

Spring 2023

## Negative Polar Questions and Answers in English and Korean

Keunhyung Park

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NEGATIVE POLAR QUESTIONS AND ANSWERS IN ENGLISH AND KOREAN

by

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Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy in

Linguistics

College of Arts and Sciences

University of South Carolina

2023

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## DEDICATION

To everyone I love and to those who love me. Without you all, I may not be able to stand here today.

## ACKNOWLEDGEMENTS

As I work on this dissertation, it feels like an endless journey. The finish line brought a faint grin to my face, but it continuously retreated two steps for every one step I took forward. The process of writing my dissertation has allowed me to deepen my understanding of the subject matter and develop a more peaceful state of mind.

First and foremost, I express my utmost gratitude to my committee members, Dr. Stanley Dubinsky, Dr. Paul Malovrh, Dr. Anne Bezuidenhout, and Dr. Jong-bok Kim. Without their valuable discussions and continuous support, I couldn't have possibly finished this dissertation. After I began my graduate studies at the University of South Carolina, I was reminded of the old proverb that states “A good teacher is like a candle - it consumes itself to light the way for others.” Throughout my academic journey in Columbia, I was fortunate enough to have Dr. Stanley Dubinsky as my advisor, and I learned everything over his shoulder. Working with him was an absolute pleasure, and his lectures left a lasting impression on me. I consider myself lucky to have had the opportunity to be trained by such an exceptional advisor. In the final chapter of my dissertation, I encountered difficulties in expanding the theoretical analyses of the NPQ to address language acquisition issues. However, with Dr. Paul Malovrh's insightful feedback, I gained new perspectives and improved the chapter's quality for future research. Moreover, my dissertation's primary focus was on the structure of English and Korean negation, which was built upon Dr. Jong-bok Kim's prior research. I just followed in his footsteps, expanding upon the work he had already done.

I can still vividly recall my first official presentation on the meaning of negative polar questions at the Student Research Symposium (SRS) in the fall of 2017. Despite feeling incredibly nervous, I was also eager to share my findings with my colleagues and professors. Following the presentation, I received positive feedback from Dr. Anne Bezuidenhout and Dr. Elaine Chun, who gave me a lot of applause and encouragement. This feedback helped boost my confidence and gave me the motivation to delve deeper into the topic. Since that day, I have devoted my time and effort to studying negative polar questions, often encountering challenges along the way as I worked to find the most reasonable solutions to the puzzle.

Prior to beginning my graduate studies at USC, I had no detailed plans for studying abroad as a graduate student. It was only thanks to the guidance and advice of my undergraduate advisors, Dr. Yaesheik Lee and Dr. Incheol Choi, at Kyungpook National University in Daegu, South Korea, that I was able to envision myself becoming a linguist someday. I followed their advice, and it gave me the motivation to pursue this path. My first publication with Dr. Incheol Choi definitely ignited my desire to delve deeper into the intricacies of negation, and it has been a driving force in my academic journey ever since.

I am aware that there are numerous individuals who have helped me along the way, and I acknowledge that I couldn't have completed this journey alone. My parents, Kyujin Park and Kyungsook Kim, as well as my one and only sister Seoyoung Park, have provided me with endless love, support, and care, which kept me going throughout this long journey. Additionally, I am at a loss for words to express my gratitude to Haeun Kim, who has always been there for me and shared both the good and the bad moments. I want to say thank you for everything.

## ABSTRACT

The meaning of positive polar questions (PPQs) is relatively straightforward, so the truth conditions of PPQs can be decided easily. In contrast, the meaning of negative polar questions (NPQs) may vary, and simple *yes-no* answers to NPQs have seemingly unpredictable interpretations. For example, a simple *yes* answer to a PPQ like ‘Did you have lunch today?’ is easily interpreted as ‘I ate lunch.’ In contrast, the same *yes* answer to an NPQ like ‘Did you not eat lunch today?’ is not obvious out of context. Why are NPQs more ambiguous than PPQs? Based on our empirical observations of the difference in degree of ambiguity between PPQs and NPQs, it is assumed that the negation in NPQs somehow affects truth-conditions syntactically, semantically, and pragmatically.

Traditionally, the answering pattern of NPQs is categorized into two distinct systems: polarity-based and truth-based. Following this typology, it has been widely received that a *yes* answer to ‘Didn’t you eat lunch today?’ denotes ‘I ate lunch’ in polarity-based languages, whereas it denotes ‘I didn’t eat lunch’ in truth-based languages. A major part of this dissertation is devoted to proposing that the traditional dichotomy is only an apparent one and that the superficial “typological” distinctions posited for them are, in fact, attributable to the distinct structures of negation in each language, the potential for ambiguity in some of these, and to the relative complexity and frequency of negation structures in each language.

Furthermore, the inherent ambiguity of NPQs raises several intriguing questions regarding the discrepancy between L1 and L2 interpretations. The distinguished linguistic

features of NPQ structures consequently affect the predominant interpretation of NPQs in a language. The existence of cross-linguistic differences between L1-L2 might cause severe misunderstanding if L2 learners do not have sufficient proficiency to understand the delicate nuance of various PQs in the target language. The final chapter of this dissertation, as a supplement to the main chapters of the dissertation, will introduce some teachability and learnability issues on the L2 acquisition of NPQs and establish research agendas for future studies.



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## LIST OF ABBREVIATIONS

A .....	answer
AAVE .....	African American Vernacular English
ACC .....	accusative
AUX.....	auxiliary
CE .....	contextual evidence
COMP .....	complementizer
CONJ .....	conjunction
COP.....	copular
DECL.....	declarative
DEL.....	delimiter
EFL .....	English as a foreign language
ESL .....	English as a second language
FOC.....	focus
HE .....	hearer expectation
HON.....	honorific
LFN.....	long form negation
LOC .....	locative
MOD .....	modified
NEG .....	negation
NMLZ.....	nominalizer
NOM .....	nominative



NPI.....	negative polarity item
NPQ .....	negative polar question
PASS.....	passive
PEN.....	proposition external negation
PIN.....	proposition internal negation
PL.....	plural
PRES.....	present
POSS.....	possessive
POL.....	polarity
PPI.....	positive polarity item
PPQ.....	positive polar question
PQ .....	polar question
PRT .....	particle
PST .....	past
Q .....	question
QP .....	quantified phrase
RT .....	response time
SAE.....	Standard American English
SB .....	speaker belief
SFN .....	short form negation
TOP.....	topic
UER .....	unexpected response

# CHAPTER 1

## INHERENT AMBIGUITY OF NPQS

### 1.1 Overview of dissertation

In natural language conversation, to elicit information currently lacked, various forms of polar questions (PQs) are used, depending on speakers' intentions and the conversational context. Interlocutors are generally able to understand the semantic and pragmatic import of PQs and to answer them without undue misunderstanding. However, this is not always the case. Sometimes, an addressee does not fully understand the intention or meaning of a question, leading in those instances to unexpected responses (or wrong responses). Such anomalies can arise due to insufficient or poorly understood conversational contexts or on account of the question itself being overly ambiguous in form or meaning. For example, in terms of various ways to answer a negative polar question (NPQ), the question and the set of possible answers in (1) illustrate the potential for miscommunication.

(1) Q: Is she not beautiful?

A: Yes, (she is beautiful).

No, (she is not beautiful).

Yes, (she is not beautiful).

No, (she is beautiful).

In (1), the four different responses are all possible answers to the NPQ given. Here, simple *yes* and *no* answers could be ambiguous and mean either *she is beautiful* or *she isn't*

*beautiful*. Thus, short *yes-no* answers lacking the parenthesized clarifications that follow could be confusing and lead to misunderstanding in a real-world discourse context.

The meaning of positive polar questions (PPQs) is relatively straightforward, so the truth conditions of PPQs can be decided easily. In contrast, the meaning of NPQs may vary, and simple *yes-no* answers to NPQs have seemingly unpredictable interpretations (Claus et al. 2017, Holmberg 2013, Kim 2017, Krifka 2017, Kramer & Rawlins 2011, Ladd 1981, Sudo 2013). Then, why are NPQs more ambiguous than PPQs? Is negation a factor operating against our proper interpretations? Based on our empirical observations of the different degrees of ambiguity between PPQs and NPQs, it is assumed that the negation in NPQs somehow affects the truth-conditions syntactically, semantically, and pragmatically.

Furthermore, the ambiguity of NPQs raises several intriguing questions regarding the discrepancy between L1 and L2 interpretations. Despite the fact that most natural languages have some sort of sentential negation, they show distinct and unique forms of sentential negation. The distinguished linguistic features of NPQs consequently affect the meaning of NPQs and the proper answering patterns to them. The existence of cross-linguistic differences between L1-L2 might cause severe misunderstanding in answering L2 NPQs if L2 learners do not have sufficient proficiency to understand the delicate nuance of various PQs in the target language. In the final chapter of this dissertation as a supplement to the main chapters of the dissertation, I will introduce some teachability and learnability issues on the L2 acquisition of NPQs.

The present study especially aims to i) clarify the syntactic and semantic structure of NPQs and the meaning of answers to them, ii) compare how native English and Korean speakers interpret NPQs in L1 and L2 and iii) reveal the universal ambiguity of NPQs in

both languages. In order to accomplish these aims, this dissertation focuses on cross-linguistic similarities and differences specifically:

- investigate the interpretation of PPQs and NPQs in English and Korean, in isolation and compared with each other.
- explore to what extent the syntactic and semantic structure of negation in each language interacts with the interpretation of NPQs.
- report on series of online experiments which gather participants' interpretations of PPQs and NPQs under linguistically decontextualized conditions, wherein the first series (in Chapter 4) tests participants on PPQ/NPQ materials in their own language (either Korean or English); the second series of experiments (in Chapter 5) tests two groups of Korean speakers of English who are acquiring English as a foreign language in South Korea (e.g., EFL context) and a second language in the United States (e.g., ESL context).

## 1.2 An introduction to negative polar questions

This section briefly introduces the interpretation of NPQs— that is, *yes-no* questions which include negation— which is the kernel of this dissertation and challenges traditional views on their interpretation. A previous traditional dichotomy has claimed that a language is typologized as either polarity-based or truth-based with respect to the usual interpretation of *yes* or *no* answers to NPQs in that language (Kuno 1973; Pope 1976; Jones 1999, Holmberg 2016). Examples of NPQs in English and Korean are shown here in (2) and (3). The meaning of “polarity-based” has to do with the fact that the negation in (2) is independent of the proposition being questioned and is only interpreted pragmatically. Thus, the semantic meaning of English NPQ in (2) is the same as the literal meaning of a

PPQ (e.g., *Did he eat lunch?*). It ignores the negation and asks, “He ate lunch. Yes or no?”

In contrast, the “truth-based” answering pattern refers to the fact that the negation in Korean NPQ in (3) is interpreted literally rather than pragmatically, and the *yes-no* question is asked of the negated proposition– i.e., “He did not eat lunch. Yes or no?”

(2) Didn’t he eat lunch?

(3) ku-ka cemsim-ul an mek-ess-ni?

he-NOM lunch-ACC NEG eat-PST-Q

‘Did he not eat lunch?’

English thus is deemed be a “polarity-based” language, because a simple *yes* answer to the NPQ in (2) confirms the core proposition (*He ate lunch*) and a simple *no* answer denies it. For its part, Korean is held to be a “truth-based” language since a *no* answer to the NPQ in (3) confirms the core proposition, and a *yes* answer denies it. Thus, the meanings of *yes* and *no* answers to PPQs and NPQs are assumed to be the same in polarity-based languages, but they are opposite each other in truth-based languages.

The main proposal that I constantly address in this dissertation is that the typological distinction between the two classes of languages is merely an apparent one. That is, there is no significant difference between the syntax and semantics of English and Korean NPQs themselves in this regard nor any fundamental differences in English and Korean speakers’ disposition towards NPQs pragmatically. Rather, the tendency of NPQ interpretations to diverge in a manner that has led linguistics to imagine a typological distinction between them is, in fact, due to the relative complexity, ambiguity, and frequency of two distinct

NPQ constructions in each language. The following section more closely reconsiders the polarity-based and truth-based dichotomy alluded to above.

### 1.3 The traditional view of answering patterns

As briefly noted, prior research on the answering patterns to PQs has proposed dividing languages typologically as “polarity-based” or “truth-based” on the strength of how *yes-no* answers to NPQs are most typically interpreted in those languages. Some of this research includes the following studies: Pope 1976; Jones 1999; Kramer & Rawlins 2011; Holmberg 2013.

In terms of the answering patterns, it should first be noted that the meaning of PPQs is relatively straightforward, and this can be seen by the fact that *yes-no* answers to PPQs are unambiguous and easily understood. Thus, there is no strict dichotomy among languages with regards to the answering patterns of PPQs. This is seen quite clearly in examples (4) and (5), where simple *yes* and *no* answers to English and Korean PPQs are provided and interpreted, respectively.

#### (4) English PPQ and answers

Q: Did he eat lunch?

A: Yes, (he did). = ‘he did eat lunch.’ (#Yes, he didn’t eat lunch.)

No, (he didn’t). = ‘he did not eat lunch.’ (#No, he did eat lunch.)

#### (5) Korean PPQ and answers

Q: ku-ka cemsim-ul mek-ess-ni?

he-NOM lunch-ACC eat-PST-Q

‘Did he eat lunch?’

A: ung, (mek-ess-e). = ‘he did eat lunch.’ (#Yes, he didn’t eat lunch.)  
 yes eat-PST-DECL  
 ani, (an-mek-ess-e). = ‘he did not eat lunch.’ (#No, he did eat lunch.)  
 no NEG-eat-PST-DECL

In both languages, the *yes-no* answers to PPQs are interpreted identically. In both (4) and (5), a simple positive *yes* (e.g., *ung* in Korean) answer to PPQs affirms the proposition ‘*he did eat lunch*’, while a simple negative answer *no* (e.g., *ani* in Korean) denies the proposition denoting ‘*he did not eat lunch*.’ Regardless of language types, it is easy to determine what the short positive and negative answers denote even with the ellipses of the following phrases. In these typical interpretations, both *yes* and *no* imply a lack of objection in normal conversational contexts.

In contrast, the meaning of NPQs is much less certain and often varies according to the context of use. In some cases, simple *yes-no* answers to NPQs can have seemingly opposite interpretations between English and Korean. We see this in examples (6) and (7), where it is quite clear from the interpretations of short answers to these that the meaning of the antecedent NPQs is diametrically opposed.

(6) English NPQ and answers

Q: Didn’t he eat lunch?

A: Yes. = ‘he did eat lunch.’ (#Yes, he didn’t eat lunch.)  
 No. = ‘he did not eat lunch.’ (#No, he did eat lunch.)

(7) Korean NPQ and answers

Q: ku-ka            cemsim-ul        **an**        mek-ess-ni?

he-NOM        lunch-ACC        NEG        eat-PST-Q

‘Didn’t he eat lunch?’

A: ung,    (an-mek-ess-e). = ‘he did not eat lunch.’ (#Yes, he did eat lunch.)

yes        NEG-eat-PST-DECL

ani,    (mek-ess-e).        = ‘he did eat lunch.’        (#No, he didn’t eat lunch.)

no        eat-PST-DECL

In the case of English NPQ in (6) and Korean NPQ in (7), short *yes-no* replies seemingly appear to have opposite interpretations. For the English NPQ in (6), *yes* and *no* responses are typically interpreted as equivalent to the same *yes* and *no* reply to the English PPQ in (4) that affirms and denies the positive proposition ‘*he did eat lunch*,’ respectively. For the Korean NPQ in (7), though, *yes* and *no* responses typically have interpretations that are the opposite of those in the Korean PPQ in (5). That is, a *yes* answer affirms the negative assertion that ‘*he did not eat lunch*,’ while a *no* answer asserts that ‘*he did eat lunch*.’ How is it, then, that *yes-no* replies to an NPQ in English and Korean, respectively, wind up having opposite interpretations? Are these differences attributable to English and Korean negation constructions, having distinct structural properties, that affect their interpretations as originally assumed in the traditional typology?

If one were to only consider the PPQs and NPQs in examples (4) through (7), one might imagine that the syntax and semantics of English and Korean NPQs were radically different. This is in fact a position which has been taken in the literature, with regards to the traditional typology of answering patterns, such as we have seen so far. These analyses



have, accordingly, classified English and Korean as “polarity-based” and “truth-based” languages, respectively. Repeated again, English is claimed to be “polarity-based” because the *yes-no* (i.e., “polar”) answers in (6) ignore the semantic value of negation in the NPQ and are equivalent to the corresponding PPQ in (4). In contrast, Korean is held to be “truth-based” because *yes-no* answers in (7) calculate the “truth” conditions contributed by the negation in the NPQ and provide interpretations that are opposite to the corresponding PPQ in (5). However, as I will present below, it is a serious mistake to categorize the languages themselves as distinct, rather than the specific constructions that yield the contrasting interpretations.

#### 1.4 Puzzles: Atypical answering patterns

The contrast observed in English NPQ (6) and Korean NPQ (7) is what forms the basis of categorizing these languages typologically as either polarity-based or truth-based. However, we are led to ask the following questions:

- How does the structure of these NPQs lead to this distinction?
- Are the disparate interpretations of NPQs unalterable?
- Are all NPQs in English polarity-based and are all NPQs in Korean truth-based?
- And if not, how would such a typological distinction be maintained?

Before attempting to answer these questions, as I seek to explain in the following chapters, I can immediately point out that English does indeed have NPQs with truth-based interpretations, and Korean has NPQs with polarity-based interpretations which deviate from the traditional typology of answering patterns. This is shown in (8) and (9) for which short *yes-no* answers are understood as meaning the opposite of *yes* and *no* answers to (6) and (7).

(8) Q: Did he (really) **not** eat lunch?

A: Yes. ‘he (really) didn’t eat lunch.’ / No. ‘he ate lunch.’

(9) Q: ku-ka            cemsim-ul            mek-ci            **anh**-ass-ni?

he-NOM            lunch-ACC            eat-NMIZ            NEG.do-PST-Q

‘Didn’t he eat lunch?’

A: ung,            (mek-ess-e)            /            ani,            (an-mek-ess-e)

yes,            (eat-PST-DECL)            /            no,            (NEG-eat-PST-DECL)

‘Yes, he ate lunch.’            /            ‘No, he didn’t eat lunch.’

Here, we see that *yes-no* answers to the English NPQ in (8) are interpreted in the same way as *yes-no* answers to the Korean NPQ in (7), i.e., a truth-based interpretation. Oppositely, *yes-no* answers to the Korean NPQ in (9) are interpreted the same as *yes-no* answers to the English NPQ in (6), i.e., a polarity-based interpretation. Previous studies, which are theoretically based on the traditional dichotomy, cannot easily explain the atypical answering patterns shown in (8) and (9).

In the following chapters, I will endeavor to show that the typological distinction between English and Korean is only an apparent one and that the superficial “typological” distinctions posited for them are, in fact, attributable to the similarities and differences between the interpretation of English and Korean NPQs. Eventually, the inherent ambiguity of NPQs can be resolved when we understand that the meaning of an NPQ is associated with the distinct structures of NPQs in each language; the potential for ambiguity in some of these is derived from the relative frequency and complexity of negative constructions in each language.

The dissertation is structured as follows. In Chapter 2, in order to raise a question about the inappropriateness of the stereotyped answering patterns, it is first necessary to examine the general structure of English and Korean negation. Then, Chapter 3 explores the syntax and semantics of NPQs generally. I then consider the range of NPQ constructions available in each of the two languages under consideration with an eye towards explaining the polarity and truth-based distinction, as arising from the position of negation, in the question formation. My current analysis posits two categories of negation, based on whether the negator affects the core proposition (*proposition internal negation*) or not (*proposition external negation*) (see Chapter 3, Section 3.4). I then report on the results of two series of online experiments which were designed to gather native speakers' interpretations of NPQs in each language and L2 interpretation of English NPQs under linguistically decontextualized conditions in Chapter 4 and 5. Finally, in Chapter 6, I discuss L2 learners' awareness of NPQs as well as the potential limitations of current instruction while establishing second/foreign language acquisition research agendas for future studies.

Letting me draw a preliminary summary, the results of current experiments (in Chapter 4 and 5) lead to the conclusion that each language has NPQ structures which can readily give rise to polarity-based or truth-based interpretations. It should be noted, however, that NPQ constructions in English, which are least ambiguous and thereby most frequent, happen to be those which lead to polarity-based interpretations. Conversely, the NPQ constructions in Korean, which are least ambiguous and consequently most frequent, are interpreted as truth-based. The results have further important implications for second/foreign language acquisition and for the teaching of each language to speakers of the other, since L2 learners effectively and efficiently are taught to understand the syntactic

and semantic differences between their own language and the target language. The final chapter of this dissertation will attempt to address some pedagogical issues on the L2 acquisition of NPQs.

## CHAPTER 2

### THE STRUCTURE OF NEGATION IN ENGLISH AND KOREAN

#### 2.1 The structure of negation in English and Korean

Before going on to discuss the general syntax and semantics of NPQs and explain how the position of negation interacts with the interpretation of NPQs, it is worth reviewing the distribution of negation— *not* in English and *an* ‘not’ in Korean. The English negator *not* can appear in various positions in the space between a subject and a verb: high in the clause and potentially contracted with the auxiliary, low in the clause and adjacent to the verb, and also, somewhere between these positions. For its part, the Korean negator *an* ‘not’ can appear in two positions: high in the clause and prefixed to an auxiliary *ha* ‘do’ and low in the clause and prefixed to the main verb itself.

##### 2.1.1 High-negation and low-negation in English

Generally, in accordance with its scope, negation is classified into two categories: *sentence* and *constituent* negation by Klima (1964) and *nexal* and *special* negation by Jeffersen (1917). In English, the former is positioned behind a tensed auxiliary and has a wide scope over the tensed predicate. However, the latter is usually attached to a specific constituent and does not have scope over the tensed predicate but simply has a narrow scope over the modifying constituent. In previous discussions on the syntactic properties of negation in many languages, one particularly common assumption is that the existence of a functional projection for negation (e.g., NegP) might vary from language to language,

and the hierarchical position of the functional projection is controversial (Kayne 1989; Pollock 1989; Rizzi 1990; Zanuttini 1997).

Regarding the distribution of English sentential negation, Holmberg (2013) presents the categories of highest, middle, or low negation based on the position of the negation. These three structurally distinct positions are originally invented to account for interpretable positions of the negation in English NPQs. The interpretation accorded to the highest negation involves a negative morpheme, well outside of vP/VP, which may undergo contraction, as in (1). Note that, in addition to the possibility of contraction, the negator *not* appears in each case to the left of an adverb (*always*, *now*, and *previously*).

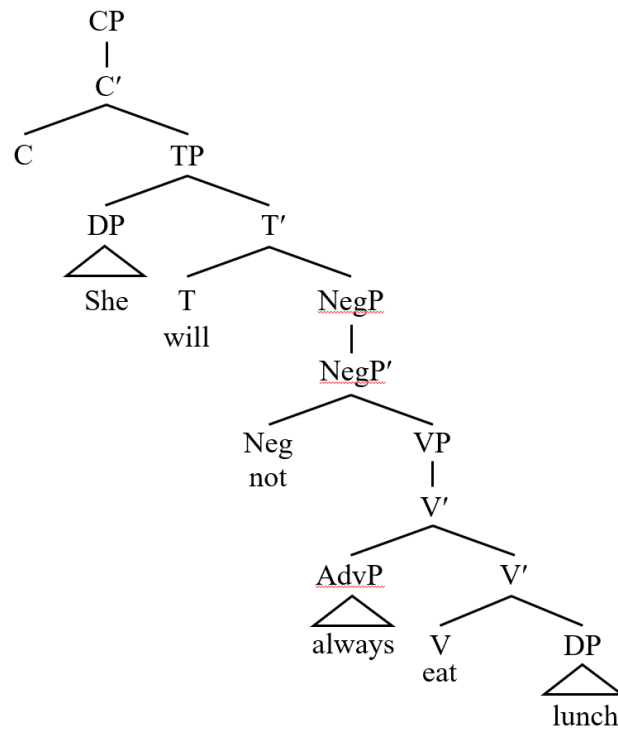
- (1) a. She will **not** always eat lunch. / She won't always eat lunch.
- b. She is **not** now eating lunch. / She isn't now eating lunch.
- c. She has **not** previously eaten lunch. / She hasn't previously eaten lunch.

In contrast, low negation remains within the scope of vP/VP and does not move, as in (2). In each case, the negator *not* appears to the right of the adverb (*always*, *now*, and *previously*). The position of negation, relative to the adverbs in (1) and (2), shows whether it is inside or outside VP, respectively.

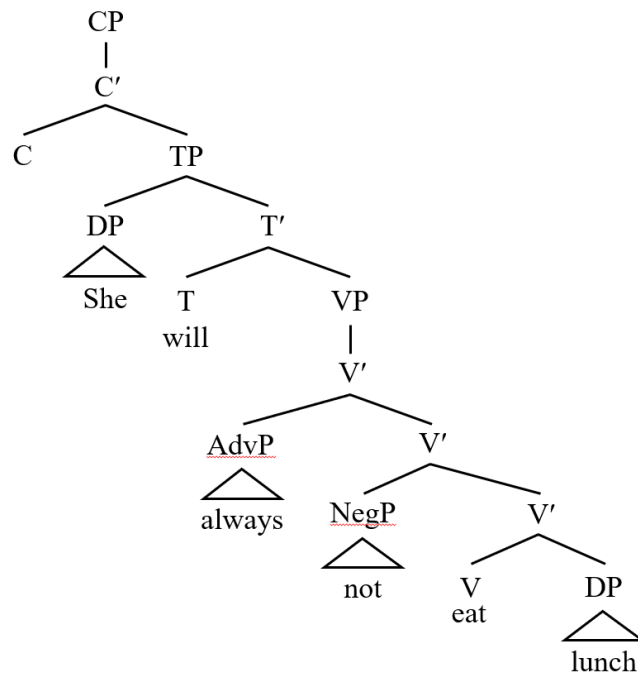
- (2) a. She will always **not** eat lunch.
- b. She is now **not** eating lunch.
- c. She has previously **not** eaten lunch.

By considering the scope of negation and the hierarchical relationship between negation and adverbials, I can derive the following representations of (1a) and (2a).

(1a')



(2a')



For Holmberg, middle negation simply involves negation in constructions where the negator is not readily determined to be either high or low and is thereby rendered ambiguous. Such constructions arise when *not* appears between an auxiliary and a lexical

verb in the lack of adverbial phrases, and there is no way to determine for certain whether it is inside or outside vP/VP, as in (3).

- (3) a. She will **not** eat lunch.  
b. She is **not** eating lunch.  
c. She has **not** eaten lunch.

Note that each position, highest and low, can be occupied grammatically by a negator in the same clause (i.e., double negative constructions), as here in (4). In Mainstream American English (MAE), multiple negations invert the original negation and convert the negative meaning to a positive one.

- (4) a. She **won't** always **not** eat lunch.  
b. She **isn't** now **not** eating lunch.  
c. She **hasn't** previously **not** eaten lunch.

The examples in (4) all involve a double negative in which two negators are separately interpreted, cancelling each other out. Example (4a), for instance, means that it is not the case that she will, on all occasions, not eat lunch; such denotes that there is at least one occasion on which she will do so. That is, the negation of a universal quantification of Not-P entails the existence of an instance of P being true. However, in some English dialects such as Southern American English (SAE) and African American Vernacular English (AAVE), double negative constructions have a simple negative meaning as found in strict negative concord languages such as Italian, French, and Spanish.



