *wh*-words such as island and intervention effects (cf., Sobin 1990; Reis 2017; Beck & Reis 2018). For example, the sentences in (23) show that the Complex Noun Phrase (CNP) island effect is absent in both INTs and EQs in Korean. The declarative clause in (23-b) can answer the preceding INT (23-a), and the EQ in (23-c) can have the preceding declarative clause as its antecedent. Those three sentences are all grammatical and share the same word order such that the embedded object—a *wh*-word in (23-a) and (23-c) and a noun phrase in (23-b)—is inside a relative clause that modifies the matrix object *salam* ‘person.’ That is, there is no asymmetry in the grammaticality across the three sentences. However, in other languages like English, INTs

¹³A caveat is that the “incredulity question” stimuli in Jun & M. Oh (1996) are not marked by the EQ CFP *tako*. Jun & M. Oh (1996) have assumed that INTs and EQs are morpho-syntactically identical, and all example sentences used in their experiments are marked by the polite form of the intimate level sentence-final CFP: *-e-yo*. The intimate sentence-final CFP *e* is “almighty” in the sense that it can occur in any matrix sentence type without being associated with a particular clause type. (i) exemplifies different types of sentences with the intimate CFP *e*. The interpretation of a sentence with the CFP *e* depends on prosody and discourse context. Further research is needed in order to precisely compare the prosodic features of EQs with *tako*↑ and INTs.

- | | | | |
|-----|----|--|----------------------------------|
| (i) | a. | khephi masi-e(-yo)↓.
coffee drink-CFP.INTIMATE(-POL)
'(I) drink coffee. (declarative)' or '(you) drink coffee. (imperative)' | <i>declarative or imperative</i> |
| | b. | khephi masi-e(-yo)↑?
coffee drink-CFP.INTIMATE(-POL)
'(Do you) drink coffee?' | <i>interrogative</i> |

like (23-a) would be ungrammatical due to the CNP island effect, while EQs like (23-c) would be grammatical.

- (23) a. Mina-ka nwukwu-lul a-nu-n salam-ul manna-ss-ni? *INT*
 Mina-NOM who-ACC know-IND-MD person-ACC meet-PST-Q
 ‘Who_i did Mina meet a person that knows *t_i*?’ (ungrammatical in English)
- b. Mina-ka caki-uy citokyoswu-lul a-nu-n salam-ul manna-ss-ta.
 Mina-NOM oneself-of advisor-ACC know-IND-MD person-ACC meet-PST-DECL
 ‘Mina met a person that knows her advisor.’
- c. Mina-ka nwukwu-lul a-nu-n salam-ul manna-ss-tako[↑]? *EQ*
 Mina-NOM who-ACC know-IND-MD person-ACC meet-PST-EQ
 ‘Mina met a person that knows WHO?’

The sentences in (24) are another set of examples that show INTs and EQs in Korean are in parallel in terms of syntactic constraints. (24-a) shows an INT demonstrating the presence of a *wh*-island effect in Korean, such that the *wh*-word *nwukwu* ‘who’ in the embedded interrogative clause does not scope out of the embedded clause (B. Kim & Goodall 2016: (14), glosses are my own). According to B. Kim & Goodall (2016), Korean speakers prefer to interpret INTs like (24-a) as conveying a polar question that seeks a yes/no answer like (24-c) rather than a *wh*-question that seeks a constituent answer like (24-b), even though both interpretations are pragmatically plausible. In other words, matrix scope is dispreferred for the *wh*-word inside the embedded clause, which in turn indicates the presence of the island effect (B. Kim & Goodall 2016).¹⁴ The EQ in (24-d), which is morpho-syntactically identical to the INT in (24-a) except for the sentence-final CFP, is grammatical and pragmatically allows for both constituent and yes/no answers, just as the INT in (24-a). The EQ in (24-d) would be interpreted as a polar EQ in which the *wh*-word has embedded scope if the EQ antecedent is the declarative clause in (24-c), which is the preferred answer to the INT in (24-a).

¹⁴Since Korean lacks overt *wh*-movement, grammaticality/acceptability judgments cannot be used as reliable pieces of evidence to determine the presence/absence of an island effect. Thus, B. Kim & Goodall (2016) rely on how the scope of the *wh*-word is interpreted, i.e., whether the *wh*-word is interpreted to scope out of its location.

- (24) a. Mary-nun [Obama-ka nwukwu-lul manna-ss-nunci] tul-ess-ni? *INT*
 Mary-TOP [Obama-NOM who-ACC meet-PST-COMP] hear-PST-Q
 ‘Who did Mary hear whether Obama met?/Did Mary hear who Obama met?’
- b. (Mary-nun Obama-ka) Hillary-lul (manna-ss-nunci
 (Mary-TOP Obama-NOM) Hillary-ACC (meet-PST-COMP
 tul-ess-e-yo↓).
 hear-PST-CFP.INTIMATE-POL)
 ‘(Mary heard whether Obama met) Hillary.’
- c. Ney, (Mary-nun Obama-ka nwukwu-lul manna-ss-nunci)
 Yes (Mary-TOP Obama-nom who-ACC meet-PST-COMP)
 tul-ess-e-yo↓.
 hear-PST-CFP.INTIMATE-POL
 ‘Yes, she heard (who Obama met).’
- d. Mary-nun [Obama-ka nwukwu-lul manna-ss-nunci] tul-ess-tako↑? *EQ*
 Mary-TOP [Obama-NOM who-ACC meet-PST-COMP] hear-PST-EQ
 ‘Mary heard whether Obama met WHO?/Mary HEARD WHO OBAMA MET?’

Property 5: pair-list reading in multiple-*wh* EQs (14-e)

The fifth property to discuss is that multiple-*wh* EQs in Korean exhibit a parallelism with multiple-*wh* INTs in available readings, unlike the previous claim for languages like English and Spanish that EQs allow for a more restricted set of readings when compared to INTs (Chernova 2017; Beck & Reis 2018). As described for Korean multiple-*wh* INTs in §2.2, English multiple-*wh* INTs like (25-a) give rise to three available readings: single-pair (25-c), pair-list (25-d), and functional (25-e). However, not all readings have been claimed to be available in multiple-*wh* EQs. That is, a multiple-*wh* EQ like (25-b) cannot be answered by the pair-list and functional answers in (25-d) and (25-e). This asymmetry has been providing support for the claim that echoed *wh*-words are semantically distinct from ordinary *wh*-words, which behave as quantifiers.

- (25) a. Who bought what? *multiple-wh INT*
- b. WHO bought WHAT? *multiple-wh EQ*
- c. Mina bought the apples. *single-pair*
- d. Mina bought the apples, Rowoon bought the peaches, and Taeyang bought the

oranges.

pair-list

- e. Each student bought their favorite fruits.

functional

Nevertheless, Korean lacks such an asymmetry; multiple-*wh* INTs and EQs show the same pattern of available readings, which is a behavior that has never been reported in any language to the best of my knowledge. Examples in (26) provide a multiple-*wh* INT (26-a) and a multiple-*wh* EQ (26-b), both of which can be answered by any of the answers that follow: the single-pair answer in (26-c), the pair-list answer in (26-d), and the functional answer in (26-e). That is, Korean INTs and EQs share the same pattern in available readings. Chapter 4 provides further support to this new empirical generalization by means of native speakers' judgments, which I have collected systematically through surveys.

- (26) a. nwuka mwue-lul sa-ss-ni?
who.NOM what-ACC buy-PST-Q *multiple-wh INT*
'Who bought what?'
- b. nwuka mwue-lul sa-ss-tako↑?
who.NOM what-ACC buy-PST-EQ *multiple-wh EQ*
'WHO bought WHAT?'
- c. Mina-ka sakwa-lul sa-ss-ta. *single-pair*
Mina-NOM apple-ACC buy-PST-DECL
'Mina bought the apples.'
- d. Mina-ka sakwa-lul, Rowoon-ika pokswunga-lul, Taeyang-ika
Mina-NOM apple-ACC Rowoon-NOM peach-ACC Taeyang-NOM
oleynci-lul sa-ss-ta. *pair-list*
orange-ACC buy-PST-DECL
'Mina bought the apples, Rowoon bought the peaches, and Taeyang bought the oranges.'
- e. haksayng kakca-ka caki-ka kacang coha.ha-nun kwail-ul
student each-NOM one's own-NOM most like.do-MD fruit-ACC
sa-ss-ta. *functional*
buy-PST-DECL
'Each student bought their favorite fruits.'

Property 6: an EQ can be farther away from its antecedent (14-f)

In Korean, an EQ does not need to immediately follow its discourse antecedent. The antecedent may have been conveyed in a separate conversation that took place several hours, days, and weeks before the current conversation where an EQ is uttered, like the scenario in (27). The EQ is fully felicitous under the given scenario even though the discourse antecedent was conveyed in a conversation that happened multiple days earlier. An appropriate answer to the EQ in (27) would provide the name of the dish that Mina said she would cook on Sunday: ‘ratatouille.’

(27) SCENARIO: earlier in the week, Mina told her partner that she would cook ratatouille on Sunday. Mina’s partner goes to a grocery store on Saturday evening to buy what Mina needs but soon realizes that he has forgotten what exactly she will be cooking tomorrow. He calls Mina and asks her the following question as soon as she picks up the call:

- a. Mina-ya, ne nayil mwue-lul yoli.ha-n-tako↑?
Mina-VOC you tomorrow what-ACC cook.do-IND-Q
‘Mina, you’ll cook WHAT tomorrow?’

Even if an EQ and its antecedent are uttered in the same conversation, the EQ is not required to immediately follow its antecedent. In the conversation in (28), the EQ ‘(she) went with WHO?’ in (28-b) and its antecedent in (28-a) are not immediately adjacent to each other. In (28-b), the EQ is preceded by another sentence: an INT ‘Isn’t Mina busy these days?’.

- (28) a. Mina-ka Momo-lang Bali-lo yehayng-ul ka-ss-ta.
Mina-NOM Momo-COM Bali-LAT travel-ACC go-PST-DECL
‘Mina went traveling to Bali with Momo.’
- b. Mina yocum pappu-ci anh-a? nwukwu-lang ka-ss-tako↑?
Mina these days busy-NEG-Q.INITIMATE who-COM go-PST-EQ
‘Isn’t Mina busy these days? (She) went with WHO?’

EQs in Korean being allowed to occur farther away from the antecedent provide a striking contrast to what has been argued for EQs in other languages. For example, in English, an EQ

and its antecedent are required to obey the “adjacency condition,” being immediately adjacent to each other and the EQ echoing the immediately preceding utterance (Beck & Reis 2018, p. 375). The conversation in (29) is an English example similar to (28); there is another sentence in between the EQ ‘Tom invited WHO?’ in (29-b) and its discourse antecedent in (29-a). According to Beck & Reis (2018), the EQ in (29-b) is not felicitous due to the violation of the adjacency condition, which seems to be absent in Korean.

(29) Beck & Reis 2018: (15)

- a. Tom invited our president for dinner tomorrow night.
- b. A dinner invitation—usually Tom is so stingy! # (But) Tom invited WHO?

Properties 1–6 I discussed thus far hold for any kind of EQ in Korean, not only for those with argument *wh*-words such as *nwukwu/nwuka* ‘who/who.NOM’ and/or *mwue* ‘what.’ Korean *wh*-EQs can contain any echoed *wh*-word as exemplified in the sentences in (30). The declarative sentence in (30-a) is the antecedent of the single-*wh* EQs in (30-b) to (30-c), as well as the multiple-*wh* EQ in (30-d). In (30-b), the echoed *wh*-word *eti* ‘where’ corresponds to the adjunct locative prepositional phrase ‘in the parking lot’ in the antecedent in (30-a). In (30-c), the echoed *wh*-word *myech* ‘how many’ corresponds to the number of the raccoons *twu* ‘two’ inside the object NP ‘two raccoons.’ The multiple-*wh* EQ in (30-d) contains three echoed *wh*-words, *encey* ‘when,’ *eti* ‘where,’ and *myech* ‘how many.’ In this case, the speaker of (30-d) seeks confirmation of all the following information: the time Mina saw the raccoons, the location Mina saw the raccoons, and the number of raccoons Mina saw. Regardless of the kind of echoed *wh*-word in them, all the EQs in (30) are marked by the EQ CFP *tako*↑, as the declarative sentence antecedent in (30-a) performs the speech act of assertion. Furthermore, the echoed *wh*-words in them need no obligatory prosodic stress.

- (30) a. Mina-ka ecey ceneyk-ey cwuchacang-eyse nekwuli twu mali-lul
 Mina-NOM yesterday evening-in parking lot-LOC racoon two CL-ACC

- po-ass-tay. *declarative*
 see-PST-DECL.HEARSAY
 ‘(I heard that) Mina saw two raccoons in the parking lot yesterday evening.’
- b. eti-eyse nekwuli twu mali-lul po-ass-tako↑? *single-wh EQ*
 where-LOC racoon two CL-ACC see-PST-EQ
 ‘(She) saw two raccoons in WHERE?’
- c. nekwuli myech mali-lul po-ass-tako↑? *single-wh EQ*
 racoon how many CL-ACC see-PST-EQ
 ‘(She) saw HOW MANY raccoons?’
- d. encey eti-eyse nekwuli myech mali-lul po-ass-tako↑? *multiple-wh EQ*
 when where-LOC racoon how many CL-ACC see-PST-EQ
 ‘WHEN did (She) see HOW MANY raccoons in WHERE?’ (ungrammatical in English)

To sum up, Korean EQs are true EQs because they share the core features of EQs across languages: they resemble INTs morpho-syntactically, convey true information-seeking questions semantically, and need a discourse antecedent in the form of one of their possible answers in order to be pragmatically felicitous. However, Korean EQs also exhibit properties that have not been attested in other languages (i.e., a specialized CFP that “agrees” with the speech act of the EQ antecedent) or contrast with properties in EQs in other languages (i.e., no obligatory prosodic stress on echoed *wh*-words and availability of pair-list and functional readings, no obligatory adjacency condition). In conclusion, Korean EQs demand that we broaden our descriptive and typological landscape of EQs.

2.4 Non-canonical interrogative clauses other than echo questions

Before concluding this chapter, I sketch some of the previously studied types of non-canonical interrogative clauses in Korean to further support that EQs are different from and cannot be reduced to any of them. By *non-canonical interrogative clauses* (non-canonical INTs), I refer to interrogative clauses whose purpose is not only to seek information but also to express

the speaker's attitude towards what is being asked (e.g., Dayal 2016; Trotzke & Czypionka 2022). Morpho-syntactic and phonological patterns of non-canonical interrogative clauses may or may not deviate from INTs. There are different types of non-canonical INTs depending on whether the canonical INT CFP *ni* is used and whether they expect (or even require) an answer from the addressee. While it is unnecessary for the current examination to list all types of Korean non-canonical INTs, I will briefly introduce some types of non-canonical INTs depending on whether they involve the canonical INT CFP *ni* or not. Those non-canonical INTs will show that the CFP, the presence of a *wh*-word, or the final intonation itself does not guarantee that a seemingly interrogative clause actually conveys a question that expects an answer from the addressee. Thus, morpho-syntactic and discourse-pragmatic features should be taken together for a precise understanding of non-canonical INTs in Korean.

Rhetorical questions are non-canonical INTs that involve the CFP *ni* and do not necessarily expect an answer from the addressee. Previously, rhetorical questions in English have been understood to have similar semantic properties to declarative clauses and thus not expect to receive an answer (e.g., C.-h. Han 2002) or to be semantically identical to INTs and different in the pragmatics (e.g., Caponigro & Sprouse 2007), and the semantics of Korean rhetorical questions haven't yet been studied to the best of my knowledge. (31-a) exemplifies an INT 'who buys apples?' that requires a true answer such as 'Mina (buys apples)' (31-b). On the other hand, (32-a) exemplifies a rhetorical question, 'Who buys apples?' preceded by a declarative clause that implies the speaker's attitude toward apples these days and introduces the rhetorical question. The rhetorical question does not necessarily require an answer to be uttered by the addressee; if there is one, it is expected to be a negative answer like 'no one buys apples' (32-b) in accordance with the discourse context. Both INT (31-a) and rhetorical question (32-a) are morpho-syntactically and prosodically identical, sharing the same word order, the same CFP *ni*, the same *wh*-word *nwuka* 'who,' and the same falling final intonation (HL%, the usual *wh*-INT final tone); still, each has a different pragmatic function.

- (31) a. nwuka sakwa-lul sa-(ni↓) ?
 who.NOM apple-ACC buy-(Q)
 ‘Who buys apples?’
- b. Mina(-ka sakwa-lul sa).
 Mina(-NOM apple-ACC buy.DECL)
 ‘Mina (buys apples).’
- (32) a. yocum sakwa-ka nemwu mas eps-e. nwuka sakwa-lul sa-(ni↓) ?
 these days apple-NOM too taste lack-DECL who.NOM apple-ACC buy-(Q)
 ‘Apples these days taste too bad. Who buys apples?’
- b. amuto an sa.
 anyone NEG buy.DECL
 ‘No one buys (apples). (*lit.* anyone doesn’t buy (apples).)’¹⁵

Self-addressed questions and biased polar questions are non-canonical INTs other than EQs requiring a CFP that is different from the CFP *ni* as in canonical INTs. They all behave like canonical INTs semantically, i.e., convey a question. Self-addressed questions convey a question that is directed to the speaker themselves, not to someone else (e.g., Jang & I.-K. Kim 1998; Eckardt & Disselkamp 2019), and require the CFPs *na* or *ka* with the rising final intonation in the case of self-addressed polar questions or the falling final intonation in the case of self-addressed *wh*-questions.¹⁶ Examples of self-addressed questions that can be uttered under a situation where the speaker wonders are shown in (33). (33-a) is a self-addressed *wh*-question with the CFP *na* combined with ↓ and (33-b) is a self-addressed polar question with the CFP *ka* combined with ↑. Both can be uttered in situations such as when the speaker wonders which family member of theirs bought the bag of apples on the table. There can be no one around the speaker or someone whom the speaker hopes to hear the question and provides information about the person who bought the bag of apples (Eckardt & Disselkamp 2019). Still, an answer is not necessarily expected to be uttered by someone other than the speaker.

¹⁵In Korean, there is no word that corresponds to English *nobody/no one*. For the survey of Korean NPIs, see Sells (2006).

¹⁶According to Eckardt & Disselkamp (2019), the choice between the CFPs *na* and *ka* may rely on some morpho-phonological factors, and I speculate that *ka* is used when the present tense is overtly marked. I do not delve into the distinction as it is orthogonal to my research.

- (33) a. nwuka sakwa-lul sa-ss-(na↓) ?
 who.NOM apple-ACC buy-PST-(SAQ)
 ‘Who bought the apples, I wonder. (*lit.* Who bought apples?)’
- b. emma-ka sa-n sakwa-i-n-(ka↑) ?
 mom-NOM buy-MD apple-COP-PRES-(SAQ)
 ‘Are those the apples that mom bought, I wonder. (*lit.* Are those the apples that mom bought?)’

On the other hand, biased polar questions are uttered when the speaker already knows or is almost certain that some proposition is true and seeks a confirmation of it (e.g., Sudo 2013; J.-i. Kim 2018) and require the CFP *ci* which can be accompanied by either one of falling (HL%, not L%) and rising final intonations—intonation does not seem to affect the biased polar question interpretation as long as there is the CFP *ci*. An example of a biased polar question is shown in (34-a), which reads as the speaker is almost certain that it is true that Mina bought the apples. A confirmation like (34-b) is strongly expected, while a negation (and/or a correction) like (34-c) will be a surprise but still acceptable.

- (34) a. Mina-ka sakwa-lul sa-ss-(ci) ?
 Mina-NOM apple-ACC buy-PST-(BPQ)
 ‘*lit.* Did Mina buy the apples?’ (Mina bought the apples, right?)
- b. ung, mac-a.
 yes right-DECL
 ‘Yes, you’re right.’
- c. ani, pay-lul sa-ss-e. / ani, Jihyo-ka sa-ss-e.
 no pear-ACC buy-PST-DECL / no Jihyo-NOM buy-PST-DECL
 ‘No, (she) bought the pears. / No, Jihyo bought (them).’

As shown so far, non-canonical INTs in Korean may or may not be in a form identical to canonical INTs. If there is a difference, it often rests on the CFP and the intonation combined with it. Most crucially, none of the abovementioned non-canonical INTs (*ni* in rhetorical questions, *na/ka* in self-addressed questions, and *ci* in biased polar questions) can be used to convey the EQ meaning. That is, the sentence in (35-b) cannot be interpreted as an EQ asking for confirmation of what

has been said in (35-a).

- (35) a. Mina-ka sakwa-lul sa-ss-ta↓.
Mina-NOM apple-ACC buy-PST-DECL
'Mina bought the apples.'
- b. #nwuka sakwa-lul sa-ss-ni/na/ci?
who.NOM apple-ACC buy-PST-Q/SAQ/BPQ
'Who bought the apples?'

Furthermore, if the CFPs in the non-canonical INT examples (32), (33), and (34) are replaced with *tako*↑, then they will be interpreted as an EQ, not as their previous label as a non-canonical INT other than EQs. This observation provides another support that CFPs have a strong connection to the semantic and pragmatic contents that are being conveyed such that certain semantic and pragmatic contents are mapped onto a certain CFP, as the EQ CFP *tako*↑.

2.5 Interim conclusions

EQs in Korean are true EQs since they satisfy the core properties of EQs across languages: they require a discourse antecedent and share similar content and form with the antecedent. Still, EQs in Korean exhibit significant differences with respect to EQs in previously reported languages. EQs in Korean share the same morpho-syntactic structure as INTs except for the CFP and are marked by an EQ CFP and the rising final intonation (Property 1). The EQ CFP must correspond to the type of the speech act (indicated by the sentence-final CFP in it; Property 2) and be accompanied by the final rise; otherwise, the sentence is not interpreted as an EQ. The morpho-syntax itself does not distinguish polar and *wh*-EQs (Property 3), and the prosodic and syntactic distinctions between echoed and non-echoed *wh*-words are also insignificant and/or absent (Property 4). Last but not least, multiple-*wh* EQs license the same set of readings as multiple-*wh* INTs (Property 5). These findings about Korean argue for some reformulating and enriching of our way of understanding and describing EQs across languages because the current

understanding that builds only upon European languages makes false predictions about EQs in Korean, let alone other under-studied languages. Our typology of EQs has to include options like those I described for Korean, with the expectation that other languages may make use of the same or similar options for EQs. I briefly show preliminary evidence of such languages in Chapter 6 Section 6.1. Next, Chapter 3 guides the readers through the novel semantic analysis of EQs that I propose based on the morpho-syntactic, prosodic, semantic, and pragmatic properties of Korean EQs described in this chapter.

Chapter 3

A semantic and pragmatic analysis of Korean EQs – step 1: single-*wh* and polar EQs

This chapter introduces the first part of the semantic and pragmatic analysis of Korean EQs that I have developed. I focus on single-*wh* EQs and polar (yes/no) EQs. I extend my analysis to multiple-*wh* EQs in the next chapter, Ch. 4. This is the first formal analysis of the meaning of EQs in Korean, to the best of my knowledge. The analysis is built upon two main assumptions. First, EQs and INTs share the same morpho-syntactic and semantic derivations up to their CFP because of the findings and generalizations in the previous chapter. Second, the CFP *tako*↑ in EQs is responsible for the main meaning difference between EQs and INTs: the pragmatic requirement for EQs to have an appropriate discourse antecedent. The chapter is structured as follows. Section 3.1 discusses the precise contribution of the EQ CFP *tako*↑ to the EQ meanings, focusing on single-*wh* EQs. Sections 3.2 and 3.3 then show how the meanings of EQs in the most simple forms are derived using the previously established semantic theories of questions: *wh*-EQs with a single *wh*-word and polar (yes/no) EQs, respectively.