### 2.1.2 Short-Form negation and Long-Form negation in Korean

Korean also has two positions into which a negator *an* ‘not’ can be inserted, namely Long-Form negation (LFN) and Short-Form negation (SFN) (Cho 1994; Hagstrom 2000; Han et al. 2007; Kim & Park 2000; Sells 2001; Sohn 1999). Based on the position of the negation *an* in relation to the main verb, LFN and SFN are also called as post-verbal and pre-verbal negations (Cho 1975; Yoon 1990). The LFN and SFN constructions are given in examples (5) and (6), respectively.

- (5) kunye-ka    cemsim-ul    mek-ci    **anh**-ass-ta.    (LFN)  
      she-NOM    lunch-ACC    eat-NMLZ    NEG.do-PST-DECL  
      ‘She did not eat lunch.’

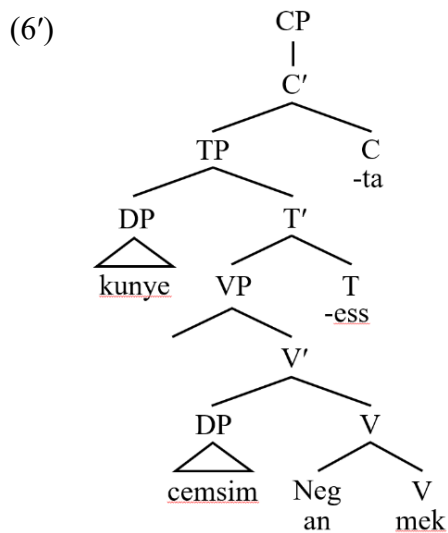
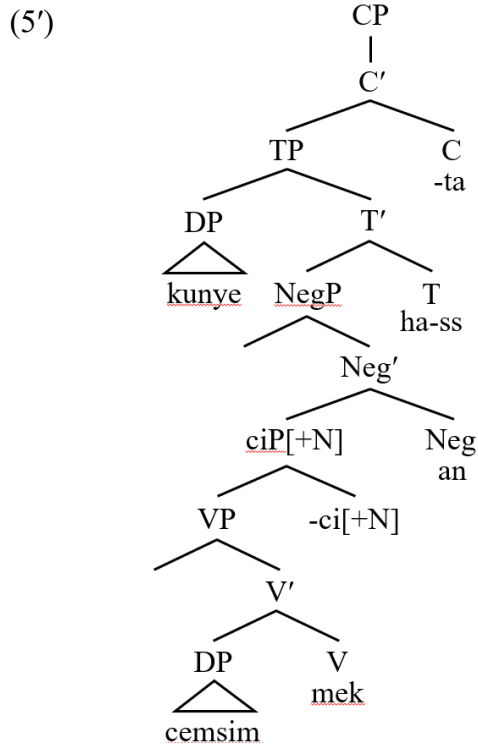
- (6) kunye-ka    cemsim-ul    **an**    mek-ess-ta.    (SFN)  
      she-NOM    lunch-ACC    NEG    eat-PST-DECL  
      ‘She did not eat lunch.’

In (5) with LFN, the verb *mek* ‘eat’ is nominalized with the postpositional affix *-ci*, and the negator *an* is prefixed to the auxiliary do-verb *ha* (reduced to *h*— in the above example— for some phonological purpose) composing a negative auxiliary complex *anh-ass-ta* with a tense marker *-ass-* and a declarative mood marker *-ta* at the end of the clause. In (6) with SFN, the negator *an* is directly prefixed to the verb *mek* ‘eat’ (or perhaps to the lowest VP, underlyingly).<sup>1</sup> As a result, the scope of *an* in SFN constructions is restricted to the verb

<sup>1</sup> Hagstrom (1998) noted that misuse of SFN in child language reveals the deep structure of SFN. Children at around age 2 produce ungrammatical negative clauses by putting the negator *an* ‘not’ in front of objects.

(i) \*na    *an*    pap    mek-e  
      I    NEG rice eat-DECL  
      ‘I do not eat rice.’

(or the lowest VP), whereas the scope of *an* in LFN constructions can range over the whole clause. The scope relations are more carefully dealt with in Section 2.2. Korean LFN and SFN constructions in (5) and (6) correspond to the following representations, respectively.



This child language data shows that *an* might originate in a pre-VP position, and that for adult speakers the object moves out of the underlying VP at a later stage in the derivation. The underlying structure of SFN constructions, based on the L1A data, might be as follows: [...Subj...Obj<sub>i</sub>...*an* [<sub>VP</sub> ...t<sub>i</sub> V]...].

Since *an* occupies structurally distinct positions in LFN and SFN constructions, two negations can appear in both positions simultaneously. Korean double negative constructions, when used as in example (7), have the same positive meaning as they would in SAE [see example (4) above].

(7) kunye-ka cemsim-ul **an** mek-ci **anh**-ass-ta. (Double negation)

she-NOM lunch-ACC NEG eat-NMLZ NEG.do-PST-DECL

‘She did not not eat lunch.’ = ‘She ate lunch.’

In (7), two distinct negators separately occupy two different positions, before and after the main verb, in the double negative construction. These two different pre- and post-verbal negations have different scopes affecting each other and draw the positive meaning of double negation. Pre-verbal negation only negates the following verb, whereas the scope of post-verbal negation covers the whole clause since the post-verbal negation is in the head of NegP. Double negation in Korean must involve both SFN and LFN independently. A clause cannot have a doubling of either SFN (*\*an-an-mek-ess-ta*) or LFN (*\*phwul-ci anh-anh-ass-ta*).

#### 2.1.2.1 Prefixhood of SFN

As examined in Korean negative constructions above, SFN and LFN constructions show different syntactic structures, and the placement of negators decisively affects the scope of negation in negative clauses. According to Yoon (1990), the scope of SFN is restricted to the verb, whereas the scope of LFN can range over the whole clause. Because of this scope difference, two negative structures could be interpreted differently depending on context.

- (8) a. Na-nun      sakwa-lul      han-pen      **an**      mek-ess-ta.  
          I-TOP      apple-ACC      one time      NEG      eat-PST-DECL
- b. Na-nun      sakwa-lul      han-pen      mek-ci      **anh**-ass-ta.  
          I-TOP      apple-ACC      one time      eat-NMLZ      NEG.do-PST-DECL
- (9) a. It is one time that I did not eat an apple. (8a and 8b)  
      b. It is not one time that I ate an apple. (only 8b)  
      c. It is not me who ate an apple one time. (only 8b)  
      d. It is not an apple that I ate one time. (only 8b)

Since pre-verbal negation only negates the following main verb, sentence (8a) in the SFN construction only implies the narrow meaning as interpreted in (9a). However, the negator *an* in LFN constructions is in the head of NegP (as represented in (5')). The negation can c-command all of the subject, object, main verb, and adverbial phrase. Thus, (8b) in the LFN construction could have all four interpretations in (9a), (9b), (9c), and (9d), and they are determined by the context of utterance. Syntactically, only LFN can be interpreted with a wide scope, but it also includes the narrow interpretation as SFN. As a result, native speakers of Korean use either SFN or LFN construction in negative declaratives interchangeably without any severe change of meaning especially when other adverbials or scope-sensitive expressions do not affect the ordinary meaning of negative clauses.

According to Kim (2000), there is strong evidence to confirm that SFN is prefixed to the main verb. First of all, similar to the limited position of adverbials, SFN is only allowed in front of the main verb as in (10).

- (10) (\***an**)    kunye-ka    (\***an**)    cemsim-ul    (**an**)    mek-ess-ta.  
              NEG    she-NOM        NEG    lunch-ACC        NEG    eat-PST-DECL

‘She did not eat lunch.’

Similar to the limited position of SFN in (10), the proper position for an adverb *cal* ‘well’ also shows identical acceptability in (11).

- (11) (\***cal**)    kunye-ka    (\***cal**)    cemsim-ul    (**cal**)    mek-ess-ta.  
              well    she-NOM        well    lunch-ACC        well    eat-PST-DECL

‘She ate lunch well.’

However, in (12), when SFN and an adverb are used in the same clause together, only one of two different word orders below is allowed.

- (12) a. kunye-ka    cemsim-ul    **cal**    **an**    mek-ess-ta.  
              she-NOM    lunch-ACC    well    NEG    eat-PST-DECL

‘She didn’t eat lunch well.’

- b. \*kunye-ka    cemsim-ul    **an**    **cal**    mek-ess-ta.  
              she-NOM    lunch-ACC    NEG    well    eat-PST-DECL

‘She didn’t eat lunch well.’

As compared in (12b), even a VP adverb originally inserted before the main verb cannot come between SFN and the main verb. These examples show that the syntactic relation of SFN is even closer to the main verb than VP adverbials.

In addition, SFN and adverbials show distinct syntactic distributions with regard to the attachment of delimiters such as *-man* ‘only’ or *-to* ‘also’.

- (13) a. kunye-ka    cemsim-ul    **cal**-man/to    mek-ess-ta.  
          she-NOM    lunch-ACC    well-only/also    eat-PST-DECL  
          ‘She DID eat lunch well.’
- b. \*kunye-ka    cemsim-ul    **an**-man/to    mek-ess-ta.  
          she-NOM    lunch-ACC    NEG-only/also    eat-PST-DECL  
          ‘She didn’t eat lunch well.’

In (13a), both delimiters can freely be attached to the adverb *cal* ‘well.’ However, no delimiters are allowed to be inserted between SFN and the main verb in (13b). This ungrammaticality reveals that SFN is very tightly prefixed to the main verb, and they do not allow any other constituents between them.

#### 2.1.2.2 *-ci* nominalization in LFN constructions

Different from SFN which is simply prefixed to the main verb, LFN constructions have more complex syntactic derivations with the nominalization of the main verb. There are broadly two different views on the syntactic representation of the *-ci* nominalization in LFN constructions. It is treated as an inflection on the main verb (in Han et al. 2007), or it is treated as a nominalizer like normal Korean nominalizers *-ki* and *-um* (in Hagstrom 2000, 2002). However, the nominalizer *-ci* and the nominalizer *-ki* show a distinct distribution in negative constructions. In (14a), the main verb *mek* ‘eat’ is nominalized, and the negator *an* ‘not’ is directly attached to the inserted *ha* ‘do’ auxiliary. Since the main verb *mek* ‘eat’ is nominalized in the LFN construction, the accusative marker *-lul*, the topic/focus marker *-nun*, or the delimiter *-man* ‘only,’ which are normally affixed to nominal expressions can also be attached to the nominalized verb *mek-ci* as in (14b). Moreover, in a comparison

between (15a) and (15b), we can find that the use of *-ci* nominalization is distinguished from *-ki* nominalization, and it is exclusively formed in LFN constructions.

- (14) a. Hana-ka      sakwa-lul      mek-ci      **anh**-ass-ta.  
           Hana-NOM    apple-ACC      eat-NMLZ      NEG.do-PST-DECL  
           ‘Hana didn’t eat an apple.’
- b. Hana-ka      sakwa-lul      mek-ci-lul/nun/man      **anh**-ass-ta.  
           Hana-NOM    apple-ACC      eat-NMLZ-ACC/TOP/only      NEG.do-PST-DECL
- (15) a. Hana-ka      sakwa(-lul)      mek-ki/\*-ci-lul      hay-ss-ta.  
           Hana-NOM    apple-ACC      eat-NMLZ-ACC      do-PST-DECL  
           ‘Hana did eating an apple.’
- b. Hana-ka      sakwa-lul      mek-ci/\*-ki      **anh**-ass-ta.  
           Hana-NOM    apple-ACC      eat-NMLZ      NEG.do-PST-DECL  
           ‘Hana didn’t eat an apple.’

Furthermore, the distinct syntactic properties of *-ki* and *-ci* nominalizations allow them to be used in the same clause. In (16), the constituent *sakwa(-lul) mek-ki* ‘eating an apple’ itself generates a nominalized object phrase, and there is the main lexical verb *ha* ‘do’ which is also nominalized with *-ci*, and the inserted auxiliary *ha* ‘do’ composes a negative complex *anhassta* ‘didn’t’ at the end of the negative clause.

- (16) Hana-ka    [**α sakwa    mek-ki-lul**]    celtay    ha-ci      anh-ass-ta.  
           Hana-NOM    apple      eat-NMLZ-ACC    never    do-NMLZ      NEG.do-PST-DECL  
           ‘Hana never did eating an apple.’

Since the whole  $\alpha$  constituent is a nominalized object in (16), it can be scrambled, topicalized, or focused by moving somewhere as in (16'). However, the  $\alpha$  constituent with the nominalized verb *ha-ci* cannot pass the constituent test in (16'').

(16') [ $\alpha$  **sakwa mek-ki-lul**]<sub>1</sub>, Hana-ka t<sub>1</sub> celtay ha-ci anh-ass-ta.  
 apple eat-NMLZ-ACC Hana-NOM never do-NMLZ NEG.do-PST-DECL

(16'') \*[[ $\alpha$  **sakwa mek-ki-lul**] celtay ha-ci]<sub>1</sub>, Hana-ka t<sub>1</sub> anh-ass-ta.  
 apple eat-NMLZ-ACC never do-NMLZ Hana-NOM NEG.do-PST-DECL

To provide further analyses on the *ci*-nominalization in LFN constructions, I emphasize that the syntactic relationship between a nominalized verb and a negative auxiliary complex in LFN constructions is fairly close, and they are likely to compose a constituent. One clue to this phenomenon is the fact that the nominalized verb (e.g. *mek-ci* 'eat-NMLZ') together with the associated negative complex (e.g. *anh-ass-ta* 'didn't') functions as a unit constituent in (14). Several constituent tests (as demonstrated in Kim & Park 2000) reveal the close structural relationship between a nominalized main verb *V-ci* and the negated auxiliary complex *anh-ta*: (i) topicalization, (ii) scrambling, (iii) rightward movement, (iv) coordination, and (v) adverb placement. Using example (14) from above as a template, I illustrate these below. In (17), (18), and (19), we see that the nominalized verb (e.g., *mek-ci* 'eat-NMLZ') and its direct object (e.g., *sakwa-lul* 'apple-ACC') do not form a unit constituent at least as far as topicalization, scrambling, and right dislocation are concerned. Similar to the ungrammatical movement in (16''), the string of an object and a nominalized verb *sakwa-lul mek-ci(-nun)* cannot be moved, leftward or rightward together, away from



the negative auxiliary complex *anh-ass-ta* ‘didn’t.’ Overall, the inadequacy of these operations reveals that the nominalized VP does not have a structural bond with the preceding object NPs, and it cannot be separated from the following negative auxiliary complex *anh-ass-ta*.

- (14) Hana-ka      sakwa-lul      mek-ci      anh-ass-ta.  
          Hana-NOM   apple-ACC   answer-NMLZ   NEG.do-PST-DECL

(17) *Topicalization*

- \*[sakwa-lul      mek-ci-nun]<sub>1</sub>      Hana-ka      t<sub>1</sub>      anh-ass-ta.  
          apple-ACC      eat-NMLZ-TOP      Hana-NOM                      NEG.do-PST-DECL

(18) *Scrambling*

- \*[sakwa-lul      mek-ci]<sub>1</sub>                      Hana-ka      t<sub>1</sub>      anh-ass-ta.  
          apple-ACC      eat-NMLZ                      Hana-NOM                      NEG.do-PST-DECL

(19) *Right dislocation*

- \*Hana-ka      t<sub>1</sub>      anh-ass-ta,                      [sakwa-lul      mek-ci]<sub>1</sub>.  
          Hana-NOM                      NEG.do-PST-DECL      apple-ACC      eat-NMLZ

In (20), I find that the *V-ci* does indeed form a constituent with the negative auxiliary complex in coordination structures. In (20a), *V-ci-NEG-AuxV* forms a unit constituent without a tense marker, and in (20b), *V-ci-NEG-AuxV-Tense* with a tense marker forms a unit constituent. Regardless of whether the tense marker is affixed or not, these examples show the close relation between the nominalized verb and the negative auxiliary complex.

(20) *Coordination*

a. Hana-ka sakwa-lul [[mek-ci anh] ko [po-ci anh]]-ass-ta.

Hana-NOM apple-ACC eat-NMLZ NEG.do CONJ see-NMLZ NEG.do-PST-DECL

b. Hana-ka sakwa-lul [[mek-ci anh-ass] ko [po-ci anh-ass]]-ta.

Hana-NOM apple-ACC eat-NMLZ NEG.do-PST CONJ see-NMLZ NEG.do-PST-DECL

Finally, in (21), we see that the adverb *eccayten* ‘anyway’ may intervene between the direct object *sakwa* ‘apple’ and the nominalized verb *mek-ci* ‘eat-NMLZ’; however, not between the nominalized verb *mek-ci* ‘eat-NMLZ’ and the negative auxiliary complex *anh-ass-ta* ‘didn’t.’ This suggests that, at least by spell-out, the nominalized verb forms a closer constituent bond with the auxiliary verb complex than it does with its direct object.

(21) *Adverb placement*

Hana-ka sakwa-lul (**eccayten**) mek-ci (\***eccayten**) anh-ass-ta.

Hana-NOM apple-ACC anyway eat-NMLZ anyway NEG.do-PST-DECL

These facts, revealed by various constituent tests, suggest that the V-*ci*-NEG-AuxV(-Tense) complex can probably form a unit constituent at spell-out derived through cyclic head movement and morpho-syntactic amalgamation.

Based on this evidence, I would extend the analysis proposed in Han et al. (2007), in which scope ambiguities between negation and object NPs are analyzed via optional raising or lowering of heads. In their raising analysis of LFN structures, head movement proceeds from the head of NegP, through the head of vP, to the head of IP. In the lowering analysis of LFN, the head of IP lowers, through the head of vP, to the head of NegP remains in situ. Given the facts reported in Kim & Park (2000), though, it is clear that head movement

operates over a wider domain. Thus, I will assume that LFN head raising also includes the head of VP-*ci*P which is a syntactic unit. The following section looks more deeply into the scope interpretation of sentential negation in English and Korean.

## 2.2 Scope interpretations of negation relative to quantified NPs

In this section, I examine the scope of negation associated with quantified subjects and objects in both languages. It will be shown that two distinct forms of Korean negation are more likely to have ambiguous scope, relative to the subject and object quantifiers, and that this ambiguity is independent of whether the quantified expression is a subject or an object (as I might expect in a language which does not require movement of subjects to a higher functional projection). In contrast, the relative scope relation between quantified NPs and sentential negation in English is determined in part by the position of the quantified NP and in part by the nature of the quantifier.

### 2.2.1 Scope relations in English

In English, either of two quantified NPs in subject or object position can have scope over the other, as seen in (22a). With a quantified subject NP and negation, scope is still ambiguous with a universally quantified NP, as seen in (22b), but the inverse scope is disallowed with an indefinite existentially quantified NP, as seen in (22c). In both cases, subject nominals can have scope over negation.

- |         |  |   |
|---------|--|---|
| (22) a. | <b>Someone</b> answered <b>every</b> question.   | some>every; every>some  |
| b.      | <b>Every</b> student didn't answer the question. | $\forall\text{Subj}>\text{neg}$ ; $\text{neg}>\forall\text{Subj}$   |
| c.      | <b>One</b> student didn't answer the question.   | $\exists\text{Subj}>\text{neg}$ ; * $\text{neg}>\exists\text{Subj}$ |

Example (22b) is ambiguous with two different interpretations. First, it can be read as ‘There is no student such that said student answered the question.’ The other interpretation is ‘It is not the case, for every student, that each one answered the question (i.e., some student didn’t).’ In contrast, (22c) can only mean ‘There is one student such that said student did not answer the question.’

In contrast, when negation is structurally higher than quantified expressions (e.g., when object NPs are quantified), it is found that scope relations between the quantified NP and negation are quite different. Except (23c) with an NPI, negation commonly has scope over nominal expressions in object position as in (23a) and (23b).

- |   |  |
|---|--|
| (23) a. Hana didn’t answer <b>every</b> question. | $*\forall \text{Obj} > \text{neg}; \text{neg} > \forall \text{Obj}$  |
| b. Hana didn’t answer <b>one</b> question.        | $\exists \text{Obj} > \text{neg}; \text{neg} > \exists \text{Obj}$   |
| c. Hana didn’t answer <b>any</b> questions.       | $\forall \text{Obj} > \text{neg}; * \text{neg} > \forall \text{Obj}$ |

Example (23a), with a universally quantified object NP, is unambiguous and does not allow the object to scope over the negation. (23a) only means ‘It is not the case, for every question, that Hana answered it (i.e., there is at least one question that she didn’t answer).’ Example (23b), with an indefinite existential quantifier, is ambiguous and means either ‘There is one question such that Hana didn’t answer it’ or ‘It is not the case that Hana answered one question.’ Example (23c), with NPI *any*, only has one interpretation that is the opposite of (23a) and means ‘For every question, it is not the case that Hana answered it.’

Table 2.1 summarizes the available interpretations between negation and either a subject or object quantified NP. The puzzle for English, then, is to explain why universally

quantified objects cannot scope over negation, while existentially quantified objects can. Conversely, we need additional discussions to account for why negation cannot have scope over existentially quantified subjects, while it can scope over universally quantified subjects.

Table 2.1 Available scope for negation and quantified subject and object in English

	Subject	Object
Universal quantifier	$\forall \text{Subj} > \text{NEG} / \text{NEG} > \forall \text{Subj}$ (22b)	$*\forall \text{Obj} > \text{NEG} / \text{NEG} > \forall \text{Obj}$ (23a)
Existential quantifier	$\exists \text{Subj} > \text{NEG} / * \text{NEG} > \exists \text{Subj}$ (22c)	$\exists \text{Obj} > \text{NEG} / \text{NEG} > \exists \text{Obj}$ (23b)
NPI object	—	$\forall \text{Obj} > \text{NEG} / * \text{NEG} > \forall \text{Obj}$ (23c)

Regarding the puzzle of negation scope, Aoun and Li (1993) (henceforth, A&L) assume that English negation always blocks the raising of quantified nominals that it commands. For example, where (24a) is ambiguous, (24b) is not which allows only  $\exists > \forall$  reading.

- (24) a. **Someone** answered **every question**.  $\exists > \forall; \forall > \exists$   
b. **Someone** didn't answer **every question**.  $\exists > \forall; * \forall > \exists$

In order for the universally quantified object in (24b), *every question*, to have scope over the subject, it would have to move through Spec,NegP. However, as this position is occupied (according to A&L) by a covert Neg Operator, it cannot do so. Applying A&L's model to (23a), we have an explanation for why the universally quantified object cannot have scope over negation: *every question* is unable to move out of the complement of NegP, since its specifier position is occupied by a Neg Operator. Notice that the NPI quantified

object in (23c) must scope over negation. In this instance, we must assume that the phrase containing *any* moves to Spec,NegP, since it must be in Agree relation with the head and serves in this construction as an overt Neg Operator for the clause. This leaves us with the ambiguous (23b), which can be interpreted either as ‘It is not the case that there exists one question that Hana answered’ or as ‘There is one question such that Hana didn’t answer it.’ If (23b) has the same structure as (23a) (and we have no reason under A&L’s analysis to assume that it doesn’t), then its ambiguity is unexplained.

Now considering the examples of (22) again, it should be noted that A&L do not provide an account of quantified subject nominals relative to negation. Returning to their analysis of (22a), they assume quantified subjects originate in Spec of VP (or vP). It is this assumption which provides a path for the quantified object to have scope over the subject and for the sentence to be ambiguous at a level of representation in (23a’).

(23a’) [TP **someone**<sub>1</sub> [TP t’<sub>1</sub> [VP **every question**<sub>2</sub> [VP t<sub>1</sub> answered t<sub>2</sub>]]]]  $\exists > \forall; \forall > \exists$

If we apply their analysis to (22), then we might expect both (22b) and (22c) to be ambiguous. Consider representation (22b’).

(22b’) [TP **Every student**<sub>1</sub> [TP t’<sub>1</sub> [NegP Op [Neg **not** [VP t<sub>1</sub> answered the question]]]]]  $\text{NEG} > \forall; \forall > \text{NEG}$

In (22b’), assuming that the subject has been raised by PF out of a VP, two interpretations are possible. They follow as such:

- (i) Since *every student* and t’<sub>1</sub> c-command *not*, the universal quantifier can take scope over negation:  $\forall > \text{NEG}$ .

- (ii) Since *not* c-commands the lowest trace of *every student*,  $t_1$ , negation can take scope over the universal quantifier:  $\text{NEG} > \forall$ .

If we apply the same analysis to (22c'), we should get the same ambiguous result, but we don't.

(22c')  $[_{TP} \text{One student}_1 [_{TP} t'_1 [_{NegP} \text{Op} [_{Neg} \text{not} [_{VP} t_1 \text{ answered the question}]]]]]$

$*\text{NEG} > \exists; \exists > \text{NEG}$

If *not* takes scope over *every student* by virtue of its c-commanding the lowest trace of that subject, as in (22b'), then it should do the same for *one student*, as in (22c'). The fact that it doesn't, together with the absence of an explanation for the ambiguity of (23b), requires more discussion. A somewhat different explanation for this puzzle attributes contrasting scope possibilities to featural ambiguity in the quantifiers themselves. It proposes a feature-based typology of quantified phrases (QPs) and utilizes Feature-Checking Theory to account for their distribution. That is, the behavior of QPs is determined by features of quantified expressions, and the distribution and interpretation of QPs are dependent on checking these features in their appropriate landing sites. More detailed analyses on this issue are beyond the domain of the current study. See Beghelli & Stowell (1997) for the relevant arguments. Despite the ambiguous scope relations caused by the nature of nominal expressions, i.e., universally and existentially quantified NPs, there is no dispute about the fact that nominals in subject positions can have scope over negation, and the negation can have scope over nominals in object positions.

### 2.2.2 Scope relations in Korean

Unlike English negation, Korean shows two distinct forms of negation (e.g., SFN and LFN), and these negation structures interact differently with quantified NPs as regarding their scopes. As discussed in Section 2.1.2, in contrast to the structure of SFN, which is prefixed to the main verb, LFN constructions involve a NegP with *an* as its head. I take the syntactic differences between SFN and LFN to be in some ways responsible for the semantic differences between them in regard to scope interpretations.

In contrast with English negation, where the relative scope of a quantified NP and negation is determined by the position of the quantified NP and by the nature of the quantifier as compared in (22) and (23), the relative scope of quantified NPs in negated Korean sentences depends more on the type of negation structure. Examples (25) and (27) illustrate universally quantified **subjects** in LFN and SFN constructions, respectively, and examples (26) and (28) illustrate universally quantified **objects** in the same LFN and SFN constructions, respectively.<sup>2</sup>

(25) (Acik) **motun haksayng-i** ku mwuncey-lul phwul-ci **anh**-ass-ta.

Yet every student-NOM the question-ACC answer-NMLZ NEG.do-PST-DECL  
 $\forall \text{Subj} > \text{NEG}; \text{NEG} > \forall \text{Subj}$

(26) (Acik) Hana-ka **motun mwuncey-lul** phwul-ci **anh**-ass-ta.

Yet Hana-NOM every question-ACC answer-NMLZ NEG.do-PST-DECL  
 $\forall \text{Obj} > \text{NEG}; \text{NEG} > \forall \text{Obj}$

<sup>2</sup> In examples (25)-(28) and (25')-(28'), the adverb *acik* 'yet/still' does not change the meaning of the sentences but does suggest an appropriate context in which a wide-scope negation interpretation is more acceptable. (25), for instance, might describe a testing situation which will be completed when every student answers all questions. Inserting the adverb *acik* 'yet' facilitates an interpretation in which the testing session is not completed because some students have not answered all questions yet (NEG >  $\forall \text{Subj}$  reading). Of course, with the adverb 'yet',  $\forall \text{Subj} > \text{NEG}$  reading is also possible if no students have answered 'the question' yet.



(27) (Acik) **motun haksayng-i** ku mwuncey-lul **an** phwul-ess-ta.  
 Yet every student-NOM the question-ACC NEG answer-PST-DECL  
 $\forall \text{Subj} > \text{NEG}; ?\text{NEG} > \forall \text{Subj}$

(28) (Acik) Hana-ka **motun mwuncey-lul** **an** phwul-ess-ta.  
 Yet Hana-NOM every question-ACC NEG answer-PST-DECL  
 $\forall \text{Obj} > \text{NEG}; ?\text{NEG} > \forall \text{Obj}$

In addition, examples (25') and (27') illustrate existentially quantified **subjects** in LFN and SFN constructions, and examples (26') and (28') illustrate existentially quantified **objects** in LFN and SFN constructions.

(25') (Acik) **han haksayng-i** ku mwuncey-lul phwul-ci **anh**-ass-ta  
 Yet one student-NOM the question-ACC answer-NMLZ NEG.do-PST-DECL  
 $\exists \text{Subj} > \text{NEG}; \text{NEG} > \exists \text{Subj}$

(26') (Acik) Hana-ka **han mwuncey-lul** phwul-ci **anh**-ass-ta  
 Yet Hana-NOM one question-ACC answer-NMLZ NEG.do-PST-DECL  
 $\exists \text{Obj} > \text{NEG}; \text{NEG} > \exists \text{Obj}$

(27') (Acik) **han haksayng-i** ku mwuncey-lul **an** phwul-ess-ta  
 Yet one student-NOM the question-ACC NEG answer-PST-DECL  
 $\exists \text{Subj} > \text{NEG}; ?\text{NEG} > \exists \text{Subj}$

(continued on p. 33)

(28') (Acik)	Hana-ka	<b>han mwuncey</b> -lul	<b>an</b>	phwul-ess-ta
Yet	Hana-NOM	one question-ACC	NEG	answer-PST-DECL
				$\exists \text{Obj} > \text{NEG}; ?\text{NEG} > \exists \text{Obj}$

What I found in the data above is that relative scope of quantified NPs and negation in Korean is quite different from that in English. First of all, there are no perceptible differences in the scope possibilities that depend on whether the quantified NP is a subject or an object. Examples (25) and (25') involve quantified subjects, and examples (26) and (26') involve quantified objects. In both pairs of LFN constructions, scope is ambiguous, and while preferred scope interpretations correspond to the surface order of constituents (i.e., rigid scope), the quantified NP can be interpreted as having scope below negation with sufficient context. For example, (25) is ambiguous between the meanings 'There is no student such that said student answered the question' and 'It is not the case, for every student, that each one answered the question (i.e., some student didn't)'. Somewhat differently, (25') is ambiguous between the meanings 'There is one student such that said student didn't answer the question' and 'It is not the case, at least one student, that said student answered the question (i.e., no student answered)'. Similarly, when object NPs are quantified as in (26) and (26'), (26) is ambiguous between 'It is no question that Hana answered' and 'It is not the case, for every question, that Hana answered it (i.e., there is at least one question that she didn't answer)'. Moreover, (26') with an existentially quantified object can be interpreted as 'There is one question such that Hana didn't answer it' or 'it is not the case that Hana answered at least one question (i.e., Hana didn't answer any questions)'. Neither is scope ambiguity sensitive to whether the quantifier is universal or existential. Examples (25) and (26) involve universally quantified NPs, and examples

(25') and (26') involve existentially quantified NPs. Here, again, scope is ambiguous for both pairs of LFN constructions, with preference for scope interpretations that correspond to the surface order of constituents. Table 2.2 illustrates the ambiguity of scope for negation and quantified NPs in the LFN construction.

Table 2.2 Available scope for negation and quantified subject/object in Korean LFN construction

	Subject	Object
Universal quantifier	$\forall \text{Subj} > \text{NEG} / \text{NEG} > \forall \text{Subj}$ (25)	$\forall \text{Obj} > \text{NEG} / \text{NEG} > \forall \text{Obj}$ (26)
Existential quantifier	$\exists \text{Subj} > \text{NEG} / \text{NEG} > \exists \text{Subj}$ (27)	$\exists \text{Obj} > \text{NEG} / \text{NEG} > \exists \text{Obj}$ (28)

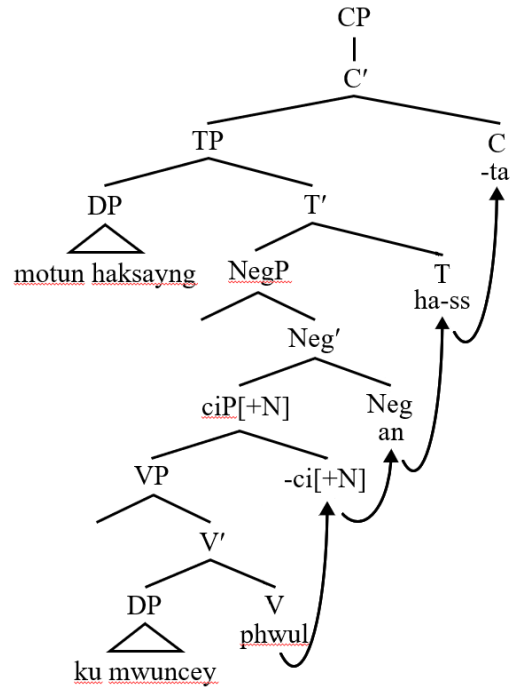
This said, I do find there to be a reliable difference between the scope interpretations available in LFN constructions and scope interpretations available in SFN constructions, with the latter being somewhat more restricted (again, with no regard for grammatical function or quantifier type). The difference appears to be that it is slightly harder to get wide-scope interpretations of negation (relative to a quantified NP) in SFN constructions (27'), (28'), (27''), and (28''). Table 2.3 illustrates the uniform difficulty of having negation take scope over any quantified NP in the SFN construction.

Table 2.3 Available scope for negation and quantified subject/object in Korean SFN construction

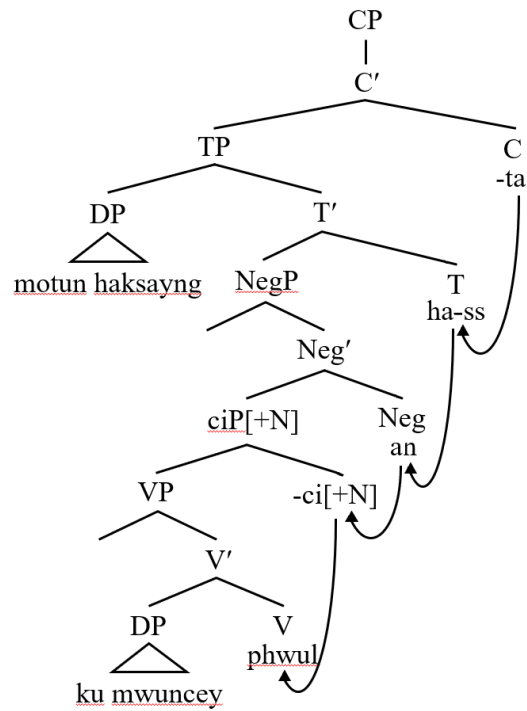
	Subject	Object
Universal quantifier	$\forall \text{Subj} > \text{NEG} / ?\text{NEG} > \forall \text{Subj}$ (25')	$\forall \text{Obj} > \text{NEG} / ?\text{NEG} > \forall \text{Obj}$ (26')
Existential quantifier	$\exists \text{Subj} > \text{NEG} / ?\text{NEG} > \exists \text{Subj}$ (27')	$\exists \text{Obj} > \text{NEG} / ?\text{NEG} > \exists \text{Obj}$ (28')

These differences, in which the scope of negation is ambiguous in LFN constructions, but rather fixed in SFN constructions, supports the analysis of LFN provided in Han et al. (2007), where it is proposed that LFN can involve either the raising of the Neg head to a higher functional projection, or the lowering of Infl (i.e. T) to Neg. In SFN constructions, where the negation is affixed to the verb stem, such raising is hardly available over quantified subject and object NPs. Current findings regarding the ambiguity of negative scope relative to subjects in LFN structures is not specifically predicted in Han et al. (2007), where they assume that functional head-raising proceeds only to the level of Infl (i.e. T), but it is not precluded once I recognize that the verbal complex also involves the head of CP. The string of phrasal heads represented in *phwul-ci-an-ha-ss-ta* involves a string of affixed heads of the following categories: V-NMLZ-NEG-auxV-PST-DECL. In other words, in succession, these the heads of VP, NmlzP, NegP, VP, TP, and CP, where *-ta* the ‘declarative’ affix heads CP. On this view, extending Han et al.’s raising operation to its morphological conclusion, negation winds up (optionally) in the head of CP, with scope over both subject and object. In each of representations in (29) and (30), the negation raises to the head of CP or lowers to the head of VP, respectively. After the movements, negation takes scope over the universally quantified subject NP in (29), and vice versa in (30).

(29)



(30)



It should be noted that relative scope of quantified NPs and negation in LFN and SFN constructions is rather controversial, but only with respect to interpretations in which negation is purported to have wide scope (Baek 1998, Choi 1999, Hagstrom 2000, Han et

al. 2007, J-B Kim 2000a, H-J Kim 2007, Suh 1989). The list of interpretations in the literature on scope relations in Korean negative sentences is shown in Table 2.4 and 2.5.

Table 2.4 Possibility of negative scope over universally quantified NPs in Korean LFN

	over quantified subjects	over quantified objects
	NEG > Every	NEG > Every
Suh (1989)	*	√
Baek (1998)	√	√
Choi (1999)	√	√
J-B Kim (2000)	√	√
Hagstrom (2000)	√	√
Han et al. (2007)	*	√
H-J Kim (2007)	√	√
This paper	√	√

Table 2.5 Possibility of negative scope over universally quantified NPs in Korean SFN

	over quantified subjects	over quantified objects
	NEG > Every	NEG > Every
Suh (1989)	*	*
Baek (1998)	√	√
Choi (1999)	√	√
J-B Kim (2000)	√	√
Hagstrom (2000)	*	*
Han et al. (2007)	*	√
H-J Kim (2007)	*	*
This paper	??	??

Based on judgments reported in the previous literature, there is general agreement that universally quantified subject and object NPs can take scope over negation in both LFN and SFN constructions. I assume for present purposes that these researchers would concur that existentially quantified subject and object NPs exhibit the same behavior as reported here in Tables 2.4 and 2.5. It is, then, with respect to the conditions under which negation can have scope over the quantifier where the disagreement lies.

### 2.3 Summary

This chapter started out with the review of sentential negation in English and Korean. English negator *not* generally appear in two distinct positions in the space between a sentential subject and a verb – high in the clause and potentially contracted with the auxiliary and low in the clause and adjacent to the verb. For its part, Korean negator *an* ‘not’ can appear in two positions – high in the clause and prefixed to an auxiliary ‘do’-verb (e.g., LFN) or low in the clause and prefixed to the main verb itself (e.g., SFN).

Given the syntactic position of negators decisively affects its scope in negative clauses, this chapter examined the scope of negation associated with quantified subjects and objects. The scope relations show that relative scope of quantified NPs and English negation is determined in part by the position of the quantified NP and in part by the nature of the quantifier. However, in Korean, negation (especially in LFN constructions) is more likely to have ambiguous scope relative to the subject and object quantifiers, and that this ambiguity is independent of whether the quantified expression is a subject or an object. Assuming that these negations would form various negative question formations in each language, the difference in scope relations between high and low negation may eventually affect the interpretation of NPQs in each language.

## CHAPTER 3

### THE SYNTAX AND SEMANTICS OF NPQS AND ANSWERS IN ENGLISH AND KOREAN

#### 3. 1 Overview

Having presented the examples of English and Korean negative constructions and discussed how the syntactic structure of negation effects logical denotations and scope interpretations, I can now apply this understanding to the structure of NPQs and following answers. An exploration of NPQ data in Section 3.2 makes it quite clear that NPQs in both English and Korean can each have interpretations that are “polarity-based” or “truth-based”, depending on the morphosyntax of negation and the position where the negator is found in the negative question. In Section 3.3, a closer look at the semantics of NPQs in Hamblin (1976) and Karttunen (1977) will help to understand how two forms of NPQs actually have opposite truth conditions. Based on these syntactic and semantic analyses, I introduce a new distinction between two types of negations, *Proposition Internal Negation* (PIN) and *Proposition External Negation* (PEN), in Section 3.4. Then, Section 3.5 more deeply discusses how the ellipsis hypothesis accounts for short answers to PPQs and NPQs. In the last section of this chapter, I additionally note that NPQs are far more susceptible to pragmatically induced interpretations when they are not proposition-negating, and Section 3.6 reviews the influence of speaker-hearer expectations on their use.



## 3.2 The structure of PQs in English and Korean

### 3.2.1 Kramer & Rawlins 2010

Kramer and Rawlins (henceforth, K&R) (2010) introduce the meaning of short *yes-no* answers and report anticipated ambiguity caused by ellipsis in short answers. In their ellipsis account, which is the key analysis of the syntax of answer particles, simple *yes-no* answers are considered to be “fragment” answers in which following phrases copied from the asked question are elided. K&R’s analysis incorporates the essential components of Laka’s (1991) Polarity phrase ( $\Sigma P$ ) and Merchant’s (2004) ellipsis feature ([E]) and proposes that simple answering particles are adjoined to  $\Sigma P$  and the whole TP is elided. For them, the [E] feature in the head of  $\Sigma P$  licenses the ellipsis of TP. As in (1), *yes-no* answering particles can be used alone, and the following phrases in parentheses could be elided.

- (1) Q: Is Alfonso coming to the party?  
A: Yes, (he is coming to the party).  
No, (he isn’t coming to the party).

K&R further propose that answering particles syntactically behave like adjuncts, and they semantically function as positive and negative responding markers. Thus, the short *yes* and *no* answers in (1) without the following phrases in the parentheses have positive and negative interpretations, respectively.

More importantly, they point out that the meaning of positive and negative answers can be collapsed as in (2). In other words, two distinct answers to a NPQ with a non-contracted negation have the same meaning.

(2) Q: Is Alfonso **not** coming to the party?

A: Yes. (= he isn't coming)

No. (= he isn't coming)

According to K&R, (2) should involve *negative neutralization*, wherein simple *yes* and *no* answers would each have an identical negative interpretation, e.g., he is not coming. They explain that this phenomenon can happen since there is a negative concord relationship among i) *no* answer particle which is adjoined to  $\Sigma P$ , ii) the  $\Sigma$  feature in the head of  $\Sigma P$ , and iii) the sentential negation inside TP. This concord chain is triggered by the negative answer *no*, and only one of them needs be interpretable.

- (3) a.  $[\Sigma P \text{ Yes} \quad [\Sigma P [E] \quad [TP \text{ he } [\text{NegP} [\text{iNeg}] [\text{VP isn't coming}]]]]]$   
 b.  $[\Sigma P \text{ No } [u\text{Neg}] \quad [\Sigma P [[u\text{Neg}, E] \quad [TP \text{ he } [\text{NegP} [\text{iNeg}] [\text{VP isn't coming}]]]]]$

In both positive and negative simple answers in (3), the elided parts contain negation in common which is copied from the preceding negative question. This assumption is possible if and only if the ellipses obey the identity condition which requires that all ellipses would be licensed by syntactic and semantic identity to the unpronounced constituent (see Merchant 2004). Under the analysis, a positive simple *yes* answer with a negative interpretation (“He is not coming”) is acceptable because of the semantic identity requirement between the original question and the elided answer. Moreover, a negative *no* answer with the same negative interpretation is possible since the chain of three negative elements as in (3b) are in line with a negative concord relationship. K&R posit that *no* answers always have the negative concord chain without exception, and only one of the

elements need be interpretable. However, it is not clear why the negative concord relationship is asymmetrically required only for negative answers.

Returning to a negative answer to a positive question in (1), as described in (4), the simple *no* answer adjoined to  $\Sigma P$  can be licensed in the negative concord chain.

(4)  $[\Sigma P \text{ No } [u\text{Neg}] \quad [\Sigma P [[i\text{Neg}, E] \quad [\text{TP } \text{he} [\text{NegP } [u\text{Neg}] [\text{VP } \text{is coming}]]]]]$

In (4), the elided part does not contain negation since it is prevented by the semantic identity condition of ellipsis. Instead, the [E] feature in the head of  $\Sigma P$  is interpretable as negation, and the simple *no* answer can have the negative interpretation. The interpretabilities of the  $\Sigma$  feature in the head of  $\Sigma P$  in (3b) and (4) seem to freely alternate no matter what comes in the elided phrase. I will discuss a more detailed ellipsis account of *yes-no* answers in Section 3.5.

### 3.2.2 Holmberg 2013

Holmberg (2013) discerns three structurally distinct classes of negation: highest, middle, or low. Highest negation corresponds to Ladd’s “outer” negation and involves *n’t* being interpreted outside IP (see Section 3.6, where I deal with some pragmatics of NPQs). In contrast, low negation involves the negator *not* when it only has scope over vP/VP. In the case of middle negation, the negator *not* (and for some English speakers, also *n’t*) is interpreted “IP-internally, but with sentential scope.”

In (5), an example of highest negation has a negative morpheme that undergoes contraction and moves to the sentence initial position. The insertion of the adverb *sometimes* weakens the structural ambiguity clarifying that the negation definitely moves

outside vP/VP. In this case, the polarity of the embedded proposition  $p$  is positive without negation, and a *yes* answer confirms the truth of  $p$  and a *no* answer is taken to mean  $\neg p$ .

(5) Q: Does**n't** he sometimes show up for work?

A: Yes. ('He sometimes does show up for work.')

A: No. ('He sometimes does not show up for work.')

In contrast, an NPQ with low negation does not involve any moved or contracted negator, and *not* remains within the scope of vP/VP behind the adverb. Here, in (6), the polarity of the embedded proposition  $p$  is negative, and a *yes* answer confirms  $\neg p$  and a *no* answer is taken to mean  $\neg\neg p$ .

(6) Q: Does he sometimes **not** show up for work?

A: Yes. ('He sometimes does not show up for work.')

A: No. ('He does not sometimes not show up for work.' – i.e., He always does show up.)

Slightly differently from K&R's syntactic analyses of *yes-no* answers, Holmberg proposes that both positive and negative answering particles are in the Spec of FocP, and these are exclusively uttered when the whole PolP is elided. These *yes* and *no* answers in the Spec of FocP have the value [+Pol] and [-Pol] and assign the value to the polarity value in the head of PolP. Representations in (7) illustrate this.

(7) a. [<sub>ΣFocP</sub> Yes [+Pol] [<sub>PolP</sub> he is [+Pol] [<sub>TP</sub> <is, T> [<sub>VP</sub> <is> coming]]]]

b. [<sub>ΣFocP</sub> No [-Pol] [<sub>PolP</sub> he is not [-Pol] [<sub>TP</sub> <is, T> [<sub>VP</sub> <is> coming]]]]

Distinct from highest and low negation, Holmberg's middle negation in negative polar questions can be structurally ambiguous since it can appear and be interpreted as inside IP, but can have outside (i.e., sentential) scope. With middle negation, short positive and negative answers can have the same meaning as we see in (8). This is exactly identical to the negative neutralization which K&R observed.

(8) Q: Is John **not** coming?

A: Yes. ('He isn't coming.')

A: No. ('He isn't coming.')

In order to avoid the expected misunderstanding in actual conversation, Holmberg suggests that short *yes* answer to NPQ (8) is not felicitous. Instead, a full answer like '*Yes, he is*' is more plausible. Moreover, Holmberg notes that some native speakers of English do not allow *n't* to have a middle negation reading, and for these speakers, most cases of *n't* are unambiguously instances of highest negation.

However, I found that the interpretation accorded to the three positions of negation depicted in (5)-(8) is not always to be as rigid and absolute as the examples would suggest. While the interpretations of three distinct negations are usually found to be as given in the examples, it should be noted that the preposed negation in (6) can sometimes be interpreted as similar to non-preposed negation, even with the insertion of an adverb "sometimes," and vice versa for in-situ negators being interpreted as preposed negation. Thus, it is reasonable to suspect that the initial positions, movements, and actual interpretations of negators might be less predictable than what Holmberg's analysis would indicate. Holmberg's account for the interpretation of NPQs is generally aligned with a polarity-based versus truth-based

system, and he argues that English language is one of the languages with mixed systems. However, I somewhat radically propose that most languages can have both truth-based and polarity-based interpretations in answering NPQs although various factors such as the relative linguistic complexity of NPQ structures and the distinct frequency of NPQ structures in natural language might influence L1 speakers' preference for a specific answering pattern between already-existing polarity- and truth-based interpretations.

Taking Holmberg's classifications as a starting point, I distinguish two categories of negation, based principally upon whether or not the negator affects the core proposition. Rather than attempt, *a priori*, to determine the syntactic status of negation or to predict and enumerate (somewhat subjective) considerations of "questioner bias" (Domaneschi et al. 2017; Ladd 1981; Romero & Han 2004; Sudo 2013), I categorize negatives preliminarily on the basis of whether they negate the embedded proposition or not. Sections 3.4 examines how the new dichotomy is realized in the interpretations of English and Korean NPQs.

### 3.2.3 English NPQs

In this section, a closer look at English examples (9)-(11) shows that English NPQs can have either VP-external or VP-internal negation. Here, we see that the distinction is largely dependent on the syntactic position of negation in the clause (although its interpretation is not always decided by the position of negation at PF). In (9), negation undergoes subject-aux inversion (SAI) and is presumed to be outside of VP where it can contract with the head of TP. The VP-external interpretation is readily predicted. In (10), I find negation to remain in situ, following the VP adverb *really*. Here, negation is unambiguously VP-internal. Alongside these two unambiguous cases, we find instances as in (11), where negation is ambiguously interpreted as either VP-internal or VP-external.

(9) Q: Didn't Hana eat lunch today? (High-neg; VP-external)

A: Yes, (she did/\*~~didn't~~). = 'She did eat lunch.'

No, (she didn't/\*~~did~~). = 'She did not eat lunch.'

(10) Q: Did Hana really **not** eat lunch today? (Low-neg; VP-internal)

A: Yes, (she didn't/\*~~did~~). = 'She did not eat lunch.'

No, (she did/\*~~didn't~~). = 'She ate lunch.'

(11) Q: Did Hana **not** eat lunch today? (Middle-neg; Ambiguous negation)

A: Yes, (she did/didn't). (??'She did/did not eat lunch.')

No, (she didn't/did). (??'She did/did not each lunch.')

We can confirm that the negation in (9) is unquestionably VP-external by comparing it to the interpretation options available for a PPQ in example (12).

(12) Q: Did Hana eat lunch today? (PPQ)

A: Yes, (she did/\*~~didn't~~). = 'She did eat lunch.'

No, (she didn't/\*~~did~~). = 'She did not eat lunch.'

Seeing that *yes* and *no* answers to NPQ (9) and PPQ (12) are interpreted identically, it is clear that the negation in (9) does not interact truth-conditionally with the core proposition denoted in the question. Example (9) therefore involves VP-external negation. In contrast, since *yes* and *no* answers to NPQ (10) are interpreted conversely from answers to PPQ in (12). We can thus be sure that negation in (10) is truth-conditional, and that (9) involves VP-internal negation. Because the surface position of *not* at PF follows the VP adverbial

*really*, we would claim that this negation has unambiguous scope over vP/VP, in a manner similar to Holmberg's low negation.

In contrast with NPQ (9) and NPQ (10), example (11) without the insertion of the adverb *really* is quite interesting. Here, a simple *yes* or *no* answer is quite anomalous and uninterpretable. In the case of (11), *yes* and *no* responses must be augmented with either *I did* or *I didn't*, in order for the questioner to make any sense of them. For this reason, I claim that the negation in (11) is ambiguous between VP-internal and VP-external negation. According to K&R's (2010), as already mentioned in Section 3.2.1, NPQ (11) should involve *negative neutralization*, wherein simple *yes* and *no* answers to (11) would each have an identical negative interpretation. However, under their account such answers should in each instance be interpretable, and they are not. In finding that they are not interpretable (without further amplification), I would align this case with Holmberg's account of middle negation and seek to maintain the dichotomy wherein the negator is inserted internal or external to propositional content. On my alternative account, then, apparent *negative neutralization* simply involves two structurally and semantically distinct NPQs, wherein a *yes* answer affirming '*He isn't coming*' constitutes a reply to a perceived VP-internal negation, and a *no* answer denying '*He is coming*' constitutes a reply to a perceived VP-external negation. On this view, I further assume that it could work contrariwise — both *yes* and *no* answers might have the same positive interpretation as *positive neutralization*.

Note that the contracted negation is nearly always interpreted as VP-external in tag questions, regardless of where it appears. Thus, the tag question constructions in (13) and (14) express VP-external negation in a normal conversational context.



(13) You ate lunch, didn't you?      Yes, I did/~~\*didn't~~. / No, I didn't/~~\*did~~.

(14) You didn't eat lunch, did you?      Yes, I did/~~\*didn't~~. / No, I didn't/~~\*did~~.

Sentence (13) involves positive speaker expectations and can be paraphrased as 'I expected that you would have eaten lunch before coming to the meeting. Did you eat lunch?' Sentence (14) involves negative speaker expectations and can be paraphrased as 'I expected that you would not have eaten lunch before coming to the meeting. Did you eat lunch?' In neither case does negation take the proposition as an argument to a negation function. More will be said about questioner's bias, conversational context, and other pragmatic forces with regard to the interpretation of two distinct NPQs in Section 3.6.

### 3.2.4 Korean NPQs

Turning to Korean NPQs, this section can now compare and contrast these with what I have observed above for English NPQs, focusing on the structure of Korean negation. Unlike English, Korean clausal negation is formed in two radically distinct ways (see Chapter 2), and these different means of constructing morphosyntactic sentential negation lead to different interpretations of the NPQ. Short-Form Negation (SFN) involves a negation morpheme prefixed to the verb itself, and Long-Form Negation (LFN) involves a negation morpheme outside the immediate projection of a nominalized verb. Just as the position of English negation can affect its interpretation (VP-internal or VP-external), so too does the choice of negation construction in Korean (SFN or LFN) prove relevant to the scope of negation and correlate with distinct NPQ interpretations.

At first, in the SFN-NPQ construction, example (15) involves a negative prefix *an* 'not' attached directly to the verb stem (*an-mek* 'NEG-eat'). In this negative construction,

with *an* ‘not’ prefixed to the verb, the scope of negation is presumably VP-internal. Unsurprisingly, an NPQ constructed with SFN is consistently interpreted as VP-internal negation, as shown in (15).