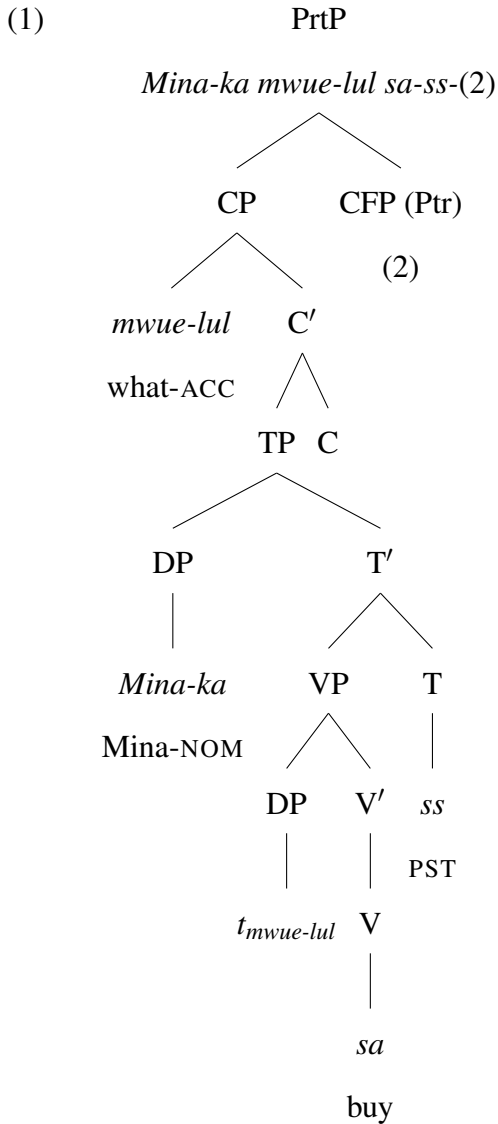
3.1 The semantic and pragmatic contribution of the EQ marker

As described in Chapter 2, all kinds of sentences exhibit the same SOV order in Korean, regardless of their final meaning and speech act properties. Post-verbal inflectional suffixes have a fixed order such that a CFP always follows the tense marker and occurs as the right-most element in a clause. Thus, the CP right below the CFP does not yet conclusively reveal its clause type; once a CFP comes, the clause type is determined, as well as the semantic and pragmatic content of the clause. The tree in (1) illustrates the simplified structure that I am assuming for an SOV sentence with an object *wh*-word.¹ The C head inside the CP is ambiguous in the precise operation it does, e.g., a proposition-forming operation, a question-forming operation, etc. The CP then combines with a sentence-final CFP, which determines the type of the whole sentence.² Some examples of sentence-final CFPs that can be used to conclude the sentence in (1) are presented from (2-a) through (2-e), as well as the type and meaning conveyed by the concluded sentence depending on the CFP. The declarative CFP *ta* bearing the falling intonation (2-a) creates a declarative clause in which the *wh*-word *mwue* ‘what/something’ bears the indefinite reading as ‘something.’ The INT CFP *ni* creates an INT, but the precise kind of the INT depends on the final intonation on *ni*. The sentence becomes a *wh*-INT with the falling final intonation ↓ on *ni* as in (2-b) and a polar INT with the rising final intonation ↑ on *ni* as in (2-c). The CFP *ci*, together with the rising final intonation ↑, creates a biased polar question as in (2-d), and the

¹I adopt two assumptions about Korean syntax from previous literature: (i) the nominative case marking on the subject noun happens in its base position (Heycock & Y.-S. Lee 1989; Y.-S. Lee 1990; Beck & S.-S. Kim 1997), and (ii) *wh*-words go through covert movement (J. Han 1992; Beck & S.-S. Kim 1997). See respective papers for further details. As for *wh*-movement in Korean, it is still controversial whether Korean employs covert movement or unselective binding. E. Lee (2019) provides a general discussion about the controversy (p. 196). The matter is, however, orthogonal to my analysis because question formation happens inside the CP in both approaches (covert movement vs. unselective binding), and what I propose is that an EQ is formed in the higher projection above the CP, with the EQ CFP *tako*↑ being the functional head.

²I am non-committal about the precise syntactic identity of Korean CFPs and assume them to be a functional head of the highest projection—CP from the perspective of the Minimalist Program. Thus, I label the highest projection as PrtP, Particle Phrase. Still, I acknowledge that it has been controversial whether Korean projects CP as languages like English and whether CFPs constitute a C head or a head of another functional projection such as *Speech Act Phrase* (see Ceong 2019b; E. Lee 2019). Regardless, what CFPs do remains the same: functioning as a head of the highest projection and combining with a lower projection.

wh-word receives the indefinite reading. If the EQ CFP *tako* and the rise \uparrow come together, then an EQ is created in the PrtP (Particle Phrase). Korean has numerous canonical and non-canonical sentence-final CFPs that can occur in the CFP position in (1) beside those five CFPs in (2).



(2) Translations of (1) according to the CFP

- | | | |
|----|--------------------------------|--------------------|
| a. | ta↓: ‘Mina bought something.’ | <i>declarative</i> |
| b. | ni↓: ‘what did Mina buy?’ | <i>wh-INT</i> |
| c. | ni↑: ‘did Mina buy something?’ | <i>polar INT</i> |

- d. *ci*↑: ‘Mina bought something, right?’ *biased polar question*
- e. *tako*↑: ‘Mina bought WHAT?’ *EQ*
- ... etc.

In what follows, I focus on the two constructions in (2) that are interpreted as constituent questions and whose *wh*-words semantically behave like question words rather than indefinites, i.e., in the INT (2-b) and the EQ (2-e). I assume they share the same structure up to the CP level. I adopt Hamblin’s (1973) treatment of questions as denoting a set of possible answers, namely, a set of propositions. Also, I adopt Karttunen’s (1977) WH-phrase rule that translates interrogative and indefinite *wh*-words into a generalized existential quantifier $\lambda P \exists x P(x)_{\langle \langle e, t \rangle, t \rangle}$. I lay out the details of the compositional derivation of the CP later when discussing the full analysis of EQs in Sections 3.2 and 3.3 to focus on the EQ CFP here. The CP *Mina-ka mwue-lul sa-ss* in (1) logically translates into (3-a) and denotes a set of propositions like (3-b) in which each proposition is a possible answer to the question being conveyed by the clause. There is no discourse-pragmatic component added to the denotation of the CP because such component is introduced by the CFPs, as seen in the discussion on non-canonical INTs in Chapter 2 (§2.4).

- (3) a. [_{CP} *Mina-ka mwue-lul sa-ss*]
 $\rightsquigarrow \lambda p \exists x [thing'(x) \wedge p = \lambda w. bought'(w, Mina, x)]_{\langle \langle s, t \rangle, t \rangle}$
- b. $\llbracket (3-a) \rrbracket =$
 $\{ \text{Mina bought the apples, Mina bought the pears, Mina bought the oranges, ...} \}$

The CFP is responsible for interpretative differences between the INT and the EQ, such that *tako*↑ as a unit is the sole trigger to the EQ interpretation while *ni* triggers no extra interpretation than the regular information-seeking question interpretation inherent to INTs. Let us first discuss INTs, whose meaning is a question that can be uttered out of the blue and does not bear any discourse-pragmatic restrictions. That is, the outcome of the compositional combination of the CP and the INT CFP should denote a question without any extra discourse-pragmatic content,

like the logical translation (4-a) and the denotation (4-b) of the INT *Mina-ka mwue-lul sa-ss-ni?* ‘what did Mina buy?’.

- (4) a. $[\text{INT } [\text{CP } \text{Mina-ka mwue-lul sa-ss }] \text{ ni?}]$ ‘what did Mina buy?’
 $\rightsquigarrow \lambda p_{\langle s,t \rangle} \exists x_{\langle e \rangle} [\textit{thing}'(x) \wedge p = \lambda w. \textit{bought}'(w, \textit{Mina}, x)]_{\langle \langle s,t \rangle, t \rangle}$
- b. $\llbracket (4\text{-a}) \rrbracket =$
 $\{\text{Mina bought the apples, Mina bought the pears, Mina bought the oranges, ...}\}$

On the other hand, EQs have some discourse-pragmatic restrictions although they denote a question. First, EQs cannot be uttered out of the blue, i.e., there must be a previous utterance that is capable of starting a new discourse. Second, the appropriate answer to an EQ must convey propositional content that has been already introduced in the discourse by someone other than the speaker uttering a sentence that conveys the content. Thus, the difference between INTs and EQs is that EQs have extra discourse-pragmatic content such that an EQ is uttered iff there is a previously uttered proposition that can serve as an answer to the EQ. I posit that such pragmatic content is encoded in EQs as a form of presupposition, and the presupposition can be incorporated into the logical translation of EQs as shown in (5).³ The EQ ‘Mina bought WHAT?’ denotes a question (5-b) iff the presupposition is satisfied, e.g., one of the propositions, say ‘Mina bought mandarins,’ is previously conveyed in the discourse. I use *UTTERED*(*q*) in the logical translation of the sentence (5-a) as a shortcut for “a sentence conveying the proposition *q* must have been uttered sometime before uttering the current sentence.”

- (5) a. $[\text{EQ } [\text{CP } \text{Mina-ka mwue-lul sa-ss }] \text{ tako}\uparrow?]$ ‘Mina bought WHAT?’
 $\rightsquigarrow \lambda p : \underline{\exists q_{\langle st \rangle} [\textit{UTTERED}(q) \wedge \exists x [\textit{thing}'(x) \wedge q = \lambda w. \textit{bought}'(w, \textit{Mina}, x)]]}$
 $\exists x [\textit{thing}'(x) \wedge p = \lambda w. \textit{bought}'(w, \textit{Mina}, x)]_{\langle \langle s,t \rangle, t \rangle}$
- b. $\llbracket (5\text{-a}) \rrbracket =$

³From (5) on, the presuppositional content is underlined and, following Heim & Kratzer’s (1998) convention, is represented between a colon and a period.

{Mina bought the apples, Mina bought the oranges, Mina bought the peaches, ...}
 Presupposition: at least one of the propositions in the set of possible answers has already been introduced in the discourse by uttering a sentence that conveys it.

The above generalizations lead to the analysis that treats both the INT CFP *ni* and the EQ CFP *tako*↑ as denoting an identity function over sets of propositions. They combine with the CP denotation and return the very same denotation. While the meaning contribution of the INT CFP ends with its identity function denotation as shown in (6-a), the EQ CFP also adds a presupposition, as shown in (6-b).

- (6) a. $ni \rightsquigarrow \lambda Q \lambda p. Q(p) \langle \langle \langle s, t \rangle \rangle, \langle \langle s, t \rangle, t \rangle \rangle$
 b. $tako\uparrow \rightsquigarrow \lambda Q \lambda p: \underline{\exists q[UTTERED(q) \wedge Q(q)]}. Q(p) \langle \langle \langle s, t \rangle \rangle, \langle \langle s, t \rangle, t \rangle \rangle$

The presuppositional content of *tako*↑ adequately renders the observed discourse restrictions between an EQ and its antecedent. In Korean, EQs do not need to echo the immediately preceding utterance, as discussed in Chapter 2 Section 2.3 (Property 6). That is, an EQ is allowed to be distant in time and discourse space from its antecedent, unlike the existing claim for EQs in other languages. Therefore, the presuppositional content of *tako*↑ need not define how close an EQ should be from its antecedent.

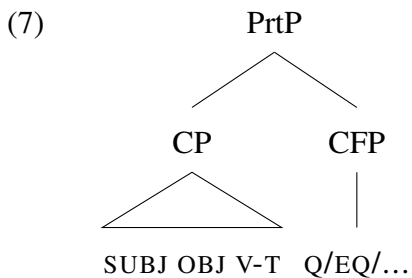
I assume that the C head and the CFP are separate semantic objects and cannot be merged into one. In other words, the CFP should not be analyzed as occurring in the C position and conveying both set-formation and presupposition-introducing operations for multiple reasons. First, a set of propositions must be formed before introducing the presuppositional content in (6-b), because the presupposition requires a set of propositions *Q* as one of its variables. Second, the same CFP *tako*↑ is used for both polar- and *wh*-EQs and the precise set-formation operation to derive the polar question meaning is different from that to derive the *wh*-question meaning. Even though both polar- and *wh*-questions denote a set of propositions, polar questions denote a set of two propositions ($\{p, \neg p\}$), while *wh*-questions denote a set of propositions ($\{p_1, p_2, p_3, \dots, p_n\}$).

In other words, the C head in polar EQs denotes a different operation than the C head in *wh*-EQs, while both types of EQs share the same CFP that introduces the same presuppositional content. Third and last, in terms of the steps of semantic derivation, a question (i.e., a set of propositions) should be formed before *wh*-words (generalized quantifiers) combine and bind the free variables in the question (Karttunen 1977). Further details will be provided throughout Sections 3.2 and 3.3.

As shown thus far, my analysis treats the EQ CFP *tako*↑ as a unit that bears the precise semantic and pragmatic content required for the realization of the EQ meaning. On the contrary, previous studies on Korean EQs have analyzed *tako*↑ as a compositional combination of the declarative CFP *ta* and the quotative particle *ko* (Noh 1995; Hyeran Lee 2010). Chapter 5 discusses why *tako*↑ needs to be assumed non-compositional in order to account for the semantic and pragmatic properties of Korean EQs.

3.2 Single-*wh* EQs

This section presents the semantic and pragmatic analysis of single-*wh* EQs. Since I am assuming that EQs and INTs have the same morpho-syntactic structure and the same semantic derivation up to the CFP, I posit the same structure for both EQs and INTs as schematized and summarized in (7). The CP in (7) contains all syntactic and semantic elements required for a full-fledged sentence except for the CFP. The CFP then determines the specific clause type and combines with the CP, resulting in a complete sentence XP. For instance, XP is an INT if the CFP is *ni* and an EQ if the CFP is *tako*↑.



Based on the above assumption, I show the semantic derivations of the two single-*wh* EQs in (8). The EQ in (8-a) has a *wh*-word *nwuka* ‘who’ in the subject position, whereas the EQ in (8-b) has a *wh*-word *mwue* ‘what’ in the object position. Except for the position of the *wh*-word, the sentences in (8) are morpho-syntactically identical and make use of the same CFP *tako*↑.

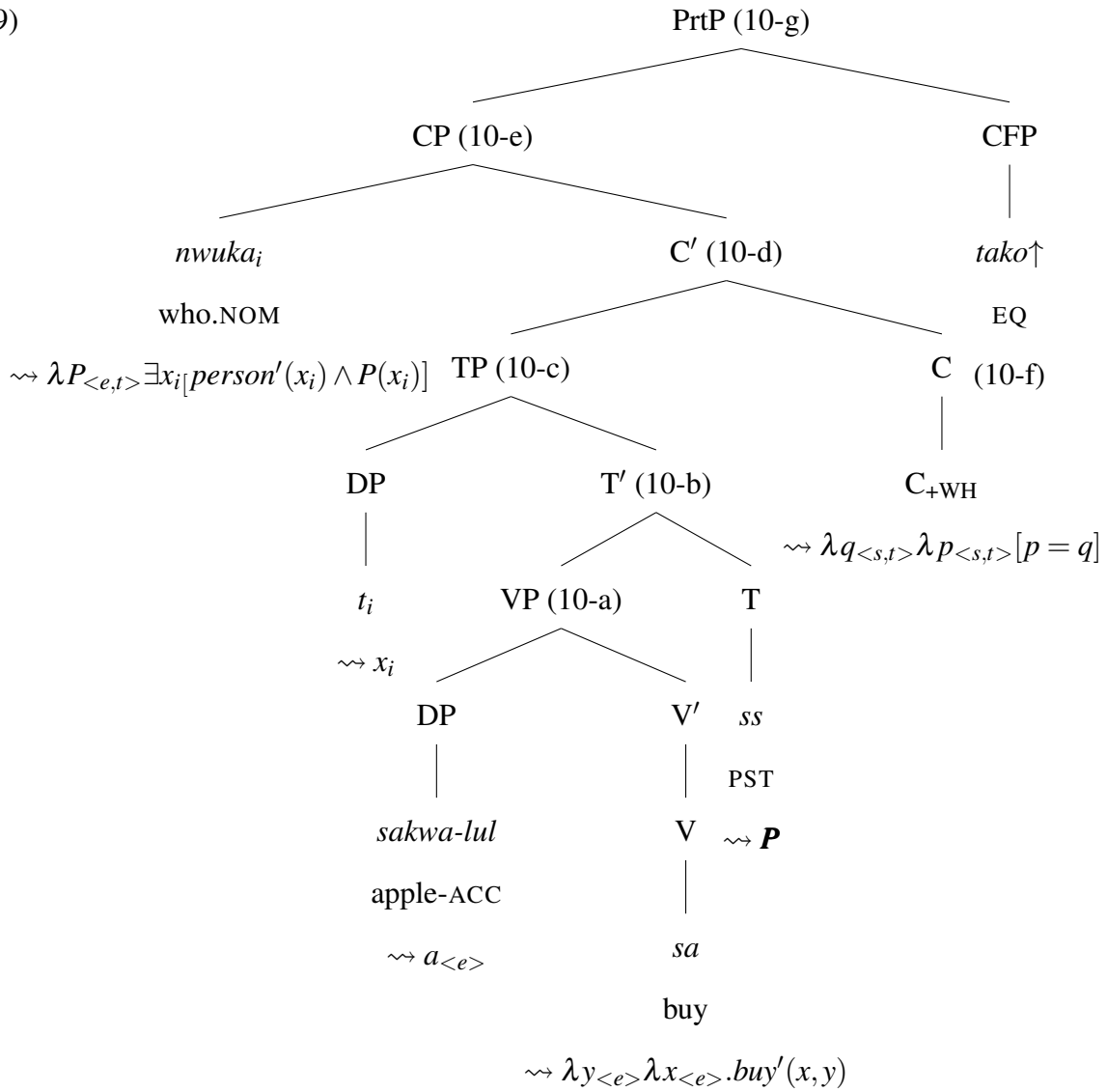
- (8) a. Nwuka sakwa-lul sa-ss-tako↑?
 who.NOM apple-ACC buy-PST-EQ
 ‘WHO bought the apples?’
- b. Mina-ka mwue-lul sa-ss-tako↑?
 Mina-NOM what-ACC buy-PST-EQ
 ‘Mina bought WHAT?’

The structure of the single-*wh* EQ with a subject *wh*-word in (8-a) can be represented as the tree in (9). (9), together with (10-a-g), also provides the logical translation of each node, and the top-most node corresponds to the full sentence in (8-a). The verb *sa* ‘buy’ denotes a two-place relation over individuals, and the object *sakwa-lul* ‘the apple’ denotes an individual of type *e*. They combine via Functional Application. The resulting logical combination is assigned to the VP node and translates into (10-a), the one-place relation, a.k.a. function. After applying the past tense marker, the formula is rewritten in the past tense form *bought* instead of *buy* as in (10-b).⁴ The subject DP is a *wh*-trace co-indexed with the *wh*-word *nwuka* ‘who’ as I assume that Korean *wh*-words go through movement at LF to an appropriate position above the C head although they are in-situ at the surface (Beck & S.-S. Kim 1997) The trace translates into a free variable x_i . Thus, the TP is represented as the open formula in (10-c). I am following Dayal (2016) in introducing the variable $w_{\langle s \rangle}$ and the lambda operator that binds it (i.e., intensionality) at this point of the derivation so the TP allows Intensional Functional Application with its sister node C. The C head denotes a logical operator C_{+WH} that applies to a single proposition to return the corresponding set (the set of propositions p that are identical to the proposition q , i.e., the

⁴Since orthogonal to the issues I am focusing on, I assume that the past tense marker translates into the past tense operator P proposed by Prior (1962). Therefore, T' translates into $\lambda x.Pbuy'(x,y)$, which I write as $\lambda x.bought'(x,y)$ henceforth for the sake of simplicity.

singleton set containing just q ($\lambda q \lambda p [p = q]$). The operation applies to the TP denotation, an open proposition (type $\langle s, t \rangle$), i.e., a function from worlds to truth values that depend on the assignment function, as signaled by the free variables in the logical translation. It results in a set of open propositions (type $\langle \langle s, t \rangle, t \rangle$) as assigned to C' and translated into (10-d). The sister node to C' is the *wh*-word ‘who’ denoting an existential generalized quantifier as shown for *nwuka_i* ‘who’ in (9). The *wh*-word and its sister node C' cannot be combined by any of the standard semantic rules, given their semantic types. Therefore, I assume that the set of open propositions denoted by C' combines with the generalized quantifier denoted by the *wh*-word by means of Karttunen’s (1977) WH-Quantification rule, which allows the generalized quantifier to bind the free variable in the set of open propositions so the appropriate *wh*-question meaning is derived. The result is that the CP denotes a set of closed propositions whose values no longer depend on the assignment function. This is shown in the logical translation of the CP in (10-e), in which the existential quantifier now binds the formerly free variable. Finally, the CP combines with the CFP *tako* \uparrow . As proposed in the previous section, *tako* \uparrow denotes an identity function over sets of propositions and triggers the presupposition that there exists at least one proposition in the set of possible answers that has already been introduced in the discourse by uttering a sentence conveying it, as shown in (10-g). Thus, both the CP (10-e) and the PrtP (10-g, which is an EQ) translate into identical logical representations except for the extra pragmatic content that is introduced by the EQ CFP.

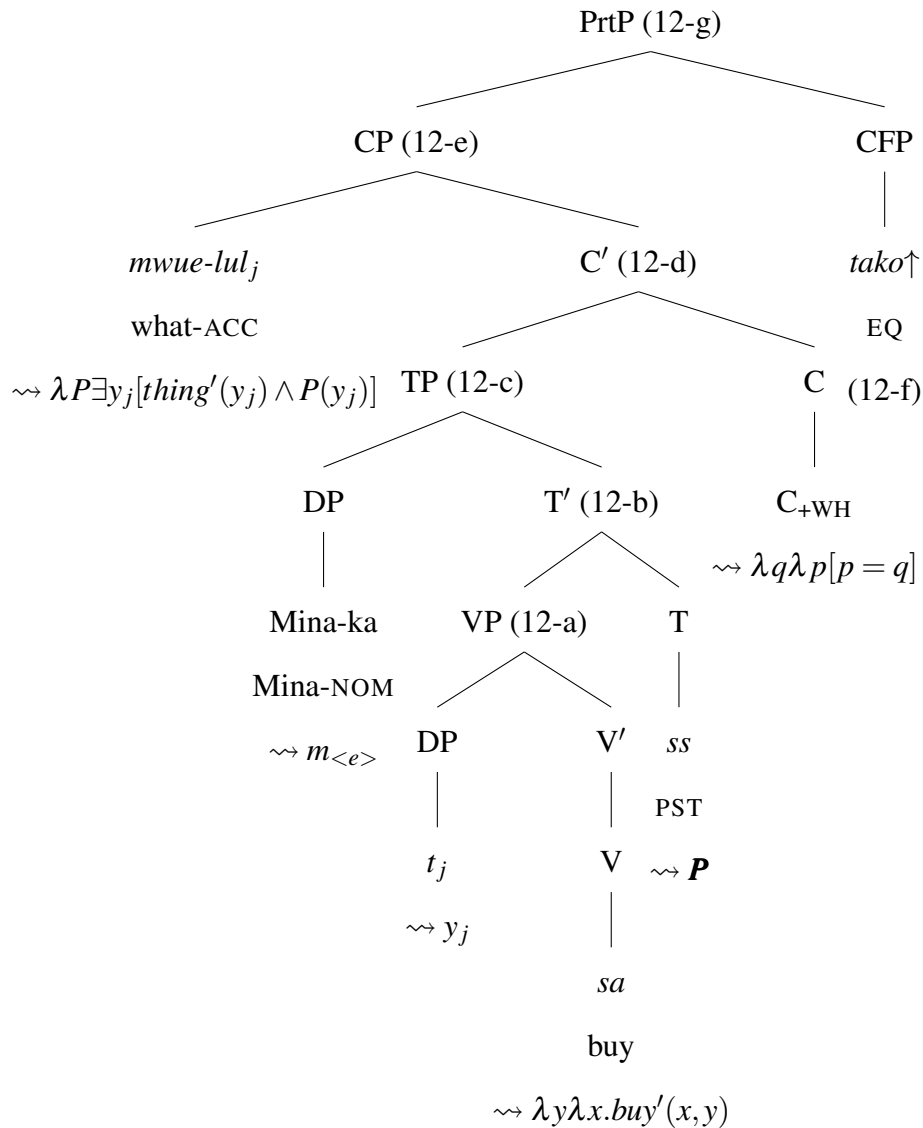
(9)



- (10)
- a. VP $\rightsquigarrow \lambda x . buy'(x, a)_{\langle e, t \rangle}$
 - b. T' $\rightsquigarrow \lambda x . bought'(x, a)_{\langle e, t \rangle}$
 - c. TP $\rightsquigarrow \lambda w_{\langle s \rangle} . bought'(w, x_i, a)_{\langle s, t \rangle}$
 - d. C' $\rightsquigarrow \lambda p [p = \lambda w . bought'(w, x_i, a)]_{\langle \langle s, t \rangle, t \rangle}$
 - e. CP $\rightsquigarrow \lambda p \exists x_i [person'(x_i) \wedge p = \lambda w . bought'(w, x_i, a)]_{\langle \langle s, t \rangle, t \rangle}$
 - f. *tako↑* $\rightsquigarrow \lambda Q \lambda p : \underline{\exists q [UTTERED(q) \wedge Q(q)]} . Q(p)_{\langle \langle \langle s, t \rangle, t \rangle, \langle \langle s, t \rangle, t \rangle \rangle}$
 - g. PrtP $\rightsquigarrow \lambda p : \underline{\exists q [UTTERED(q) \wedge \exists x_i [person'(x_i) \wedge q = \lambda w . bought'(w, x_i, a)]]}$
 $\exists x_i [person'(x_i) \wedge p = \lambda w . bought'(w, x_i, a)]_{\langle \langle s, t \rangle, t \rangle}$

The single-*wh* EQ with an object *wh*-word in (8-b) shares the same structure and steps of derivation as described for (9) and (10) except for that the *wh*-word *mwue-lul* ‘what’ leaves a trace in the object position, not in the subject position. The tree in (11) illustrates the structure of the EQ in (8-b); again, the CP (12-e) and the PrtP (12-g, which is an EQ) share the same logical translation, and the presuppositional content is encoded in the EQ.