- (15) Q: Hana-ka        cemsim-ul        **an**        mek-ess-ni?        (SFN-NPQ)  
           Hana-NOM       lunch-ACC       NEG       eat-PST-Q  
           ‘Didn’t Hana eat lunch?’
- A: Ung,        (an-mek-ess-e).        /        Ani,        (mek-ess-e).  
           yes        (NEG-eat-PST-DECL)        /        no        (eat-PST-DECL)  
           ‘Yes, she didn’t eat lunch.’        /        ‘No, she did eat lunch.’
- A: Ung,        (\*mek-ess-e).        /        Ani,        (\*an-mek-ess-e)  
           yes        (eat-PST-DECL)        /        no,        (NEG-eat-PST-DECL)  
           ‘Yes, she ate lunch’        /        ‘No, she didn’t eat lunch’

The LFN-NPQ construction in (16) below involves the nominalization of the verb stem *mek* ‘eat’ with a nominalizing *ci* suffix (*mek-ci* ‘eat-NMLZ’). Then, the negative morpheme *an* ‘not’ is prefixed to a ‘do’-support verb *ha* (*an-ha* ‘NEG-do’) which is incorporated into an auxiliary complex as a result of head amalgamation (*anh-ass-ni* ‘NEG.do-PST-QUES’=‘didn’t?’). Here, the negative morpheme occurs outside of the nominalized VP and the NPQ constructed using this LFN morphology is most frequently interpreted as VP-external negation, as illustrated in the first set of answers in (16). The interpretation of LFN-NPQs appearing as VP-internal negation, shown in the second set of answers in (16),

is marginally possible for some Korean speakers, but mostly with contrastive intonation on the negative auxiliary complex *ANHassni* ‘didn’t?’.<sup>3</sup>

- (16) Q: Hana-ka        cemsim-ul        mek-ci        **anh**-ass-ni?        (LFN-NPQ)  
           Hana-NOM     lunch-ACC        eat-NMLZ        NEG.do-PST-Q  
           ‘Didn’t Hana eat lunch?’
- A: Ung,     (mek-ess-e).                                /     Ani,     (an-mek-ess-e)  
           yes     (eat-PST-DECL)                                /     no,     (NEG-eat-PST-DECL)  
           ‘Yes, she ate lunch’                                /     ‘No, she didn’t eat lunch’
- A: Ung,     (??an-mek-ess-e)                                /     ani, (??mek-ess-e)  
           yes,     (NEG-eat-PST-DECL)                                /     no, (eat-PST-DECL)  
           ‘Yes, (??she didn’t eat lunch)’                                /     ‘No, (??she ate lunch)’

In LFN-NPQ example (16), the interpretations of *ung-ani* ‘yes-no’ answers are typically analogous to the interpretation of *yes-no* answers to the English NPQ with high negation in (9) and the opposite of *yes-no* answers to the English NPQ with low negation in (10). In SFN-NPQ example (15), the interpretations of *ung-ani* ‘yes-no’ answers are most often analogous to the interpretation of *yes-no* answers to the English NPQ with low negation in (10) and opposite to *yes-no* answers to the English NPQ with high negation in (9). In (16), *an* ‘not’ is attached high in the clause and outside the scope of the nominalized VP *mek-ci* ‘eat-NMLZ’. Just like English high negation in (9), which undergoes SAI along with the

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<sup>3</sup> With normal NPQ intonation, in normal conversational contexts, LFN-NPQs are ordinarily interpreted as including VP-external negation asking whether *p* is true or not. In this case, the typical VP-external interpretation suggests that the speaker expects that the addressee did in fact eat lunch and is simply trying to verify this. In contrast, if the speaker utters (16) with prominent stress on *ANHassni* ‘didn’t?’, it suggests that the speaker doubts that the addressee did eat lunch, and new contextual information is conflicting with their original positive expectation. Here, the speaker’s state of mind might be paraphrased as ‘I expect that you did NOT eat lunch. Did you?’

auxiliary verb it is attached to, *an* ‘not’ also does not normally figure in the logical interpretation of the question, leaving (16) to have the same (“polar-based”) interpretation as its corresponding PPQ. In (15), *an* ‘not’ is attached low in the clause, usually leading to a (“truth-based”) interpretation that is the opposite of its corresponding PPQ.

It is obvious, if one takes the polarity-truth typology at face value, that the data in English NPQ (10) and Korean NPQ (16) might be problematic and require additional explanation, since we can see clearly from these facts that polarity-based and truth-based interpretations of NPQs are all possible in both languages and that they both correlate in some way with the relative height of negation in a given question. In light of this, I contend that the polarity-truth typology might not be as useful a distinction as previously thought. The following sections will discuss, in turn, the semantics and syntax of NPQs more.

### 3.2.5 Unconscious ambiguity of NPQs in natural language

As discussed in previous sections, it is obvious that both English and Korean have two distinct forms of NPQs. The meanings of these NPQs are likely to be decided by their surface structure. More specifically, depending on the position of negation in NPQs, addressees interpret the NPQ as a VP-internal or VP-external and choose a felicitous answer between *yes* and *no*. That is, an English NPQ with contracted negation and a Korean NPQ with LFN are typically interpreted as NPQs with VP-external negation, and the answers to these NPQs are identical to PPQs. In contrast, an English NPQ with non-contracted negation and a Korean NPQ with SFN are typically interpreted as NPQs with VP-internal negation, and the answers to these NPQs are opposite to PPQs.

However, in natural language conversation, it is easily found that the typical interpretations derived from the surface structure of NPQs are totally overturned. In other

words, there would be a mismatch between the form and meaning of NPQs. There are a few circumstances in which SFN-NPQ has the same VP-external interpretation as its LFN counterpart, and vice versa. This is sometimes restricted to specialized conversational formulae, typically involving predicate adjectives. For instance, one can ask someone “Aren’t you hungry?” using either LFN or SFN construction as in (17) and (18), respectively. In both cases, an addressee might answer *ung, paykophā* ‘yes, (I am) hungry’, treating the negator non-propositionally.

(17) Q: paykophu-ci      **anh**-a?  
          hungry-NMLZ      NEG.do-Q  
          ‘Aren’t you hungry?’

(18) Q: **an**-paykoph-a?  
          NEG-hungry-Q  
          ‘Aren’t you hungry?’

In both cases, addressees are not confused and can naturally answer without any hesitation. When lunch time is slightly passed and a questioner and an addressee both have not eaten anything yet, the questioner might ask using any one of these example NPQs. The opposite context is also possible. For example, when lunch time is already quite some time in the past, but his/her partner does not look like hungry at all, the questioner could ask these NPQs meaning “Are you really not hungry yet?” In this situation, the address may answer *ung, paykophci anha* (or *ung, pay an kopha*) ‘yes, (I am) not hungry.’ Since the conversational context gives them a lot of non-linguistic information, they unconsciously ask one of these NPQs and naturally answer the question without severe confusion. The

heart of this matter is that both types of NPQs can ask  $p?$  or  $\neg p?$  regardless of the form of NPQs. I will discuss this further in Section 3.4.

### 3.3 The semantics of PQs and answers

Semantic approaches to the denotation of *yes-no* questions have presented formalisms wherein a question denotes the set of possible answers to it (Hamblin 1973) or the set of true answers to it (Karttunen 1977). According to Hamblin (1976) and Karttunen (1977), every *yes-no* question denotes a set of propositions which contains both a positive and a negative proposition.<sup>4</sup> Thus, a PPQ such as (19) denotes a set of propositions (i.e.  $\{p, \neg p\}$ ) that are possible (or ‘true’) answers to it. This is shown in (20), where the positive simple answer *yes* means  $\llbracket \lambda w [I \text{ ate lunch in } w] \rrbracket$ , and the negative simple answer *no* means  $\llbracket \lambda w [I \text{ did **not** eat lunch in } w] \rrbracket$ .

(19)  $\llbracket \text{Did you eat lunch?} \rrbracket$

(20)  $\{\lambda w [I \text{ ate lunch in } w], \lambda w [I \text{ did **not** eat lunch in } w]\}$

Given this model for the interpretation of a polar question, as illustrated here with a PPQ, how would their semantics be applied to NPQs? Given that Hamblin (1976) and Karttunen (1977) do not address the semantics of NPQs, we are left to speculate. I strongly posit that NPQs with low negation and high negation will be interpreted differently, in that low negation directly interacts with the truth of the propositions denoted by the NPQ (VP-internal) and that high negation does not (VP-external). This section will discuss low-negation NPQs first, and then consider high-negation NPQs.

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<sup>4</sup> At this point, according to Karttunen (1977), *yes-no* questions and alternative questions are semantically equivalent. That is, *did you eat lunch?* and *did you eat lunch or not?* denote the same set of propositions.

Hamblin (1976) and Karttunen (1977) do not actually distinguish the semantics of positive and negative *yes-no* questions, seeming to propose a semantics involving a disjunctive set of propositions for all PQs. Adopting Hamblin’s general analysis of PQ semantics, I assume that the NPQ in (21) with low negation also denotes a set of propositions (i.e., the two possible answers). Given that low negation interacts with and figures in the interpretation of the proposition being questioned, it is assumed that each proposition in this set is negated  $\{\neg p, \neg\neg p\}$ . The semantics for NPQ (21) would therefore entail that a *yes* response means  $\neg p$  and a *no* response means  $\neg\neg p$  (i.e.,  $p$ ). On this view, the propositions in the set denoted by (21) are truth-conditionally opposite of those denoted by (19). Example (22) illustrates the set of possible answers to (21), with a *yes* answer meaning  $\llbracket \lambda w \text{ [I really did **not** eat lunch in } w] \rrbracket$  and a *no* answer meaning  $\llbracket \lambda w \text{ [I did **not** really **not** eat lunch in } w] \rrbracket$ .

(21)  $\llbracket \text{Did you really **not** eat lunch?} \rrbracket$

(22)  $\{\lambda w \text{ [I really did **not** eat lunch in } w], \lambda w \text{ [I did **not** really **not** eat lunch in } w]\}$

Turning to an NPQ with high negation, as in (23), I posit that its interpretation will be different from NPQ (21) with low negation. Here, negation does not normally figure into the logical denotation of (23). Rather, NPQ (23) is assumed to denote the same set of propositions as does (19). This is shown in (24), where a *yes* answer means  $\llbracket \lambda w \text{ [I ate lunch in } w] \rrbracket$  and a *no* answer means  $\llbracket \lambda w \text{ [I did **not** eat lunch in } w] \rrbracket$ . Note that the denotation of NPQ (23), given in (24), is identical to that of PPQ (19), given in (20). This is due to high negation residing outside the propositional frame, leaving the meanings of the PPQ in (19) and the NPQ in (23) logically identical.

(23) [[ Didn't you eat lunch? ]]

(24) { $\lambda w$  [I ate lunch in  $w$ ],  $\lambda w$  [I did **not** eat lunch in  $w$ ]}

As shown in the comparison of (21/22) and (23/24), I propose that the structure of NPQs affects their semantic interpretation. That is, the meaning of two NPQ constructions is mainly determined by their surface structures.

### 3.4 Proposition Internal Negation (PIN) vs. Proposition External Negation (PEN)

Having seen that Holmberg's 3-way (HIGHEST, MIDDLE, and LOW) analysis of negation which conceals a simple dichotomy, since highest involves vP/VP external negation, low involves vP/VP internal negation, and middle is merely ambiguous between the first two is overly complex and somewhat unexplanatory. Moreover, it should also be noted that it would not work so well for Korean, which only has high and low negation, and the negations more flexibly raise out of and lower into the core proposition. I will therefore consider an alternative to Holmberg's classification that simply involves two NPQ types.

When a PQ is asked (either PPQ or NPQ), the fundamental semantic meaning of the inquiry is to determine the polarity of a core proposition. The semantic value of answers to the PQ is then that the questioned proposition is either true or false. With PPQs, the interpretation of short *yes-no* answers is straightforward, with *yes* affirming the truth of the positive proposition and *no* denying it. With NPQs, however, short answers are more nuanced and affected by the pragmatics of speaker and hearer expectations. That said, the likely interpretations are greatly affected by the position of the negator in the structure. When negation is low, the NPQ tends to reverse the polarity of its PPQ analog, and *yes-no* answers to them tend to be interpreted opposite to what they would be for a PPQ. When



the negation is high, the negation in the NPQ tends to be ignored semantically and not reverse the polarity of its NPQ analog. *Yes-no* answers to these tend to be interpreted as logically equivalent to what they would be for a corresponding PPQ.

To help to understand the puzzle of answers to NPQs, I now clarify the general property of these two distinct patterns. In cases where the negative morpheme actually negates the proposition denoted in the question, I call it ***Proposition Internal Negation (PIN)***, where the negative morpheme does not affect the truth of the proposition, I call it ***Proposition External Negation (PEN)***. This PIN-PEN dichotomy is a useful distinction for analyzing NPQ interpretations. Table 3.1 illustrates the typical question-answer patterns for PPQs, PIN-NPQs, and PEN-NPQs.

Table 3.1 Question-answer patterns for PPQ, PIN-NPQ, and PEN-NPQ

		What is asked?	What does <i>yes</i> mean?	What does <i>no</i> mean?
I.	PPQ	Is $p$ true?	The $p$ is true.	The $p$ is false.
II.	PIN-NPQ	Is $\neg p$ true?	The $\neg p$ is true.	The $\neg p$ is false. (=The $p$ is true.)
III.	PEN-NPQ	Is $p$ true?	The $p$ is true.	The $p$ is false.

A PPQ asks if  $p$  is true, a PIN-NPQ asks if  $\neg p$  is true, and a PEN-NPQ (like a PPQ) also asks if  $p$  is true. Hence, the answering patterns in rows I and III are identical, but these are opposite to those in row II. While characterizing the structurally-induced tendencies for interpreting these, it is noted that these similarities and differences only typify their usual interpretations.

Reviewing the consideration of English and Korean NPQs in the previous section, I have seen that these NPQs are differentiated by the PIN-PEN dichotomy (inclusive of that

position being ambiguous), and that this can be seen from the interpretation of *yes-no* answers to them. Example (9)-(11), repeated here, shows this.

(9) Q: Did**n't** Hana eat lunch today? (PEN-NPQ)

A: Yes. = 'She did eat lunch.'

No. = 'She did not eat lunch.'

(10) Q: Did Hana really **not** eat lunch today? (PIN-NPQ)

A: Yes. = 'She did not eat lunch.'

No. = 'She ate lunch.'

(11) Q: Did Hana **not** eat lunch today? (Ambiguous NPQ)

A: Yes. (??'She did/did not eat lunch.')

No. (??'She did/did not each lunch.')

So, likewise, does the position of negation in Korean NPQs affect their interpretation, and this is also apparent from the interpretation of *ung-ani* ('yes-no') answers to them. Example (15) and (16), which are repeated here with SFN in (15) and LFN in (16), shows the differences in preferred PIN and PEN interpretations, respectively.

(15) Q: Hana-ka cemsim-ul **an** mek-ess-ni? (PIN-NPQ)

Hana-NOM lunch-ACC NEG eat-PST-Q

'Did Hana not eat lunch?'

A: Ung. = 'She did not eat lunch.' / Ani. = 'She did eat lunch.'

yes

no

(continued on p. 58)

(16) Q: Hana-ka            cemsim-ul            mek-ci            **anh**-ass-ni?            (PEN-NPQ)

Hana-NOM            lunch-ACC            eat-NMLZ            NEG.do-PST-Q

‘Didn’t Hana eat lunch?’

A: Ung. = ‘She did eat lunch.’            /            Ani. = ‘She did not eat lunch.’

yes

no

However, for both English and Korean, the position of the negator influences but does not completely determine the interpretation of NPQs. Thus, the formulaic PIN/PEN interpretations for *yes-no/ung-ani* answers shown above can be reversed if there is sufficient pragmatic motivation to do so. So, for each of these patterns, I would consider the short answers together with their interpretations to be merely canonical and typical, rather than definitive and semantically rigid.

This said, structure does play a role even in the face of conversational expectations. Setting the fully ambiguous (11) aside, I have found that (9) is more likely to have its interpretation reversed than is (10), and I take this to be on account of the negator in (10) never undergoing movement out of the VP and thereby having its interpretation restricted to a PIN interpretation. Likewise, (16) is more likely to have its interpretation reversed than is (15), and this is probably due to the fact that the negator in (16) can be lifted out of the VP projected by the auxiliary verb into the CP periphery or can be kept within that VP (see Chapter 2). In contrast, much like the negator in English NPQ (10), the negator in Korean NPQ (15) is attached to the verb stem, limitedly having the chance to be raised out of it. Its PIN interpretation is, predictably, more constrained. What these observations, of both the canonical interpretations and the likelihood of them being reversed, show us is that

structure matters. In this regard, I think it useful and important to recognize two classes of PIN-PEN in an analysis of NPQs (rather than three).

### 3.5 The ellipsis account for *yes-no* answers

Having discussed the semantic interpretations of PQs and the PIN-PEN dichotomy, we now turn to the syntax of short (*yes-no*) answers more deeply. That is, given the syntax and semantics of PQs themselves, what is the syntactic structure of *yes-no* answers, such that it will have the requisite interpretation. In general terms, it is claimed that *yes-no* answers to PQs involve TP/VP ellipsis. This is to say that *yes* and *no* are merged with an elided phrase that has the meaning of the proposition being confirmed or disconfirmed. The present examination of these structures will also explore why it is that simple *yes-no* answers (to NPQs in particular) sometimes wind up being ambiguous or uninterpretable. I will first look at the syntax of PPQs before turning our attention to that of NPQs.

#### 3.5.1 Ellipsis in answers to PPQs

An ellipsis model is proposed in Kramer & Rawlins (2010) and Holmberg (2013) to explain how the interpretations of short *yes-no* answers to PQs are generated. In this account, the structure of *yes-no* answers involves the functional category of Pol(arity), which projects a PolP between the FocP and TP (Laka 1990).<sup>5</sup> Holmberg (2013, 2016) proposes that a Pol head is projected in every matrix clause and is valued in one of three ways: affirmative [+], negative [–], and open [∅]. All PQs are assumed to have open [∅] polarity.<sup>6</sup> To illustrate, the head of PolP in (25) has open [∅] polarity. Subject-Aux

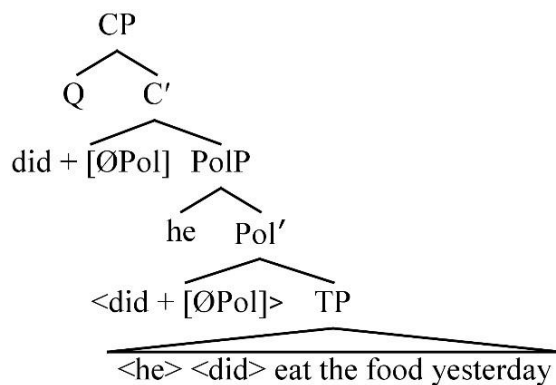
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<sup>5</sup> In Laka (1990), Holmberg's (2013) PolP is called a  $\Sigma$ P, and Laka's terminology is maintained in Kramer & Rawlins (2010). In Laka's account, the position of  $\Sigma$ P varies across languages and is below TP in English and above TP in Basque.

<sup>6</sup> Holmberg proposes that the head of PolP for all PQs is valued as [∅], and that the head of PolP in declarative sentences defaults to [+], except in the presence of negation or other negative operators that assign [–].

Inversion (SAI) involves head-movement of *did* from TP to CP, passing through PolP and picking up the value of [ $\emptyset$ Pol] along the way. In this manner, [ $\emptyset$ Pol] is copied into the CP domain and gets sentential scope. It is assumed that the subject ultimately moves to the Spec,PolP, which in Holmberg's account is the highest spec-position in the IP-domain and counts as the position which satisfies the EPP (extended projection principle).

(25) Did he eat the food yesterday?



Example (26) illustrates short *yes* and *no* answers to (25), along with their interpretations.

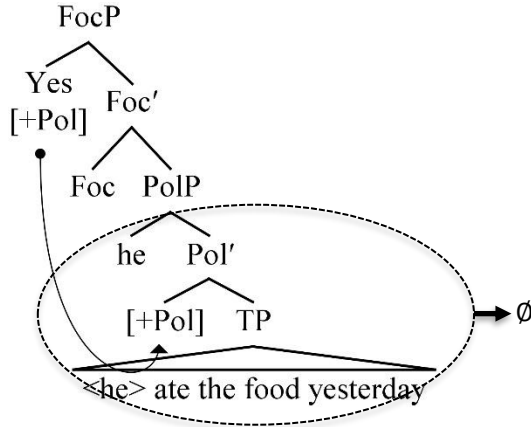
(26) Q: Did he eat the food yesterday?

A: Yes. ('He did eat the food yesterday.')

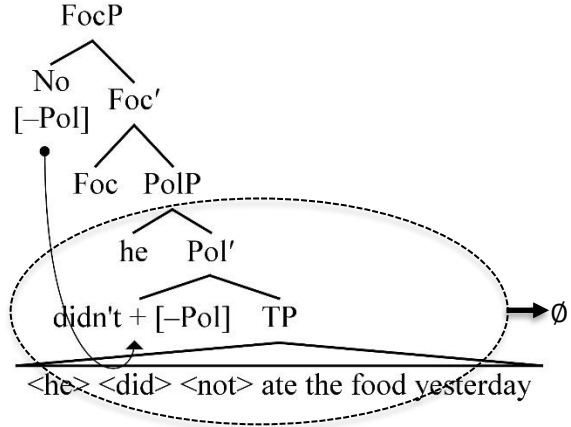
No. ('He did **not** eat the food yesterday.')

Holmberg's analysis of the *yes-no* answers in (26) assumes that *yes* and *no* are inserted into Spec,FocP and that the complement of FocP is a copy of the entire PolP projection of (25). The *yes* and *no* answers assign affirmative [+] or negative [-] values, respectively, to the head of PolP, leading to the correct valuation of polarity in the elided phrase. Examples (27) and (28) show the structures Holmberg would posit for *yes* and *no* answers in (26).

(27) Yes, (he did.)



(28) No, (he did not.)



The interpretations and syntactic structures assigned to them are indeed appropriate for a PPQ such as (25) when asked in a neutral context. In this situation, there would be two equally plausible possibilities: either *he did eat the food* or *he did not eat the food*. In this context, the meanings of *yes* and *no* answers are unambiguous. Of course, in a more complex and nuanced discourse, where speaker and hearer expectations are woven in, these simple *yes* and *no* answers can in fact become ambiguous. Section 3.6 considers the role of pragmatics in regard to such cases.

### 3.5.2 Ellipsis extended to answers to NPQs

As we have seen in (9)-(11) above, short *yes-no* answers to NPQs are generally dependent on the position of negation in the NPQs but not as straightforwardly interpreted as *yes-no* answers to PPQs. The NPQs in (29) and (30), below, each have a negator, *n't* or *not* respectively, and ask about the truth of the propositions: *He ate the food yesterday* or *He didn't eat the food yesterday*. Using the categories of high, middle, and low negation, we can assume that (29) involves high negation and that (30), with *not* following the propositional adverb *really*, has low negation.

(29) Q: Didn't he eat the food yesterday?

A: Yes, (he did eat the food.)

No, (he did **not** eat the food.)

(30) Q: Did he really **not** eat the food yesterday?

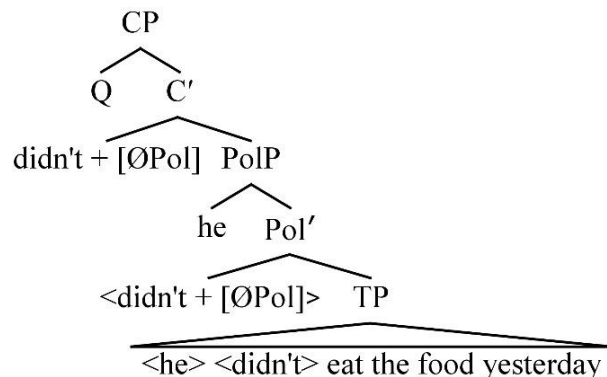
A: Yes, (he really did **not** eat the food.)

No, (he really did eat the food.)

Notice that the most natural interpretation of short *yes-no* answers to each of (29) and (30) is the reverse of the other. It is most reasonable to assume that this contrast can be attributed to the structure of NPQs and that the position of negation affects how the negator is interpreted relative to the core proposition in the question.

Holmberg (2013, 2016) does not provide an explicit analysis of high negation in English NPQs, but I can follow his model and take account of the fact that *yes-no* answers to (29) tend to be interpreted identically to *yes-no* answers to (26). Accordingly, it is assumed that the *n't* negator in Spec,CP does not participate directly in the valuation of the Pol feature in PolP and that the interpretation of *n't* is only relevant to the pragmatics of speaker and hearer expectations. Example (31) shows the structure of (29).

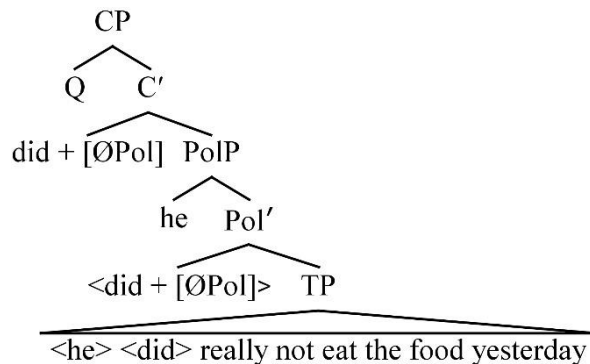
(31) Didn't he eat the food yesterday?



Here above, *n't* is affixed to *did* and moves through PolP, picking up [ $\emptyset$ Pol] along the way. Following Holmberg's assumption that all PQs have open [ $\emptyset$ ] polarity, I assume here that *didn't* assigns no negative valuation to [ $\emptyset$ Pol] in much the same way that *did* assigns no positive valuation to it in (25). With *n't* moved up into CP and out of the computation, *yes-no* answers to (29) are calculated identically to (26) and would have the same representations as in (27) and (28). Thus, in a *yes* answer to (31), *yes* occupies Spec,FocP and assigns a [+] value to the head of PolP.

Holmberg (2013, 2016) does provide an analysis of low negation NPQ. The negation *not* in (30) remains within the scope of VP and fails to interact with PolP. This also leaves [ $\emptyset$ Pol] unvalued, such that (30) is an open question about the truth of the proposition: *He really did not eat the food yesterday*. Example (32) illustrates the structure.

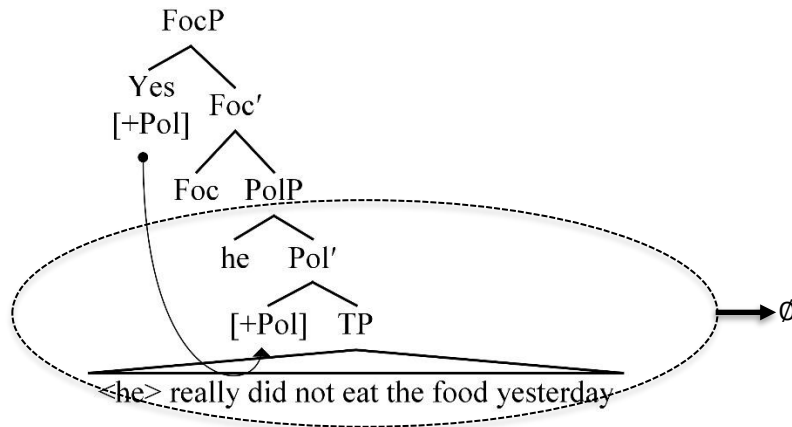
(32) Did he really **not** eat the food yesterday?



Here, a simple *yes* answer to (30) is interpreted as opposite to a *yes* answer to (29).

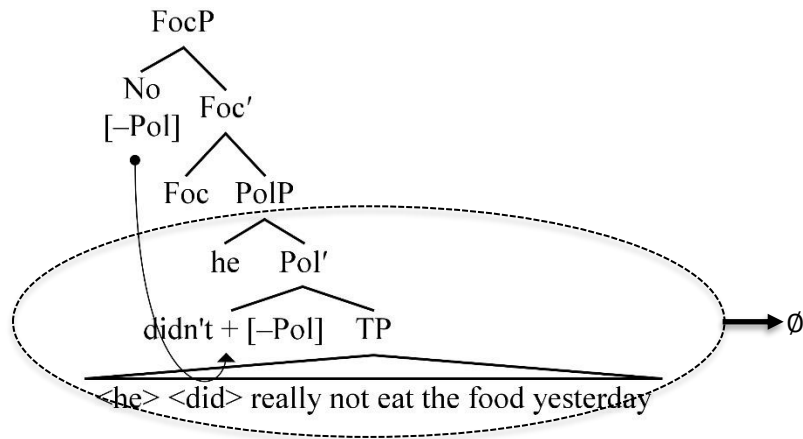


(33) Yes, (he really did not.)



Comparing (27) with (33), above, we see that *yes* occupies Spec,FocP and assigns a [+] value to the head of PolP, affirming the negative proposition *he really did not eat the food yesterday*. This contrasts with (27), where *yes* affirms the positive proposition, *he did eat the food yesterday*. In the same way, a simple *no* answer to (30) is interpreted as opposite to a *no* answer to (29).

(34) No, (he really did.)



Comparing (28) with (34), above, we see that *no* occupies Spec,FocP and assigns a [-] value to the head of PolP, denying the negative proposition *he really did not eat the food*

yesterday. This contrasts with (28), where *no* denies the positive proposition, *he did eat the food yesterday*.

Holmberg (2013, 2016) also provides an analysis of NPQ middle negation, showing it to be unanswerable with simple *yes-no* responses.

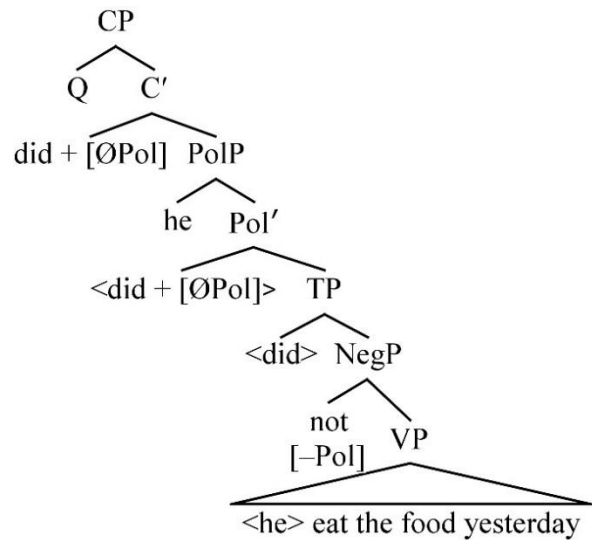
(35) Q: Did he **not** eat the food yesterday?

A: #Yes, (~~he did not/did eat the food.~~)

#No, (~~he did not/did eat the food.~~)

Holmberg claims that in the middle negation NPQ, (35), *not* is outside of VP and occupies the head of NegP where it is able to assign a value to the head of PolP. The structure of the middle negation NPQ in (35) is shown in (36).

(36) Q: Did he **not** eat the food yesterday?

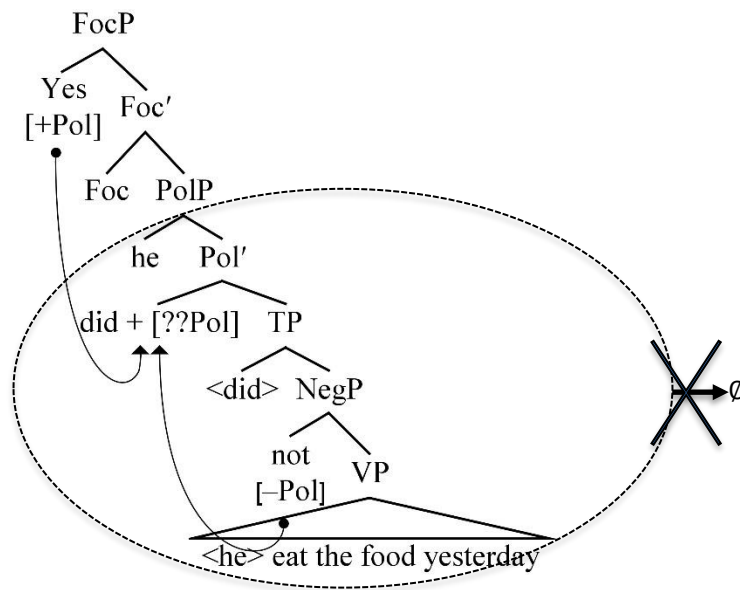


In this circumstance, a short *yes* or *no* answer to the NPQ (which also assign a value to the feature Pol) can clash with the head of the embedded NegP. This, according to Holmberg, is why simple *yes-no* answers to middle negation NPQs are not easily interpreted.

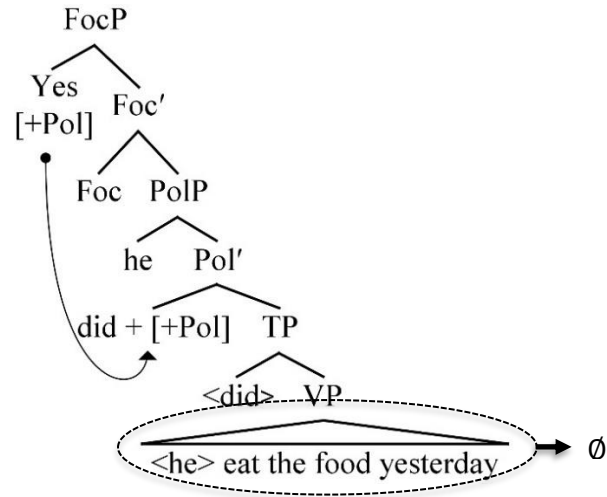
However, as we shall see shortly, his analysis of this feature clash accounts only for the confusion that might arise from a *yes* answer, but not as readily for the confusion arising out of a *no* answer.

In a short *yes* answer to (35), *yes* occupies Spec,FocP and tries to assign a [+] value to the head of PolP. At the same time, the head of NegP *not* tries to assign a [-] value to that same head. The arising featural clash renders the short answer uninterpretable once ellipsis erases Spell-Out of PolP. This is shown below in (37). An alternative answer (*Yes, he did*) is interpretable as shown in (38), since only the VP copied from the original NPQ in (35) is elided and absence of *not* and its containing NegP eliminates the clash.

(37) Yes, (he did not/did eat the food yesterday).

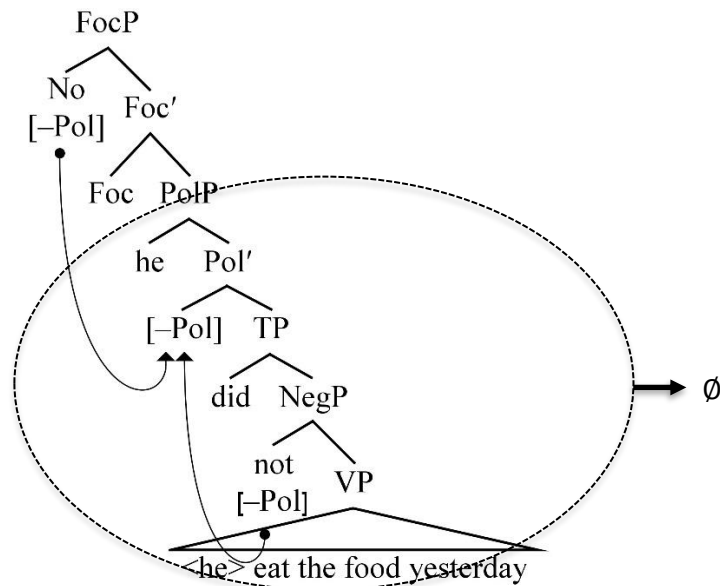


(38) Yes, he did (eat the food yesterday).



As stated above, Holmberg's account for the structure of middle negation NPQs does not explain quite as straightforwardly how it is that simple *no* answers to these NPQs fail to be interpreted. If the structure of (39) is analogous to (38), as illustrated here, then I would expect there to be no feature clash, since the *no* in Spec,FocP and the *not* head of NegP would assign the same [-] value to the head of PolP.

(39) No, (he did not eat the food yesterday).



In order to account for this inconsistency, Holmberg claims that the two separate negations in (39), *no* and *not*, involve “negative concord” such that only one of them may be interpreted. On his analysis, this renders the short *no* answer in (39) to be uninterpretable as an answer to (36). Thus, simple *yes* and *no* answers to (36) are held to be ill-formed for quite different reasons – contrary to what I have shown here in the comparison of (38) and (39).

Holmberg’s account for the ill-formedness of (39) is further complicated by the fact that if an adverb precedes *not* in (39) – as is the case in (32) – a short *no* answer would be acceptable. Holmberg’s answer to this dilemma is to claim that a *not* in NegP preceded by an adverb **optionally** assigns a [–] value to PolP, but obligatorily assigns the value if no adverb intervenes. In this regard I find Holmberg’s account of these facts to be both unnecessarily complex and inconsistent, as well as somewhat arbitrary.

In place of Holmberg’s account for middle negation NPQs, I would suggest that the uninterpretable status of short *yes-no* answers to (35) is merely a case of structural ambiguity, with negation being neither clearly inside nor outside the clausal VP. On this view, (35) might have either of the structures in (40) and (41).

(40) Did he **not** eat the food yesterday?

[<sub>CP</sub> did+[ $\emptyset$ Pol] [<sub>PolP</sub> <did+[ $\emptyset$ Pol]> [<sub>TP</sub> he <did> **not** [<sub>VP</sub> eat the food yesterday]]]]

(41) Did he **not** eat the food yesterday?

[<sub>CP</sub> did+[ $\emptyset$ Pol] [<sub>PolP</sub> <did+[ $\emptyset$ Pol]> [<sub>TP</sub> he <did> [<sub>VP</sub> **not** eat the food yesterday]]]]

If the negation were unambiguously outside of the VP, then short *yes-no* answers would be interpreted as they are in (29), with *yes* affirming the positive proposition *He did eat the*

*food yesterday* and *no* denying it. If the negation were unambiguously inside VP, then short *yes-no* answers would be interpreted as they are in (30), affirming a negated proposition *He did not eat the food yesterday* and *no* denying that. In (35), one cannot be sure and cannot reply with a short *yes-no* answer.

Further undermining Holmberg's account of middle negation NPQs, as well as any support for there even being a separable category of middle negation NPQs, is the fact that Korean (and other languages) fail to have such a category. As already seen, Korean has negation constructions that can be properly described as high and low, but nothing which exactly fits the description of middle. I consider this a shortcoming of Holmberg's account and propose instead that so-called middle negation NPQs are nothing more than structures that are superficially ambiguous between high negation and low negation.

### 3.6 The pragmatics of NPQs

Previous sections noted that NPQs are occasionally semantically ambiguous and suggested that NPQ pragmatics should be considered in order to properly understand their meaning. It needs be acknowledged that NPQs, with a negation that is often not proposition-negating, are far more susceptible to pragmatically induced interpretations. In this regard it is important that I review the influence of speaker-hearer expectations on their use.

#### 3.6.1 Ladd 1981

Ladd (1981) first distinguished inner and outer negation as being sensitive to questioner bias. Ladd's semantic/pragmatic analysis of NPQs proposes that negation can be inside or outside the proposition it is attached to, depending on speakers' beliefs or biases (Ladd 1981, and see also: Büring & Gunlogson 2000, Romero & Han 2004).

According to Ladd (1981), outer and inner negation, shown in (42) and (43), can involve questioners' having different beliefs and expectations in asking the exact same NPQ.

(42) [*Situation: Kathleen and Jeff have just come from Chicago on the Greyhound bus to visit Bob in Ithaca.*]

Bob: You guys must be starving. You want to get something to eat?

Kathleen: Yeah, **isn't there a vegetarian restaurant around here?**  
Moosewood, or something like that?

Bob: Gee, you've heard of Moosewood all the way out in Chicago, huh?  
OK, let's go there.

(43) [*Situation: Bob is visiting Kathleen and Jeff in Chicago while attending the CLS.*]

Bob: I'd like to take you guys out to dinner while I'm here - we'd have time  
to go somewhere around here before the evening session tonight, don't  
you think?

Kathleen: I guess, but there's not really any place to go to in Hyde Park.

Bob: Oh, really, **isn't there a vegetarian restaurant around here?**

Kathleen: No, about all we can get is hamburgers and souvlaki.

In (42), Kathleen already believes there to be a vegetarian restaurant in the area and is seeking confirmation of that. This would be similar to her saying, "*There's a vegetarian restaurant around here, isn't there?*" In contrast, in (43), Bob initially assumes that there would be such a restaurant and infers from Kathleen's reply that he could be mistaken. In this context, his reply is one of surprise and akin to his saying, "*There's no vegetarian restaurant around here?!*" For Ladd, (42) is an example involving outer negation, in that

“the speaker believes ...  $p$  and wants confirmation” of that, and “what is being questioned is the speaker’s belief  $p$ .” In (43), which he calls inner negation, “the speaker has just inferred ...  $\neg p$ ” and “what is being questioned is the inference  $\neg p$ .” Ladd acknowledges that it isn’t immediately clear “what it means ... [for] neg ... [to be] outside the questioned proposition,” nor “what it is doing in the sentence at all.” But he does show that this distinction, however it might be analyzed, is a productive one, showing up in relation to tag questions and other constructions as well. Ladd does not, in his article, take up the important matter of how *yes* and *no* responses might be construed in answer to each of these cases, as I will do here.

Furthermore, example (44) illustrates an inner and outer negation contrast, wherein polarity items such as *too* and *either* serve to disambiguate the possible scope of negation. Thus, the two NPQs in (44) can be seen to pose semantically and pragmatically distinct questions.

- (44) a. Isn’t Jane coming, **too/also**?  
       b. Isn’t Jane coming, **either**?

In (44a), the positive polarity item (PPI) *too* or *also* inclines the NPQ to be interpreted as having outer negation (i.e., non-propositional negation), leading to its being interpreted analogously to a PPQ. Although Ladd did not consider the meaning of short answers to NPQs, I would infer that a *yes* answer to (44a) means that *Jane is coming*, and a *no* answer that *Jane is not coming*. By contrast, in (44b), the negative polarity item (NPI) *either* leads to the NPQ being interpreted as containing inner negation (i.e., propositional negation), and its being interpreted as contrary to a PPQ. In this case, a *yes* answer likely means that



*Jane is not coming*, and a *no* answer indicates that *Jane is coming*.<sup>7</sup> If we consider the PIN-PEN dichotomy when interpreting the answers to these NPQs, we can classify (44a) as a PEN-NPQ and (44b) as a PIN-NPQ. According to Ladd, this suggests that the polarity of an adverb (whether it's a PPI or NPI) is more important than the actual placement of negation when interpreting an NPQ.

### 3.6.2 Romero & Han 2004

Romero & Han (2004) (henceforth, R&H) categorize NPQs according to whether the negator is contracted and undergoes SAI (e.g., *Doesn't John drink?*) or stays in situ (e.g., *Does John **not** drink?*). In their proposal, the former is referred to as a “preposed NPQ” and the latter as a “non-preposed NPQ”. They claim that “preposed NPQs” carry the epistemic conversational implicature that *John drinks*, but that “non-preposed NPQs” do not have this implicature. Thus, a questioner who says *Doesn't John drink?* is presumed to be expecting a positive answer to the question.

For them, (44a) with its PPI (e.g., *Isn't Jane coming **too**?*) presupposes that Jane is coming, and “double-checks” the positive assertion of *p*, while (44b) with its NPI (e.g., *Isn't Jane coming **either**?*) presupposes that Jane is not coming, and “double-checks” the negative assertion of  $\neg p$ . R&H (2004) ask how it is that a preposed negation can lead to an epistemic conversational implicature. In other words, how does it come to be that Ladd's outer negation is interpreted outside of the proposition (i.e., as PEN)? As they suggest, “it is surprising that a *yes/no*-question with negation – in any position whatsoever – could

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<sup>7</sup> Wherein I marginally agree with his outer negation interpretation for (44b). In my own estimation, the sentence *Isn't Jane coming, either?* is quite marginal. I would expect the NPI *either* to collocate with *Is Jane not coming*, yielding the better formed sentence *Is Jane not coming, either?*

force an epistemic implicature at all,” since “questions cannot be negated, hence the possibility of adding (crosscategorical) negation over Q is ill-formed” [pp. 7-8].

R&H (2004) provides a different perspective on preposed negation. Rather than consider the two exchanges in (42) and (43) to involve outer and inner negation, as Ladd (1981) does, R&H essentially propose that all preposed negators are “outer” and do not involve a negation operator. Rather, they claim, the solution is to propose that preposed negation involves an operator VERUM, which is taken to be the semantic denotation of the adverb *really*. They show how VERUM functions to supply epistemic implicatures into the interpretations of questions containing *really* (e.g., *Did you **really** leave early?*), assertions with polarity focus induced by prosody (e.g., *John **DID** go to the Himalayas, They will **NOT** finish on time*), and also to NPQs with preposed negation (e.g., *Didn’t John finish the project?*). In this regard, the VERUM of preposed negation NPQs interacts with both PPIs as in (44a) and NPIs as in (44b) to produce a complex web of speaker expectations and hearer assumptions.

While R&H would not agree with Ladd’s categorization of which questions involve outer negation and which ones involve inner negation, their analysis does clearly distinguish negation as sometimes being proposition-internal and engaging with the logical structure of *p* and sometimes being proposition-external and being interpreted as engaging with the pragmatics of implicatures. As discussed in Section 3.4, my own analysis largely agrees with the dichotomy established in R&H (2004) and will ultimately test this distinction in regard to *yes-no* answers both in English and Korean with L1 speakers. A full explanation of these semantic and pragmatic interpretations lies outside the bounds of this discussion but suffice it to say that the PIN and PEN distinction is a real one, and that

it does correlate in a categorical way with the position of negation in the clause. In my experimental study, described in Chapter 4 and 5, I have endeavored to avoid the thicket of ambiguity arising from speaker-hearer expectations, discourse context, and sentence prosody, in order to focus as well as can be accomplished on the interpretation of NPQs that is most likely to arise from their structure alone. First, however, in the following section, I will briefly review previous experiments that have attempted to incorporate discourse context and control for pragmatic variables, showing why such experiments lead to a multiplicity of uncontrolled and unexpected variables.

### 3.7 Summary

This chapter, as the main chapter of the current dissertation, has offered an overview of the syntax, semantics, and pragmatics of *yes-no* questions and following answers. Taking a closer look at Holmberg's 3-way (HIGHEST, MIDDLE, and LOW) analysis of negation, the chapter examined English and Korean PPQs and NPQs in detail. The examples presented in this chapter showed that these languages share two distinct types of NPQs, which either involve negation within the verb phrase or outside of it.

Revisiting Kramer and Rawlins (2009) and Holmberg (2013, 2016), I proposed that when answering NPQs in English, both truth-based and polarity-based interpretations are possible. A similar investigation into Korean NPQs showed that two types of Korean negation, SFN and LFN, lead to different interpretations of the Korean NPQ. Given the structural similarity of NPQs between two languages, it was found that an English NPQ with contracted negation and a Korean NPQ with LFN are typically interpreted as NPQs with VP-external negation, while an English NPQ with non-contracted negation and a

Korean NPQ with SFN are typically interpreted as NPQs with VP-internal negation. This finding goes against the traditional typology of answering patterns.

However, in both English and Korean NPQs, the location of the negator has an impact on the interpretation of the NPQs, but it does not completely determine it. That is, the interpretations are merely canonical and typical, rather than definitive and semantically rigid. In order to provide a more comprehensive explanation for the ambiguity of NPQs in natural languages, previous analyses needed to be integrated into a more straightforward and comprehensive explanation. As a result, this chapter has introduced the PIN-PEN dichotomy, which considers both the form and meaning of NPQ constructions. If the negative morpheme negates the proposition expressed in the question, it is considered *Proposition Internal Negation* (PIN), and if the negative morpheme does not affect the truth condition of the proposition, it is considered *Proposition External Negation* (PEN).

Towards the end of this chapter, it was highlighted that NPQs can sometimes have semantic ambiguity, and it was suggested that the pragmatics of NPQs must also be taken into account to fully comprehend their meaning. In an attempt to address the importance of speakers' beliefs or biases, Ladd's semantic/pragmatic analysis of NPQs proposes that negation can either be inside or outside the proposition depending on the questioner's expectations. Furthermore, Romero & Han's semantic and pragmatic analysis of preposed and non-preposed NPQs offers a useful explanation for comprehending an epistemic implicature that arises from a VERUM operator in NPQs.

## CHAPTER 4

### L1 INTERPRETATION OF POLAR QUESTIONS

#### 4.1 Introduction

This chapter explores the syntax and semantics of NPQs by analyzing L1 English and L1 Korean speakers' responses to PQs in linguistically decontextualized conditions to better understand their structure and meaning. Since so much of NPQ interpretation relies on speaker and hearer expectations, I conjecture that, by testing native speakers' responses to NPQs without linguistic contextual evidence, it might be able to better ascertain the underlying syntax and semantics of NPQs. Of course, it is possible that suppressing conversational contexts in online experiments might enhance the noise instead of removing it, due to implicit uncontrolled pragmatic biases. While I acknowledge this as a distinct possibility and a potential confound, it should be noted that presenting conversational contexts injects other uncertainties (cf. Section 4.2). Instead, by eliminating contextual information (as much as possible), I hypothesize that L1 speakers might interpret an ambiguous NPQ based on its intrinsic syntactic structure and semantic denotation. Also, by testing both English and Korean speakers' responses to the NPQ structures in their own language, I hope to ascertain any noteworthy cross-linguistic differences.

#### 4.2 Previous experimental findings on the interpretation of PQs

In four recent studies that investigated how native speakers respond to PQs, the experimental subjects were provided with articulated conversational contexts. The studies

referenced are Roelofsen et al. (2012), Kramer & Rawlins (2012) (as reported in Roelofsen & Farkas 2015), González-Fuente et al. (2015), and Claus et al. (2017). The first two studies focused on English PQs, while the others examined Catalan/Russian and German PQs. None of these, or any others that I am currently aware of, examine PQs in Korean.

Overall, I agree that the experimental methods used in these studies are appropriate for investigating the syntax and semantics of PQs and how native speakers respond to them. It is also understandable that contextually generated speaker-hearer expectations play a role in generating such responses. However, it is important to acknowledge that controlling for conversational context is challenging, and there are limitations to the methods used in prior research. I find, looking at the stimuli and their constructed contexts, that it is nearly impossible to precisely control for (i) experimental subject biases which may not correlate with researchers' expectations, and (ii) unanticipated conversational implicatures which arise from the presentation of said stimuli. Despite these limitations, these studies support the idea that different languages generate a range of PIN- and PEN-NPQs, and it is not accurate to categorize languages as either "polarity-based" or "truth-based." I will discuss each of these points in more detail below.

Roelofsen et al. (2012) conducted a series of experiments to assess the felicity of PQs in various discourse contexts, while attempting to control for *speaker belief* (SB) and *contextual evidence* (CE). In their experiments, they presented participants with stimuli consisting of 3-panel cartoons, as shown in Figure 4.1, and ask them to judge the naturalness of a target PQ in the last panel. The PQ options tested included PPQs (e.g., *Did she get a cat?*), High-negation NPQs (e.g., *Didn't she get a cat?*), and Low-negation NPQs (e.g., *Did she not buy a cat?*).

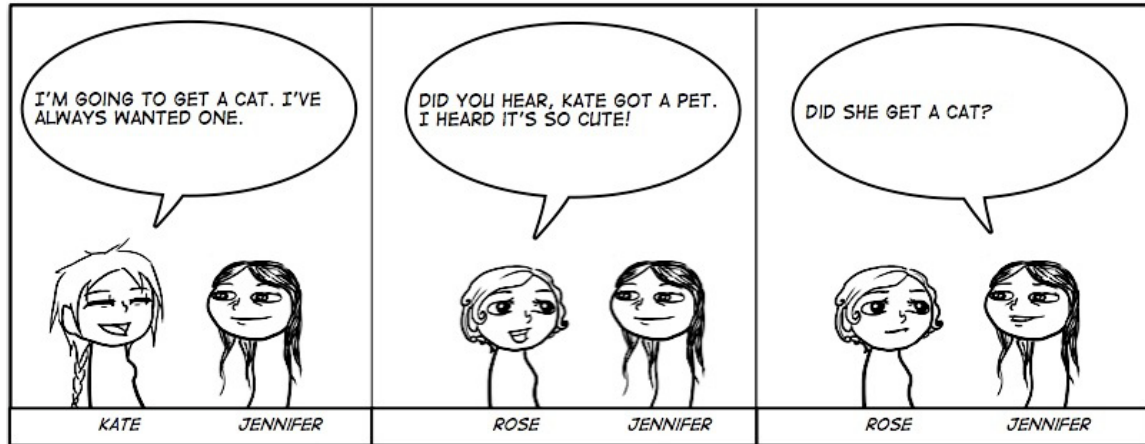


Figure 4.1 An example stimulus for testing PPQ Felicity in Roelofsen et al. (2012)

In the stimulus, the first panel is intended to reveal SB, and the second panel is intended to provide CE. Example (1) illustrates the three SB conditions that are manipulated, and example (2) illustrates the three CE conditions.

- (1) Kate to Jennifer: *I'm going to get a **cat**.* (positive SB)  
 Kate to Jennifer: *I'm going to get a **pet**.* (neutral SB)  
 Kate to Jennifer: *I'm going to get a **dog**.* (negative SB)
- (2) Rose to Jennifer: *Kate got a **cat**.* (positive CE)  
 Rose to Jennifer: *Kate got a **pet**.* (neutral CE)  
 Rose to Jennifer: *Kate got a **dog**.* (negative CE)

In the third picture, participants were asked to judge the naturalness of the target question (e.g., *Did she get a cat?*) on a scale from 1 (completely natural) to 7 (completely unnatural).

The experiments conducted by Roelofsen et al. (2012) demonstrated that the appropriateness of different types of PQs is impacted by both SB and CE. The results showed that all three PQ types were considered more acceptable in positive and neutral SB

conditions, as opposed to negative SB conditions. Furthermore, High-negation NPQs were deemed more acceptable when there was no strong contextual evidence present, while Low-negation NPQs were judged to be more appropriate in negative and neutral CE conditions, but less so in positive CE conditions.

Although the results of Roelofsen et al.'s experiments shed some light on the nature of PQs, they do not indicate how participants actually interpreted the PQs that they were asked to judge. While acceptability judgements can be a window into interpretation and (hence) structure, they do not alone provide this. It is further the case that these experiments presumed that the interpretation of any given PQ type is stable and uniform. In other words, they assumed that each PQ type (i.e., PPQs, High-negation NPQs, and Low-negation NPQs) had a stable and uniform interpretation, but as discussed in previous chapters, this assumption is not supportable. Therefore, since Roelofsen et al.'s experiments did not account for this variability, they cannot definitively establish how participants interpreted and structured the PQ stimuli.

To improve upon Roelofsen et al.'s (2012) study, Kramer & Rawlins (2012) (as described in Roelofsen & Farkas 2015) utilized a felicity judgement task that involved positive and negative answer choices. This experiment used a 2x2x2 design where the conditions manipulated were the context (positive vs. negative), PQ type (PPQ vs. NPQ), and answer (*yes* vs. *no*). Participants were asked to judge the felicity of a *yes* or *no* answer under each of the previous 4 conditions. In addition, they were also asked whether the *yes* or *no* answer was true or not and could respond with 'true', 'false', or 'unsure'. Examples (3) and (4) illustrate two (out of eight) possible scenarios. In (3), the context and PQ are



both positive, and the answer is negative. Conversely, in (4), the context and PQ are both negative, and the answer is positive.