(11)



- (12)
- a. VP $\rightsquigarrow \lambda x.buy'(x,y)_{\langle e,t \rangle}$
 - b. T' $\rightsquigarrow \lambda x.bought'(x,y)_{\langle e,t \rangle}$
 - c. TP $\rightsquigarrow \lambda w.bought'(w,m,y_j)_{\langle s,t \rangle}$

- d. $C' \rightsquigarrow \lambda p[p = \lambda w.bought'(w, m, y_j)]_{\langle \langle s, t \rangle, t \rangle}$
- e. $CP \rightsquigarrow \lambda p \exists y_j [thing'(y_j) \wedge p = \lambda w.bought'(w, m, y_j)]_{\langle \langle s, t \rangle, t \rangle}$
- f. $tako\uparrow \rightsquigarrow \lambda Q \lambda p : \exists q [UTTERED(q) \wedge Q(q)].Q(p)_{\langle \langle \langle s, t \rangle, t \rangle, \langle \langle s, t \rangle, t \rangle \rangle \rangle}$
- g. $PrtP \rightsquigarrow \lambda p : \exists q [\underline{UTTERED(q) \wedge \exists y_j [thing'(y_j) \wedge q = \lambda w.bought'(w, m, y_j)]}]_{\langle \langle s, t \rangle, t \rangle}$

The logical translations in (10-g) and (12-g), respectively corresponding to the EQs in (8), can denote if and only if the presupposition is satisfied. For example, there are two sets of propositions in (13) in which the boldfaced propositions are the ones that have been previously introduced in the discourse by uttering sentences conveying them. Since the existence of the boldfaced propositions satisfies the presupposition in the EQs in (8), each set in (13) can be denoted by each EQ in (8), respectively.

(13) Example denotations of (8)

- a. $\llbracket (8-a) \rrbracket = \{\mathbf{Mina bought the apples}, \text{Rowoon bought the apples, Taeyang bought the apples...}\}$
- b. $\llbracket (8-b) \rrbracket = \{\mathbf{Mina bought the apples}, \text{Mina bought the oranges, Mina bought the peaches...}\}$

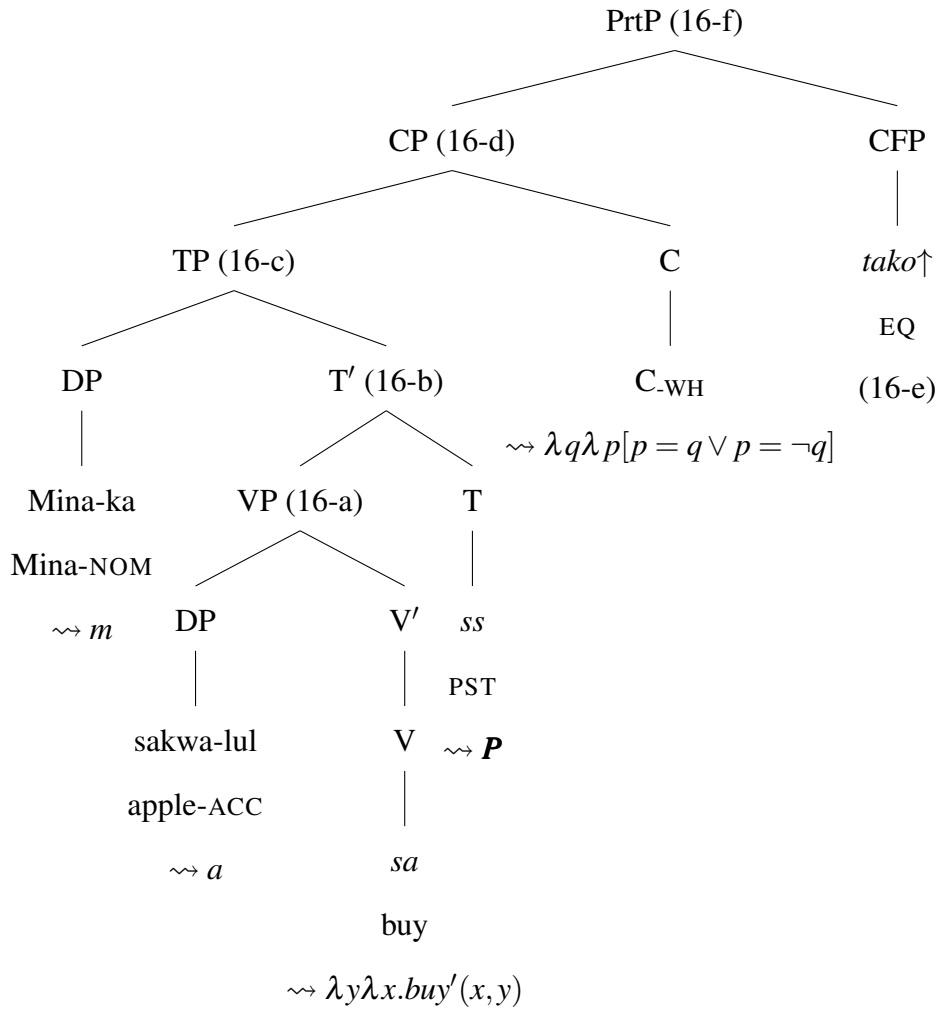
3.3 Polar (yes/no) EQs

Lastly, this section presents the semantic and pragmatic analysis of polar (yes/no) EQs. The steps of the derivation are similar to those of *wh*-EQs because polar-EQs are also realized by *tako*↑, as in the example below.

- (14) Mina-ka sakwa-lul sa-ss-tako↑?
 Mina-NOM apple-ACC buy-PST-EQ
 ‘MINA BOUGHT THE APPLES?’

The key difference between *wh*- and polar EQs results from the C head. In polar EQs, it denotes a logical operator that applies to a single proposition to return the corresponding set of propositions p that are identical to the proposition q or the negation of the proposition q ($\lambda q \lambda p [p = q \vee p = \neg q]$), along the line of Karttunen's (1977) treatment of polar INTs. The structure of polar EQs is identical to that of polar INTs up to the CP level that combines with the CFP. The tree in (15) illustrates the structure of the polar EQ in (14). (15), together with (16-a-f), provides the logical translation of each node, and the top-most node corresponds to the polar EQ in (14). The steps of the derivation of the polar EQ meaning are almost identical to the single-*wh* EQs except for the absence of a *wh*-word. The two-place relation over individuals denoted by the verb *sa* 'buy' does not combine with a free variable. Instead, it combines with the object individual denoted by the object DP *sakwa-lul* 'the apples' and results in a function over individuals as translated in (16-a). The predicate is rewritten as the past tense form as in (16-b). The function then combines with the subject individual denoted by the subject DP *Mina-ka* 'Mina.' Thus, the resulting TP is represented as the formula in (16-c). The C_{WH} operator denoted by the C head combines with the TP and returns a set of propositions as translated in (16-d). Finally, the CP combines with the CFP *tako* \uparrow , which introduces the presupposition that there is at least one proposition in the set of possible answers that has already been introduced in the discourse by uttering a sentence conveying it, as in (16-f).

(15)



- (16)
- a. VP $\rightsquigarrow \lambda x . buy'(x, a)_{\langle e, t \rangle}$
 - b. T' $\rightsquigarrow \lambda x . bought'(x, a)_{\langle e, t \rangle}$
 - c. TP $\rightsquigarrow \lambda w . bought'(w, m, a)_{\langle s, t \rangle}$
 - d. CP $\rightsquigarrow \lambda p [p = \lambda w . bought'(w, m, a) \vee p = \lambda w . \neg bought'(w, m, a)]_{\langle \langle s, t \rangle, t \rangle}$
 - e. tako↑ $\rightsquigarrow \lambda Q \lambda p : \underline{\exists q [UTTERED(q) \wedge Q(q)]} . Q(p)_{\langle \langle \langle s, t \rangle, t \rangle, \langle \langle s, t \rangle, t \rangle \rangle}$
 - f. PrtP \rightsquigarrow
 $\lambda p : \underline{\exists q [UTTERED(q) \wedge [q = \lambda w . bought'(w, m, a) \vee q = \lambda w . \neg bought'(w, m, a)]]} .$
 $[p = \lambda w . bought'(w, m, a) \vee p = \lambda w . \neg bought'(w, m, a)]_{\langle \langle s, t \rangle, t \rangle}$

The logical translation in (16-f), corresponding to the EQ in (14), can denote if and only if

the presupposition is satisfied. For example, there is a set of propositions in (17) in which the boldfaced proposition is the one that has been introduced to the discourse by uttering a sentence conveying it. The existence of the boldfaced proposition satisfies the presuppositional content introduced by the CFP *tako*↑. Thus, the set in (17) can be denoted by the EQ in (14).

(17) $\llbracket(14)\rrbracket = \{\mathbf{Mina\ bought\ the\ apples}, \text{Mina did not buy the apples}\}$

To summarize, this chapter has shown that the INT and EQ CFPs are semantically identical and inert, and the EQ CFP conveys the pragmatic content that represents the discourse restriction that applies to EQs: the presupposition that one of the possible answers to the EQ being conveyed has been previously conveyed in the discourse by uttering a sentence conveying it. In Sections 3.2 and 3.3, I have shown that my analysis can successfully derive the meaning of single-*wh* and polar EQs in a simple and familiar way using previously established semantic theory of questions. The next chapter will discuss the semantic and pragmatic analysis of EQs with multiple *wh*-words and present novel data on the available readings in them.

Chapter 4

A semantic and pragmatic analysis of Korean EQs – step 2: multiple-*wh* EQs

This chapter presents the semantic and pragmatic analysis of multiple-*wh* EQs.¹ The precise denotation of a multiple-*wh* EQ depends on what reading it bears and the intuition associated with the reading. As described in §2.3, multiple-*wh* EQs in Korean allow for three available readings: single-pair, pair-list, and functional. Existing work on EQs has either ignored multiple-*wh* EQs or claimed that they can receive a single-pair reading only (e.g., Beck & Reis 2018; Chernova 2017). Section 4.1 discusses how multiple-*wh* EQs with the single-pair reading can be analyzed by the proposal I presented in the previous chapter. Then, Section 4.2 reports the first-ever experimental evidence that Korean multiple-*wh* EQs, instead, resemble multiple-*wh* INTs in the type of available readings as well. Lastly, Section 4.3 sketches how my analysis can derive the meanings of pair-list and functional EQs based on existing semantic analyses of pair-list and functional INTs. These new findings further support my analysis that treats EQs as semantically identical to INTs.

4.1 Analysis of multiple-*wh* EQs with a single-pair reading

This section presents the semantic and pragmatic analysis of multiple-*wh* EQs, focusing on their single-pair reading. The example below shows a multiple-*wh* EQ marked by *tako*↑.

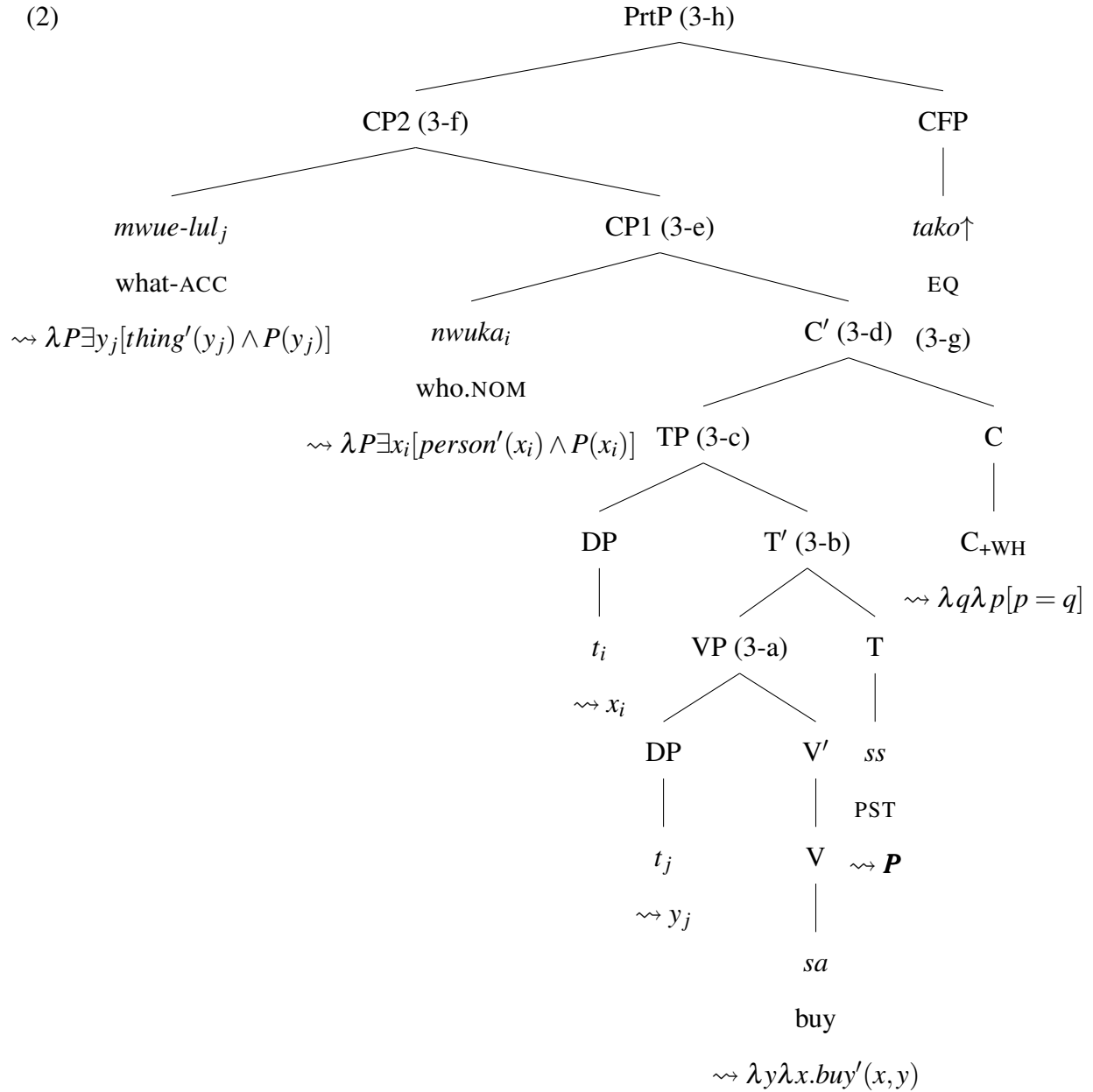
¹All the multiple-*wh* EQ examples in this chapter contain two *wh*-words for simplicity, but there is no limit in the number of *wh*-words in multiple-*wh* EQs (just as multiple-*wh* INTs as discussed in §2.2).

The intuition associated with the single-pair reading of the EQ in (1) is that the appropriate answer, which must have already been introduced in the discourse as for all EQs, is conveyed by a declarative sentence resembling the EQ except for the *wh*-words being replaced by non-*wh* constituents, i.e., from the EQ ‘WHO bought WHAT?’ in (1), the answer ‘Mina bought the apples’ is derived, with the single ordered pair ⟨Mina, apples⟩ summarizing the two pieces of new information that are conveyed by the answer.

- (1) Nwuka mwue-lul sa-ss-tako↑?
 who.NOM what-ACC buy-PST-EQ
 ‘WHO bought WHAT?’

As I did for single-*wh* and polar EQs in Chapter 3, I assume that multiple *wh*-EQs share the same structure as multiple-*wh* INTs up to the CFP. The tree in (2) represents the structure of the multiple-*wh* EQ in (1), and (3-a-h) provides the logical translation of each node. The top-most node corresponds to the full sentence in (1). All the steps of the derivation are similar to those of the derivation of single-*wh* EQs except for the presence of two *wh*-words, rather than just one. The verb *sa* ‘buy’ denotes a two-place relation over individuals, and first combines with the object *wh*-trace co-indexed with the *wh*-word *mwue-lul* ‘what’ that translates into a free variable. The resulting VP, represented as a function over individuals in (3-a), is rewritten as the past tense form, as in (3-b). The function denoted by T' combines with the subject *wh*-trace co-indexed with the *wh*-word *nwuka* ‘who’ and results in an open formula with two free variables as in (3-c). As in single-*wh* EQs, the C head in multiple-*wh* EQs denotes the C_{+WH} operator that forms a set of propositions p that is identical to a given proposition q . Thus, C' denotes a set of propositions that translates into (3-d). However, unlike single-*wh* EQs, the structure of multiple-*wh* EQs like (1) has two CP levels, as in (2). Each CP introduces one *wh*-word in its Spec. In CP1, the existential generalized quantifier denoted by the subject *wh*-word ‘who’ combines with the set of propositions denoted by C' via Karttunen’s WH-quantification rule and binds the free variable ($\exists x_i$). The resulting CP1 translates into (3-e), where there is still a free variable. The remaining

free variable is bound by the second existential generalized quantifier ($\exists y_j$) denoted by the object *wh*-word ‘what’ in the CP2 Spec, resulting in CP2 that translates into (3-f) and denotes a set of propositions. As the CFP *tako* \uparrow combines with CP2 and introduces the presuppositional content without affecting the denotation, the highest node S, corresponding to the EQ in (1), denotes the same set of propositions as CP2 with the extra presuppositional content such that at least one proposition in the set of possible answers has already been introduced in the discourse by uttering a sentence conveying it, as represented in (3-h).



- (3)
- VP $\rightsquigarrow \lambda x . buy'(x, y_j)_{\langle e, t \rangle}$
 - T' $\rightsquigarrow \lambda x . bought'(x, y_j)_{\langle e, t \rangle}$
 - TP $\rightsquigarrow \lambda w . bought'(w, x_i, y_j)_{\langle s, t \rangle}$
 - C' $\rightsquigarrow \lambda p [p = \lambda w . bought'(w, x_i, y_j)]_{\langle \langle s, t \rangle, t \rangle}$
 - CP1 $\rightsquigarrow \lambda p \exists x_i [person'(x_i) \wedge p = \lambda w . bought'(w, x_i, y_j)]_{\langle \langle s, t \rangle, t \rangle}$
 - CP2 $\rightsquigarrow \lambda p \exists y_j \exists x_i [person'(x_i) \wedge thing'(y_j) \wedge p = \lambda w . bought'(w, x_i, y_j)]_{\langle \langle s, t \rangle, t \rangle}$

- g. $tako\uparrow \rightsquigarrow \lambda Q\lambda p : \exists q[\underline{UTTERED}(q) \wedge Q(q)].Q(p) \langle \langle \langle s,t \rangle, t \rangle, \langle \langle s,t \rangle, t \rangle \rangle$
- h. $PrtP \rightsquigarrow \lambda p : \exists q[\underline{UTTERED}(q) \wedge \exists x_i \exists y_j [person'(x_i) \wedge thing'(y_j) \wedge q = \lambda w.bought'(w, x_i, y_j)]] . \exists x_i \exists y_j [person'(x_i) \wedge thing'(y_j) \wedge p = \lambda w.bought'(w, x_i, y_j)] \langle \langle s,t \rangle, t \rangle$

Due to the presupposition, the multiple-*wh* EQ in (1) cannot be assigned a denotation unless the presupposition is satisfied. As an example, (4) provides a set of possible answers, with the one in bold being the one that has already been introduced in the discourse and, therefore, satisfies the presuppositional requirement of (1)/(3-h). Thus, the EQ in (1) can denote the set in (4).

- (4) $\llbracket (1) \rrbracket = \{ \mathbf{Mina bought the apples}$, Rowoon bought the peaches, Taeyang bought the oranges, ... }

4.2 Multiple-*wh* EQs with pair-list and functional readings: experimental evidence

In Chapter 2, I have claimed that multiple-*wh* INTs and EQs in Korean allow for three readings: single-pair, pair-list, and functional (§2.2-3). For instance, either the multiple-*wh* INT in (5-a) or the multiple-*wh* EQ in (5-b) can be answered by the “single-pair” answer in (6-a), the “pair-list” answer in (6-b), or the “functional” answer in (6-c).

- (5) a. Nwuka mwue-lul sa-ss-ni↓? *multiple-wh INT*
 who.NOM what-ACC buy-PST-Q
 ‘Who bought what?’
- b. Nwuka mwue-lul sa-ss-tako↑? *multiple-wh EQ*
 who.NOM what-ACC buy-PST-EQ
 ‘WHO bought WHAT?’
- (6) a. Mina-ka sakwa-lul sa-ss-ta. *single-pair*
 Mina-NOM apple-ACC buy-PST-DECL
 ‘Mina bought the apples.’

- b. Mina-ka sakwa-lul sa-ss-ko, Rowoon-ika pokswunga-lul
 Mina-NOM apple-ACC buy-PST-CONN Rowoon-NOM peach-ACC
 sa-ss-ko, Taeyang-ika oleynci-lul sa-ss-ta. *pair-list*
 buy-PST-CONN Taeyang-NOM orange-ACC buy-PST-DECL
 ‘Mina bought the apples, Rowoon bought the peaches, and Taeyang bought the
 oranges.’
- c. haksayng kakca-ka caki-ka kacang coha.ha-nu-n kwail-ul
 student each-NOM one’s own-NOM most like.do-IND-MD fruit-ACC
 sa-ss-ta. *functional*
 buy-PST-DECL
 ‘Each student bought their favorite fruits.’

The data in (6) were initially based on my own intuition as a native speaker of Korean, together with those of other native speakers I consulted informally, either in person or remotely. The existing literature on EQs in languages other than Korean repeatedly makes the claim that EQs have a limited set of available readings when compared to INTs, allowing only for a single-pair answer (English, Beck & Reis 2018) or a single individual answer (Spanish, Chernova 2017). Furthermore, the functional reading in multiple-*wh* EQs has never been discussed in existing literature, while the pair-list reading in multiple-*wh* EQs has been at least mentioned and ruled out. Given this sharp contrast between my preliminary findings in Korean and the reported empirical generalization about other languages, I decided to further investigate the Korean data in a more controlled manner by means of two acceptability judgment surveys: one for available readings of multiple-*wh* INTs (INT Survey) and the other for available readings of multiple-*wh* EQs (EQ Survey).

Both surveys asked participants to rate a total of eight scenarios (all scenarios are provided in the Appendix). Each scenario was presented once to every participant in a randomized order, and only one scenario was shown on the screen so that participants could move on to the next scenario only if they rated the current scenario and clicked the next button. In the INT Survey, the scenarios described a conversation involving two people, one asking a multiple-*wh* INT and the other answering. In the EQ Survey, the scenarios were similar to those in the INT Survey,

but the question being asked was a multiple-*wh* EQ. The answers in the INT Survey and the antecedents in the EQ Survey had four different variants: single-pair, pair-list, functional, and a clause that provides irrelevant information to the question, set as the control variable for a reference point of what rating score can count as unacceptable. Example scenarios are shown below: (7) from the INT Survey and (8) from the EQ Survey. The INT Survey was built by providing a relevant scenario like (7), where one of the two interlocutors, Mina in (7), asks a multiple-*wh* INT. Then, the other interlocutor, Mina's friend in (7), replies with a single-pair (SP) answer (7-a), or a pair-list (PL) answer (7-b), or an appropriate functional (FN) answer (7-c), or an irrelevant (IR, control) answer (7-d). Similarly, the EQ Survey was built by providing a relevant scenario like (8), but the appropriate answer is provided first as the antecedent to improve the naturalness of the scenario because EQs cannot be uttered out of the blue and require a discourse antecedent, whose meaning must be the same as the meaning of the appropriate answer. One of the two interlocutors, Mina's friend in (8), first presents a declarative clause with an SP statement (8-a), or a PL statement (8-b), or an FN statement (8-c), or an IR statement (8-d). Then, the other interlocutor, Mina in (8), asks a multiple-*wh* EQ. The actual scenario used in the surveys included only one among the four variants of the answer/antecedent (a-d). Every variant was shown twice throughout the whole survey. Every scenario was presented only once during the survey to avoid any influence of familiarity with a scenario. Below every scenario, there was a question for participants asking to rate how natural the conversation in the scenario was based on the rating scale from 1 (completely unnatural) to 7 (completely natural). The instructions of both surveys provided the definition of "natural" as "being possible to imagine native Korean speakers conversing like the given scenario."

(7) Example scenario from the INT Survey

미나의 친구들 몇 명이 여름방학동안 여행을 다녀왔다. 친구들이 여행을 다녀왔다는 소식을 듣고, 미나가 친구에게 묻는다.

Some of Mina's friends went on a trip over the summer break. After hearing the

news about their friends' trip, Mina asks her friend.

미나: “누가 어디를 여행했니?” (marked with the INT CFP 니 ni)

Mina: “Who traveled where?”

미나의 질문에 친구가 다음과 같이 대답한다.

The friend answers Mina's question as the following.

친구:

Friend:

- a. “소연이는 유럽을 여행했어.” *single-pair*
“Soyeon traveled to Europe.”
- b. “소연이는 유럽, 한나는 남미, 주영이는 중앙아시아를 여행했어.” *pair-list*
“Soyeon traveled to Europe, Hanna traveled to South America, and Juyoung traveled to Central Asia.”
- c. “각자 자기가 가장 가고 싶었던 지역을 여행했어.” *functional*
“Each and every one traveled to the place they wanted to visit the most.”
- d. “소연이는 인턴십을 했어.” *irrelevant*
“Soyeon did an intership.”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

(8) Example scenario from the EQ Survey

미나의 친구들 몇 명이 여름방학동안 여행을 다녀왔다. 방학이 끝나고 오랜만에 미나를 만난 친구가 미나에게 말한다.

Some of Mina's friends went on a trip over the summer break. Getting to see Mina after a while since the break, Mina's friend tells Mina.

친구:

Friend:

- a. “소연이는 유럽을 여행했어.” *single-pair*

“Soyeon traveled to Europe.”