- (3) [Context: John was supposed to send an email to a customer. Bill helped John write it and finally send it. Sue wasn't involved at all and doesn't know this.]  
(Positive context)

Sue: Did John send the email? (Positive question)

Bill: No. (Negative answer)

- (4) [Context: John was planning to take a vacation soon. Bill is John's boss and knows that he didn't go on vacation. Sue just noticed John's car in the parking lot.] (Negative context)

Sue: Did John **not** take his vacation? (Negative question)

Bill: Yes. (Positive answer)

In sum, the results from this experiment showed that participants to be more certain in answering PPQs than NPQs. Additionally, it was found that both *yes* and *no* answers to NPQs were more frequently used to confirm the negation of a proposition than to reject it.

The methodology used in the experiments has some issues, such as the possibility that the manipulated conditions may not be controlled as intended. In (3), even in the positively induced context, Sue actually does not know if John sent an email or not. This context does not offer sufficient information to presume the positive bias/expectation. Thus, Sue's positive question (i.e., *Did John send the email?*) is simply neutral and might indeed not be biased to a positive (or negative) expectation. In addition, in (4), Sue's question (i.e., *Did John **not** take his vacation?*) is a middle-negation NPQ that is semantically and

syntactically ambiguous, meaning it could be interpreted as either a PIN-NPQ or a PEN-NPQ depending on the questioner's intention. In the current scenario, participants may face confusion in determining the felicity of a positive or negative answer, as Sue could ask for the truth of either proposition. To avoid ambiguity, it would have been preferable to use clear High-negation and Low-negation NPQs in positive and negative contexts, instead of the uncertain Middle-negation NPQs. However, this would require a more complex experimental design, such as a 2x2x3 or a 2x2x2x2, which could be more difficult to analyze statistically.

Similar shortcomings are found in other studies as well. For instance, González-Fuente et al. (2015) used a PPQ-NPQ condition in their experiment with Catalan and Russian stimuli. However, their NPQ condition only included Middle-negation NPQs (such as “Has the deliveryman **not** come yet?”), which they presented as if the NPQs were unambiguously PIN-NPQs (although they are not). More importantly, correctly noting that “*prosody* and *gesture* have been largely ignored in the theoretical research”, they provide experimental evidence proving that even with a decidable discourse context “intonation and gesture patterns can imply different sets of pragmatic implicatures across languages.” The experiment described in Claus et al. (2017), in which German participants judged the acceptability of certain phrases, added further complexity to the issue. Their findings revealed, in addition to the expected complexities and ambiguities arising from discourse context and speaker-hearer expectations, that German participants themselves could be divided into two groups. The majority group preferred to use *ja* ‘yes’ to affirm negative antecedents and *nein* ‘no’ to reject them, while the other group used *nein* to affirm negative antecedents and *ja* to reject them.

Taken altogether, it seems reasonable to say that when planning an experiment to investigate the meaning of NPQs, it is almost impossible to completely and accurately control for: (i) speaker-hearer beliefs and expectations, (ii) textual ambiguity or vagueness, and (iii) individual speaker preferences and variation. Thus, while these experiments (and others like them) may justifiably attempt to control for discourse-participant expectations and the implicatures arising from them, effectively doing so can be exceedingly challenging, and the experimental findings that arise from such attempts may be difficult to evaluate and analyze.

#### 4.3 Measuring the interpretation of NPQs in linguistically decontextualized conditions

As observed in the previous section, the difficulties in ascertaining the structure and interpretation of NPQs concern the fact that they nearly always invoke pragmatically induced presuppositions, relying as they do on contextual evidence (CE), speaker beliefs (SB), and hearer expectations (HE). The experiments discussed in Section 4.2 attempted to control SB by providing linguistic CE to experimental subjects. However, as noted, textual contexts can often be vague or ambiguous, resulting in unanticipated conversational implicatures, and the NPQ experimental stimuli can also be structurally ambiguous. The combination of unclear contexts and potentially ambiguous stimuli can create uncertainty in the results or complicate conditions and lead to confounding results.

In the current experimental study, described here below, I have ventured to control for SB in a manner that is not dependent on managing all the uncertainties of conversational implicatures. To ensure greater certainty about participants' beliefs, the method used in the experiments involves presenting them with ontologically based contextual evidence rather than linguistically constructed ones. The experiments were designed with the explicit goal

of determining the interpretation of different types of NPQs in the absence of any linguistic context (Park and Dubinsky, 2019). As I noted earlier, the rationale for testing NPQs in linguistically decontextualized conditions is that their interpretation in natural conversation is influenced by various factors such as CE, SB, and HE, which are conveyed through a range of means including linguistic context, situational evidence, speaker prosody, and speaker gestures. Given that it is virtually impossible to control for all of these factors, the best alternative is to attempt to determine the fundamental meaning of NPQs without any conversational contexts, relying solely on ontological context. This, it is hoped, will enable us to gain a clearer understanding of the precise underlying structure of NPQs and their interpretation.

#### 4.3.1 Experimental design

This section outlines a series of online experiments conducted to test how English and Korean speakers process the three varieties of *yes-no* questions mentioned earlier. The goal of the current experiments is to test how native speakers of these two languages respond to PPQs, high-negation NPQs, and low-negation NPQs, with the specific aim of uncovering differences in responses to PIN- and PEN-NPQs. The three-experiment series for each language is divided as follows, where each experiment manipulated one of the following contrasts:

- Experiment 1 tested PPQs vs. high-negation NPQs
- Experiment 2 tested PPQs vs. low-negation NPQs
- Experiment 3 tested PPQs vs. high-negation NPQs vs. low-negation NPQs

Noting again that the denotation of a PPQ is truth-conditionally the opposite of a low-negation NPQ, and the same as a high-negation NPQ, I observed that the use of either (PIN

vs. PEN) is ordinarily triggered by speaker expectations and conversational context. Thus, the rationale for testing PQs in linguistically decontextualized conditions is that NPQs are found (as we have noted above) to rely heavily on pragmatic context for their interpretation, and presenting them to subjects outside the realm of discourse might afford a clearer view of their underlying syntactic and semantic structure than could be had within the context of speaker-hearer expectations.<sup>8</sup> The current experiments are explicitly constructed to find out, as accurately as possible, how L1 English and Korean speakers would respond to different types of PQs when there is no linguistic context. The research questions that this particular experiment aims to investigate are:

Q1. How are NPQs interpreted in linguistically decontextualized conditions?

Q2. Is there a relationship between the position of negation and the interpretation of NPQs, which corresponds to the PIN/PEN dichotomy?

Q3. Are there language-particular differences in native-speaker interpretations of two distinct NPQ structures?

A series of three experiments is conducted for each language, using DMDX Display Software<sup>i</sup> to monitor participants' response times (RTs) and unexpected responses (UERs). Participants are also provided an opportunity to explain the meaning of their responses to experimental items, following the experiment. The reason for tracking RTs and UERs is that some questions might take a longer amount of RT to process on account of some level of morphosyntactic complexity, but still be answered in accordance with typical expectations because their interpretation is not ambiguous in any way. Likewise, other

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<sup>8</sup> As normally expected, suppressing conversational contexts in the experiment might enhance the noise instead of removing it, due to implicit uncontrolled pragmatic biases. Acknowledging this as a possible and potential confound, I also note that presenting conversational contexts injects other uncertainties, it being difficult to create contexts that are uniformly interpreted.

questions might trigger more UERs because their truth value is not straightforwardly recoverable without context but will be answered quickly because their structure is not particularly complex. I note that NPQs in general are more complex and ambiguous than PPQs, but the (morphosyntactic and semantic) differences between PIN-NPQs and PEN-NPQs are not necessarily as straightforward.

For each experimental item, participants are presented with two successive slides: 1) a slide displaying a symbol having a particular shape and a particular color, and 2) a slide displaying a written question with two possible answer choices. Figures 4.2a and 4.2b illustrate this.

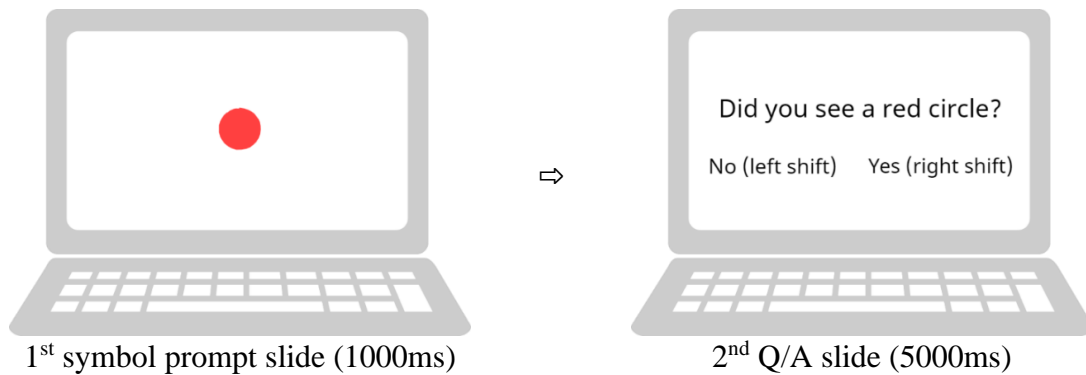


Figure 4.2a: Illustration of slides in experimental items

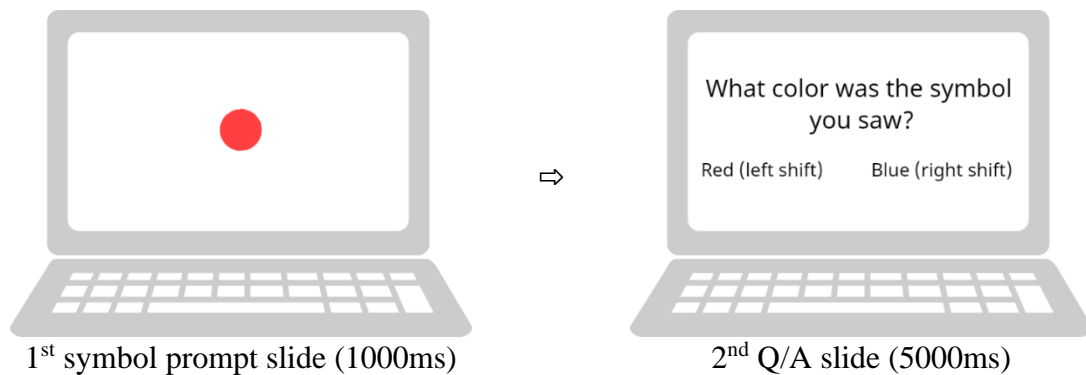


Figure 4.2b: Illustration of slides in filler items

As shown in Figure 4.2a and 4.2b, the first symbol prompt slide randomly displayed, for 1000ms, one of five different symbols (triangle, star, square, X, or circle) in one of five different colors (red, blue, black, yellow, or green). This allowed for twenty-five ( $5 \times 5$ ) different possible visual prompts. The second Q/A slide presented a question about the symbol presented in the 1<sup>st</sup> slide. This 2<sup>nd</sup> slide randomly presented, for 5000ms, either an experimental PQ (Figure 4.2a) or a filler question (Figure 4.2b), together with two possible answers. While the Q/A slide was shown, participants were to read the presented question and then choose their answer by pressing either the right shift-key or left shift-key on the keyboard. For experimental items, the shift keys corresponded to *yes* and *no* (Figure 4.2a), and for filler items the shift keys corresponded to color/shape terms (Figure 4.2b). To prevent any delays that might arise from having to find the key for *yes* and the key for *no*, I fixed the position of *yes/no* answers, such that *yes* was consistently on the right and *no* was consistently on the left.

Following each 2<sup>nd</sup> Q/A slide, a new pair of a symbol and a Q/A slide was presented until the experiment ended. There was no pause or delay between the presentation of symbol slides and the presentation of subsequent Q/A slides. Figure 4.2c illustrates a random sampling of symbol prompts used in the experiments.



Figure 4.2c: Example of Random Symbols

Since the experiments are intended to test participants' responses to linguistically decontextualized NPQs, several measures are taken to ensure that they are not exposed to

pragmatic cues. First, the visual prompts (randomly shaped and differently colored in twenty-five options) are displayed without context or background information – a symbol on a white screen. Secondly, the order of prompts was randomized, and experimental and filler questions are mixed randomly. Lastly, questions are presented in written form, to ensure that participants would not be exposed to any meta-linguistic pragmatic cues, such as stress or intonation, and the word order for the questions in Q/A slides is always canonical, such that no extraneous topic or focus effects are induced.

#### 4.3.2 Materials and subjects

Examples (5) and (6) present a sampling of English and Korean PQs used as stimuli in the current experiments. (5) and (6) each present a PPQ, a PIN-NPQ, and a PEN-NPQ. The answer choices for each, as presented in the experiment, are limited to simple *yes* and *no* (*ney* and *aniyo* in Korean) answers. In case of English NPQ (5b), without the adverb *really*, the syntactic position of negation is ambiguous between inside of or outside of VP. Thus, all English low-negation NPQ items involved the adverb to the left of *not* in order to make the position of negation clear.

- (5) a. Did you see a red circle? (PPQ)  
 b. Did you really **not** see a red circle? (Low-NPQ)  
 c. Didn't you see a red circle? (High-NPQ)
- (6) a. ppalkan      wen-ul      po-ass-na-yo? (PPQ)  
          red            circle-ACC    see-PST-Q-HON  
          'Did you see a red circle?'

(continued on p. 88)



b. ppalkan      wen-ul      **an**      po-ass-na-yo?      (SFN-NPQ)

red      circle-ACC      NEG      see-PST-Q-HON

‘Did you not see a red circle?’

c. ppalkan      wen-ul      po-ci      **anh**-ass-na-yo?      (LFN-NPQ)

red      circle-ACC      see-NMLZ      NEG.do-PST-Q-HON

‘Didn’t you see a red circle?’

In all experiments, the experimental PQs, as exemplified in (5) and (6), are mixed with filler questions composed of *wh*-questions and tag questions, as exemplified in (7) and (8) below. Fillers questions consist of three types: (i) *wh*-questions pertaining to the color of the symbol prompt, as exemplified in (7a) and (8a); (ii) *wh*-questions regarding the shape of the symbol prompt, as in (7b) and (8b); and (iii) *yes/no* tag questions, as in (7c) and (8c). The *wh*-questions have two possible answer choices, for both color (e.g., blue vs. yellow) or shape (e.g., star vs. square). The tag questions have answer choices of either *yes* or *no*.

(7) a. What color was the symbol you saw?      (English filler Q)

b. What shape was the symbol you saw?

c. You saw a red circle, didn’t you?

(8) a. mwusun      saykkkal-uy      moyang-ul      po-ass-na-yo?      (Korean filler Q)

what      color-POSS      symbol-ACC      see-PST-Q-HON

‘What color was the symbol you saw?’

b. etten      moyang-ul      po-ass-na-yo?

What      shape-ACC      see-PST-Q-HON

‘What symbol did you see?’

- c. ppalkansayk wen-ul po-ass-e-yo, kuleh-ci anh-na-yo?  
 red circle-ACC see-PST-DECL-HON right-NMLZ NEG.do-Q-HON

‘You saw a red circle, didn’t you?’

Experiments 1 and 2 presented each participant with 24 PPQs and 24 NPQs, together with 24 filler questions, for a total of 72 items. Experiment 3 presented participants with 24 PPQs, 24 high-negation (LFN) NPQs, 24 low-negation (SFN) NPQs, and 48 filler questions, for a total of 120 items. In each set of 24 experimental questions (PPQs and NPQs), 12 questions were designed to induce *yes*-answers and 12 questions to induce *no*-answers as correct choices. In the set of 24 (or 48 in Experiment 3) filler questions, 12 (24 in Experiment 3) questions were *wh*-questions, and 12 (24 in Experiment 3) questions were tag questions. A detailed summary of experimental and filler items is given in Table 4.1.

Table 4.1 Summary of stimuli

	Experiment 1	Experiment 2	Experiment 3
PPQs	12 <i>yes</i> answers	12 <i>yes</i> answers	12 <i>yes</i> answers
	Q: Did you see a red circle?	Q: Did you see a red circle?	Q: Did you see a red circle?
	A: Yes, (it was a red circle)	A: Yes, (it was a red circle)	A: Yes, (it was a red circle)
	12 <i>no</i> answers	12 <i>no</i> answers	12 <i>no</i> answers
	Q: Did you see a red circle?	Q: Did you see a red circle?	Q: Did you see a red circle?
	A: No, (it was a yellow star)	A: No, (it was a yellow star)	A: No, (it was a yellow star)
PEN-NPQs	12 <i>yes</i> answers		12 <i>yes</i> answers
	Q: Didn’t you see a red circle? -		Q: Didn’t you see a red circle?
	A: Yes, (it was a red circle)		A: Yes, (it was a red circle)
	12 <i>no</i> answers		12 <i>no</i> answers
	Q: Didn’t you see a red circle? -		Q: Didn’t you see a red circle?
	A: No, (it was a yellow star)		A: No, (it was a yellow star)
PIN-NPQs	-	12 <i>yes</i> answers	12 <i>yes</i> answers
		Q: Did you really not see a rc?	Q: Did you really not see a rc?
		A: Yes, (it was a yellow star)	A: Yes, (it was a yellow star)
		12 <i>no</i> answers	12 <i>no</i> answers
	-	Q: Did you really not see a rc?	Q: Did you really not see a rc?
		A: No, (it was a red circle)	A: No, (it was a red circle)
Filler Qs	12 <i>wh</i> -Qs	12 <i>wh</i> -Qs	24 <i>wh</i> -Qs
	12 tag-Qs	12 tag-Qs	24 tag-Qs
Total Qs	72 questions	72 questions	120 questions

All participants in both English and Korean groups are mono-lingual speakers at least seventeen years of age, who do not suffer from any severe mental and physical disorders (including color blindness) and are considered to be normal readers. Thus, no participants had problems concentrating on the repeated questions for approximately ten to fifteen minutes. Participants were tested on data from their own native language only, and no participant took part in more than one of the three experiments. Korean-speaking participants were tested in South Korea, and English-speaking participants were tested in the United States, so as to minimize any possible foreign language influence. Each of three Korean Experiments 1, 2, and 3 have 11 participants. Each of three English Experiments 1, 2, and 3 have 15 participants.<sup>9</sup>

#### 4.3.3 Post experiment in-person interview

As the participants are only required to provide simple *yes* or *no* answers to the stimuli, it is not always clear what they intended their responses to mean (even though in most instances there was little question about it). This is especially the case when participants' answers to NPQs are unexpected given the PIN-PEN dichotomy. Did they misread the stimulus? Did they misinterpret the limitedly given context? Did they subconsciously calculate an implicature that was not provided experimentally? To investigate this, participants were interviewed and asked to elaborate on the meaning behind their choice of *yes* or *no*.

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<sup>9</sup> One participant who had high UER rates on PPQ items (5/24) was removed from the results. This is done because many wrong or random answers to PPQ items (which are quite straightforward interpreted) strongly suggests that the participant was either not paying attention or not fully participating in the experiment. Except this participant, all participants in the English and Korean experiments did not make unexpected responses more than three in responding PPQs.

#### 4.4 Experimental results

The meaning of NPQs is inherently complex and ambiguous and is subject to both syntactic-semantic and pragmatic factors. The current experiments focus on the former and have tried to investigate L1 interpretation of NPQs by presenting participants with unambiguous and non-linguistic CE. By being more certain of participants' SB, we are able to better focus on the syntactic complexity and semantic ambiguity of the different NPQ forms. The findings of this experimental study provide evidence that the PIN-PEN dichotomy is generally applicable to both English and Korean languages. However, the results also reveal a significant cross-linguistic difference between English and Korean in that high-negation NPQs in English tend to have unambiguous PEN interpretations while LFN-NPQs (i.e., high-negation NPQs) in Korean are more prone to ambiguity.

##### 4.4.1 Response time (RT)

The main hypothesis tested in the current experiments concerning RTs is that morpho-syntactic and semantic complexity, along with semantic ambiguity, should result in longer RTs. That is, syntactically and semantically simpler structures should be processed in a shorter amount of time.

##### 4.4.1.1 Experimental results

In this regard, processing PPQs (having no morphological or semantic negation) should be easier and faster than NPQs. As expected, in Experiments 1 and 2, both English and Korean participants' RTs were faster for PPQs than for NPQs as shown in Figures 4.3 and 4.4: 1046ms (cf. 1114ms for English high-negation NPQs in Exp 1); 1077ms (cf. 1504ms for Korean LFN-NPQs in Exp 1); 1094ms (cf. 1996ms for English low-negation NPQs in Exp 2); and 1322ms (cf. 1907ms for Korean SFN-NPQs in Exp 2). In one of these

cases (1076ms for English PPQs vs. 1114ms for English high-negation NPQs), the difference of RTs was not statistically significant.

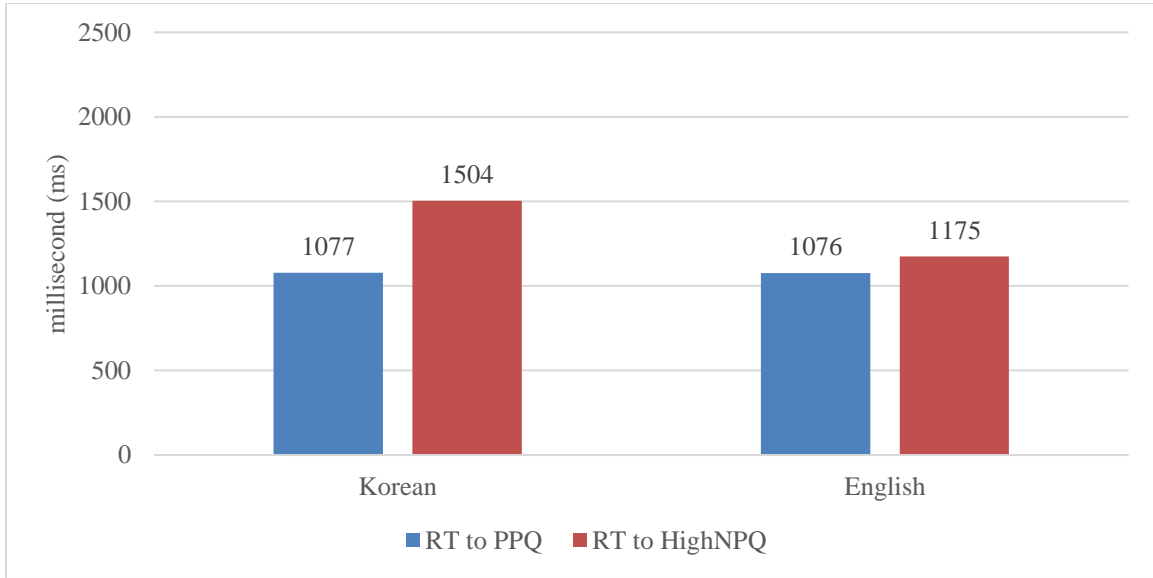


Figure 4.3 RTs for PPQ and high-negation NPQ in Experiment 1

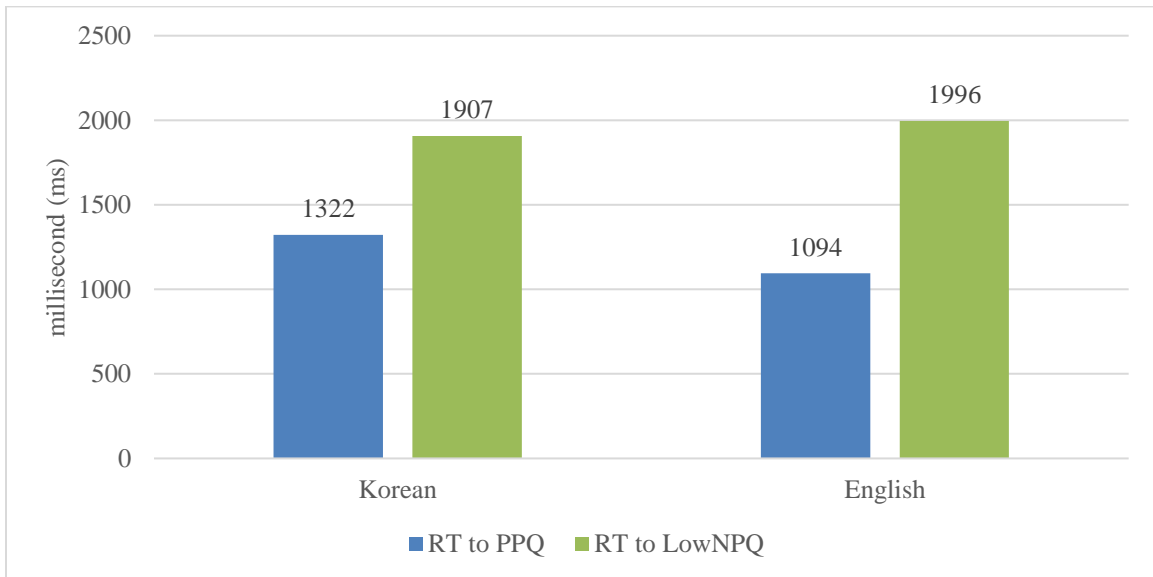


Figure 4.4 RTs for PPQ and low-negation NPQ in Experiment 2

In Experiment 1 (PPQs vs. high-negation NPQs), RTs for Korean PPQs averaged 1077.09ms, contrasting with an average RTs of 1503.64ms for LFN-NPQs,  $t(526)=-7.91$ ,

$p < .001$ . RTs for English PPQs averaged 1075.98ms, contrasting with an average RTs of 1114.12ms for high-negation NPQs,  $t(718) = -1.86$ ,  $p = .063$ . In Experiment 2 (PPQs vs. low-negation NPQs), RTs for Korean PPQs averaged 1322.24ms, contrasting with an average RTs of 1906.31ms for SFN-NPQs,  $t(526) = -9.68$ ,  $p < .001$ . Moreover, RTs for English PPQs averaged 1094.31ms, contrasting with an average RTs of 1996.17ms for low-negation NPQs,  $t(766) = -19.789$ ,  $p < .001$ .

Experiment 3 presented both low-negation NPQs and high-negation NPQs alongside PPQs and was designed to determine whether the syntactic and/or semantic complexity of the two types of NPQs might have an effect on RTs relative to each other. Interestingly, English and Korean participants show distinct patterns of responding in Experiment 3. Korean participants' RTs for LFN-NPQs (2221ms) and SFN-NPQs (2095ms) were significantly and uniformly higher than for PPQs (1437ms). In contrast, English participants' RTs for low-negation NPQs (2314ms) stood out as being significantly higher than their RTs for either high-negation NPQs (1568ms) or PPQs (1377ms). Bar graphs in Figure 4.5 illustrate the differences between two languages.

Seeing that English PPQs and high-negation NPQs are quickly processed in contrast with low-negation NPQs and that both types of Korean NPQs take more processing time than do Korean PPQs, I will explore some potential explanations for these discrepancies in following sections. In Korean, a one-way ANOVA revealed a statistically significant difference in RTs between at least two types of PQs ( $F(2, 789) = 97.529$ ,  $p < .001$ ). Tukey's test for multiple comparisons found no statistically significant difference between RTs for SFN-NPQs and RTs for LFN-NPQs ( $p = .084$ ). In English, a one-way ANOVA revealed a statistically significant difference in RTs among the three types of PQs ( $F(2, 1653) =$

249.27,  $p < .001$ ). A post hoc Tukey's Test found that the mean value of RTs was significantly different all three PQ types (PPQ-HighNPQ,  $p < .001$ , 95% C.I. = 48.17, 325.86; PPQ-LowNPQ,  $p < .001$ , 95% C.I. = 780.41, 1058.11; LowNPQ-HighNPQ,  $p < .001$ , 95% C.I. = 593.40, 871.09).