- b. “소연이는 유럽, 한나는 남미, 주영이는 중앙아시아를 여행했어.” *pair-list*

“Soyeon traveled to Europe, Hanna traveled to South America, and Juyoung traveled to Central Asia.”

- c. “각자 자기가 가장 가고 싶었던 지역을 여행했어.” *functional*

“Each and every one traveled to the place they wanted to visit the most.”

- d. “소연이는 인턴십을 했어.” *irrelevant*

“Soyeon did an internship.”

친구의 말에 놀란 미나는 다음과 같이 묻는다.

Mina, surprised by what the friend said, asks the following.

미나: “누가 어디를 여행했다고?” (marked with the EQ CFP *다고 tako*)

Mina: “*WHO* traveled *WHERE*?”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

Participants were recruited on social media platforms (X—former Twitter—, Bluesky, and KakaoTalk). Anyone who was willing could participate, but I excluded responses from participants who were not a native Korean speaker or did not fall under the age range of 19–39 based on the demographics questions provided at the end of the surveys.² Whether a participant was a native Korean speaker was determined based on a self-identification question asking for the name of the province in which they lived for the longest time until the age of 18. Participants received a URL address to the survey installed on Qualtrics via email and were allowed to complete it anytime and anywhere they wanted. Their participation was not monitored nor compensated. Thus, the INT Survey had 61 participants, while the EQ Survey had 53 participants. There was

²Adults over the age of 40 were not the target age range of the survey because the standard variety of Korean (Seoul Korean) possibly went through significant changes before 2000s, the time those adults must have spent the most of their adolescent years. The changes happened across at least three areas of the variety: acoustics, phonology, and lexicon (e.g., Hyunjung Lee & Jongman 2015; Kwon 2023; Y. Oh & Son 2023). To the best of my knowledge, a comprehensive diachronic analysis of standard Korean has not yet been published.

no overlap in participants across the two surveys. The demographics of the participants in both surveys were highly skewed to women and from Seoul/Gyeonggi province, where the standard variety of Korean is spoken, so the effects of gender and dialect region are unknown.

For the analysis, I converted the responses to z-scores to understand every participant's rating scores with respect to normal distribution. My proposal predicts that the rating scores in both surveys show the same pattern, such that the scores for PL and FN are as high as the score for SP, and the scores for SP, PL, and FN are significantly higher than the control score. On the other hand, previous claims make the following predictions: there is an asymmetry between INTs and EQs such that the rating scores for SP, PL, and FN in the INT Survey are acceptable, while in the EQ Survey, the rating scores for PL and FN are as low as the score for IR and the SP is the only acceptable reading. The findings from the survey align with my own intuitions as well as with the prediction my proposal makes: EQs license the same kinds of readings as INTs. First, the INT Survey has revealed that SP, PL, and FN are more preferred as an appropriate answer to multiple-*wh* INTs in comparison to IR. PL scored the highest (mean z-score = 0.507), followed by SP (0.128), FN (-0.232), and IR the lowest (-1.356). The mean acceptability z-score for the SP, PL, and FN conditions were all significantly higher than the mean acceptability z-score for IR by t-test (SP vs. IR: $t(60) = 18.93, p < 2.2e-16$; PL vs. IR: $t(60) = 24.08, p < 2.2e-16$; FN vs. IR: $t(60) = 15.23, p < 2.2e-16$). Those results follow the existing cross-linguistic understanding of multiple-*wh* INTs such that they allow single-pair, pair-list, and functional readings. Nevertheless, crucially, the EQ Survey has revealed that Korean EQs, too, allow single-pair, pair-list, and functional readings. That is, the results of the EQ Survey do not follow the claim that EQs allow for a restricted type of available readings when compared to INTs. The scores have shown the same patterns as in the INT Survey; PL scored the highest (mean z-score = 0.513), followed by SP (0.331), FN (-0.527), and IR the lowest (-1.261). Again, the differences between the scores for the SP, PL, and FN conditions and the score for IR were statistically significant by t-test (SP vs. IR: $t(52) = 20.23, p < 2.2e-16$; PL vs. IR: $t(52) = 24.87, p < 2.2e-16$; FN vs. IR: $t(52) = 8.50, p < 2.2e-16$). Figures 4.1 and 4.2 summarize the results, showing a similar tendency in the

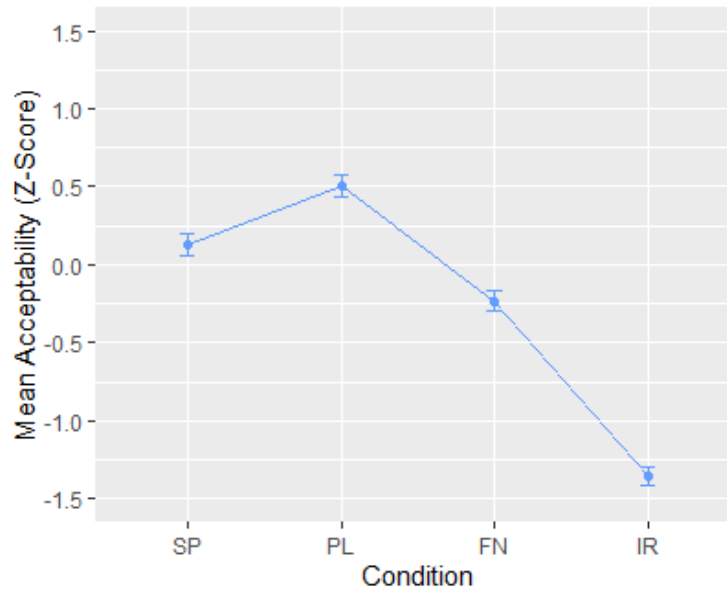


Figure 4.1. Mean acceptability score by condition (INTs)

acceptability scores to the readings.

Interestingly, in both surveys, the pair-list reading has received the highest rating score, even higher than the single-pair reading, which has been considered as a default reading in multiple *wh*-INTs and EQs (SP vs. PL in both surveys: $p < 0.05$ by t-test). Also, the mean score for the single-pair reading in the INT Survey (0.128) is lower than that in the EQ survey (0.331), and the difference is statistically significant ($p < 0.05$). These differences can possibly be attributed to the scenarios, which state that there are multiple individuals involved in the event described in the scenario. For instance, the scenarios (7) and (8) stated that “some of Mina’s friends” went on a trip. Likewise, all the events described in other scenarios used in the surveys involved multiple individuals (see Appendix A for the full set of scenarios). Although the scenarios were intentionally designed to warrant any type of readings to the multiple-*wh* question while maintaining the scenarios identical across all variants of readings, participants may have considered the pair-list reading as the most felicitous. Moreover, in the INT Survey, since the multiple-*wh* INT in every scenario was seeking information unknown to the speaker, participants may have expected the answer to be maximally informative and thus to be pair-list, not single-pair.

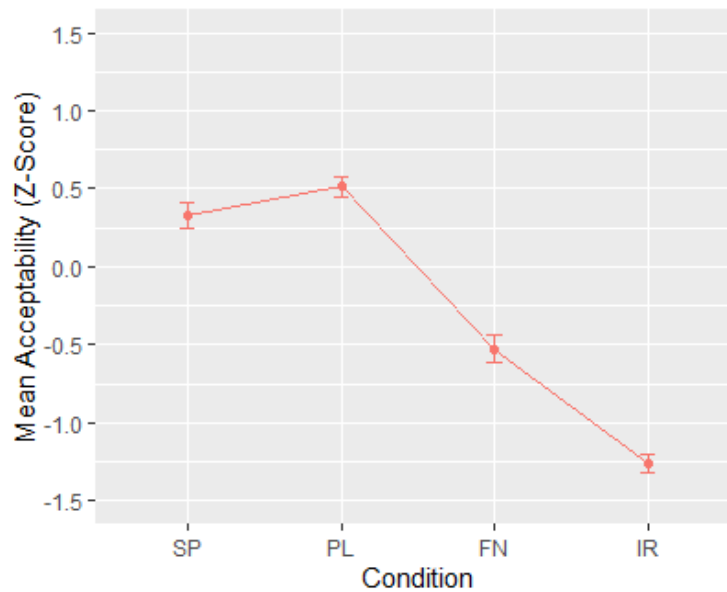


Figure 4.2. Mean acceptability z-score by condition (EQs)

In the case of the EQ survey, since the nature of any EQ is to seek the previous utterance, whether the antecedent conveys maximal information with regards to the given situation may have had less influence on participants' rating of the naturalness of the conversation.

Another interesting aspect of the results is the scores for the functional reading. In the INT Survey, the mean raw score for the functional reading was 4.11, while that in the EQ Survey was 3.15. On the 1–7 scale, those scores are somewhat in the middle, implying the functional reading is not completely unacceptable as the control variable, the irrelevant ones (mean raw: 1.74 (INT), 1.47 (EQ)); but at the same time, it is not as acceptable as single-pair and pair-list readings (SP mean raw: 4.86 (INT), 5.27 (EQ)); PL mean raw: 5.62 (INT), 5.72 (EQ)). The differences between the functional reading and other variants were statistically significant at the level of 0.05 in both surveys. This marginal acceptance may be attributed to Gricean conversational maxims, such that the functional readings used in the survey violate the maxim of Quantity—be as informative as required (Grice 1975). For instance, the functional reading in (7) and (8), “each and every one traveled to the place they wanted to visit the most,” does not provide specific information about which friend of Mina traveled to which location that would

constitute salient pairs under the given discourse context; thus, it is not fully acceptable due to the lack of sufficient information. The functional readings in other scenarios, although they somewhat answer the questions being presented, do not necessarily provide precise information on the identity of the subject and the object, like other functional clauses such as “every man loves his mom” do. Also, the situation described by the functional answer in each scenario, e.g., “each and every one traveled to the place they wanted to visit the most (Scenario A),” “each and every one played the instrument they’re most confident in (Scenario E),” “each and every one liked the character they thought the most handsome (Scenario H),” and so on, might not be that surprising, while every scenario stated that the speaker of the EQ was surprised by what has been said. Nevertheless, the scores for the functional reading were higher than the control variables (which were completely unacceptable) despite the violation of conversational maxims. Therefore, I speculate that pragmatics, not semantics, is responsible for the marginal acceptance of the functional reading. For future research, I plan to modify the scenarios and the functional reading variants and conduct the surveys again. After eliminating those two factors (scenarios implying pair-list and answers violating a conversational maxim) by modifying/rewriting the scenarios, I expect the results to show similar acceptance scores across the single-pair, pair-list, and functional readings in both INTs and EQs.

In sum, EQs in Korean allow for the same kinds of readings with the same level of acceptability as INTs, which contrasts with previous cross-linguistic claims about EQs in other languages that they allow for neither pair-list nor functional readings. The data strongly support my proposal treating EQs and INTs as semantically identical because the results of the two surveys show the same pattern: PL being the highest followed by SP and FN being marginal. Furthermore, the results demand a new systematic investigation to revise the previous impressionistic assumption that pair-list reading is unavailable in multiple-*wh* EQs because my participants rated the pair-list readings even higher than the single-pair readings. The data offer strong evidence that the interpretative difference between INTs and EQs does not arise from the semantics, which in turn suggests that what is responsible for the difference is in the pragmatics,

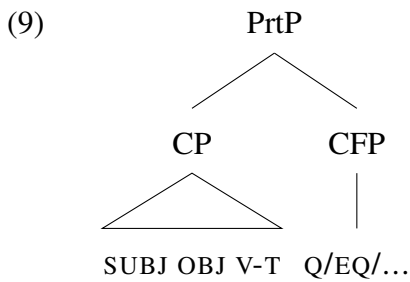
as I have proposed in the previous chapter. Now, I move on to the next section to discuss how my analysis can account for pair-list and functional EQs by adopting existing analyses on pair-list and functional INTs.

4.3 Preliminary analysis of multiple-*wh* EQs with pair-list and functional readings

Before concluding the chapter, I sketch how my analysis of EQs can be extended to account for both their pair-list and their functional readings. Multiple-*wh* EQs with a single-pair reading have been analyzed based on the same assumptions I have made for single-*wh* and polar EQs (Ch. 3 §3.1) and existing analysis of multiple-*wh* INTs with a single-pair reading (§4.1). Multiple-*wh* EQs with pair-list and functional readings, too, can be analyzed based on the same assumptions and existing analysis of multiple-*wh* INTs with pair-list and functional readings.

As explained in Chapter 2 (§2.2), the pair-list reading of a multiple-*wh* INT is associated with the intuition that the appropriate answer to the INT contains a list of declarative sentences each of which resembles the INT with the two *wh*-words replaced with two non-*wh* constituents and conveys a proposition of the kind ‘that $R(x)(y)$ ’ with R being a two-place relation that holds between two individuals. The same intuition holds for multiple-*wh* EQs with the pair-list reading with extra presuppositional content such that there is a list of declarative sentences that has already been conveyed in the discourse. On the other hand, the functional reading of a multiple-*wh* INT is associated with the intuition that the appropriate answer to the INT is a declarative sentence that resembles the INT with the two *wh*-words replaced with two non-*wh* constituents. However, in this case, the higher non-*wh* constituent is quantificational and binds the pronominal inside the lower non-*wh* constituent. That is, the functional reading has a dependency between the higher non-*wh* constituent, which denotes an individual that is an argument of the function, and the lower non-*wh* constituent, which denotes an individual that is the corresponding output value of the function. Thus, the proposition conveyed by the answer is the kind ‘that $R(x)(f(x))$.’

Multiple-*wh* EQs with the functional reading invite the same intuition with extra presuppositional content such that there is a proposition (which involves a dependency between the higher and lower non-*wh* constituents) that has already been conveyed in the discourse. Therefore, I posit that multiple-*wh* INTs and EQs with the pair-list and functional readings share the same steps of derivation up to the CFP, assuming a structure schematized in (9), reiterated from Ch. 3 §3.1. In INTs, the highest CP combines with the CFP *ni*, while in EQs, the same highest CP combines with the CFP *tako*↑.



I adopt the view from Dayal (1996) and Dayal (2016) and treat multiple-*wh* INTs with pair-list and functional readings as semantically identical. Building on insights from Chierchia (1993), Dayal posits that they share the same steps of semantic derivation, and they too denote a set of propositions, just as multiple-*wh* INTs with the single-pair reading. Dayal argues that pair-list and functional readings are outputs of the same semantic mechanism, and the pair-list reading is a spell-out “graph” of the one-to-one correspondence created by the functional reading (Dayal 1996, p. 118). For example, the multiple-*wh* INT in (10-a) can be answered with the pair-list answer in (10-b) and the functional answer in (10-c). According to Dayal, both answers (10-b) and (10-c) have the same functional dependency and result in the same list of ordered pairs (as in (10-b)) when the extension of the function in (10-c) (*one’s favorite fruits*) is in the given context. The difference between the pair-list reading and the functional reading is that the functional reading has a linguistic expression (such as *every*) that directly conveys the functional dependency. Dayal claims that the C head in *wh*-INTs is inherently ambiguous with two possible meanings: the one that triggers the single-pair reading ($\lambda q \lambda p [p = q]$ as used in §4.1) and another

that triggers the pair-list and functional readings.

- (10) a. Who bought what?
 b. Mina bought the apples, Rowoon bought the peaches, and Taeyang bought the oranges.

⟨Mina, apples⟩, ⟨Rowoon, peaches⟩, ⟨Taeyang, oranges⟩

- c. Every student bought their favorite fruits.

PERSON	<i>one's favorite fruits</i>	THING
Mina	→	the apples
Rowoon	→	the peaches
Taeyang	→	the oranges

Crucially, Dayal claims that the C head in *wh*-INTs is inherently ambiguous with two possible meanings: the ordinary head C_{+WH} that occurs with the single-pair reading ($\lambda q \lambda p [p = q]$ as used in §4.1) and the functional head $C_{+WH\text{-functional}}$ that occurs with the pair-list and functional readings. That is, the multiple-*wh* INT in (10-a) has a structure schematized in (11-a) in which the C head is the functional $C_{+WH\text{-functional}}$ that logically translates into (11-b). $C_{+WH\text{-functional}}$ is a logical operator looking for its sister's (TP) denotation, i.e., a 2-place relation $Q_{\langle\langle ee, e \rangle, st \rangle}$ between an individual $y_{\langle e \rangle}$ (corresponds to t_j) and a function $f_{\langle e, e \rangle}$ from individuals to individuals (corresponds to t_i^j). It returns a function that will determine the domain $D_{\langle e, t \rangle}$ of f (the set of its inputs) by combining the subject *wh*-word, as well as the range $R_{\langle e, t \rangle}$ of f (the set of its outputs) by combining with the object *wh*-word. Dayal argues that the generalized quantifier meaning of *wh*-words undergo type shift from $\langle\langle e, t \rangle, t \rangle$ to $\langle e, t \rangle$ through Partee's (1987) BE operator ($\lambda \mathcal{P}_{\langle\langle e, t \rangle, t \rangle} \lambda x_e [\mathcal{P}(\lambda y_e [y = x])]$) so the domain and range arguments can be determined. Alternatively, *wh*-words may be treated to denote a set of individuals and go through another type shift operation THE ($\lambda Q_{\langle e, t \rangle} \lambda P_{\langle e, t \rangle} [\exists x [\forall y [Q(y) \leftrightarrow y = x] \wedge P(x)]]$, Partee 1987) to acquire the generalized quantifier meaning. As for the INT in (10-a), the domain D is *person* (from *who*) and the range R is *thing* (from *what*). The grand intersection of all propositions p'

$(\cap \lambda p' \exists y \in D[p' = Q(y)(f)])$ “creates the graph” of each and every correspondence, which is the proposition p (Dayal 2016, p. 113). Thus, the INT ‘Who bought what?’ logically translates into (11-c).

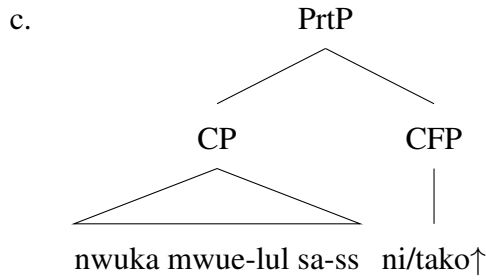
(11) Dayal’s C_{+WH} -functional (Dayal 1996; 2016)

- a. $[CP_2 \text{ what}_i [CP_1 \text{ who}_j [C' C_{+WH}\text{-functional} [TP t_j \text{ bought } t_i^j]]]]$
- b. $C_{+WH}\text{-functional}^3 \rightsquigarrow \lambda Q \lambda D \lambda R \lambda p \exists f [Dom(f) = D \wedge \forall y [R(f(y))] \wedge$
 $p = \cap \lambda p' \exists y \in D [p' = Q(y)(f)]]$
- c. Who bought what? $\rightsquigarrow \lambda p \exists f [Dom(f) = person \wedge \forall y [thing(f(y))] \wedge$
 $p = \cap \lambda p' \exists y \in D [p' = \lambda w. bought'(w, y, f(y))]]$

Now, I show how my analysis, in combination with Dayal’s analysis of multiple-*wh* INTs with the pair-list and functional readings, can derive the correct meaning for EQs. I assume the multiple-*wh* INT in (12-a) and the multiple-*wh* EQ in (12-b) to have the same morpho-syntactic and semantic structure up to the CFP as in (12-c), regardless of their reading. If the INT and the EQ receive the single-pair reading, the CP translates into (13-a) due to the C head that denotes the standard C_{+WH} operation ($\lambda q \lambda p [p = q]$, §4.1). If the INT and the EQ receive the pair-list/functional readings, the CP translates into (13-b) due to the C head denoting the $C_{+WH}\text{-functional}$ in (11-b). Both types of CP in (13) denote a set of propositions.

- (12) a. $[_{PrtP} [CP \text{ nwuka mwue-lul sa-ss}] \text{ -ni?}]$ *multiple-wh INT*
 who.NOM what-ACC buy-PST Q
 ‘Who bought what?’
- b. $[_{PrtP} [CP \text{ nwuka mwue-lul sa-ss}] \text{ -tako}\uparrow?]$ *multiple-wh EQ*
 who.NOM what-ACC buy-PST EQ
 ‘WHO bought WHAT?’

³Dayal (1996) has left the variable p open and free until the highest CP, although it is introduced in TP. I instead abstract over the variable p in C and bind it with the lambda operator to maintain the steps of derivation identical to single-*wh* EQ §3.2, polar EQ §3.3, and multiple-*wh* EQ with the single-pair reading §4.1, in which I introduce the variable w and the lambda operator that binds w (i.e., intensionality) in TP.



(13) Logical translation of the CP in (12)

- a. Single-pair $\rightsquigarrow \lambda p \exists y \exists x [person'(x) \wedge thing'(y) \wedge p = \lambda w.bought'(w, x, y)]_{\langle \langle s, t \rangle, t \rangle}$
- b. Pair-list/functional $\rightsquigarrow \lambda p \exists f [Dom(f) = person' \wedge \forall y [thing'(f(y))]] \wedge$
 $p = \cap \lambda p' \exists y \in person' [p' = \lambda w.bought'(w, y, f(y))]]_{\langle \langle s, t \rangle, t \rangle}$

As defined in Chapter 3 §3.1, the INT and EQ CFPs denote an identity function over sets of propositions, as translated in (14-a) for the INT CFP *ni* and in (14-c) for the EQ CFP *tako*↑. The EQ CFP also conveys pragmatic content as underlined: the presupposition about the existence of a proposition that has been previously introduced. Since both CFPs are a function over a set of propositions and the CP denotes a set of propositions, they can be combined without any further adjustments. The resulting full sentence S denotes the same set of propositions as the CP. The logical translation of the multiple-*wh* INT with the pair-list and functional readings in (12-a) is provided in (14-b), and the logical translation of the multiple-*wh* EQ with the pair-list and functional readings in (12-b) is provided in (14-d). Both of them denote a set of propositions such as (15) in which each proposition describes a “graph” of the function *f*. However, the EQ crucially differs from the INT due to the presuppositional content triggered by the EQ CFP underlined in (14-d). Unless the presupposition is satisfied, the EQ cannot denote a set like in (15).

- (14) a. $ni \rightsquigarrow \lambda Q \lambda p. Q(p)$
 b. $(12\text{-a}) \rightsquigarrow \lambda Q \lambda p. Q(p) (\lambda p \exists f [Dom(f) = person' \wedge \forall y [thing'(f(y))] \wedge$
 $p = \cap \lambda p' \exists y \in person' [p' = \lambda w. bought'(w, y, f(y))]])$
 $\Rightarrow \lambda p \exists f [Dom(f) = person' \wedge \forall y [thing'(f(y))] \wedge$
 $p = \cap \lambda p' \exists y \in person' [p' = \lambda w. bought'(w, y, f(y))]])$
 c. $tako \uparrow \rightsquigarrow \lambda Q \lambda p : \exists q [UTTERED(q) \wedge Q(q)]. Q(p)$
 d. $(12\text{-b}) \rightsquigarrow \lambda Q \lambda p : \exists q [UTTERED(q) \wedge Q(q)]. Q(p) (\lambda p \exists f [Dom(f) = person' \wedge$
 $\forall y [thing'(f(y))] \wedge p = \cap \lambda p' \exists y \in person' [p' = \lambda w. bought'(w, y, f(y))]])$
 $\Rightarrow \lambda p : \exists q [UTTERED(q) \wedge \exists f [Dom(f) = person' \wedge \forall y [thing'(f(y))] \wedge$
 $q = \cap \lambda p' \exists y \in person' [p' = \lambda w. bought'(w, y, f(y))]]. \exists f [Dom(f) = person' \wedge$
 $\forall y [thing'(f(y))] \wedge p = \cap \lambda p' \exists y \in person' [p' = \lambda w. bought'(w, y, f(y))]])$

- (15) {Mina bought the apples and Rowoon bought the peaches and Taeyang bought the oranges, Mina bought the peaches and Rowoon bought the oranges and Taeyang bought the peaches, Mina bought the oranges and Rowoon bought the peaches and Taeyang bought the apples, ...}

Thus far, I have shown that my analysis is compatible with an existing analysis of pair-list and functional readings and capable of capturing the parallelism between multiple-*wh* INTs and multiple-*wh* EQs. As the novel experimental evidence supports, they are semantically identical, denoting a set of propositions, and pragmatically differ such that multiple-*wh* EQs trigger the presupposition that at least one possible answer to the question has already been introduced to the discourse by uttering a sentence conveying it. Assuming an ambiguous C head (C_{+WH} for single-pair and $C_{+WH\text{-functional}}$ for pair-list and functional) also matches the descriptive property of Korean such that multiple-*wh* INTs and EQs have the identical morpho-syntactic form across readings.

The analysis I have adopted here may not be the most parsimonious one as it involves extra ad-hoc operations such as type shift. Several proposals have been made to account for the

pair-list and functional readings of multiple-*wh* INTs (e.g., Dayal 1996; Büring 2003; Kotek 2016; Xiang 2023. See Xiang (2023) for an overview), and all of them have primarily built upon English. As there has been no systematic study on the semantics of pair-list and functional questions in Korean, considerably more work should be carried out to further develop a full-fledged analysis of multiple-*wh* INTs and EQs with the pair-list and functional readings in Korean.