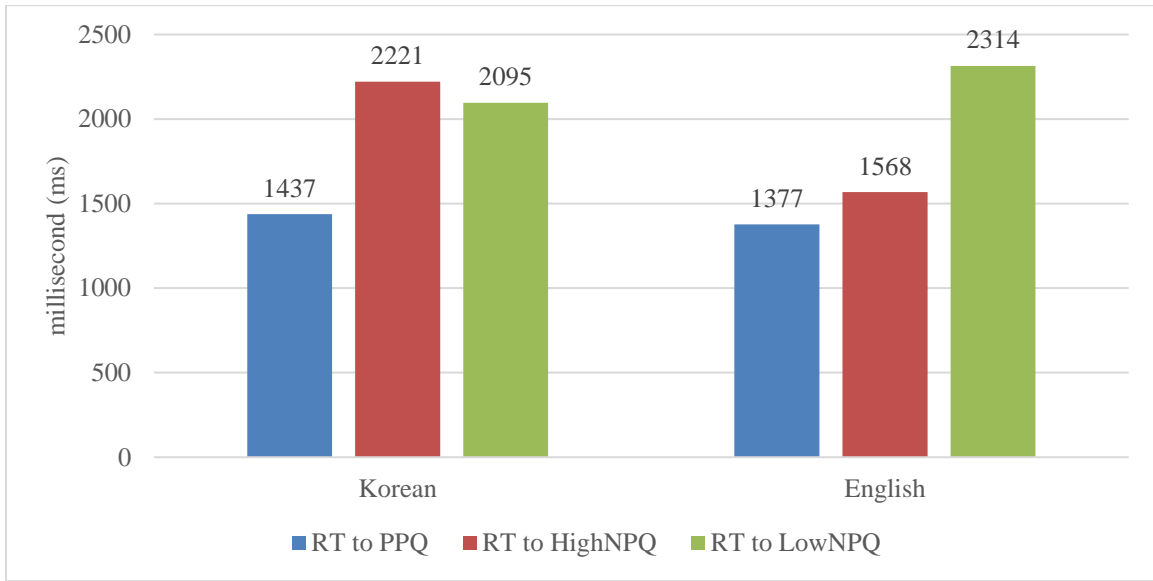


Figure 4.5 RTs for PPQ, high-negation NPQ, and low-negation NPQ in Experiment 3

The detailed results of the two sets of three experiments are summarized in Table 4.2 below:

Table 4.2 The summary of RTs in three experiments

		Experiment 1	Experiment 2	Experiment 3
Korean	PPQ	1077.09 (ms)	1322.24	1437.01
	LFN-NPQ	1503.64	-	2221.18
	SFN-NPQ	-	1906.31	2095.18
English	PPQ	1046.28	1094.31	1377.07
	High-NPQ	1114.12	-	1567.84
	Low-NPQ	-	1996.17	2314.07

#### 4.4.1.2 Discussion

The contrasting results between English and Korean in Experiment 3 invite further exploration into the data, looking at individual subject variation. Figures 4.6 and 4.7 illustrate the mean RTs for each of the three items by participant, where a blue-line tracks mean RTs for PPQs, a red-line tracks mean RTs for high-negation NPQs, and a green-line tracks mean RTs for low-negation NPQs.

As previously reported, there was no significant difference in RTs between high-negation NPQ and low-negation NPQ in Korean ( $p=.084$ ), but there was a significant difference overall between these categories in English ( $p<.001$ ). Looking at Figure 4.6 and 4.7, we can see that seven Korean participants took longer average RTs with LFN-NPQs (e.g., K052, K056, K057, K059, K065, K072, and K080), but others took longer RTs with SFN-NPQs (e.g., K070 and K078) or similar RTs between these NPQ types (e.g., K049 and K082). That is, while there was no statistical difference overall at the significance level of .05, it may be the case that some participants responded to LFN-NPQs significantly faster, and others were faster in responding to SFN-NPQs. In contrast, RTs for low-negation NPQs in English are seen to be steadily longer both overall and by participant. One English participant (e.g., E084) shows a relatively small difference between RTs for low- and high-negation NPQs, but this participant still shows slower response to low-negation NPQs than high-negation NPQs. That is, each participant in English group appears to have taken significantly longer to respond to low-negation NPQs than to high-negation NPQs.



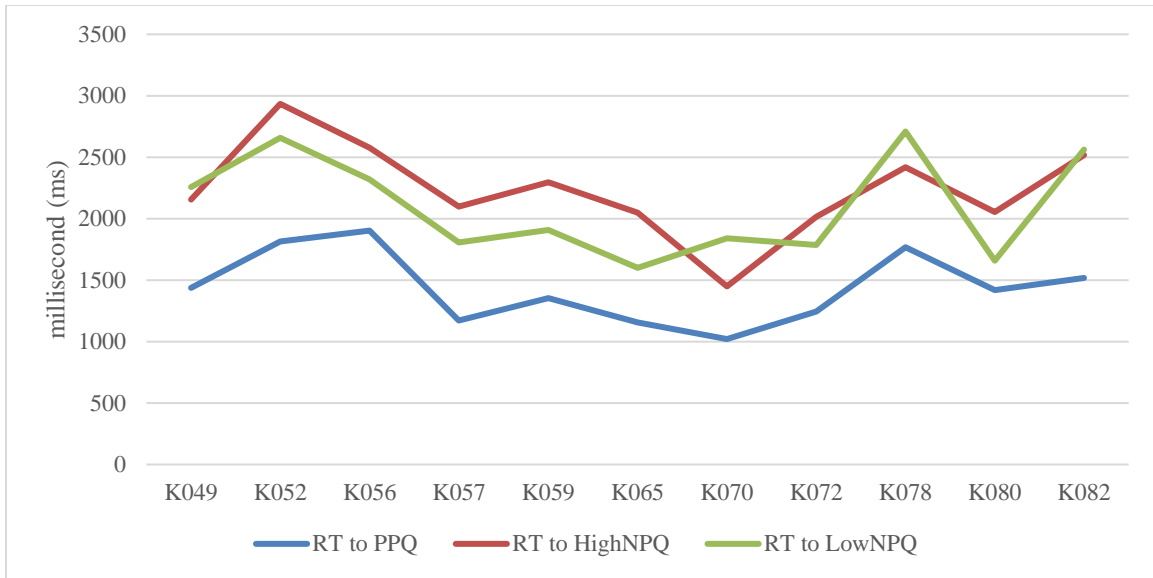


Figure 4.6 Individual RTs in Korean Experiment 3

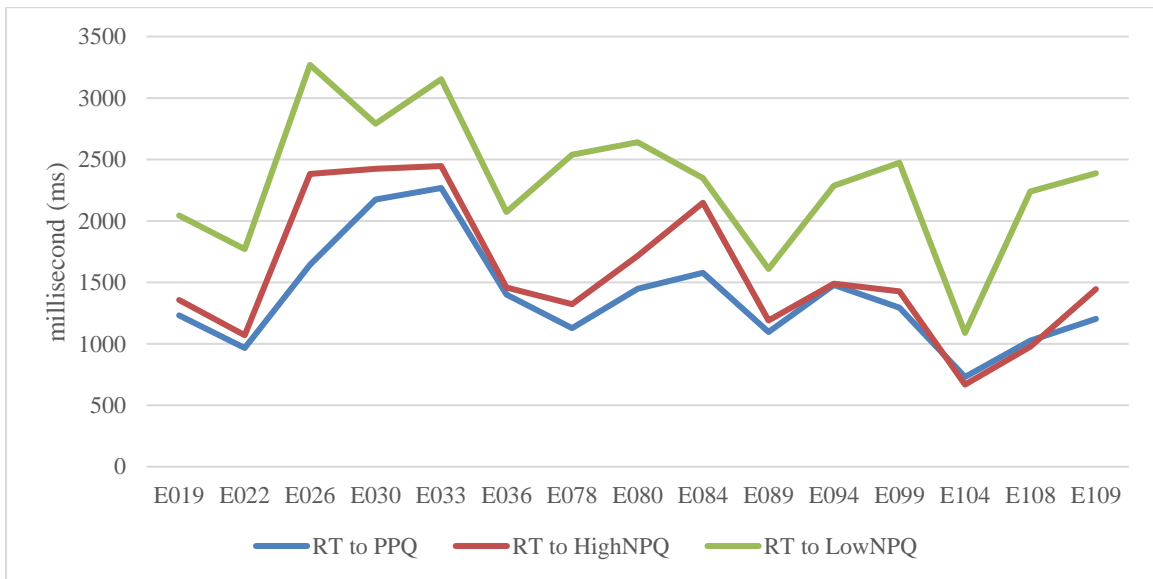


Figure 4.7 Individual RTs in English Experiment 3

There also appears to be a contrast between English and Korean regarding RTs for PPQs and high-negation NPQs. Notice that all Korean participants were significantly quicker to respond to PPQs than to either category of NPQs. In contrast, RTs for PPQ items and high-negation NPQ items seem rather similar by English participants, with the

exception of two participants (E026 and E084). So, while the mean RTs for PPQ items and high-negation NPQ items were significantly different in English ( $p < .001$ ), the difference between these two categories might be driven by certain participants. This conjecture has some further support from the results of Experiment 1. When looked at by participant, the difference in RTs for PPQ and high-negation NPQ items was not significant in Experiment 1 ( $p = .063$ ). In Figure 4.8, it appears that all English participants' RTs for PPQs and high-negation NPQs are almost the same exhibiting a similar pattern. Conclusively, in Experiment 3, I could have a similar result. Excluding the two participants who raised suspicions (E026 and E084), there was no significant effect of question type for RTs between PPQs and high-negation NPQs,  $t(526) = -1.86$ ,  $p = .063$ . In subsequent sections, it will become apparent that some of the findings related to RTs are supported by the results obtained from assessing unexpected responses.

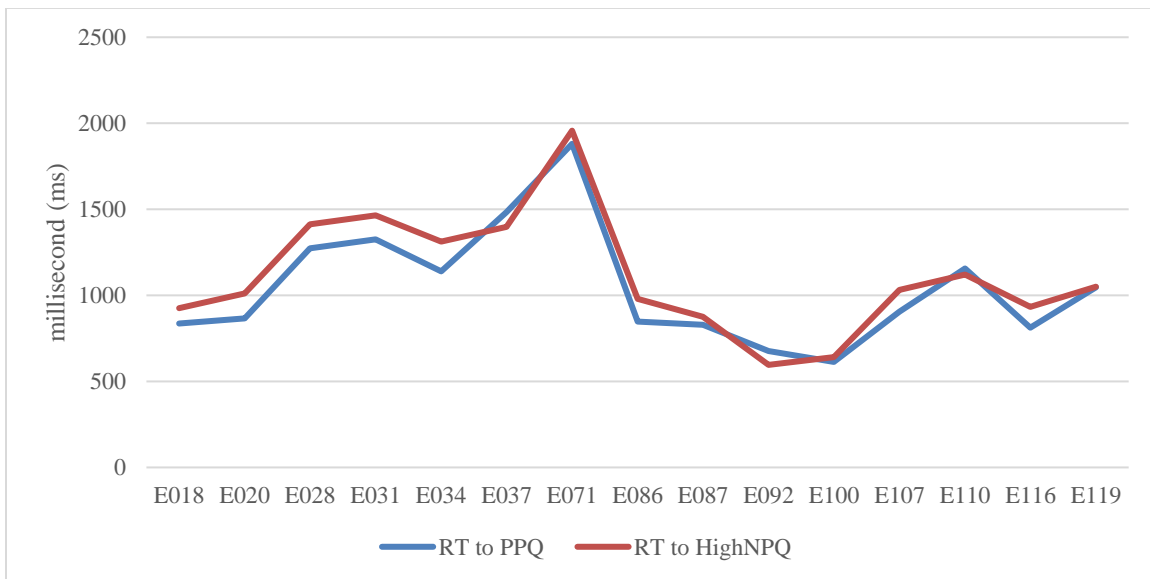


Figure 4.8 Individual RTs in English Experiment 1

#### 4.4.2 Unexpected responses (UER)

Similar to the conjecture regarding RTs, the hypothesis is that greater morpho-syntactic complexity along with semantic ambiguity would lead to a greater number of UERs. In this regard, PPQs (which lack morphological or semantic negation) should be more easily processed, and participants' responses should not likely diverge from what is expected than would be the case for NPQs, where semantic and pragmatic considerations might lead participants to make different calculations in indicating their answers.

##### 4.4.2.1 What are unexpected responses?

Prior to presenting the findings, it is important to explain the definition of **unexpected** *yes* and *no* answers to experimental stimuli. The concept of unexpected answers is slightly divergent from incorrect answers or mistakes. This is because some native speakers actually process a specific form of NPQs in an opposite way from the typical interpretation by the majority. Assessing *yes* and *no* answers to PPQ items is quite straightforward, since such questions rarely invoke conversational implicatures and certainly would not do so under our experimental conditions. For example, following the presentation of a red circle, one fully expects the answer to *Did you see a red circle?* to be *yes* and not *no*. Contrariwise, following the presentation of a green triangle, the answer to *Did you see a red circle?* would most certainly be *no*. There is no excuse for opposite answers to PPQs. In the case of NPQs, however, for which context-driven and structure-driven ambiguity is involved, calculating answers is more nuanced. As discussed previously, high negation in English and LFN in Korean do not typically alter truth-conditional meaning (i.e., these are typically PEN), and answers to these are expected to be identical to those for PPQs. And since low negation in English and SFN in Korean typically reverse the truth-conditional meaning of

their corresponding PPQ (i.e., they are typically PIN), answers to them should be the reverse of their corresponding PPQ and PEN-NPQ. Consequently, the PIN interpretation of high-negation NPQs and LFN-NPQs and the PEN interpretation of low-negation NPQs and SFN-NPQs are treated as unexpected responses.

#### 4.4.2.2 Experimental results

As expected, both English and Korean participants had more UERs to NPQ stimuli than to PPQ stimuli. In Experiment 1 (Figure 4.9), English and Korean participants had a very low UERs in answering PPQs. However, UERs for high-negation NPQs in English and Korean contrast sharply. English participants' UER for high-negation NPQs was very similar to their UER for PPQs (5.6% and 2.8%, respectively). In contrast, Korean participants' UER for LFN-NPQs was considerably higher than their UER for PPQs (22.3% and 3.4%, respectively). The difference in UERs between low-frequent negation NPQs and PPQs in Korean was statistically significant, with  $t(526)=-6.76$ ,  $p<.001$ . Although the UERs for high-negation NPQs in English were not significantly higher than those for PPQs, at 5.6% and 2.8%, respectively, there was still a minor difference, with  $t(718)=-1.87$ ,  $p=.062$ .

In Experiment 2 (Figure 4.10), the results showed that English and Korean participants had comparable UERs for PPQs and low-negation NPQs, demonstrating a similar trend. Both groups had low UERs for PPQs and high UERs for low-negation NPQs. First, Korean participants' UER for SFN-NPQs was significantly higher than for PPQs. The average UER for PPQs was only 2.7%, while the average UER for SFN-NPQs was 31.3%, with a significant difference of  $t(526)=-9.41$ ,  $p<.001$ . Similarly, English participants had higher UERs for low-negation NPQs than for PPQs. The average UER for PPQs was only 2.1%,

while the average UER for low-negation NPQs was 26.6%, with a significant difference of  $t(766)=-10.80, p<.001$ .

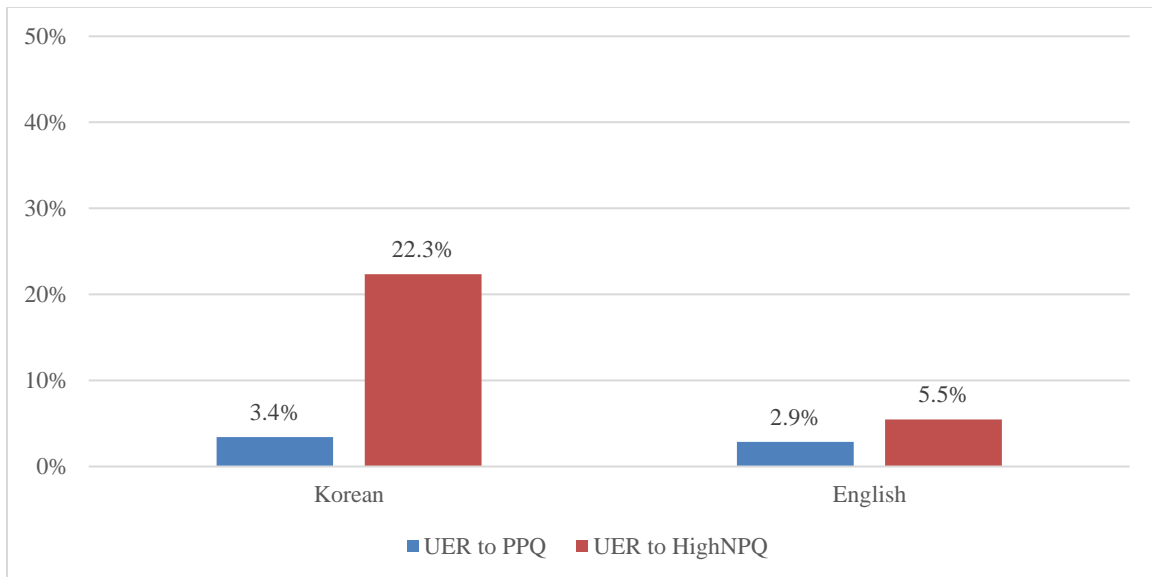


Figure 4.9 Unexpected Response Rates in Experiment 1

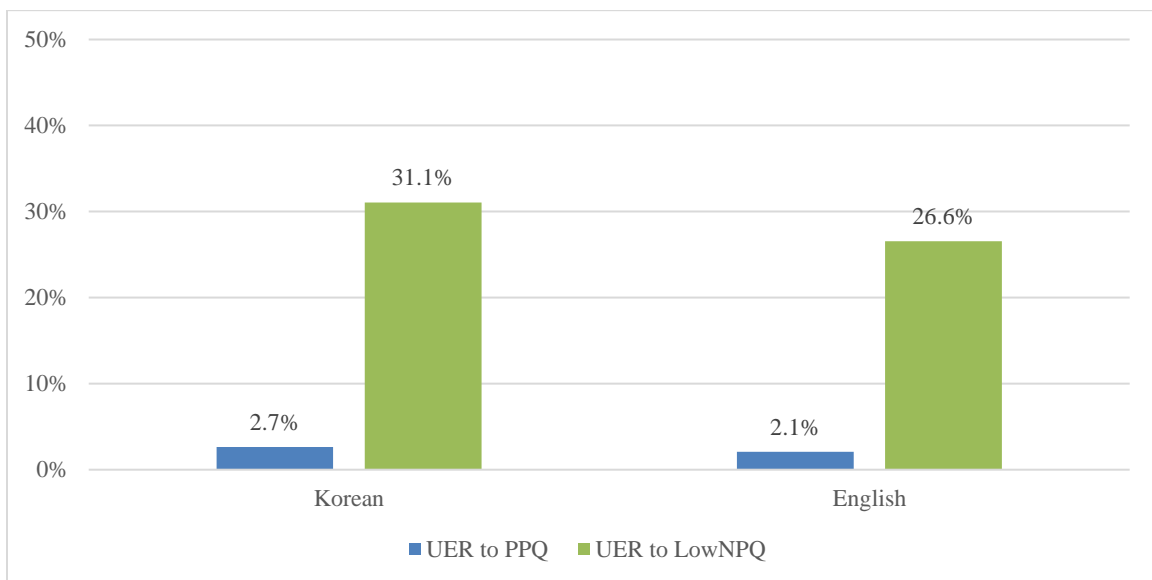


Figure 4.10 Unexpected Response Rates in Experiment 2

When looking at Experiments 1 and 2 collectively, it seems that English NPQs with high negation may be easier to understand or less confusing than those with low negation. Additionally, it appears that Korean NPQs with SFN and LFN may have a similar level of ambiguity or difficulty in comprehension.

Experiment 3, included both low and high negation NPQs and PPQs, was designed to explore whether the syntactic and semantic complexity of the two types of NPQs affect the proportion of UERs relative to each other. Results in the English and Korean versions of Experiment 3 contrasted strongly. In Korean, LFN-NPQs had the highest UER at 53.4%, while SFN-NPQs had a much lower UER of 12.9%, and PPQs had an even lower UER at 2.3%. For English, I found a reversal of these UER results relative to Korean. English low-negation NPQs had the highest UER at 41.9%, while high-negation NPQs had a significantly lower UER of 9.7%, and PPQs had an even lower UER of 4.2%.

For the Korean data, a one-way ANOVA was conducted to analyze the UERs among all three groups. The results showed a statistically significant difference in UERs among all three groups ( $F(2, 789) = 147.48, p < .001$ ). Similarly, for the English data, a one-way ANOVA was conducted to analyze the UERs among all three groups. The results revealed a statistically significant difference in UERs among all three groups ( $F(2, 1653) = 170.09, p < .001$ ). Figure 4.11 shows the comparison between the UERs for Korean and English data, and Table 4.3 summarizes the overall UERs for all three experiments.

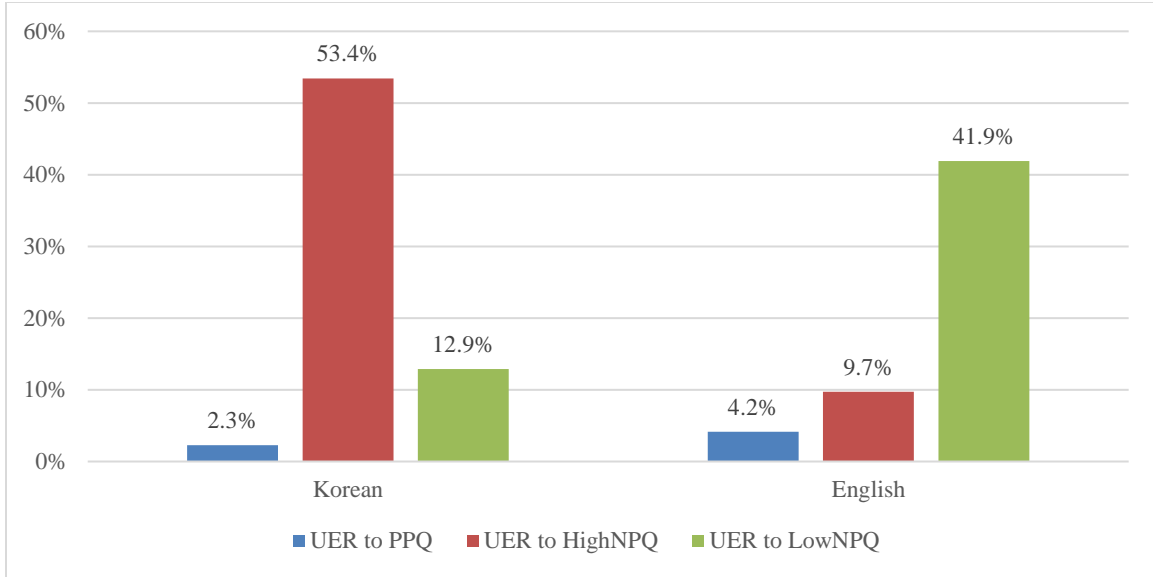


Figure 4.11 Unexpected Response Rates in Experiment 3

Table 4.3 The summary of UERs in three experiments

		Experiment 1	Experiment 2	Experiment 3
Korean	PPQ	3.4 (%)	2.7	2.3
	LFN-NPQ	22.3	-	53.4
	SFN-NPQ	-	31.3	12.9
English	PPQ	2.8	2.1	4.2
	High-NPQ	5.6	-	9.7
	Low-NPQ	-	26.6	41.9

#### 4.4.2.3 Discussion

Answering patterns in accordance with UER results collected from a series of experiments show that English and Korean participants responded three distinct types of yes-no questions differently in linguistically decontextualized conditions. As expected, answering PPQs was relatively easy and did not result in high UERs in any of the experiments. One observation that can be made across all experiments is that both language groups were generally quite accurate in answering PPQs. Since non-focused canonical PPQs (e.g., *Did you see a red circle?*) involve no particularly difficult calculations and

have no pragmatic implicatures, answering them was quite straightforward. None of the 78 participants tested recorded more than 3 errors out of 24 PPQ items seen, and the average number of PPQ errors for all participants across all experiments was 0.69 out of 24. By using the error rate for PPQs as a reference point for the participants' comprehension of the experimental conditions, it is informative to investigate response patterns in answering PIN- and PEN-NPQs.

When answering two different types of NPQs in each language (high-negation vs. low-negation in English; LFN vs. SFN in Korean), the potential syntactic complexity and semantic ambiguity may have resulted in higher UERs. In both languages, the PIN-PEN dichotomy reflected in the NPQ structures appears to have influenced participants' responses. It is obvious there is a considerable difference in UERs for two NPQ types between the language groups.

In Experiment 1, it was observed that English high-negation and Korean LFN-NPQs had substantially different UERs, indicating that the Korean LFN-NPQ is more complex or likely to be ambiguous compared to the English high-negation NPQ. In Experiment 2, it was found that the UERs for English low-negation and Korean SFN-NPQs were quite similar and both were high, suggesting that their syntactic complexity or potential for ambiguity was equally high.

These differences revealed themselves quite robustly in Experiment 3, where both NPQ types and PPQs were presented. Korean participants showed a significantly higher UER for LFN-NPQs (53.4%) compared to English participants who had a UER of 9.7% for high-negation NPQs. The responses of Korean participants to LFN-NPQs were not much better than guessing. Conversely, English participants had a much higher UER for



low-negation NPQs (41.9%) compared to Korean participants who had a UER of 12.9% for SFN-NPQs. In other words, the low UERs observed for English high-negation NPQs and Korean SFN-NPQs indicate that these structures may be less ambiguous or less syntactically complex than their corresponding constructions in each language (low-negation NPQs in English and LFN-NPQs in Korean). The fact that high-negation is easier to understand in English and SFN is more easily understood in Korean requires further explanation.

Additionally, it should be noted that potential ambiguity in certain constructions may be a factor influencing the results. In Section 3.2.3, I noted that intonational differences can render ambiguous a Korean NPQ constructed using LFN. This factor, coupled with the fact that participants only read (and did not hear) the written stimuli on a screen in the current experiments, might have contributed to their confusion about the meaning of this category. With no intonational stimulus or pragmatic context to guide them, participants might have simply guessed (or imagined an intonational contour that would lead to the wrong interpretation). In the English low-negation NPQ case, we have the opposite problem, wherein it is uncontracted negation that can be ambiguous between PIN and PEN. While the low-negation NPQs in the English experiment involved an adverb to the left of *not* in order to force the PIN reading, it is unclear whether all participants noticed or responded to this negation in the same way.

The UER results we have discussed are a broad summary of the data gathered from all the participants. However, upon closer examination of individual participant results, some notable patterns emerge. The tables presented below show the number of UERs made by each participant for each type of experimental item, out of a total of 24 items per category.