Chapter 5

Problems of existing analyses of EQs

This chapter emphasizes the merit of the analysis of EQs I have developed in the previous chapters by reviewing existing analyses of EQs and showing that none of them performs as well as mine in accounting for Korean EQs and their characterizing properties. Section 5.1 argues why the EQ CFP *tako*↑ needs to be assumed non-compositional by examining independent uses and functions of each element that could allegedly participate in the composition of *tako*↑—*ta*, *ko*, and ↑—outside EQs. Section 5.2 discusses existing analyses of EQs to show that none is satisfactory for Korean. Section 5.2.1 reviews existing analyses of Korean EQs and argues that they fail to account for the semantic and pragmatic properties of Korean EQs. Section 5.2.2 explores existing semantic and pragmatic analyses of EQs in languages other than Korean (mainly Indo-European languages) to show that they are at odds with the characterizing properties of Korean EQs discussed in Ch. 2 (§2.3).

5.1 Why the EQ CFP is non-compositional

In my analysis of EQs in Korean, I have assumed *tako*↑ to form a morpho-syntactic and semantic unit triggering the presuppositional content that is crucially responsible for the EQ interpretation. On the other hand, the default assumption in the literature so far has been to analyze *tako*↑ as compositional resulting from combining the declarative CFP *ta*, the quotative

particle *ko*, and the question intonation \uparrow (Noh 1995; Hyeran Lee 2010).¹ Nevertheless, the assumption is grounded only on morpho-syntactic resemblance without any discussion of whether the appropriate semantic/pragmatic contribution of *tako* \uparrow can be compositionally derived from those of the three markers. In the remainder of the section, I discuss the semantic and pragmatic properties of each marker to then show that their combination does not result in the semantic and pragmatic properties of *tako* \uparrow .

Marker 1. CFP *ta*: a declarative sentence-final CFP

First, I start by briefly examining the semantic and pragmatic behavior of the CFP *ta*. Examples in (1) are *ta*-final clauses, where (1-a) is accompanied by the falling final intonation \downarrow and (1-b) by the rising final intonation \uparrow . Both clauses behave like declaratives and can be translated into the same proposition-denoting formula, as shown in (1-c). That is, the CFP *ta* and the associated intonational contour on it do not seem to affect the semantic contribution of the sentence, i.e., its truth conditions. The difference in intonation triggers pragmatic differences, though. While the fall in (1-a) behaves like the neutral one for a declarative clause triggering no extra effects, the rise in (1-b) does trigger some discourse-pragmatic effects such as indicating the speaker’s attitude, e.g., the speaker assumes that the addressee will be surprised by what is being said, the speaker intends to continue talking, etc. (See H. R. S. Kim (2010) for a comprehensive pragmatic analysis of the effect of the high boundary tone on the CFP *ta*).

¹According to this view, EQs are a reduced form of reportative constructions like (i-a) formed by eliding the matrix subject and verb. More discussion on this line of proposal follows in §5.2.1.

- (i) a. [ne [Mina-ka sakwa-lul sa-ss-ta]-ko mal.ha-yss-ni?]
 [you [Mina-NOM apple-ACC buy-PST-DECL]-QT say.do-PST-Q]
 ‘Did you say that Mina bought the apples?’
 b. Mina-ka sakwa-lul sa-ss-ta-ko?
 Mina-NOM apple-ACC buy-PST-DECL-QT
 ‘(You said) Mina bought THE APPLES?’

- (1) a. Mina-ka sakwa-lul sa-ss-(ta↓)
 Mina-NOM apple-ACC buy-PST-TA
 ‘Mina bought the apples.’
- b. Mina-ka sakwa-lul sa-ss-(ta↑)
 Mina-NOM apple-ACC buy-PST-TA
 ‘Mina bought the apples. [it must be surprising to you; I’ll continue talking; etc.]’
- c. [Mina-ka sakwa-lul sa-ss-ta] $\rightsquigarrow \lambda w.bought'(w, Mina, apples)$

Not even the presence of a *wh*-word can turn a sentence with CFP *ta* into an interrogative sentence. As you may remember from Ch.2 §2.2., *wh*-words in Korean can be interpreted as indefinites or semantically behave like question words that characterize *wh*-INTs conveying constituent questions as their meaning. Whenever a *wh*-word occurs in a sentence marked by the CFP *ta*, the *wh*-word can only behave as an indefinite, and the whole sentence is always interpreted as proposition-denoting declarative sentence, regardless of the intonational contour on *ta*. For instance, (2-a) and (2-b) are identical clauses, both with the same *wh*-word *mwue* ‘what’ and the same CFP *ta*. They are both interpreted as declarative clauses denoting the proposition in (2-c). The falling intonation in (2-a) doesn’t trigger any semantic or pragmatic effect, while the rising intonation in (2-b) adds some further pragmatic constraints. Still, neither sentence can ever be interpreted as denoting a question of any kind.

- (2) a. Mina-ka mwue-lul sa-ss-(ta↓)
 Mina-NOM what/something-ACC buy-PST-TA
 ‘Mina bought something.’
- b. Mina-ka mwue-lul sa-ss-(ta↑)
 Mina-NOM what/something-ACC buy-PST-TA
 ‘Mina bought something. [it must be surprising to you; I’ll continue talking; etc.]’
- c. [Mina-ka mwue-lul sa-ss-ta] $\rightsquigarrow \lambda w \exists x [thing'(x) \wedge bought'(w, Mina, x)]$

Given these properties, CFP *ta* would be best described as a functional element denoting the identity function in (3-a). This function applies to the denotation of the sister node of CFP *ta*, a proposition (e.g., (3-b)), and returns the very same proposition (e.g., (3-c)).

- (3) a. $ta \rightsquigarrow \lambda p_{\langle s,t \rangle} . p$
 b. $[\text{CP Mina-ka sakwa-lul sa-ss}] \rightsquigarrow \lambda w. \text{bought}'(w, \text{Mina}, \text{apples})$
 c. $[[\text{CP Mina-ka sakwa-lul sa-ss}] ta]$
 $\rightsquigarrow \lambda p. p(\lambda w. \text{bought}'(w, \text{Mina}, \text{apples})) = \lambda w. \text{bought}'(w, \text{Mina}, \text{apples})$

In conclusion, CFP *ta* affects neither the semantics nor the presuppositional content of the sentence it occurs in. Also, it applies only to proposition-denoting sentences. If it actually occurred as one of the morphemes in *tako*↑, it wouldn't be the morpheme responsible for the presuppositional content of EQs, and it would have to undergo two significant changes. First, since it is the CP sister in an EQ that denotes a question, i.e., a set of propositions, *ta* would have to change its meaning from an identity function from proposition to proposition to a function from set of propositions to set of propositions. There is no independent evidence that *ta* can ever do that in any other construction since *ta* can never mark any question-denoting clause. Second, *ta* would have become able to combine with another CFP that is capable of question formation. However, there is no independent evidence that *ko* in *tako*↑ is capable of it.

Marker 2. CFP *ko*: a Boolean or discourse conjunction

I now move to the CFP *ko* to see if there is independent evidence that it could occur as a morpheme within *tako*↑. The CFP *ko* by itself can occur in inter-clausal or sentence-final positions and perform multiple morpho-syntactic, semantic, and pragmatic functions.² Regardless of its position, *ko* never triggers the discourse-pragmatic effect that characterizes EQs that were discussed in Ch. 3—the presupposition that one of the possible answers to the question has been previously uttered in the discourse. Inter-clausal *ko* exhibits two uses: as a conjunction connecting two clauses or as a complementizer that takes a clausal complement. First, *ko* is used as a conjunction in the sentences in (4). The sentence in (4-a) is a declarative clause that

²While I am aware that *ko* also occurs inter-phrasally, e.g., in between two VPs, I don't discuss inter-phrasal *ko* here because the center of the current discussion is about *ko* as a CFP. See Ceong (2019a) for the survey of the morpho-syntactic functions of *ko* and at least three syntactic contexts that license the appearances of *ko*.

consists of three declarative clauses, and the sentence in (4-b) is a *wh*-INT that consists of three interrogative clauses. In both sentences, *ko* occurs on every verbal complex except for the sentence-final verbal complex in which the sentence-final CFP occurs: *ta* in (4-a) and *ni* in (4-b). CFP *ko* in (4-a) behaves as a conjunction operator like English *and* that conjoins two clauses, each of which denotes a proposition in (4-a) or a set of propositions in (4-b).

(4) Inter-clausal *ko*: a Boolean conjunction

- a. Mina-ka sakwa-lul sa-ss-(ko) Rowoon-ika pokswunga-lul sa-ss-(ko)
 Mina-NOM apple-ACC buy-PST-(KO) Rowoon-NOM peach-ACC buy-PST-(KO)
 Taeyang-ika olaynci-lul sa-ss-ta. *declarative*
 Taeyang-NOM orange-ACC buy-PST-DECL
 ‘Mina bought the apples and Rowoon the peaches and Taeyang the oranges.’
- b. Mina-ka mwue-lul sa-ss-(ko) Rowoon-ika mwue-lul sa-ss-(ko)
 Mina-NOM what-ACC buy-PST-(KO) Rowoon-NOM what-ACC buy-PST-(KO)
 Taeyang-ika mwue-lul sa-ss-ni↓? *wh-INT*
 Taeyang-NOM what-ACC buy-PST-Q
 ‘What did Mina buy, what did Rowoon buy, and what did Taeyang buy?’

On the other hand, *ko* is used as a complementizer in sentences like in (5), somewhat similar to English *that*. The declarative sentence in (5-a) and the *wh*-INT in (5-b) both contain an embedded clause, which is the complement of the matrix verb *mal.ha* ‘say’ and *mit* ‘believe.’ Unlike the conjoined clauses in (4-a) and (4-b), the embedded clauses in (5-a) and (5-b) already have the sentence-final CFP *ta* at the end of their verbal complex, and *ko* follows. This use of *ko* has been often described as a “(indirect) quotative particle” where the embedded clause functions as the clausal complement of the matrix verb (Ceong 2019a).³ However, despite being described as a quotative particle, *ko* is not obligatory in such indirect quotation contexts. It can be omitted without affecting the grammaticality of the whole sentence while maintaining the ‘indirect quotation’ interpretation, as indicated with the parentheses in the sentences in (5). Furthermore,

³EQs have been claimed to be generated from indirect quotation primarily due to the morphological resemblance between the EQ CFP *tako* and the embedded clause-final CFP string *ta-ko* (e.g., Noh 1995; Hyeran Lee 2010). I rebut this claim in §5.2.1.

the context in which *ko* occurs is not restricted to indirect quotation. As in the examples in (5), verbs of communication (e.g., *mal.ha-* ‘say/tell,’ *solli.chi-* ‘yell,’ and *cwucang.ha-* ‘argue’) are not the only type of verbs that takes the embedded *ko*-final clause as its complement. Some verbs of attitude/cognition (e.g., *mit-* ‘believe,’ *sayngkak.ha-* ‘think,’ *sangsang.ha-* ‘imagine,’ *kiek.ha-* ‘remember’) can be the matrix verb of sentences like those in (5).

(5) Inter-clausal *ko*: a complementizer

- a. Rowoon-ika [[Mina-ka sakwa-lul sa-ss-ta-] $\overline{((ko))}$]
 Rowoon-NOM [[Mina-NOM apple-ACC buy-PST-DECL-] $\overline{((KO))}$]
 mal.ha/mit-ess-ta. *declarative*
 say.do/believe-PST-DECL
 ‘Rowoon said/believed that Mina bought the apples.’
- b. Rowoon-ika [[Mina-ka mwue-lul sa-ss-ta-] $\overline{((ko))}$]
 Rowoon-NOM [[Mina-NOM what-ACC buy-PST-DECL-] $\overline{((KO))}$]
 mal.ha/mit-ess-ni \downarrow ? *wh-INT*
 say.do/believe-PST-Q
 ‘What did Rowoon say/believe that Mina bought?’

The sentences in (4) and (5) can be uttered out of the blue and start a new discourse. Based on these observations, CFP *ko* as a conjunction can be translated into (6-a) in which the two variables *p* and *q* denote a proposition (type $\langle s, t \rangle$) or a set of propositions (type $\langle \langle s, t \rangle, t \rangle$). (6-b) provides the logical translation of the example in (4-a), ‘Mina bought the apples and Rowoon the peaches and Taeyang the oranges.’ CFP *ko* as a complementizer can be translated into (6-c), an identity function over propositions. (6-d) provides the logical translation of the example in (5-a), ‘Rowoon said/believed that Mina bought the apples.’ Neither the conjunction *ko* nor the complementizer *ko* bears the presuppositional content responsible for the EQ interpretation.

- (6) a. *ko* (Boolean conjunction) $\rightsquigarrow \lambda q \lambda p. p \wedge q$
 (*p* and *q* are of type $\langle s, t \rangle$ or $\langle \langle s, t \rangle, t \rangle$)
- b. [(4-a)] $\rightsquigarrow \lambda w [bought'(w, Mina, apples) \wedge bought'(w, Rowoon, peaches) \wedge$

bought'(w, Taeyang, oranges)]

- c. *ko* (complementizer) $\rightsquigarrow \lambda p_{\langle s,t \rangle} . p$
- d. [(5-a)] $\rightsquigarrow \lambda w . \textit{said/believed}'(w, Rowoon, \lambda w' . \textit{bought}'(w', Mina, apples))$

CFP *ko* in the sentence-final position marks either a declarative or a polar interrogative sentence, depending on the final intonation: It is declarative with falling intonation (*ko*↓) and a polar interrogative with rising intonation (*ko*↑). Neither type of *ko*-final sentence can be uttered out of the blue as they convey an extra piece of information or a follow-up question building on the preceding utterance, which can be either a declarative or an INT (M. S. Kim 2015; Yeon & Brown 2019). Examples in (7) show two different types of *ko*-final sentences: declarative and interrogative. In (7-a), the *ko*-final declarative sentence provides additional information following the preceding utterance of the speaker themselves, whereas in (7-b), the *ko*-final interrogative sentence conveys an additional polar question following the preceding polar INT. *Wh*-words in *ko*-final interrogative sentences can bear the indefinite or the interrogative reading depending on the final intonation: indefinite with the rising intonation as in (7-c) while interrogative with the falling intonation as in (7-d). In all four examples, the preceding utterance is necessary for the *ko*-final sentences to be felicitous.

- (7) a. Rowoon-ika pokswunga-lul sa-ss-ta. Mina-ka/nun sakwa-lul
 Rowoon-NOM peach-ACC buy-PST-DECL Mina-NOM/TOP apple-ACC
 sa-ss-ko↓
 buy-PST-KO
 ‘Rowoon bought the peaches. And Mina bought the apples.’
- b. Rowoon-ika pokswunga-lul sa-ss-ni? Mina-ka/nun sakwa-lul sa-ss-ko↑
 Rowoon-NOM peach-ACC buy-PST-Q Mina-NOM/TOP apple-ACC buy-PST-KO
 ‘Did Jihyo buy the peaches? And did Mina buy the apples?’
- c. Rowoon-ika pokswunga-lul sa-ss-ni? Mina-ka/nun mwue-lul
 Rowoon-NOM peach-ACC buy-PST-Q Mina-NOM/TOP what/something-ACC
 sa-ss-ko↑
 buy-PST-KO
 ‘Did Rowoon buy the peaches? And did Mina buy something?’

- d. Rowoon-ika mwue-lul sa-ss-ni? Mina-ka/nun mwue-lul
 Rowoon-NOM what-ACC buy-PST-Q Mina-NOM/TOP what/something-ACC
 sa-ss-(ko↓) ?
 buy-PST-KO
 ‘What did Rowoon buy? And what did Mina buy?’

These examples show that the discourse condition of the sentence-final CFP *ko* is to have a preceding utterance, which, at a glimpse, might seem quite similar to the discourse condition of EQs. However, the crucial difference between *ko*-final sentences and EQs is that EQs always convey a question whose answer has been conveyed by a preceding utterance, while *ko*-final clauses do not. Putting aside the fact that *ko*-final sentences can be declarative as well, *ko*-final interrogative sentences do not require their preceding utterances to convey their answer. For example, (8) shows a *ko*-final interrogative sentence that follows a declarative sentence. The preceding utterance, ‘Rowoon bought the peaches,’ is not among the appropriate answers to the polar question conveyed by the *ko*-final interrogative sentence.

- (8) Rowoon-ika pokswunga-lul sa-ss-ta. Mina-ka/nun sakwa-lul sa-ss-(ko↑)
 Rowoon-NOM peach-ACC buy-PST-DECL Mina-NOM/TOP apple-ACC buy-PST-KO
 ‘Rowoon bought the peaches. And did Mina buy the apples?’

Based on these observations, the sentence-final CFP *ko* seems to behave more like a discourse-level conjunction that introduces the presupposition that there is a previous utterance q , either a declarative clause (type $\langle s, t \rangle$) or an interrogative clause (type $\langle \langle s, t \rangle, t \rangle$), that is related (R) to what is being conveyed in the *ko*-final sentence (p , either type $\langle s, t \rangle$ or $\langle \langle s, t \rangle, t \rangle$ because *ko*-final clauses are either declarative or interrogative), which is a weaker discourse restriction than that of EQs where their preceding utterances must be the answer (of type $\langle s, t \rangle$) to the EQ being conveyed. The logical translation of the sentence-final *ko* is shown in (9-a) with the presuppositional content underlined, which can derive a proposition with a presupposition (9-b) and a set of propositions (a polar question) with a presupposition (9-c).

- (9) a. ko (discourse conjunction) $\rightsquigarrow \lambda p : \underline{\exists q[UTTERED(q) \wedge R(q, p)]}.p$
 (p and q are of type $\langle s, t \rangle$ or $\langle \langle s, t \rangle, t \rangle$)
- b. [[CP Mina-ka sakwa-lul sa-ss] ko_{\downarrow}]
 $\rightsquigarrow: \underline{\exists q[UTTERED(q) \wedge R(q, \lambda w'.bought'(w', Mina, apples))]}.$
 $\lambda w.bought'(w, Mina, apples)$
- c. [[CP Mina-ka sakwa-lul sa-ss] ko_{\uparrow}]
 $\rightsquigarrow \lambda p : \underline{\exists q[UTTERED(q) \wedge R(q, \lambda p[p = \lambda w.bought'(w, Mina, apples) \vee$
 $p = \lambda w.\neg bought'(w, Mina, apples)])]}].[p = \lambda w.bought'(w, Mina, apples) \vee$
 $p = \lambda w.\neg bought'(w, Mina, apples)]$

To summarize, neither the logical operation assigned to the CFP ta nor the three possible logical operations conveyed by ko (reiterated below) bears the precise presuppositional content that crucially distinguishes EQs from INTs: there is at least one possible answer to the EQ that has been already introduced in the discourse by uttering a sentence conveying it. Also, the identity function assigned to ta as in (10-a) cannot combine with the CP that denotes a question, i.e., a set of propositions. In (10), there are two operations capable of combining with the CP denotation: the inter-clausal Boolean conjunction ko in (10-b) and the sentence-final discourse conjunction ko in (10-d). Nevertheless, ko is not allowed to precede ta ; the CFP string $ko-ta$ is ungrammatical although it is phonologically sound, e.g., **Mina-ka sakwa-lul sa-ss-ko-ta* ‘Mina-NOM apple-ACC buy-PST-KO-TA.’ Therefore, assuming $tako$ in EQs as a compositionally formed CFP from ta and ko is incompatible with the semantics and pragmatics of EQs.

- (10) a. $ta \rightsquigarrow \lambda p_{\langle s, t \rangle}.p$
- b. ko (Boolean conjunction) $\rightsquigarrow \lambda q \lambda p.p \wedge q$
 (p and q are of type $\langle s, t \rangle$ or $\langle \langle s, t \rangle, t \rangle$)
- c. ko (complementizer) $\rightsquigarrow \lambda p_{\langle s, t \rangle}.p$

- d. ko (discourse conjunction) $\rightsquigarrow \lambda p : \exists q [UTTERED(q) \wedge R(q, p)].p$
 (p and q are of type $\langle s, t \rangle$ or $\langle \langle s, t \rangle, t \rangle$)

Marker 3. Rising intonation \uparrow : no association with a particular interpretation

Now I move on to the third piece of *tako* \uparrow , the rising intonation \uparrow (boundary tone H% on the final syllable⁴). Although it commonly accompanies information-seeking questions (especially polar questions), it cannot be mapped onto a particular interpretation (Jun 2005). \uparrow is responsible for question interpretation only if the CFP does not overtly indicate the clause type. As mentioned in Ch. 2, §2.1, canonical sentence-final CFPs have six different speech levels: plain, familiar, intimate, blunt/semi-formal, polite, and deferential/formal. While plain, familiar, and deferential/formal speech levels make use of four distinct CFPs (one for each clause type), intimate, blunt/semi-formal, and polite speech levels make no overt distinction across four different clause types through the CFP. That is, the same form is used across clause types: intimate level *a/e*; blunt/semi-formal level *o/wu*; polite level *(e)yo*. With those CFPs, \uparrow seems solely responsible for question interpretation, as exemplified in (11), where the final intonation is the only cause of the interpretative differences between the declarative (11-a) and interrogative (11-b) clauses because the CFP is intimate *e*, blunt *o*, or polite *eyo*.

- (11) a. Mina-ka sakwa-lul sa-ss- e/o/eyo \downarrow *declarative*
 Mina-NOM apple-ACC buy-PST DECL
 ‘Mina bought the apples.’
- b. Mina-ka sakwa-lul sa-ss- e/o/eyo \uparrow *interrogative*
 Mina-NOM apple-ACC buy-PST Q
 ‘Did Mina buy the apples?’

However, \uparrow cannot trigger question interpretation when the CFP is associated with a clause type

⁴Further investigation is needed in order to clarify whether the rise has the same prosodic features across different clause types where it occurs, e.g., polar INTs, declaratives with extra pragmatic constraints (2-b), etc. I am assuming that all occurrences of the rising intonation \uparrow are identical to the rising intonation in EQs (H%, Sun-Ah Jun *p.c.*) based on them being impressionistically indistinguishable and on some of the previous literature that have reported the high boundary tone H% in declaratives (H. R. S. Kim 2010) and polar INTs (Jun 2005).

other than interrogative. I have already shown in (2) that the question interpretation is unavailable despite the presence of a *wh*-word and ↑ because of the plain declarative CFP *ta*. Likewise, in the familiar and deferential levels, question interpretation requires the existence of the interrogative CFP. (12) shows clauses with the familiar level declarative CFP *ney* (12-a) and interrogative CFP *na* (12-b), and (13) shows sentences with the deferential level declarative CFP *-up-ni-ta* (13-a) and interrogative CFP *-up-ni-kka* (13-b). Even though every sentence in (12) and (13) bears ↑, question interpretation is available only in the b-sentences where the INT CFP occurs.

(12) Familiar level

- | | | |
|----|--|----------------------|
| a. | Mina-ka sakwa-lul sa-ss- ney↑
Mina-NOM apple-ACC buy-PST -DECL
'Mina bought the apples.' | <i>declarative</i> |
| b. | Mina-ka sakwa-lul sa-ss- -na↑
Mina-NOM apple-ACC buy-PST- Q
'Did Mina buy the apples?' | <i>interrogative</i> |

(13) Deferential level

- | | | |
|----|--|----------------------|
| a. | Mina-ka sakwa-lul sa-ss- up-ni-ta↑
Mina-NOM apple-ACC buy-PST -SH-AH-DECL
'Mina bought the apples.' | <i>declarative</i> |
| b. | Mina-ka sakwa-lul sa-ss- up-ni-kka↑
Mina-NOM apple-ACC buy-PST- SH-AH-Q
'Did Mina buy the apples?' | <i>interrogative</i> |

Therefore, there is no independent evidence that the rise ↑ can be the trigger of question interpretation, let alone as the trigger of the presuppositional content in EQs. It is the CFP that is responsible for the clause type. If the CFP clearly indicates what clause type it is associated with, then the final intonation barely plays any role in the syntactic and semantic content of the clause. However, if the CFP is ambiguous and compatible with more than one clause type, then the intonation disambiguates.

Marker 4. *Tako* without ↑: no EQ interpretation

Fourth and last, *tako* without ↑ cannot act as a unit that triggers the EQ interpretation. When the CFP *tako* comes in the sentence-final position without ↑, the sentence denotes something entirely different from EQs. If there is no *wh*-word, then the whole sentence behaves like a declarative conveying propositional content together with extra discourse-pragmatic effects such as speaker attitude. For instance, (14-a) can be used in various contexts where the speaker puts a strong emphasis on what is being conveyed, where the speaker has predicted what is actually false, where what is being conveyed is the reason for something that has been introduced in the discourse earlier, or where the speaker is repeating what has been said (Chae 2019). Although the last context seems relevant to EQs as constructions like (14-a) can be used when answering to EQs like ‘Mina bought WHAT?’, it is still impossible to derive EQ meanings by combining *tako* (regardless of whatever semantic operation it does) with the rise ↑ because ↑ itself does not denote any question formation operation (though it sometimes disambiguates with CFPs that are compatible with multiple clause types including interrogative clauses). The more peculiar case happens when *tako*-final clauses without ↑ have a *wh*-word. In such cases, the whole clause behaves like a declarative, and the *wh*-word is read neither as an interrogative nor as an indefinite, as exemplified in (14-b). What is happening in clauses like (14-b) seems to be the negation of all alternatives introduced by the *wh*-word, which is completely irrelevant to clauses like (14-a) and their discourse effects, and ↑ does not bear any semantic operation that again negates all the negated alternatives. Therefore, there is no consistent evidence that is sufficient to claim that (i) *tako* in (14-a) and (14-b) are semantically the same, and (ii) *tako* in (14) is semantically the same as *tako* in EQs. I leave the precise semantic and pragmatic contents of *tako*↓ for future research.

- (14) a. Mina-ka sakwa-lul sa-ss-(tako↓)
Mina-NOM apple-ACC buy-PST-TAKO
‘Mina bought the apples. [I really mean it; this was what I predicted to be true, but it’s not; this is the reason; this has been said earlier.]’

- b. Mina-ka mwue-lul sa-ss-(tako↓)
 Mina-NOM what/something-ACC buy-PST-TAKO
 ‘lit. Mina bought what/something. [Mina bought nothing.]’

To sum up, independent evidence suggests that the semantic and pragmatic contribution of *ta*, *ko*, and \uparrow as in (15-a), (15-b), and (15-c), respectively. It is impossible to derive the EQ meaning by compositionally combining (15-a) and (15-b) since the CP below the EQ CFP is assumed to denote a set of propositions like (16). The identity function assigned to the CFP *ta* applies only to propositions of type $\langle st \rangle$, which in turn fails to apply to the CP denotation—a set of propositions (type $\langle stt \rangle$)—through independent rules of semantic composition. Most crucially, the presuppositional content in the CFP *ko* is not precise enough for EQs because it does not specify the relation between the previous utterance and what is being conveyed currently. In other words, the presupposition in *ko* lacks the most distinctive discourse requirement of EQs: the previous utterance must be the answer to the EQ being conveyed.

- (15) a. $ta \rightsquigarrow \lambda p_{\langle st \rangle}.p$
 b. inter-clausal *ko* $\rightsquigarrow \lambda q \lambda p.p \wedge q$ OR $\lambda p.p$
 sentence-final *ko* $\rightsquigarrow \lambda p : \exists q[UTTERED(q) \wedge R(q, p)].p$
 c. \uparrow : no particular interpretation guaranteed

- (16) [CP Mina-ka mwue-lul sa-ss] $\rightsquigarrow \lambda p \exists x[thing'(x) \wedge p = \lambda w.bought'(w, Mina, x)]$

In conclusion, *tako* \uparrow has to be analyzed as a non-decomposable atomic unit that carries the precise semantic and pragmatic contents that are necessary for EQ interpretation (reiterated below); otherwise, EQ meanings cannot be derived under the current semantic rules of composition and types.⁵

⁵Although there exist three other variations of the EQ CFPs (*nyako* \uparrow , *lako* \uparrow , and *cako* \uparrow) which have been used as a morphological ground for assuming *ko* as the uniform EQ marker, I argue that each of them as a whole has to be assigned a precise operation like *tako* \uparrow because they presuppose the existence of previously introduced semantic object which has different semantic types across the EQ CFP variations (*nyako* \uparrow : a set of propositions (question); *lako* \uparrow : a command; *cako* \uparrow : a suggestion). This point will be further discussed in Ch. 6 §6.1.

(17) $tako\uparrow \rightsquigarrow \lambda Q\lambda p : \exists q[UTTERED(q) \wedge Q(q)].Q(p)$ *reiterated from (6-b), §3.1*

In the next section, I provide an overview of previous semantic analyses of EQs in Korean and other languages to show that, unlike my novel analysis, those previous analyses are inadequate for Korean EQs.

5.2 Problems with existing analyses of EQs in Korean and other languages

This section reviews previous analyses of EQs in Korean and other languages to show that they cannot fully account for the characterizing properties of Korean EQs. Section 5.2.1 first discusses existing analyses of Korean EQs. I show that they are problematic because they have focused primarily on the morpho-syntax of EQs while ignoring the semantic and pragmatic properties of EQs. Then, Section 5.2.2 discusses existing semantic and pragmatic analyses of EQs in languages other than Korean, e.g., English, German, and Spanish. I show that they are incompatible with at least one of the characterizing properties of Korean EQs discussed in Chapter 2 (§2.3).

5.2.1 Problems with existing morpho-syntactic analyses of EQs in Korean

Little attention has been paid to EQs in Korean in the literature so far. They have been argued to be a type of indirect speech generated through deletion of the matrix verb of saying/asking (Noh 1995; Hyeran Lee 2010). Under this view, the EQ CFP *tako*↑ is compositionally formed by combining the sentence-final CFP of the EQ antecedent (*ta*) and the quotative particle (*ko*). This view has its own merit in that it reflects the historical connection between *tako* in EQs and *tako* in quotative constructions.⁶ According to H. Lee's (2010) analysis, both the EQ in

⁶According to Ahn & Yap (2014), *tako* went through multiple steps of grammaticalization originating from the combination of the verb *ha* 'say' and the connective *ko* in quotative constructions, which was first attested in Middle Korean in the 15th century. Over time, the process involved elision and phonological reduction, and *tako* has served different functions: clausal complementizer in the 18th century, clausal connective in the 19th century, a

(18-b) and the “indirect speech” sentence in (18-d) are interpreted as requiring the declarative sentence in (18-a) as their discourse antecedent. The example in (18-d) shows a constituent interrogative with the *wh*-word inside an indirect quotative clause, complement of the verb ‘say.’ The EQ (18-b) and the indirect speech (18-d) are claimed to be “exactly the same (Hyeran Lee 2010, p. 330)” except for whether the matrix verb is deleted or not. The sentence-final CFP in the indirect speech is the canonical INT CFP *ni*. Moreover, Hyeran Lee (2010) has proposed a specialized EQ complementizer C_{EQ} that binds and licenses echoed *wh*-words, whereas non-echoed *wh*-words are bound by the ordinary C_{+WH} , although there is no further discussion about the semantic function of C_{EQ} . C_{EQ} is assumed to appear in the highest CP as shown by the structures in (18-c) and (18-e). Also, Noh (1995) has claimed that, in Korean indirect speech (which includes EQs according to Noh’s view), the sentence-final CFP of the embedded clause must be preserved.

(18) Based on Hyeran Lee (2010, p. 330)

- a. Mina-ka sakwa-lul sa-ss-ta. *declarative*
 Mina-NOM apple-ACC buy-PST-DECL
 ‘Mina bought the apples.’
- b. Mina-ka mwue-lul sa-ss-(ta-ko) ? *EQ*
 Mina-NOM what-ACC buy-PST-(DECL-QT)
 ‘Mina bought WHAT?’
- c. [CP [Mina-ka mwue-lul sa-ss-ta-ko] C_{EQ}]
- d. Mina-ka mwue-lul sa-ss-(ta-ko mal.ha-yss-ni) ? *indirect speech*
 Mina-NOM what-ACC buy-PST-(DECL-QT say.do-PST-Q)
 ‘What did you say Mina bought?’
- e. [CP [Mina-ka mwue-lul sa-ss-ta-ko] mal.ha-yss C_{EQ} -ni]

These approaches to Korean EQs are problematic for at least five reasons. First, the meaning generated by the matrix verb *mal.ha-yss-ni* in the indirect speech in (18-d) needs to be encoded

sentence-final CFP in the early 20th century, and as an EQ marker in the late 20th century. See Ahn & Yap (2014), p. 304–311, for details.

in some element in the EQ in (18-b) if the two sentences end up conveying the very same meaning. The locus of this difference must be C_{EQ} since there is no other viable candidate, which in turn requires different definitions between the operation conveyed by C_{EQ} in EQs and that in indirect speech. The innermost embedded clause in the examples in (18-b) and (18-d) denotes a proposition ‘Mina bought something’ as in (19-a) because *wh*-words are interpreted as *wh*-indefinites in declarative clauses (as seen in §2.2) and CFP *ta* is a declarative sentence-final CFP (as seen in §5.1). Since these approaches assume *ko* as a quotative particle that combines with the clausal complement of the matrix verb ‘say,’ *ko* translates into an identity function over propositions (as seen in (6-c) in §5.1). Thus, the embedded clause up to C_{EQ} in (18-c) denotes a proposition as in (19-b). On the other hand, in the indirect speech example, the embedded clause combines with the matrix verb ‘say.’ Since C_{EQ} occurs in between the past tense marker *yss* and the INT CFP *ni*, the matrix verb denotes a 2-place predicate *said'* that holds between the speaker of the discourse antecedent (i.e., the addressee of the indirect speech in (18-d)) and the proposition conveyed by the embedded clause. Thus, the structure up to C_{EQ} in (18-d) logically translates into (19-c). I assume the intensional variable is introduced in TP. Then, C_{EQ} should be able to form a set of propositions from a proposition since both (19-b) and (19-c) denote a proposition and need to combine with C_{EQ} . In addition, C_{EQ} in the EQ should be capable of introducing the semantic content as the matrix verb ‘say’ does in the indirect speech. However, C_{EQ} in the indirect speech should not convey the meaning of ‘say’ because the matrix verb has already introduced it. Therefore, it is impossible for the EQ (18-b) and the indirect speech (18-d) to have the same denotation assuming a uniform C_{EQ} .

- (19) a. [Mina-ka mwue-lul sa-ss-ta] $\rightsquigarrow \lambda w \exists x [\textit{thing}'(x) \wedge \textit{bought}'(w, \textit{Mina}, x)]_{\langle s, t \rangle}$
 b. [[Mina-ka mwue-lul sa-ss-ta] -ko]
 $\rightsquigarrow \lambda p. p(\lambda w \exists x [\textit{thing}'(x) \wedge \textit{bought}'(w, \textit{Mina}, x)])$
 $= \lambda w \exists x [\textit{thing}'(x) \wedge \textit{bought}'(w, \textit{Mina}, x)]_{\langle s, t \rangle}$
 c. [[[Mina-ka mwue-lul sa-ss-ta] -ko] -mal.ha-yss]

$$\begin{aligned} &\rightsquigarrow \lambda p \exists y [y = \textit{addressee}' \wedge \textit{said}'(y, p)] (\lambda w \exists x [\textit{thing}'(x) \wedge \textit{bought}'(w, \textit{Mina}, x)]) \\ &= \exists y [y = \textit{addressee}' \wedge \textit{said}'(y, \lambda w \exists x [\textit{thing}'(x) \wedge \textit{bought}'(w, \textit{Mina}, x)])] \end{aligned}$$

Intensionalized in TP:

$$\lambda w \exists y [y = \textit{addressee}' \wedge \textit{said}'(y, \lambda w' \exists x [\textit{thing}'(x) \wedge \textit{bought}'(w', \textit{Mina}, x)]]]_{\langle s, t \rangle}$$

Second, the *wh*-word in the structure like (19-c) and (19-e) needs to go through a change in its interpretation from a *wh*-indefinite to a *wh*-interrogative due to the compositionality of *ta-ko*, a combination of the declarative CFP and the quotative particle. As described earlier ((2), §5.1), Korean *wh*-words are interpreted as indefinite inside declarative clauses. That is, the embedded clause until the CFP *ta* in the above examples is interpreted as ‘Mina bought something.’ However, in the matrix level, the echoed *wh*-word is interpreted as a *wh*-interrogative that seeks for a constituent like the EQ ‘Mina bought WHAT?’ in (19-b). Thus, the same *wh*-word *mwue* ‘what’ needs to be interpreted as an indefinite in the lower level inside the embedded clause and then as an interrogative in the higher level when C_{EQ} combines with the embedded clause in structures like (19-c) and (19-e). There is no satisfying account for how to resolve this interpretative change happening across embedded and matrix clauses. Third, it is unnecessary to assume that echoed and non-echoed *wh*-words need to be bound by a different complementizer, considering that the language does not significantly distinguish them (as described in Ch. 2 §2.3). That is, assuming two different complementizers— C_{EQ} that binds echoed *wh*-words and C_{+WH} that binds non-echoed *wh*-words—is at odds with the properties of Korean *wh*-words. Fourth, the indirect speech like (18-d) does not guarantee the EQ reading due to the sentence-final CFP being the canonical INT CFP *ni*. While (18-b) is always interpreted as an EQ (assuming the appropriate intonation, the final \uparrow), (18-d) has at least two different interpretations depending on the final intonation: a polar INT ‘did you say that Mina bought something?’ with \uparrow , and a *wh*-INT ‘what did you say that Mina bought?’ with \downarrow . Last and fifth, the claim that the sentence-final CFP of the indirect speech/EQ antecedent is required to be preserved contradicts the actual distributive patterns of the sentence-final CFPs. Korean speakers make use of a sentence-final

CFP of a different speech level in the rich paradigm of sentence-final CFPs, as shown in the table below (reiterated from Ch. 2 §2.1). That is, in a declarative clause that functions as the indirect speech/EQ antecedent, the CFP may take a different form depending on the speech level.

Table 5.1. Canonical sentence-final CFPs in Korean

	Declarative	Interrogative	Imperative	Hortative
Plain	- <i>ta</i>	- <i>ni/nya</i>	- <i>la</i>	- <i>ca</i>
Intimate	- <i>a/-e</i>	- <i>a/e/ay</i>	- <i>a/-e</i>	- <i>a/-e</i>
Familiar	- <i>ney</i>	- <i>na/nun-ka</i>	- <i>key</i>	- <i>sey</i>
Blunt/semi-formal	-(<i>s</i>) <i>o</i> /(<i>s</i>) <i>wu</i>	-(<i>s</i>) <i>o</i> /(<i>s</i>) <i>wu</i>	-(<i>u</i>) <i>o</i> / <i>wu</i>	-(<i>u</i>) <i>p-si-ta</i>
Polite	- <i>yo</i>	- <i>yo</i>	- <i>yo</i>	- <i>yo</i>
Deferential/formal	-(<i>su</i>) <i>p-ni-ta</i>	-(<i>su</i>) <i>p-ni-kka</i>	- <i>sip-si-o</i>	- <i>sip-si-ta</i>

However, in indirect speech and EQs, only four of the plain level sentence-final CFPs (namely, *ta*, *nya*, *la*, and *ca*) are used. For example, in the examples in (20), the declarative antecedent clause in (20-a) has the intimate level sentence-final CFP *e*. However, the CFP *e* cannot replace *ta* in the examples in (20-b) and (20-c) although the bisyllabic string *e-ko* is phonologically sound in Korean.

- (20) a. Mina-ka sakwa-lul sa-ss-(e). *declarative antecedent*
 Mina-NOM apple-ACC buy-PST-DECL.INTIMATE
 ‘Mina bought the apples.’
- b. Mina-ka mwue-lul sa-ss-(ta/*e-ko)? *EQ*
 Mina-NOM what-ACC buy-PST-DECL-QT
 ‘Mina bought WHAT?’
- c. Mina-ka mwue-lul sa-ss-(ta/*e-ko mal.ha-yss-ni)? *indirect speech*
 Mina-NOM what-ACC buy-PST-DECL-QT say.do-PST-Q
 ‘Did you say Mina bought WHAT?’

Noh (1995) has argued that the speech level of a sentence-final CFP is “leveled out” into the

plain level when a clause is embedded without further elaboration (p. 136). If the speech level of the CFP in the embedded clause is always “leveled out” into the plain level, then *ni* should be able to be used in well-formed EQs and indirect speech, as Korean has two plain-level INT CFPs: *ni* and *nya*. Both of the two plain INT CFPs are fully accepted in INTs like (21-a). However, in EQs like (21-b) and indirect speech like (21-c) whose antecedent is (21-a), *nya* is the only plain INT CFP that is accepted, although Korean phonology also allows the bisyllabic string *ni-ko*. Thus, the assumption of the CFP being “leveled out” cannot fully account for the asymmetry that lies within two plain-level INT CFPs.

- (21) a. Mina-ka mwue-lul sa-ss- $\sqrt{\text{ni}/\sqrt{\text{nya}}}$ ↓? *INT*
 Mina-NOM apple-ACC buy-PST-(Q.PLAIN)
 ‘What did Mina buy?’
- b. nwuka mwue-lul sa-ss- $\sqrt{\text{ni}/\sqrt{\text{nya-ko}}}$ ↑? *EQ*
 who.NOM apple-ACC buy-PST-(Q.PLAIN-KO)
 ‘WHO bought what?’
- c. nwuka mwue-lul sa-ss- $\sqrt{\text{ni}/\sqrt{\text{nya-ko}}}$ mal.ha-yss-ni? *indirect speech*
 who.NOM apple-ACC buy-PST-(Q.PLAIN-KO) say.do-PST-Q
 ‘Who did you say bought what?’

To summarize, existing analyses on Korean EQs are problematic because they do not take the precise semantic derivation of EQs into consideration nor fully examine the behaviors of the CFPs and *wh*-words in Korean, and ignore the meaning of *tako*, *ta*, and *ko* in synchronically relevant constructions in contemporary Korean. Then, do existing semantic and pragmatic analyses of EQs in other languages perform better in accounting for the semantic and pragmatic properties of Korean EQs? I show they do not, as discussed next.

5.2.2 Problems with existing semantic and pragmatic analyses of EQs in languages other than Korean

Existing semantic and pragmatic analyses of EQs in other languages can be divided into two large families, depending on whether EQs are considered semantically distinct from INTs or

not. I call the former family the difference-based approaches and the latter the similarity-based approaches. I briefly discuss each in turn.

The difference-based approaches have focused on the morpho-syntactic and prosodic differences between EQs and INTs (e.g., Comorovski 1996; Dayal 1996; Sudo 2010; Reis 2017; Beck & Reis 2018; a.o.). Most of the analyses within this approach build on unique properties of echoed phrases (*wh*-words in *wh*-EQs and constituent phrases in polar-EQs) such as being *in situ*, obligatory prosodic stress, and more lenient restrictions than ordinary *wh*-words with respect to syntactic constraints and scope, in addition to the strong connection between the preceding utterance and the content and form of EQs. These peculiarities of *wh*-phrases have been attested in many Indo-European language including English (Dayal 1996; Artstein 2002; Sudo 2010), Italian (Badan, Bryllia & Fiorin 2017), German (Reis 2017; Beck & Reis 2018), Greek (Roussou, Vlachos & Papazachariou 2014), Romanian (Comorovski 1996), and Spanish (Chernova 2017). The difference-based approaches roughly fall into three types according to which key aspect is assumed to be crucially responsible for the EQ meaning: (i) *wh*-words in EQs have a different denotation than ordinary *wh*-words, (ii) EQs have a specialized complementizer/operator, and (iii) EQs involve an extra semantic relation that INTs lack. Nevertheless, none of these proposals is fully compatible with the properties of Korean EQs, as I show next.

The first type of proposal argues that echoed *wh*-phrases have a different denotation from ordinary *wh*-phrases. A common approach to the semantics of ordinary *wh*-phrases in INTs is the one proposed by Karttunen (1977), according to which they denote existential generalized quantifiers. By contrast, echoed *wh*-phrases have been argued to translate into free variables over individuals (Dayal 1996), a set of linguistic expressions (Sudo 2010), or a set of contextually (or anaphorically) defined alternatives (Reis 2017; Beck & Reis 2018). Differences aside, all these proposals share the assumption that echoed *wh*-words are syntactically and semantically distinct from non-echoed *wh*-words, building primarily on the aforementioned prosodic and syntactic differences between *wh*-INTs and *wh*-EQs. This assumption would be unmotivated and unnecessary for Korean as echoed and ordinary *wh*-words exhibit the same morpho-syntactic

and intonational features. In particular, prosodic stress does not seem obligatory on echoed *wh*-words (§2.3, Property 4), which is implied by the findings from Jun & M. Oh (1996) that Korean speakers often perceive *wh*-words with prosodic stress as an ordinary *wh*-word. Moreover, Korean EQs and INTs seem to share similar syntactic constraints (or lack thereof) due to Korean being a *wh-in-situ* language where the only morpho-syntactic difference between EQs and INTs is their CFPs. For instance, the examples in (22) illustrate the absence of asymmetry between EQs and INTs with regards to *wh*-island effects, though it is controversial whether *wh*-island effects are present in Korean. The INT in (22-a), which has been reported unacceptable in English due to the island effect, is fully acceptable and grammatical, as well as its EQ counterpart in (22-b). On the other hand, the INT in (22-c), which has been reported to exhibit the island effect, and its EQ counterpart in (22-d) does not show any asymmetry in their interpretations; both are grammatical and pragmatically allow both matrix and embedded *wh*-scopes (further discussion in Ch. 2 §2.3). Thus, were echoed *wh*-words in Korean assumed to be different from ordinary *wh*-words, it would be left unexplained why they exhibit the same morpho-syntactic and prosodic features.

- (22) a. ne nwuka encey ttena-ss-nunci kwungkum.ha-ni? *INT*
 you who.NOM when leave-PST-COMP wonder.do-Q
 ‘When do you wonder who left?’ (unacceptable in English; Rizzi 2013)
- b. ne nwuka encey ttena-ss-nunci kwungkum.ha-tako↑ *EQ*
 you who.NOM when leave-PST-COMP wonder.do-EQ
 ‘You wonder WHO left WHEN?’
- c. Mary-nun [Obama-ka nwukwu-lul manna-ss-nunci] tul-ess-ni? *INT*
 Mary-TOP [Obama-NOM who-ACC meet-PST-COMP] hear-PST-Q
 ‘Who did Mary hear whether Obama met?/Did Mary hear who Obama met?’
 (embedded *wh*-scope preferred; B. Kim & Goodall 2016)
- d. Mary-nun [Obama-ka nwukwu-lul manna-ss-nunci] tul-ess-tako↑? *EQ*
 Mary-TOP [Obama-NOM who-ACC meet-PST-COMP] hear-PST-EQ
 ‘Mary heard whether Obama met WHO?/Mary HEARD WHO OBAMA MET?’

The second type of proposal in difference-based approaches postulates the existence of a phonologically silent complementizer/operator specialized for EQs: a single uniform operator for

all types of EQs (Dayal 1996), or two separate polar-EQ and *wh*-EQ operators (Sudo 2010). However, these proposals are again incompatible with Korean. First, Dayal’s (1996) EQ operator in (23-a) is proposed as a uniform operator for EQs with a declarative or an interrogative clause antecedent. It occurs as a sister to the CP and binds open variables Z and Q that can denote a proposition or a set of propositions. In EQs with a declarative clause antecedent, the CP denotes a proposition, OP_{echo} applies to it, turns it into a set of propositions, and binds the free variables introduced by echoed *wh*-phrases. In EQs with an interrogative clause antecedent, the CP denotes a set of propositions, OP_{echo} applies to the set and returns a set of sets of propositions, i.e., a set of questions, and binds the free variables. Then, EQs call for another operator, the answerhood operator in (23-b). It applies to the set denoted by the EQ (the set of propositions or the set of sets of propositions) and chooses the unique previously uttered proposition.

(23) Dayal’s (1996) proposal

- a. $OP_{echo} \rightsquigarrow \lambda Z \lambda Q. \exists x_1 \dots \exists x_n [Q = Z(x_1) \dots (x_n)]$
- b. $Ans(Q_{echo}) \rightsquigarrow \iota p [p \in Q \wedge \textit{previously-uttered}'(p)]$

On the other hand, Sudo (2010) adopts the structured meanings approach (or function approach) to questions (e.g., Krifka 2007). I do not lay out the details of Sudo’s proposal because it requires several new assumptions on classes of types (e.g., type u for linguistic expressions) and compositional rules (e.g., Metalinguistic Inheritance). Sudo proposes two different silent complementizers, $Comp_{yn.echo}$ for polar EQs and $Comp_{wh.echo}$ for *wh*-EQs. Instead of introducing an answerhood operator like Dayal, Sudo’s EQ complementizers are defined as seeking a linguistic expression that is entailed by the antecedent. For instance, the *wh*-EQ in (24-b) logically translates into (24-c). It denotes the structural meaning ($\langle \rangle$) of a function over a linguistic expression X_u , which is a member of the set of alternative linguistic expressions D_u . The meaning of ‘John speaks X ’ evaluated by the context of the current utterance (EQ, g, c) is entailed by the meaning of ‘John speaks Uyghur’ evaluated by the context of the antecedent

utterance (g', c'). Sudo postulates a different denotation for polar EQs to model that there are two possible answers: yes or no. Still, the entailment relation between the antecedent and the linguistic expression in question is required.

(24) Sudo's (2010) proposal

- a. John speaks Uyghur. *antecedent*
- b. He speaks WHAT? *EQ*
- c. $\langle \lambda X_u. \llbracket \text{John speaks } X \rrbracket^{g',c} \Leftarrow \llbracket \text{John speaks Uyghur} \rrbracket^{g',c'}, D_u \rangle$

Dayal's and Sudo's proposals on the silent operators for EQs involve extra assumptions that are not the simplest and most parsimonious ones for Korean. As for Dayal's uniform OP_{echo} , it is incompatible with the fact that EQs in Korean make use of a different CFP depending on the antecedent clause: *tako*↑ when the antecedent clause is declarative and performs the speech act of assertion, or *nyako*↑ when the antecedent clause is interrogative and performs the speech act of question. Also, as for Sudo's $Comp_{yn.echo}$ and $Comp_{wh.echo}$, it is also at odds with EQs in Korean because the same CFP *tako*↑ is used in both polar- and *wh*-EQs.

The last type of difference-based approach introduces a new semantic relation to the denotation of EQs to account for the discourse-pragmatic constraint of EQs, which is that EQs require a previous utterance as the antecedent. Comorovski (1996) posits two primitive relations: (i) an assertion relation $\mathbf{A}_{\langle \langle s,t \rangle, \langle e,t \rangle \rangle}$ that holds between a proposition p and a context c , indicating that p has been asserted in c , and (ii) an asking relation $\mathbf{Q}_{\langle \langle \langle s,t \rangle, t \rangle, \langle e,t \rangle \rangle}$ that holds between a question Q and a context c , indicating that Q has been asked in c . For example, (25-a) is a logical translation of an EQ 'Mina bought WHAT?' that seeks a proposition as its answer, while (25-b) is a logical translation of an EQ 'WHO bought what?' that seeks a question as its answer. The EQ in (25-a) denotes a set of asserted propositions, and the EQ in (25-b) denotes a set of asked questions. Nevertheless, Comorovski does not specify which element is responsible for triggering such a pragmatic requirement. My proposal, instead, makes *tako*↑ responsible for the

pragmatic requirement and assumes the pragmatic requirement to be just a presupposition rather than an ad-hoc new discourse relation. Furthermore, Comorovski’s proposal cannot account for my novel empirical finding that INTs and EQs in Korean are semantically identical (Ch. 4 §4.2) because Comorovski assumes that INTs and EQs have a different denotation, as shown by the comparison between the logical translation of the EQ in (25-a) and the INT in (25-c).

(25) Comorovski’s (1996) proposal (slightly modified from (39-40) on p.77)

- a. Mina bought WHAT? $\rightsquigarrow \lambda p \exists x [\mathbf{A}(p, c) \wedge p = \lambda w. \text{bought}'(w, \text{Mina}, x)]$
- b. WHO bought what? $\rightsquigarrow \lambda Q \exists y [\mathbf{Q}(Q, c) \wedge Q = \lambda p \exists x [p = \lambda w. \text{bought}'(w, x, y)]]$
- c. What did Mina buy? $\rightsquigarrow \lambda p \exists x [p = \lambda w. \text{bought}'(w, \text{Mina}, x)]$

Next, I turn to the other family of proposals, the similarity-based approaches, represented by Artstein (2002) and Biezma, Braun & James (2021). Both studies rely heavily on English and assume the same denotations for EQs and INTs, a set of propositions. Nevertheless, they differ in what they assume as the trigger of the EQ interpretation. First, Artstein (2002) argues the trigger is focus introduced by prosodic stress on echoed words. Artstein proposes a focus semantic account such that the focus, marked by intonational contour (pitch accent) on the echoed word, gives rise to a set of alternatives, each of which has the same semantic type as the focused element, based on the definition in (26-a). For instance, the constituent *ranunculus* in the polar EQ in (26-b), the *wh*-word *what* in the *wh*-EQ in (26-c), and *what-culus* in which the *wh*-word *what* occurs below the word level in the *wh*-EQ in (26-d) are focused by means of pitch accent. Artstein assumes that echoed *wh*-words, as well as echoed constituents, denote an individual of type *e*. Furthermore, in EQs with an echoed part below the word level like (26-c), Artstein posits that a focused word part (e.g., *ranun*) denotes the sound *ranun* based on the process of “phonological decomposition.” Then, an unfocused part (e.g., *culus*) denotes a function over the sound denoted by the focused part and returns the meaning of the combination of focused and unfocused parts (e.g., *ranunculus*). Thus, the focused words in (26-a), (26-b), and (26-c)

introduce the same set of alternatives of type e , which leads to the same denotation for all three EQs in (26): a set of propositions, e.g., (26-d).

(26) Artstein’s (2002) proposal

- a. $[[\alpha_\tau]]^f = D_\tau$ (a set of alternatives that match the type of α)
- b. You gave [RANUNCULUS $_e$] f to George?
- c. You gave [WHAT $_e$] f to George?
- d. You gave [WHAT-culus $_e$] f to George?
- e. {the addressee gave ranunculus to George, the addressee gave homunculus to George, the addressee gave abaculus to George, ...}

Artstein’s proposal can uniformly account for any type of EQs, including polar and *wh*-EQs as well as EQs with an echoed part below the word level. Furthermore, it treats EQs as having the same denotation as INTs: a set of propositions. In fact, EQs in Korean can also ask for confirmation of a part of a word, similar to (26-c). However, unlike English, the ordinary *mwue* ‘what’ is not used in such cases. For example, the EQ in (27-c) is asking for a confirmation of a part of the constituent in its antecedent in (27-b), which is an answer to the INT in (27-a). Instead of *mwue* ‘what,’ *mwusun* is used in (27-a) and (27-c). *Mwusun* has been labeled as an interrogative determiner that roughly translates into ‘what/what kind/which’ in English (H.-m. Sohn 2020). In both the INT in (27-a) and the EQ in (27-c), replacing *mwusun* with *mwue* ‘what’ triggers ungrammaticality, i.e., **mwue kkoch* ‘what flower,’ **mwue-khwullesu* ‘what-culus.’ *Mwue* ‘what’ may replace the full DP *mwusun kkoch/mwusun khwullesu* ‘what flower/what-culus.’

- (27) a. Mina-ka mwusun kkoch-ul sa-ss-ni? *INT*
 Mina-NOM what kind flower-ACC buy-PST-Q
 ‘What kind of flower did Mina buy?’
- b. Mina-ka lanenkhwullesu-lul sa-ss-ta. *declarative*
 Mina-NOM ranunculus-ACC buy-PST-DECL
 ‘Mina bought ranunculus.’

- c. Mina-ka mwusun/*mwue khwullesu-lul sa-ss-tako↑? *EQ*
 Mina-NOM what culus-ACC buy-PST-EQ
 ‘Mina bought WHAT-culus?’

My analysis did not address EQs like (27-b) because the precise identity of *mwusun* is largely understudied and a more systematic analysis needs to be undertaken.⁷ Thus, once a better understanding of *mwusun* is established, a more comprehensive analysis of EQs in Korean may be developed by adopting Artstein’s assumption on phonological decomposition. While I leave it for future research, I argue that the current version of Artstein’s proposal is not fully compatible with Korean. Artstein assumes the intonational contour on the echoed word to be responsible for the EQ interpretation. However, as explained in Ch. 2 §2.3 (property 4), EQs in Korean do not require obligatory prosodic stress on echoed words, and *wh*-words in INTs and EQs are not necessarily distinguished from each other. Thus, there is no morpho-syntactic nor prosodic element on Korean *wh*-words that is capable of introducing the focus.

Next, I touch on another proposal in the similarity-based approaches. Biezma, Braun & James (2021) argue that intonation is an unreliable cue based on systematic empirical evidence acquired from experiments. The results indicate that neither prosody nor word order is crucial for distinguishing EQs vs. INTs. That is, both constructions in (28-b) and (28-c) can be interpreted as an EQ to the antecedent in (28-a) regardless of whether the *wh*-word is fronted or not. The proposal attributes the interpretative differences between EQs and INTs to whether a participant is committed to accepting what is being asserted (which is a proposal to update the context). If she is not committed to accepting it, she asks for a confirmation of the unresolved proposal (by uttering an EQ) rather than proceeding with further questions (by uttering an INT).

- (28) a. Mina bought ranunculus. *EQ antecedent*

⁷To the best of my knowledge, there has been no morpho-syntactic nor semantic analysis of *mwusun*, although it is a frequently used word. While *mwusun* can occur in any type of *wh*-question, including INTs, EQs, and non-canonical INTs, it occurs in non-interrogative contexts as well, serving multiple functions than a question word, e.g., discourse marker (see Choi 2003; Heeju Lee & S.-O. Sohn 2022; a.o.).

- b. WHAT did Mina buy? *wh-fronted EQ*
- c. Mina bought WHAT? *wh-in-situ EQ*

Biezma, Braun & James (2021) present formal analyses of ordinary *wh*-INTs with a fronted or in-situ *wh*-word using the model of *Question Under Discussion*. They argue that *wh*-fronted INTs like ‘What did Mina buy?’ share the same denotation as *wh*-fronted EQs such as (28-b), and *wh-in-situ* INTs (i.e., declarative questions) like ‘Mina bought what?’ share the same denotation as *wh-in-situ* EQs such as (28-c). They posit two different operators, one for each type of INT: Q operator in *wh*-fronted INTs, and \exists in *wh-in-situ* INTs. Both operators require that the question being conveyed is a subset of Immediate QUD (IQUD, the most immediate question under discussion), but the precise mechanism is different, as shown in (29). The difference between the operators Q and \exists is to account for the fact that *wh-in-situ* INTs presuppose that there is an already introduced question that needs to be resolved (i.e., IQUD) whereas *wh*-fronted INTs introduce a new question into the QUD stack denoting a set of questions. The EQ interpretation arises when there exists a proposal awaiting evaluation recorded in the set of proposals in the projected context \mathcal{F} , i.e., $\mathcal{F} \neq \emptyset$.

(29) Biezma, Braun & James’ (2021) proposal (p.13)

where $[[\alpha]]$ is a set of propositions (type $\langle \langle s, t \rangle, t \rangle$)

- a. $[[Q\alpha]]^c = [[\alpha]]^c$ only if $[[\alpha]]^c \subseteq IQUD_c$ and $|[[\alpha]]^c \cup IQUD_c| > 1$
- b. $[[\exists\alpha]]^c = \{\lambda w. \exists p \in [[\alpha]]^c : p(w) = 1\}$ only if $[[\alpha]]^c \subseteq IQUD_c$

Biezma, Braun & James’ proposal is not completely applicable to Korean because Korean is a *wh-in-situ* language and thus lacks such distinction between the constructions in (28-b) and (28-c) in English. Furthermore, Korean doesn’t need to assume ad-hoc silent operations like Q and \exists due to the rich CFP system. Under discourse contexts where an assertion has been already made, the speaker needs to form an EQ with the CFP *tako*↑ in order to ask a question about

what has been asserted. That is, the information about the discourse restriction is encoded in the CFP *tako*↑ itself. Thus, there is no need to assume a discourse model indicating an unresolved proposal in the projected context, i.e., $\mathcal{F} \neq \emptyset$. Lastly, although the operator \exists for *wh-in-situ* EQs is designed to capture the presupposition that there exists a question remaining unresolved, \exists requires a proposition in the set to be true ($p(w) = 1$), which is unnecessary for EQs. EQs denote a set of possible answers rather than true answers because EQs are questions asking about what has already been said regardless of its truthfulness. That is, the antecedent/answer to an EQ can be false.

In sum, existing analyses of EQs in languages other than Korean would not be the simplest, most parsimonious ones if applied to Korean since the assumptions they rely on are not supported by the properties of Korean EQs. On the other hand, the novel analysis I have developed for Korean EQs can account for two core properties of Korean EQs without any ad-hoc assumption: (i) echoed *wh*-words behave the same as ordinary *wh*-words in terms of prosody and morpho-syntax, and (ii) the CFP is responsible for the interpretative difference between INTs vs. EQs.

Chapter 6

General Discussion

This chapter briefly discusses outstanding issues that need to be further developed in future research pertaining to the semantics and pragmatics of EQs (§6.1). Then, I summarize the findings of this dissertation and their implications and contributions to the formal theory of questions (§6.2).

6.1 Outstanding issues

My investigation of EQs in Korean raises intriguing issues regarding the semantics and pragmatics of EQs that have not yet been discussed. In this section, I touch on two outstanding issues, one related to the semantics of EQs and another related to the pragmatics of EQs: (i) EQs with an antecedent other than a declarative clause, and (ii) the distance between an EQ and its antecedent. While I believe each issue deserves a full-fledged investigation in a separate study, I briefly describe each issue and make some suggestions for future research.

Issue 1. EQs with an antecedent other than a declarative sentence

In the previous chapters, I showed that declarative sentences can act as a discourse antecedent of EQs, and they are associated with a specific EQ CFP, *tako*↑. There are at least three other kinds of sentences that can act as antecedents of EQs: interrogative sentences, imperative sentences, and hortative sentences. The EQ in (1-b) is marked by the CFP *nyako*↑ and has an interrogative sentence antecedent asking a question as in (1-a). The EQ in (1-d) is marked by the CFP *lako*↑

and has an imperative sentence antecedent making a command as in (1-c). The EQ in (1-f) is marked by the CFP *cako*↑ and has a hortative sentence antecedent making a suggestion as in (1-e). If one tries to argue for a decomposition of the different CFPs marking these other kinds of EQs, they will run into the same issues I have already discussed in Chapter 5 for EQ with a declarative sentence as its antecedent. In particular, if one wants to assume that *ko*↑ acts as a flexible identity function that can apply to objects of different kinds and trigger the appropriate presuppositions, it would face compositional issues similar to those I discussed in Chapter 5 for EQs with *tako*↑ (§5.1).

- | | | | |
|-----|----|---|-------------------|
| (1) | a. | Mina-ka sakwa-lul sa-ni?
Mina-NOM apple-ACC buy-Q
'Does Mina buy the apples?' | <i>INT</i> |
| | b. | Mina-ka mwue-lul sa- nyako ↑ ?
Mina-NOM what-ACC buy-EQ
'Does Mina buy WHAT?' | <i>EQ</i> |
| | c. | Mina-ya, sakwa-lul sa-la.
Mina-VOC apple-ACC buy-IMP
'Mina, buy the apples.' | <i>imperative</i> |
| | d. | mwue-lul sa- lako ↑ ?
what-ACC buy-EQ
'Buy WHAT?' | <i>EQ</i> |
| | e. | Mina-ya, sakwa-lul sa-ca.
Mina-VOC apple-ACC buy-HOR
'Mina, let's buy the apples.' | <i>hortative</i> |
| | f. | mwue-lul sa- cako ↑ ?
what-ACC buy-EQ
'Let's buy WHAT?' | <i>EQ</i> |

I posit that each of the three other EQ CFPs—*nyako*↑, *lako*↑, and *cako*↑—needs to be assigned an operation that precisely reflects the semantic and pragmatic contents of each corresponding EQ. I have argued that an EQ with *tako*↑ (and the CP inside, too) denotes a set of what its antecedent sentence denotes, i.e., proposition, and the CFP *tako*↑ conveys the presuppositional content

responsible for the EQ interpretation. Also, I have argued for a structure in which the CFP is a sister node to the CP that denotes the propositional content/question nucleus. I have argued that the meaning of the CFP *tako*↑ is an identity function over a set of propositions triggering the presupposition that at least one possible answer to the EQ has already been introduced in the discourse by uttering a sentence conveying it. I believe the three EQ markers other than *tako*↑ can be analyzed along similar lines.

First, an EQ with *nyako*↑ must have a discourse antecedent that is interrogative morpho-syntactically, performs the act of questioning, and denotes a question, i.e., a set of propositions, as shown by the examples in (2-a) and (2-b). Such type of EQ has been labeled as *second-order question* and analyzed as denoting a set of questions, i.e., a set of sets of propositions, of type $\langle \langle \langle s, t \rangle, t \rangle, t \rangle$ (Karttunen 1977; Dayal 1996; Artstein 2002; a.o.). For instance, the EQ in (2-b) seeks confirmation of a question previously conveyed by the INT in (2-a) and denotes a set of questions. The EQ may denote a set such as (2-c) iff the following presupposition is satisfied: there is at least one possible answer (which is a question) that has already been introduced in the discourse by uttering a sentence conveying it. In (2-c), the underlined question satisfies the presupposition.

- (2) a. Mina-ka mwue-lul sa-ss-ni↓? INT
 Mina-NOM what-ACC buy-PST-Q
 ‘What did Mina buy?’
- b. nwuka mwue-lul sa-ss-nyako↑? EQ
 who.NOM what-ACC buy-PST-EQ
 ‘What did WHO buy?’
- c. [(2-b)]
 = { [what did Mina buy?], [what did Rowoon buy?], [what did Taeyang buy?], ... }
 = { { Mina bought the apples, Mina bought the peaches, Mina bought the oranges, ... }, { Rowoon bought the apples, Rowoon bought the peaches, Rowoon bought the oranges, ... }, { Taeyang bought the apples, Taeyang bought the peaches, Taeyang bought the oranges, ... } }

Presupposition: at least one question in the set of possible answers (i.e., questions) has already been introduced in the discourse by uttering a sentence that conveys it.

I assume that the EQ in (2-b) has a structure simplified as in (3). The sister CP of the CFP *nyako*↑ can be logically translated into (3-b) as a function over questions Q where every question denotes a set of propositions p such that x bought y , each variable bound by a generalized quantifier. As shown in (3-c), the CFP *nyako*↑ is analyzed as an identity function over a set of questions Z , also triggering the underlined presupposition that there is at least one question Q' in the set Z that has already been introduced in the discourse by uttering an INT conveying it. Thus, the EQ in (2-b) translates into (3-d) and denotes a set of questions such as (2-c) iff the underlined presupposition is satisfied.

- (3) a. [EQ [CP nwuka mwue-lul sa-ss-] *nyako*↑]
 b. CP $\rightsquigarrow \lambda Q_{\langle\langle s,t \rangle, t \rangle} \exists x_e [person'(x) \wedge Q = \lambda p_{\langle s,t \rangle} \exists y_e [thing'(y) \wedge p = \lambda w.bought'(w, x, y)]]$
 c. *nyako*↑ $\rightsquigarrow \lambda Z_{\langle\langle\langle s,t \rangle, t \rangle, t \rangle} \lambda Q : \exists Q'_{\langle\langle s,t \rangle, t \rangle} [UTTERED(Q') \wedge Z(Q')]. Z(Q)$
 d. EQ (2-b) $\rightsquigarrow \lambda Q : \exists Q' [UTTERED(Q') \wedge \exists x [person'(x) \wedge Q' = \lambda p \exists y [thing'(y) \wedge p = \lambda w.bought'(w, x, y)]]]. \exists x [person'(x) \wedge Q = \lambda p \exists y [thing'(y) \wedge p = \lambda w.bought'(w, x, y)]]$

Now, I move on to EQs with *lako*↑ or *cako*↑. An EQ with *lako*↑ must have an antecedent that is imperative morpho-syntactically and performs the act of commanding. On the other hand, an EQ with *cako*↑ must have an antecedent that is hortative morpho-syntactically and performs the act of suggesting. The semantics of imperative and hortative sentences have received very little attention in the literature in comparison to that of declarative and interrogative sentences. I remain agnostic about the precise semantic identity of imperative and hortative sentences and call their denotation as command c (of type α) and suggestion s (of type β), respectively.¹ For

¹See Portner (2016) for an overview of formal theories of imperative clauses. As for hortative clauses, no

instance, the EQ in (4-b) seeks confirmation of what has been commanded by the imperative sentence in (4-a). (4-b) denotes a set of imperative sentences like (4-c) iff the presupposition that there exists at least one command in the set that has already been introduced to the discourse by uttering a sentence conveying it. On the other hand, the EQ in (5-b) seeks confirmation of what has been suggested by the hortative sentence in (5-a). (5-b) denotes a set of hortative sentences like (5-c) iff the presupposition that there exists at least one suggestion in the set that has already been introduced to the discourse.

- (4) a. Mina-ya, sakwa-lul sa-la. *imperative*
 Mina-VOC apple-ACC buy-IMP
 ‘Mina, buy the apples.’
- b. mwue-lul sa-(lako↑) ? *EQ*
 what-ACC buy-(EQ)
 ‘Buy WHAT?’
- c. $[(4-b)]_{\langle \alpha, t \rangle}$
 = { [[buy the apples.]], [[buy the peaches.]], [[buy the oranges.]], ... }
 Presupposition: at least one command in the set of possible answers (i.e., commands) has already been introduced in the discourse by uttering a sentence that conveys it.
- (5) a. Mina-ya, sakwa-lul sa-ca. *hortative*
 Mina-VOC apple-ACC buy-HOR
 ‘Mina, let’s buy the apples.’
- b. mwue-lul sa-(cako↑) ? *EQ*
 what-ACC buy-(EQ)
 ‘Let’s buy WHAT?’
- c. $[(5-b)]_{\langle \beta, t \rangle}$
 = { [[let’s buy the apples.]], [[let’s buy the peaches.]], [[let’s buy the oranges.]], ... }
 Presupposition: at least one suggestion in the set of possible answers (i.e., suggestions) has already been introduced in the discourse by uttering a sentence that conveys it.

published study has been published on the formal analysis of their semantics.

I assume that *lako*↑ and *cako*↑ too are sister nodes to the CP, as shown in (6-a). The CP sister of the CFP *lako*↑ will denote a set of commands, while the sister CP of the CFP *cako*↑ will denote a set of suggestions. *Lako*↑ will denote an identity function over a set of commands $X_{\langle\alpha,t\rangle}$ and conveys the presupposition that at least one command c'_α in the set X has been already introduced in the discourse by uttering a sentence conveying it, as in (6-b). Similarly, *cako*↑ will denote an identity function over a set of suggestions $Y_{\langle\beta,t\rangle}$ and conveys the presupposition that at least one suggestion s'_β in the set Y has been already introduced in the discourse by uttering a sentence conveying it, as in (6-c).

- (6) a. [EQ [CP mwue-lul sa-] *lako*↑/*cako*↑]
 b. $\text{lako}\uparrow \rightsquigarrow \lambda X_{\langle\alpha,t\rangle} \lambda c_\alpha : \exists c'_\alpha [\text{UTTERED}(c') \wedge X(c')]. X(c)$
 c. $\text{cako}\uparrow \rightsquigarrow \lambda Y_{\langle\beta,t\rangle} \lambda s_\beta : \exists s'_\beta [\text{UTTERED}(s') \wedge Y(s')]. Y(s)$

Under the view that assumes *ko*↑ as a universal EQ CFP, *ko*↑ may denote an identity function over a set of varying objects of open semantic type (to accommodate all four types of set of antecedent denotation, i.e., set of propositions ($\langle\langle s, t \rangle, t \rangle$), set of questions ($\langle\langle\langle s, t \rangle, t \rangle, t \rangle$), set of commands ($\langle\alpha, t \rangle$), and set of suggestions ($\langle\beta, t \rangle$)) presupposing that there is at least one semantic object (whose type is also open) in the set that has been introduced in the discourse by uttering a sentence conveying it, as the logical translation shown in (7-a). However, it fails to derive the precise meaning of EQs. For example, an EQ with the CFP *tako*↑ will have a structure in (7-b). As discussed in Chapter 5 §5.1, any clause with the sentence-final CFP *ta* is declarative that denotes a proposition, and the *wh*-word *mwue* is interpreted as an indefinite ‘something.’ Thus, the embedded S denotes a proposition translated into (7-c). Since *ko*↑ in (7-a) is defined as a function over an open variable, it can combine with a proposition like (7-c). Then, the proposition in (7-c) is assigned to Z , and results in a logical translation of the EQ ‘Mina bought WHAT?’ as in (7-d). (7-d) is problematic because the presupposition in (7-d) requires the variable Q' to be previously uttered and a member of the proposition: a possible world. It

thus violating the “adjacency” condition. Moreover, in (10), an EQ is uttered several days after the antecedent sentence was uttered (reiterated from Ch.3). Nevertheless, in both examples, the EQ is licensed.

- (9) a. Mina-ka emma sayngsin senmwul-lo lanenkhwulesu-lul
 Mina-NOM mom birthday.HON gift-as ranunculus-ACC
 sa-ss-e. *antecedent*
 buy-PST-DECL.INTIMATE
 ‘Mina bought ranunculus as a birthday gift for her mom.’
- b. Mina ton eps-nun-cwul al-ass-nuntey. (kuntey) mwue-lul
 Mina money no.exist-IND-COUNTERFACT know-PST-DECL (but) what-ACC
 sa-ss-tako↑? *EQ*
 buy-PST-EQ
 ‘I thought Mina had no money. (But) she bought WHAT?’

(10) SCENARIO: earlier in the week, Mina told her partner that she would cook ratatouille on Sunday. Mina’s partner goes to a grocery store on Saturday evening to buy what Mina needs but soon realizes that he has forgotten what exactly she will be cooking tomorrow. He calls Mina and asks her the following question as soon as she picks up the call:

- a. Mina-ya, ne nayil mwue-lul yoli.ha-n-tako↑?
 Mina-VOC you tomorrow what-ACC cook.do-IND-Q
 ‘Mina, you’ll cook WHAT tomorrow?’

This empirical generalization raises the following interesting questions: (i) In Korean, how far away can an EQ be from its antecedent? (ii) what discourse conditions license EQs? One may posit that the distance between an EQ and its antecedent does not play any role and entailment is the only licensing condition, as the antecedent sentences in (9) and (10) do entail the base utterances of the EQs in (9) and (10).² However, previous proposals on entailment licensing EQs such as Poschmann (2018) and Ji (2022) build on the assumption that the adjacency condition holds. That is, they rely on the data in which an EQ immediately follows its antecedent. Thus,

²In (9), ‘Mina bought ranunculus as a birthday gift for her mom’ entails ‘she (Mina) bought ranunculus’; in (10), ‘she (Mina) will cook ratatouille on Sunday’ entails ‘you (Mina) will cook ratatouille tomorrow (Sunday).’

the entailment condition also needs to be revisited by taking into consideration that, at least in Korean, an EQ and its antecedent need not be adjacent.

My intuition as a native speaker of Korean is that the distance, in fact, does not matter. In Korean, an EQ is licensed as long as the addressee knows the answer to the EQ. Thus, the presuppositional content conveyed in the EQ may be enriched with the speaker's belief about the addressee's knowledge of what was said. In (10), the antecedent is not uttered in the current conversation Mina and her partner are having over the phone. Rather, Mina's partner presupposes that Mina knows one of the possible answers to the EQ that was said before at any time prior to his EQ. Then, the presuppositional content I proposed for *tako*↑ may be roughly expanded as in (11): there is at least one proposition *q* that is one of the possible answers to the EQ and has been already introduced in the discourse by uttering a sentence conveying it, and the addressee knows *q*.

$$(11) \quad \textit{tako}\uparrow \rightsquigarrow \lambda Q \lambda p : \exists q [UTTERED(q) \wedge Q(q) \wedge \textit{know}'(\textit{addressee}, q)] \cdot Q(p)$$

6.2 Summary of the study

This dissertation sought to answer the following questions on EQs in Korean: (i) what are the differences between INTs and EQs?; (ii) Do the differences result from semantics or pragmatics?; (iii) What is the precise mechanism that can account for the differences?

INTs and EQs are known to be different in their morpho-syntax, intonation, and discourse-pragmatic restriction. As EQs in previously reported languages, EQs in Korean need a discourse antecedent that conveys the answer to the EQ being conveyed. However, Korean exhibits a number of interesting properties that characterize EQs. First, EQs are morpho-syntactically marked by the EQ CFP *tako*↑. It is a combination of a certain CFP string (*tako*) and the rising intonation (↑). *Tako*↑ is never used to convey an ordinary information-seeking question and overtly distinguishes EQs from INTs. INTs are marked by the CFP *ni* (or its variant according to speech level), and there is not a single intonation that is solely associated with information-

seeking questions. Second, the form of EQ CFP depends on the speech act performed by the EQ antecedent. CFP *tako*↑ is used when the antecedent makes an assertion. If the antecedent performs other speech acts than assertion, e.g., asking a question, then *tako*↑ cannot be used in the EQ that follows. Third, polar and *wh*-EQs are morpho-syntactically identical, including the CFP, except for the presence/absence of a *wh*-word. Fourth, EQs do not require an obligatory prosodic stress on echoed *wh*-words, unlike languages like English. That is, echoed and non-echoed *wh*-words share the same morpho-syntax and prosody. Fifth and last, multiple-*wh* EQs and INTs exhibit parallelism in the kinds of readings they receive. Both EQs and INTs can receive single-pair, pair-list, or functional readings. I presented the first-ever experimental data through two acceptability judgment surveys. The results provided a counterexample to the previous claims that EQs do not allow for pair-list and functional readings, thus semantically distinct from INTs.

Based on the descriptive generalizations on the similarities and differences between INTs and EQs, I proposed a novel analysis that precisely captures the properties of EQs in Korean. I argued that INTs and EQs are semantically identical, and the interpretative difference arises in their pragmatics. I assumed that the CFP is responsible for the pragmatic difference between INTs and EQs because the CFP is the only overt distinction between them. I proposed that both INT and EQ CFPs bear an identity function over sets of propositions, and crucially, the EQ CFP *tako*↑ triggers the discourse-pragmatic restriction by means of introducing the presupposition such that at least one possible answer to the EQ being conveyed is previously introduced in the discourse by uttering a sentence conveying it. Therefore, INTs and EQs remain the same in their semantics but different in their pragmatics. Furthermore, I showed that EQs can be analyzed in a simple and straightforward way by using previously established semantic theories and devices used for the analysis of questions without introducing new semantic terms and rules.

Although my analysis was developed for EQs in Korean, the approach treating INTs and EQs as semantically identical and pragmatically distinct may be advantageous in accounting for languages that make use of the same *wh*-words across INTs and EQs. For instance, in Italian,

a multiple-*wh* construction is not allowed in INTs nor EQs, as exemplified in (12). Also, in Japanese, the *wh*-word in the EQ (13-b) is not distinguished from the same *wh*-word in the INT in (13-a) neither in its morpho-syntax nor intonation. The particle *tte* in (13-b) is the only responsible element for the interpretative difference between (13-a) and (13-b).

- (12) *Chi ha scritto che cosa? *Italian (Calabrese 1984; Ivano Caponigro p.c.)*
 who has written what
 Intended: ‘Who wrote what?’ / ‘WHO wrote WHAT?’
- (13) a. Hanako-wa doko-de hana-wo katta-no-desu-ka? *Japanese (Ueki 1989)*
 Hanako-TEM where-LOC flower-ACC bought-NM-COP-Q
 ‘Where did Hanako buy flowers?’
- b. Hanako-wa doko-de hana-wo katta-no-desu-ka tte?
 Hanako-TEM where-LOC flower-ACC bought-NM-COP-Q EQ
 ‘Where did Hanako buy flowers, you say?’

Also, Turkish is another language in which EQs receive the pair-list and functional readings (Ebru Evcen *p.c.*). EQs in Turkish are morpho-syntactically identical to INTs but distinguished from INTs by prosody. A prosodic stress is required on the verb, specifically on the tense marker, so the final intonation reaches the high tone on the boundary. Echoed *wh*-words are not required to bear stress.³ In (14), Speaker A utters a pair-list declarative sentence that provides a list of pairs: ⟨Junhee, kimchi fried rice⟩, ⟨Momo, onigiri⟩, and ⟨Sarin, lassi⟩. On the other hand, in (15), the discourse antecedent is a functional declarative sentence that has a quantificational nominal ‘every student’ as the subject. The object noun phrase ‘their advisor’s finger’ contains a pronoun

³Another interesting property of Turkish EQs is that, in the case of multiple-*wh* EQs with two echoed *wh*-words, it is common to repeat the second *wh*-word and the verb predicate (Ebru Evcen, *p.c.*). That is, each example in (i) can be used in the scenarios (14) and (15), respectively.

- (i) a. Kim ne getir-miş ne getir-miş?
 who what bring-INDIRECT.PST what bring-INDIRECT.PST
 ‘WHO brought WHAT?’
- b. Kim ney-i kes-miş ney-i kes-miş?
 who what-ACC cut-INDIRECT.PST what-ACC cut-INDIRECT.PST
 ‘WHO cut WHAT?’

that is bound by the quantificational nominal. In both scenarios, a multiple-*wh* EQ is felicitous.

- (14) SCENARIO: Speaker A described the potluck party she had over the weekend as the following: “Junhee brought kimchi fried rice, Momo brought onigiri, and Sarin brought lassi.” However, Speaker B didn’t catch any names and dishes because she was not paying attention.

B: Kim ne getir-miş?! EQ
who what bring-INDIRECT.PST
‘WHO brought WHAT?’

- (15) SCENARIO: Speaker B is shocked by the incident that happened in Speaker A’s department: every student cut their advisor’s finger.

B: Kim ney-i kes-miş?! EQ
who what-ACC cut-INDIRECT.PST
‘WHO cut WHAT?!’

The examples from Italian, Japanese, and Turkish, in addition to the Korean data, demand a broader cross-linguistic investigation of EQs. Previous approaches that treat echoed and non-echoed *wh*-words as semantically distinct are unable to account for the similarities in the behaviors of *wh*-words in those languages. Furthermore, the claim that EQs allow for fewer types of readings is unwarranted in Korean and Turkish.

Taken together, this study enriches the current understanding of questions established by previous works by reporting new data from a less-studied language. Since systematic studies on EQs are few and previous ones are primarily built upon the most-studied languages, they can potentially be biased and are not universal, as confirmed by my Korean data and preliminary evidence in Italian, Japanese, and Turkish. My investigation on Korean EQs provided an opportunity to re-examine unwarranted beliefs on EQs, which in turn highlighted the importance of diversity of linguistic data and perspectives. This study can be a groundwork for future cross-linguistic research on languages whose EQs exhibit previously unnoticed behaviors. Also, this study

may well have a bearing on inspiring an analysis of non-canonical INTs in non-Indo-European languages, which are also largely understudied. In sum, as the first-ever semantic and pragmatic analysis of EQs in Korean, the present study contributes to the field by deepening and broadening our understanding of EQs and interrogative clauses in general.

Appendix. Full set of scenarios used in the surveys

INT Survey

- A. 미나의 친구들 몇 명이 여름방학동안 여행을 다녀왔다. 친구들이 여행을 다녀왔다는 소식을 듣고, 미나가 친구에게 묻는다.

Some of Mina’s friends went on a trip over the summer break. After hearing the news about their friends’ travel, Mina asks her friend.

미나: “누가 어디를 여행했니?”

Mina: “Who traveled where?”

미나의 질문에 친구가 다음과 같이 대답한다.

The friend answers Mina’s question as the following.

친구:

Friend:

- a. “소연이는 유럽을 여행했어.” *single-pair*
“Soyeon traveled to Europe.”
- b. “소연이는 유럽, 한나는 남미, 주영이는 중앙아시아를 여행했어.” *pair-list*
“Soyeon traveled to Europe, Hanna traveled to South America, and Juyoung traveled to Central Asia.”
- c. “각자 자기가 가장 가고 싶었던 지역을 여행했어.” *functional*
“Each and every one traveled to the place they wanted to visit the most.”
- d. “소연이는 인턴십을 했어.” *irrelevant*

“Soyeon did an intership.”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- B. 민희는 회사에서 전 직원 대상의 명절 보너스를 받았다. 동료들 전부 보너스로 무언가를 샀다는 것을 알고, 민희가 동료들에게 묻는다.

Minhee’s company gave out holiday bonus to every employee. After realizing that everyone bought something with the bonus, Minhee asks her colleagues.

민희: “누가 뭐를 샀니?”

Minhee: “Who bought what?”

민희의 질문에 동료들 중 하나가 다음과 같이 대답한다.

One of the colleagues answers Minhee’s question as the following.

동료:

Colleague:

- a. “나는 노트북을 샀어.” *single-pair*
“I bought a laptop.”
- b. “나는 노트북, 선재는 명품 지갑, 혜수는 비행기 티켓을 샀어.” *pair-list*
“I bought a laptop, Seonjae bought a luxury wallet, and Hyesoo bought a flight ticket.”
- c. “각자 자기가 가장 사고 싶었던 것을 샀어.” *functional*
“Each and every one bought the thing they wanted to buy the most.”
- d. “나는 학자금을 빌렸어.” *irrelevant*
“I borrowed a student loan.”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- C. 방송국 기자인 인경은 금요일마다 동기들과 모임을 한다. 동기들이 이번주에 맡았던 취재 주제가 궁금해, 인경이 동기들에게 묻는다.

Inkyung, a reporter at a TV station, meets with her coworkers every Friday. She wants to know what they've worked on this week, so she asks her coworkers.

인경: “누가 뭐를 취재했니?”

Inkyung: “*Who covered what?*”

인경의 질문에 동기들 중 하나가 다음과 같이 대답한다.

One of the coworkers answers Inkyung's question as the following.

동기:

Coworker:

a. “인성이는 산불을 취재했어.” *single-pair*

“*Inseong covered the mountain fire.*”

b. “인성이는 산불, 찬희는 입시 비리, 석우는 대선을 취재했어.” *pair-list*

“*Inseong covered the mountain fire, Chanhee covered the college entrance scandal, and Seokwoo covered the presidential election.*”

c. “각자 자기가 가장 관심이 있었던 주제를 취재했어.” *functional*

“*Each and every one covered the topic they were interested in the most.*”

d. “인성이는 휴가를 갔어.” *irrelevant*

“*Inseong went on a vacation.*”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

D. 경진은 문학 수업에서 시 한 편을 골라 외워오는 과제를 받았다. 다른 친구들은 이미 다 정했다는 소식을 듣고, 경진이 친구에게 묻는다.

Kyeongjin has an assignment in her literature class to pick a poem and memorize it. After hearing all of her classmates have already chosen a poem, she asks her friend.

경진: “누가 뭐를 외웠니?”

Kyeongjin: “*Who memorized what?*”

경진의 질문에 친구가 다음과 같이 대답한다.

The friend answers Kyeongjin's question as the following.

친구:

Friend:

- a. “진규는 ‘빈 집’을 외웠어.” *single-pair*
“Jinkyu memorized ‘Empty House.’”
- b. “진규는 ‘빈 집’, 태양이는 ‘이 시대의 사랑’, 석우는 ‘서시’를 외웠어.” *pair-list*
“Jinkyu memorized ‘Empty House,’ Taeyang memorized ‘Love of This Age,’ and Seokwoo memorized ‘Prelude.’”
- c. “각자 자기가 가장 감동받은 시를 외웠어.” *functional*
“Each and every one memorized the poem that made an impression on them the most.”
- d. “진규는 기형도 전집을 읽었어.” *irrelevant*
“Jinkyu read the complete works of Ki Hyeongdo.”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- E. 새봄의 친구들 몇 명이 밴드를 결성했다. 새봄이 그 밴드의 공연에 다녀왔다는 것을 알고, 새봄의 엄마가 새봄에게 묻는다.

Some of Saebom's friends formed a band. After learning that Saebom went to their show, her mom asks Saebom.

엄마: “누가 뭐를 연주했니?”

Mom: “Who played what?”

엄마의 질문에 새봄이 다음과 같이 대답한다.

Saebom answers her mom's question as the following.

새봄:

Saebom:

- a. “경수가 기타를 연주했어.” *single-pair*

“Kyeongsoo played guitar.”

- b. “경수가 기타, 인호가 드럼, 옹호가 베이스를 연주했어.” *pair-list*

“Kyeongsoo played guitar, Inho played drum, and Yongho played bass.”

- c. “각자 자기가 가장 자신있는 악기를 연주했어.” *functional*

“Each and every one played the instrument they’re most confident in.”

- d. “경수가 사회를 봤어.” *irrelevant*

“Kyeongsoo was an MC.”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- F. 현지의 친구들 몇 명이 수험생활을 하고 있다. 친구들이 수험생활을 위해 핸드폰에서 SNS 앱을 지웠다는 말을 듣고, 현지는 친구들에게 묻는다.

Some of Hyunji’s friends are preparing for an exam. After hearing that they have deleted social media apps from their phones to study, Hyunji asks her friends.

현지: “누가 뭐를 지웠니?”

Hyunji: “Who deleted what?”

현지의 질문에 친구들 중 하나가 다음과 같이 대답한다.

One of the friends answers Hyunji’s question as the following.

친구:

Friend:

- a. “나는 틱톡을 지웠어.” *single-pair*

“I deleted TikTok.”

- b. “나는 틱톡, 지우는 인스타그램, 상혁이는 트위터를 지웠어.” *pair-list*

“I deleted TikTok, Jiwoo deleted Instagram, and Sanghyuk deleted Twitter.”

- c. “각자 자기가 가장 자주 쓰는 앱을 지웠어.” *functional*

“Each and every one deleted the app they’ve been using the most.”

- d. “나는 시간 관리 앱을 설치했어.” *irrelevant*

"I installed a time management app."

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- G. 윤희는 친구들과 새로 생긴 식당에 다녀왔다. 윤희가 그 식당에 다녀왔다는 것을 알고, 윤희의 동생이 윤희에게 묻는다.

Yoonhee went to a newly opened restaurant with her friends. After knowing that Yoonhee's been there, Yoonhee's sister asks her about it.

동생: "누가 뭐를 먹었니?"

Sister: "Who ate what?"

동생의 질문에 윤희가 다음과 같이 대답한다.

Yoonhee answers her sister's question as the following.

윤희:

Yoonhee:

- a. "나는 알탕을 먹었어." *single-pair*
"I ate fish roe soup."
- b. "나는 알탕, 지효는 갈비탕, 선우는 선짓국을 먹었어." *pair-list*
"I ate fish roe soup, Jihyo ate short rib soup, and Seonwoo ate ox blood soup."
- c. "각자 자기가 가장 끌리는 메뉴를 먹었어." *functional*
"Each and every one ate the dish they craved the most."
- d. "나는 계산을 했어." *irrelevant*
"I paid for the food."

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- H. 지수의 동생이 친구들과 영화를 보고 왔다. 동생과 친구들이 영화를 보면서 좋아하는 캐릭터가 다르다는 것을 알고 지수가 동생에게 묻는다.

Jisoo's sister went to see a movie with her friends. Knowing that her sister and friends

liked different characters in the movie, Jisoo asks her sister.

지수: “누가 누구를 좋아했니?”

Jisoo: “*who liked who?*”

지수의 질문에 동생이 다음과 같이 대답한다.

Jisoo’s sister answers her question as the following.

동생:

Sister:

- a. “나는 정대만을 좋아했어.” *single-pair*
“*I liked Jung Daeman.*”
- b. “나는 정대만, 서진이는 강백호, 현서는 송태섭을 좋아했어.” *pair-list*
“*I liked Jung Daeman, Seojin liked Kang Baekho, and Hyeonso liked Song Taesub.*”
- c. “각자 자기가 가장 잘생겼다고 생각한 캐릭터를 좋아했어.” *functional*
“*Each and every one liked the character they thought the most handsome.*”
- d. “내가 영화표를 샀어.” *irrelevant*
“*I bought the tickets.*”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

EQ Survey

- A. 미나의 친구들 몇 명이 여름방학동안 여행을 다녀왔다. 방학이 끝나고 오랜만에 미나를 만난 친구가 미나에게 말한다.

Some of Mina’s friends went on a trip over the summer break. Getting to see Mina after a while since the break, Mina’s friend tells Mina.

친구:

Friend:

- a. “소연이는 유럽을 여행했어.” *single-pair*

“Soyeon traveled to Europe.”

- b. “소연이는 유럽, 한나는 남미, 주영이는 중앙아시아를 여행했어.” *pair-list*

“Soyeon traveled to Europe, Hanna traveled to South America, and Juyoung traveled to Central Asia.”

- c. “각자 자기가 가장 가고 싶었던 지역을 여행했어.” *functional*

“Each and every one traveled to the place they wanted to visit the most.”

- d. “소연이는 인턴십을 했어.” *irrelevant*

“Soyeon did an intership.”

친구의 말에 놀란 미나는 다음과 같이 묻는다.

Mina, surprised by what the friend said, asks the following.

미나: “누가 어디를 여행했다고?”

Mina: “*WHO* traveled *WHERE*?”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- B. 민희는 회사에서 전 직원 대상의 명절 보너스를 받았다. 보너스를 어디에 썼는지 이야기하는 중에 동료 한 명이 말한다.

Minhee’s company gave out holiday bonus to every employee. While talking about how they spent the bonus, one colleague tells Mina.

동료:

Colleague:

- a. “나는 노트북을 샀어.” *single-pair*

“I bought a laptop.”

- b. “나는 노트북, 선재는 명품 지갑, 혜수는 비행기 티켓을 샀어.” *pair-list*

“I bought a laptop, Seonjae bought a luxury wallet, and Hyesoo bought a flight ticket.”

- c. “각자 자기가 가장 사고 싶었던 것을 샀어.” *functional*

“Each and every one bought the thing they wanted to buy the most.”

- d. “나는 학자금을 빌렸어.” *irrelevant*

“I borrowed a student loan.”

동료의 말에 놀란 민희가 다음과 같이 묻는다.

Minhee, surprised by what the colleague said, asks the following.

민희: “누가 뭐를 샀다고?”

Minhee: “*WHO bought WHAT?*”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- C. 방송국 기자인 인경은 금요일마다 동기들과 모임을 한다. 이번주에 맡았던 취재 주제를 이야기하는 중에 동기 한 명이 말한다. Inkyung, a reporter at a TV station, meets with her coworkers every Friday. While talking about the topics they covered this week, one coworker tells Inkyung.

동기:

Coworker:

- a. “인성이는 산불을 취재했어.” *single-pair*

“Inseong covered the mountain fire.”

- b. “인성이는 산불, 찬희는 입시 비리, 석우는 대선을 취재했어.” *pair-list*

“Inseong covered the mountain fire, Chanhee covered the college entrance scandal, and Seokwoo covered the presidential election.”

- c. “각자 자기가 가장 관심이 있었던 주제를 취재했어.” *functional*

“Each and every one covered the topic they were interested in the most.”

- d. “인성이는 휴가를 갔어.” *irrelevant*

“Inseong went on a vacation.”

동기의 말에 놀란 민희가 다음과 같이 묻는다.

Minhee, surprised by what the coworker said, asks the following.

인경: “누가 뭐를 취재했다고?”

Inkyung: “*WHO covered WHAT?*”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- D. 경진은 문학 수업에서 시 한 편을 골라 외워오는 과제를 받았다. 이미 시를 골라 외운 친구들이 있다는 소식을 듣고 친구가 경진에게 말한다.

Kyeongjin has an assignment in her literature class to pick a poem and memorize it. After hearing some classmates have already chosen a poem and memorized it, one friend tells Kyeongjin.

친구:

Friend:

a. “진규는 ‘빈 집’을 외웠어.” *single-pair*
“Jinkyu memorized ‘Empty House.’”

b. “진규는 ‘빈 집’, 태양이는 ‘이 시대의 사랑’, 석우는 ‘서시’를 외웠어.” *pair-list*
“Jinkyu memorized ‘Empty House,’ Taeyang memorized ‘Love of This Age,’ and Seokwoo memorized ‘Prelude.’”

c. “각자 자기가 가장 감동받은 시를 외웠어.” *functional*
“Each and every one memorized the poem that made an impression on them the most.”

d. “진규는 기형도 전집을 읽었어.” *irrelevant*
“Jinkyu read the complete works of Ki Hyeongdo.”

친구의 말에 놀란 경진은 다음과 같이 묻는다.

Kyeongjin, surprised by what the friend said, asks the following.

경진: “누가 뭐를 외웠다고?”

Kyeongjin: “*WHO memorized WHAT?*”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- E. 새봄의 친구들 몇 명이 밴드를 결성했다. 그 밴드의 공연에 다녀온 새봄은 엄마에게 말한다.

Some of Saebom's friends formed a band. After coming back from their show, Saebom tells her mom.

새봄:

Saebom:

- a. “경수가 기타를 연주했어.” *single-pair*
“Kyeongsoo played guitar.”
- b. “경수가 기타, 인호가 드럼, 용호가 베이스를 연주했어.” *pair-list*
“Kyeongsoo played guitar, Inho played drum, and Yongho played bass.”
- c. “각자 자기가 가장 자신있는 악기를 연주했어.” *functional*
“Each and every one played the instrument they're most confident in.”
- d. “경수가 사회를 봤어.” *irrelevant*
“Kyeongsoo was an MC.”

새봄의 말에 놀란 엄마는 다음과 같이 묻는다.

Her mom, surprised by what Saebom said, asks the following.

엄마: “누가 뭐를 연주했다고?”

Mom: “WHO played WHAT?”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- F. 현지의 친구들 몇 명이 수험생활을 하고 있다. 친구들이 수험생활을 위해 핸드폰에서 SNS 앱을 지운 친구들은 현지에게 말한다.

Some of Hyunji's friends are preparing for an exam. They have deleted social media apps from their phones to study and tell Hyunji.

친구:

Friend:

- a. “나는 틱톡을 지웠어.” *single-pair*
“I deleted TikTok.”
- b. “나는 틱톡, 지우는 인스타그램, 상혁이는 트위터를 지웠어.” *pair-list*
“I deleted TikTok, Jiwoo deleted Instagram, and Sanghyuk deleted Twitter.”
- c. “각자 자기가 가장 자주 쓰는 앱을 지웠어.” *functional*
“Each and every one deleted the app they’ve been using the most.”
- d. “나는 시간 관리 앱을 설치했어.” *irrelevant*
“I installed a time management app.”

친구의 말에 놀란 현지는 다음과 같이 묻는다.

Hyunji, surprised by what the friend said, asks the following.

현지: “누가 뭐를 지웠다고?”

Hyunji: “WHO deleted WHAT?”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

- G. 윤희는 친구들과 새로 생긴 식당에 다녀왔다. 그 식당에 대해 궁금해하던 동생에게 윤희가 말한다.

Yoonhee went to a newly opened restaurant with her friends. Her sister has been curious about the place, so Yoonhee tells her sister.

윤희:

Yoonhee:

- a. “나는 알탕을 먹었어.” *single-pair*
“I ate fish roe soup.”
- b. “나는 알탕, 지효는 갈비탕, 선우는 선짓국을 먹었어.” *pair-list*
“I ate fish roe soup, Jihyo ate short rib soup, and Seonwoo ate ox blood soup.”

c. “각자 자기가 가장 끌리는 메뉴를 먹었어.” *functional*
“Each and every one ate the dish they craved the most.”

d. “나는 계산을 했어.” *irrelevant*
“I paid for the food.”

윤희의 말에 놀란 동생은 다음과 같이 대답한다.

Yoonhee’s sister, surprised by what Yoonhee said, asks the following.

동생: “누가 뭐를 먹었다고?”

Sister: “WHO ate WHAT?”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

H. 지수의 동생이 친구들과 영화를 보고 왔다. 영화 속에서 가장 좋아하는 캐릭터에 대해 이야기하며 동생이 지수에게 말한다.

Jisoo’s sister went to see a movie with her friends. While talking about the favorite character in the movie, she tells Jisoo.

동생:

Sister:

a. “나는 정대만을 좋아했어.” *single-pair*
“I liked Jung Daeman.”

b. “나는 정대만, 서진이는 강백호, 현서는 송태섭을 좋아했어.” *pair-list*
“I liked Jung Daeman, Seojin liked Kang Baekho, and Hyeonso liked Song Taesub.”

c. “각자 자기가 가장 잘생겼다고 생각한 캐릭터를 좋아했어.” *functional*
“Each and every one liked the character they thought the most handsome.”

d. “내가 영화표를 샀어.” *irrelevant*
“I bought the tickets.”

동생의 말에 놀란 지수가 다음과 같이 대답한다.

Jisoo, surprised by what her sister said, asks the following.

지수: “누가 누구를 좋아했다고?”

Jisoo: “*WHO liked WHO?*”

위 대화가 얼마나 자연스러운가?

How natural is the above conversation?

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