As shown in Figure 4.9 above, Experiment 1 demonstrated that the UERs for high-negation NPQs were considerably higher than those for PPQs in Korean (22.3%) compared to English (5.6%). Further examination of individual participant results, as shown in Tables 4.4 and 4.5, indicates that the relatively higher UERs for LFN-NPQs in Korean were mainly due to the performance of three participants (K067, K069, and K079). If these three participants are excluded from the analysis, the UERs for the remaining eight participants are nearly identical to those of English participants (i.e., 11 UERs from 8 Korean participants (5.7%) and 20 UERs from 15 English participants (5.6%)). It is a reasonable conjecture that participant K067 had a reversed understanding of the meaning of the LFN-NPQ stimulus, having gotten 21 out of 24 of the items opposite. In the case of participants K069 and K079, they might have answered randomly or were uncertain about the meaning of the construction. It would be fair to conclude that almost none of the participants in the English group were unsure about the meaning of a high-negation NPQ since they made an average of only 1.33 UER out of 24 items in this category.

Experiment 2 results reveal that, as illustrated in Figure 4.10, the UERs for low-negation NPQs were substantially higher in both Korean (31.1%) and English (26.6%) compared to the PPQs. However, when examining the individual data in Tables 4.6 and 4.7, it can be observed that the significantly high UERs for low-negation NPQs in each language group were largely due to the performance of several participants. Specifically, K058, K066, and K081 accounted for nearly 60% (49/82) of all UERs in the Korean group, and E025, E029, E038, and E079 accounted for 56% (56/100) of all UERs in the English group.

Table 4.4 Individual UERs to PPQs and LFN-NPQs in Korean Experiment 1

Participant	PPQ UERs	LFN-NPQ UERs
K050	3	0
K053	0	0
K060	0	0
K062	0	1
K063	0	6
<b>K067*</b>	<b>1</b>	<b>21</b>
<b>K069*</b>	<b>2</b>	<b>12</b>
K073	1	1
K076	0	2
K077	0	1
<b>K079*</b>	<b>2</b>	<b>15</b>
Total	9	59

Table 4.5 Individual UERs to PPQs and high-NPQs in English Experiment 1

Participant	PPQs UERs	High-negation NPQ UERs
E018	1	0
E020	2	4
E028	1	1
E031	0	1
E034	0	1
E037	1	1
E071	0	1
E086	0	1
E087	2	3
E092	0	1
E100	0	1
E107	1	1
E110	1	2
E116	1	1
E119	0	1
Total	10	20

Table 4.6 Individual UERs to PPQs and SFN-NPQs in Korean Experiment 2

Participant	PPQs UERs	SFN-NPQ UERs
K051	0	6
K054	0	2
K055	3	3
<b>K058*</b>	<b>1</b>	<b>10</b>
K061	0	3
K064	1	9
<b>K066*</b>	<b>1</b>	<b>21</b>
K068	0	1
K071	1	6
K075	0	3
<b>K081*</b>	<b>0</b>	<b>18</b>
Total	7	82

Table 4.7 Individual UERs to PPQs and low-NPQs in English Experiment 2

Participant	PPQ UERs	Low-negation NPQ UERs
E017	1	2
E023	0	3
E024	1	6
<b>E025*</b>	<b>1</b>	<b>13</b>
<b>E029*</b>	<b>0</b>	<b>17</b>
E032	0	2
<b>E038*</b>	<b>0</b>	<b>16</b>
<b>E079*</b>	<b>0</b>	<b>10</b>
E088	0	2
E091	0	4
E097	0	4
E105	0	2
E106	3	6
E111	1	7
E115	0	6
Total	7	100

After examining the individual participant errors in Experiment 2, some insights can be drawn. Firstly, it seems that both SFN and LFN constructions (i.e., PIN and PEN interpretations) can be challenging for certain Korean participants. Secondly, there is a possibility that PIN constructions are generally more difficult to comprehend for some

speakers across languages, but more research is needed to support this claim. Lastly, it can be inferred that English speakers have a clear understanding of PEN constructions as they rarely make errors in interpreting them.

The findings from Experiment 3, illustrated in Figure 4.11, indicate that there were marked differences in the results when comparing the Korean and English groups. Specifically, when looking at LFN-NPQs in Korean, the UER was 53.4%, whereas it was only 12.9% for SFN-NPQs. Conversely, in English, the low-negation NPQs had an UER of 41.9%, while the high-negation NPQs had an UER of 9.7%. The Korean data suggests that there was a greater amount of confusion when presented with both LFN-NPQs and SFN-NPQs. Specifically, four out of eleven participants (K056, K057, K059, and K080) consistently answered LFN-NPQs as if they were SFN-NPQs. Additionally, three participants (K049, K065, and K082) provided inconsistent responses to LFN-NPQs, in contrast to their responses to SFN-NPQs. Only two participants (K072 and K078) interpreted both categories as expected. These findings are presented in Table 4.8.

In the English Experiment 3, the results were opposite to those observed in the Korean Experiment 3. Very few participants were confused by the high-negation NPQ stimuli, whereas seven out of fifteen participants had difficulty with the low-negation NPQ category. Specifically, three participants (E036, E080, and E084) consistently answered low-negation NPQs as if they were high-negation NPQs. Additionally, four participants (E026, E078, E104, and E108) provided inconsistent responses to low-negation NPQs. Three participants (E022, E089, and E094) were able to interpret both categories as expected without confusion. These findings are presented in Table 4.9.

Table 4.8 Individual UERs to PPQs, LFN- and SFN-NPQs in Korean Experiment 3

Participant	PPQ UERs	LFN-NPQ UERs	SFN-NPQ UERs
K049	0	14	4
K052	0	8	3
<b>K056*</b>	<b>3</b>	<b>22</b>	<b>2</b>
<b>K057*</b>	<b>0</b>	<b>22</b>	<b>1</b>
<b>K059*</b>	<b>0</b>	<b>21</b>	<b>1</b>
K065	2	12	6
K070	0	2	10
K072	0	2	3
K078	1	3	2
<b>K080*</b>	<b>0</b>	<b>23</b>	<b>0</b>
K082	0	12	2
Total	6	141	34

Table 4.9 Individual UERs to PPQs, high- and low-NPQs in English Experiment 3

Participant	PPQ <i>Errors</i>	PEN-NPQ <i>Errors</i>	PIN-NPQ <i>Errors</i>
E019	1	2	7
E022	0	1	3
<b>E026*</b>	<b>3</b>	<b>6</b>	<b>12</b>
E030	0	5	5
E033	1	2	4
<b>E036*</b>	<b>0</b>	<b>2</b>	<b>24</b>
<b>E078*</b>	<b>1</b>	<b>3</b>	<b>16</b>
<b>E080*</b>	<b>3</b>	<b>4</b>	<b>19</b>
<b>E084*</b>	<b>0</b>	<b>2</b>	<b>19</b>
E089	0	1	0
E094	1	1	0
E099	1	2	4
<b>E104*</b>	<b>3</b>	<b>1</b>	<b>14</b>
<b>E108*</b>	<b>1</b>	<b>1</b>	<b>15</b>
E109	0	2	7
Total	15	35	149

#### 4.4.3 Data elaborating upon post-experiment interviews

Post-experiment interviews of participants reveal some interesting insights into inter-personal variation. As shown in Figure 4.11 and Tables 4.8 and 4.9, Korean-speaking participants had a tendency to produce high numbers of UERs in response to LFN-NPQ

stimuli (i.e., PEN-NPQs), while English-speaking participants tended to have high numbers of UERs in response to low-negation NPQ stimuli (i.e., PIN-NPQs). This could be due to two potential factors: ambiguity and frequency. In the case of Korean, it is assumed that LFN constructions can be derived in two ways syntactically – one in which negation is lowered into the VP and one in which negation is raised into the inflectional periphery (see Chapter 2). It is also the case that SFN is more frequently used in spoken Korean and more rigidly interpreted as PIN. Thus, for Korean, the LFN constructions (used for PEN-NPQs) is both rare and ambiguous. On the other hand, for English, it is the low-negation NPQs (e.g., *Did you really not go?*) which are problematic in a similar way. Without the framing adverb *really*, such questions are truly ambiguous. Also, low-negation is infrequent in English as compared with high-negation that is contracted into the auxiliary complex. Thus, for English participants, it is the low-negation stimuli (utilized for PIN-NPQs) that are more difficult and ambiguous to respond.

The post-experiment interviews with participants confirmed that Korean speakers had difficulties in understanding LFN-NPQs, while English speakers had difficulties in comprehending the meaning of low-negation NPQs, as expected based on the experimental results. Interestingly, some English-speaking participants who had a high number of UERs in the experiment showed a good and conventional understanding of the PIN-PEN dichotomy during their interview. This difference in performance between the experiment and the interview may be due to the fact that participants had more time to think about the meaning of ambiguous structures during the interview. In contrast, some participants who had no difficulty in responding to the NPQs as expected during the experiment, experienced confusion when asked about two distinct NPQs during the post-experiment

interview, where they had enough time to carefully evaluate the meaning of two NPQ types. This contrast between the participants' experimental performance and their post-hoc understanding of the stimuli may confirm that ambiguity in the interpretation of certain NPQs may have hindered their performance in the experimental task.

#### 4.5 General discussion

The RTs and UERs collected from Experiment 1 (PPQ vs. high-negation NPQ), Experiment 2 (PPQ vs. low-negation NPQ), and Experiment 3 (PPQ vs. high-negation NPQ vs. low-negation NPQ) reveal that English and Korean participants responded differently to each question type, and these differences were significant. As previously noted, answering PPQs is quite straightforward and does not demand a high processing cost in choosing between *yes* and *no* answers. However, NPQs (both high- and low-negation NPQs) are more complex and demand greater processing effort due to potential ambiguities and pragmatic expectations. Both might be seen to correlate with the specific form of NPQs (e.g., SFN/LFN in Korean; low-/high-negation in English).

The current experiments found revealed significantly different patterns in the UER and RT measures for the two languages. In Korean, UERs for LFN-NPQ constructions were many times higher than for either SFN-NPQs or PPQs, while in English, the UERs for low-negation NPQs were much higher than for high-negation NPQs or PPQs. In regard to RT measures, there was also a contrast between the languages, both Korean SFN- and LFN-NPQ constructions had dramatically higher RTs than PPQs, whereas English high-negation NPQs and PPQs had much lower RTs than low-negation NPQ stimuli.

This leads me to ask several questions. How are the English and Korean results of these experiments comparable and parallel, and why are they so? In addressing the ways



in which they are not, we would ask: Why are LFN-NPQs in Korean relatively harder to answer and slower to process than corresponding high-negation NPQs in English, and also harder to answer than SFN-NPQs? Alternatively, why are high-negation NPQs in English relatively so much easier to answer and faster to process than English low-negation NPQs? In answering these, and other more specific questions below, I will consider syntactic-derivational complexity, potential ambiguity, relative frequency, and conversational formality as possible factors.

#### 4.5.1 The interpretation of NPQs without context

Noting the important role of context in the interpretation of NPQs, Ladd (1981) observed that NPQs can have distinct interpretations depending primarily on speaker and hearer expectations. Ladd referred to these as involving whether the negation is interpreted as being “outside” or “inside” of the clause. When questioners believe that some proposition  $p$  is true and simply want confirmation, negation scopes outside of the proposition, and when questioners infer that  $p$  is false and is questioning the proposition  $\neg p$ , negation takes scope inside the proposition. Given the usual dependence on pragmatic context for the use and interpretation of NPQs and wishing to test responses to them without such contexts, I designed the current experiments to test the interpretation of NPQs under linguistically decontextualized conditions with no pragmatic cues.

Current experimental results show that NPQs are more difficult to answer than PPQs, and this was confirmed by longer RTs and higher UERs for the former. In Experiment 1 (PPQ vs. high-negation NPQ), RTs and UERs in both languages were higher for high-negation NPQs than for PPQs. Since high-negation NPQs and PPQs have essentially the same truth-conditions, the difficulty in processing the former might have to do with (i) the

fact that the NPQs have representationally more complex structure (i.e., they include negation), and (ii) the expectation that non-truth conditional negation is used to transmit pragmatic and conversational cues, and such cues were arguably absent from the current experiment. Accordingly, participants had to process the semantically vacuous negation and determine that it is to be disregarded (there being no contextual basis for calculating conversational implicatures from its use). Thus, some participants might take longer to process these NPQs and provided unexpected responses by mistake.

In Experiment 2 (comparing PPQs to low-negation NPQs), the RTs and UERs for NPQs were even higher than in Experiment 1. Here, participants still had to process a structure that is more complex than that of PPQs (i.e., one involving negation). However, rather than simply determining that negation was not relevant to interpretation as in Experiment 1 with proposition external negation, they had to calculate the semantic consequences of negating the core proposition with proposition internal negation. I speculate that the higher RTs and UERs for both English and Korean participants in Experiment 2 were due to the increased syntactic and semantic complexity of this task.

#### 4.5.2 Relation between the form and meaning of NPQs

Both English and Korean allow negation to appear in different positions (inside vs. outside VP), and these positions appear to correlate with their being interpreted either inside or outside the question proposition. In English, negation can appear inside the VP and within the scope of an adverb (e.g., *really*) as in (9a). Alternatively, negation in an NPQ can undergo SAI and appear in the left periphery at PF, as illustrated in (9b). In (9a), the negation is calculated into the truth-functional interpretation of the question proposition (i.e., PIN interpretation), and in (9b), it is not (i.e., PEN interpretation).

- (9) a. [<sub>CP</sub> Did<sub>1</sub> [<sub>TP</sub> you t<sub>1</sub> [<sub>VP</sub> really **not** see [<sub>NP</sub> a red circle?]]]]  
 b. [<sub>CP</sub> Didn't<sub>1</sub> [<sub>TP</sub> you t<sub>1</sub> [<sub>VP</sub> see [<sub>NP</sub> a red circle?]]]]

Korean, likewise, can have negation affixed directly to the lexical verb inside VP (i.e., SFN) as in (10a), or attached to the auxiliary verb high in the clause and outside the scope of a nominalized VP (i.e., LFN) as in (10b).

- (10) a. [CP [TP [VP [NP ppalkan wen-ul] **an-po-ass-na-yo?**]]]  
red circle-ACC NEG-see-PST-Q-HON  
‘Did you not see a red circle?’
- b. [CP [TP [VP [NP ppalkan wen-ul] po-ci]] **anh-ass-na-yo?**]  
red circle-ACC see-NMLZ NEG.do-PST-Q-HON  
‘Didn’t you see a red circle?’

Like English negations, negation in SFN-NPQs in (10a) does figure directly into the meaning (i.e., PIN interpretation), and negation in LFN-NPQs in (10b) tends not to figure into propositional interpretation (i.e., PEN interpretation).

In Experiment 3, I investigated the PIN-PEN distinction and its correlation with negation structure (SFN/LFN in Korean and low-/high-negation in English). The results of Experiment 3 revealed that both Korean and English speakers tended to differentiate between PIN-NPQs and PEN-NPQs based on their morpho-syntactic structure. This finding was generally consistent across participants, although not every participant showed the correlation. For participants who had slower response times and unexpected

interpretations of NPQs (reported in Section 4.4), it is possible that they added their own imagined prosody to the written stimuli, leading to their atypical responses.

#### 4.5.3. Language-particular differences in native-speaker interpretation

Generally, the interpretation patterns for NPQs in English and Korean were quite parallel. Both languages showed that high-negation in NPQs outside the verb phrase does not affect truth-conditional interpretation, while low-negation inside the verb phrase does. When considering all responses without relative discourse contexts, English and Korean NPQs elicited very similar interpretations. Nevertheless, there were some noteworthy distinctions between the two languages.

The findings of Experiment 2, which investigated how participants responded to low-negation NPQs compared to PPQs, were alike for both English and Korean speakers. The PIN-NPQ condition resulted in similar UERs in both languages, with 31.1% in Korean and 26.6% in English. This similarity could be attributed to the fact that speakers of both languages encountered the challenge of having to compute the semantic implications of negating the main proposition in order to arrive at an interpretation.

However, the results from Experiment 1 for interlanguage comparison were unexpectedly different. This experiment tested how participants responded to high-negation NPQs compared to PPQs, and the UERs for Korean participants (22.3%) were much higher than those for English participants (5.6%). Additionally, the mean RT was somewhat slower for Korean participants (1504ms) compared to English participants (1114ms). The difference was even more pronounced in Experiment 3, which tested all three types of PQs together. In this experiment, the disparity in UERs for Korean participants' responses to high-negation NPQs (53.4%) was even greater, while English

participants' responses had a mean UERs of only 9.7%. Correspondingly, the disparity in mean RT was also larger in Experiment 3, with Korean participants taking an average of 2221ms and English participants taking an average of 1568ms.

- *In Experiment 2, why do Korean SFN and English low-negation NPQs show similar UERs and RTs? In Experiment 1, why do Korean LFN and English high-negation NPQs show very different UERs and RTs? In Experiment 1, why do English high-negation NPQs have UERs and RTs that are not significantly higher than PPQs?*

If the negative element is factored into the interpretation of negative questions, the increased syntactic and semantic complexity of having a NegP may explain the higher UERs and slower RTs. Considering the explanation for the similar results in Experiment 2 between Korean SFN and English low-negation NPQs conditions, we could question what causes the differences between Korean LFN and English high-negation NPQs conditions in Experiment 1. If both constructions are typically interpreted as PEN-NPQs, we would anticipate comparable outcomes. The fact that they do not produce similar results suggests that they may differ in some way.

The Korean LFN-NPQs yielded a higher level of uncertainty (i.e., higher UER) and slower processing (i.e., higher RT) than did English high-negation NPQs. One possible explanation for this is that the construction of Korean LFN is different from that of English high-negation. In Korean, the negative element in the LFN structure can either raise to the head of CP or lower to the head of VP along with the entire auxiliary complex (see Han et al. 2007), resulting in derivational uncertainty that may cause higher UER and slower processing than SFN-NPQs. In English, by contrast, the negation element is a clitic

attached to the tensed auxiliary verb and moves with it into the left periphery. This fact, along with negation not being involved in the semantics of the questioned proposition (i.e., its being explicit PEN), may contribute to minimal uncertainty and faster processing times.

The explanation provided for the differences between Korean LFN-NPQs and English high-negation NPQs in Experiment 1 is supported by the results of the English portion of the experiment, where it is observed that there is no significant difference in UERs and RTs between English high-negation NPQs and PPQs. This is because English high-negation NPQs do not involve any syntactic or semantic ambiguity, and there is no need to calculate negation into the propositional meaning of the question. Consequently, it is not surprising that they are processed with the same level of certainty and speed as PPQs.

- *In Experiment 3, why do both types of Korean NPQs have equivalently higher RTs while RTs for English NPQs are only higher for low-Negation NPQs?*

In Experiment 3, as shown in Figure 4.5, participants' responses to NPQs had significantly higher RTs in all but one category. Assuming that RTs are in some ways correlated with complexity, this contrast begs for an explanation. In Korean SFN-NPQs, with the negator affixed directly to the VP head and unambiguously inside of the propositional content of the question, one expects some delay attributable to the semantic calculations involved in negating the proposition. Similarly, English low-negation NPQs can be presumed to have a proposition-negating *not* which must enter into the semantic interpretation, and which takes time to calculate. For Korean LFN-NPQs, where the negator is in the auxiliary complex but which is shown to be syntactically ambiguous between a raising and a lowering structure, higher RTs might be attributed to this syntactic/semantic ambiguity. In the last instance, the English high-negation NPQs, the structure is syntactically

unambiguous with the contracted negation criticized to the auxiliary verb and raised with it overtly into the left periphery. Thus, at the moment of utterance, it is easily decided that English high-negation NPQs are likely to have a PEN interpretation. The structure is semantically unambiguous in that the negator is never in a position to be interpreted as proposition negating. With neither syntactic ambiguity nor semantic calculations to interfere with its processing, this English NPQ class has RTs similar to those of PPQs.

- *While the explanations given above present plausible reasons for the UER and RT results, we are still left wondering why the UERs for LFN-NPQs in Korean and low-negation NPQs in English are so stunningly high (4x that of their NPQ counterparts)?*

I propose that the radically higher UERs for Korean LFN-NPQs and English low-negation NPQs are partly a result of frequency effects. That is, in addition to whatever syntactic ambiguity and semantic processing confounds that contribute to subjects' uncertainty regarding the interpretation of these constructions, their uncertainty is compounded by the fact that they are also less familiar with them in the context of the experiment.

LFN (high negation) is less frequent in Korean, coupled with participants' greater familiarity with SFN (low negation) in general, and especially in NPQs, may be a significant contributing factor. Lee's (2008) research, which analyzed the Sejong Raw Corpus, shows that SFN and LFN constructions have notably different occurrences in spoken and written corpora. The study reveals that SFN is about five times more common in spoken contexts, while LFN is about five times more frequent in writing. Since NPQs are typically used in conversation (where SFN is more common), asking participants to

evaluate a context and respond to an LFN-NPQ only added to their uncertainty about what it might mean.

The opposite frequency pattern is observed in English. Previous corpus studies (Biber et al. 1999, González 2007, Kjellmer 1997) have strongly demonstrated that contracted negation is generally more common than uncontracted negation in English, except in academic writing and speech. Moreover, when questions are specifically considered, the use of contracted negation is overwhelmingly more frequent (93%, 206/221 [Kjellmer 1997]). Once again, with contracted negation (i.e., high negation) being preferred over uncontracted negation (i.e., low negation) by a ratio of 14 to 1 in question formation, asking participants to assess a context and respond to a low-negation NPQ only heightened their uncertainty about its meaning.

It is thus an accidental and arbitrary grammatical fact about each language that the SFN-NPQ with its usual PIN interpretation that is preferred in Korean and that the high-negation NPQ with its usual PEN interpretation that is preferred in English. However, I believe that this arbitrary difference in speaker preferences (and hence in frequency) is what contributes to Korean being categorized as a “Truth-based” system and English being categorized as a “Polarity-based” system in the traditional typology, which is erroneous. Once, syntactic complexity and ambiguity, semantic interpretive load, and language-particular frequency effects are taken into account, dividing languages into these illusory classifications can be seen as rather silly.

#### 4.6 Conclusion

The meaning and use of NPQs is inherently complex and dependent on several factors, including syntax, semantics, and pragmatics. In the present experimental study, I have



investigated the interpretation of NPQs and question-answer pairs in linguistically decontextualized conditions, so as to focus on their morpho-syntactic complexity and semantic ambiguity. As predicted, it is found that languages are not strictly distinguished according to any strict truth- or polarity- typology, and I proposed in its place the PIN/PEN dichotomy which correlates with syntactic structure and might be independent of pragmatic considerations. The data from the experiments conducted in English and Korean support this new dichotomy, and participants' RTs and UERs back up the proposed hypotheses.

Based on participants' RTs and UERs, I found that English speakers had more difficulties in answering NPQs with the more ambiguous low negation structures (which have PIN interpretation), and that Korean speakers had more difficulties in answering NPQs with the more complex and also ambiguous LFN structures (which have PEN interpretation). Given that the PIN-NPQ in English is more difficult to process and more likely to be ambiguous, it is no surprise that it is less likely to be used. Likewise for the PEN-NPQ in Korean, which is difficult to process and less frequently used. Thus, the tendency for PEN-NPQs in English (which have polarity-based interpretations) and the tendency for PIN-NPQs in Korean (which have truth-based interpretations) might very well be a simple consequence of frequency of use, which is itself the consequence of a tendency to eschew syntactically complex and ambiguous constructions. This study is the first to gather empirical data on decontextualized NPQs in English and Korean, which aims to improve our understanding of NPQ constructions in general. However, more research is necessary to investigate NPQs in other languages under both context-dependent and context-independent conditions to deepen our understanding.

## CHAPTER 5

### L2 INTERPRETATION OF POLAR QUESTIONS

#### 5.1 Introduction

It is widely recognized in literature that polar questions (PQs) are present in all languages around the world, and typically consist of both positive polar questions (PPQs) and negative polar questions (NPQs). While PPQs are relatively easy to interpret and their truth conditions can be determined easily, the meaning of NPQs can be more ambiguous, and the interpretation of simple yes-no answers to NPQs can be unpredictable, according to several studies (Claus et al. 2017, Holmberg 2013, Kim 2017, Krifka 2017, Kramer & Rawlins 2009, Ladd 1981, Sudo 2013).

Previous studies on the interpretation of NPQs have proposed that languages are typologically classified into “polarity-based” and “truth-based” languages based on how *yes-no* answers to NPQs are interpreted (Jones 1999, Pope 1976). Under this traditional view that languages have distinct interpretations of NPQs, literature has reported that most L2 learners have difficulties in the acquisition of L2 NPQs because of the L1-L2 differences. Given that the answering dichotomy is widely accepted in the literature, how L2 learners acquire native-like attainment of L2 NPQ if L1 NPQ is different from the target language has been a major question. However, upon closer examination of answering patterns to NPQs in various languages, it has been recognized that the traditional classification may have been a premature generalization. In other words, answering patterns are not strictly distinguished into two language groups. In the current study, we

will examine how languages have two different types of NPQs with either polarity- or truth-based interpretations, which challenges the traditional classification. Casting doubt on the traditional typology, several recent studies have raised concerns about the ambiguous interpretations of NPQs in diverse languages, where both interpretations are possible depending on the structure of the NPQs.

The goal of this study is to analyze how Korean individuals learning English as a second/foreign language respond to negative *yes-no* questions in English. The study is specifically interested in identifying the developmental differences between two groups of learners: those learning English as a foreign language (EFL) in Korea and those learning English as a second language (ESL) in the United States. In Section 5.2, this paper first considers similarities and differences between English and Korean NPQs, that may lead to misinterpretations when questions are translated from one language to the other. In Section 5.3 and 5.4, I examine some limitations in the traditional dichotomy of answering patterns and report common misunderstandings in the previous L1/L2 studies regarding the acquisition of NPQs. In Section 5.5 and 5.6, the paper presents the results of a series of online experiments that measure L2 participants' response times (RTs) and unexpected responses (UERs) to English PQs under linguistically decontextualized conditions. Finally, Section 5.7 discusses why two different L2 groups show distinguished developmental sequences in responding L2 English NPQs and establish research agenda for future studies.

## 5.2 English and Korean PPQs and NPQs

It should be noted, first, that how the traditional dichotomy of answering patterns deal with English and Korean *yes-no* questions and felicitous answers to them. Previous accounts of NPQ interpretation in two languages note that their interpretations are the

opposite of each other. That is, a *yes* answer to English NPQs tends to confirm the positive assertion and be interpreted as if negation were not there. Contrastively, a *yes* answer to Korean NPQs tends to confirm a negation of the underlying assertion, taking negation as a meaningful contribution to the question proposition. This contrast can be observed explicitly in examples (1)-(4), which illustrate the interpretation of short affirmative or negative responses to positive and negative questions.

(1) Q: Did you see him? (English PPQ)

A: Yes. = 'I did see him.' / No. = 'I did not see him.'

(2) Q: Didn't you see him? (English NPQ)

A: Yes. = 'I did see him.' / No. = 'I did not see him.'

(3) Q: ne-nun ku-ul po-ass-ni? (Korean PPQ)

you-TOP he-ACC see-PST-Q

'Did you see him?'

A: ung. = 'I did see him.' / ani. = 'I did not see him.'

yes

no

(4) Q: ne-nun ku-ul **an** po-ass-ni? (Korean NPQ)

you-TOP he-ACC NEG see-PST-Q

'Didn't you see him?'

A: ung. = 'I did not see him.' / ani. = 'I did see him.'

yes

no

Many researchers have, heretofore, claimed that these different patterns to be typological. That is, as in (2), English ignores the negation in NPQs (a “polarity-based” language, in their terms), and as in (4), Korean counts it (a “truth-based” language). A numerous number of previous studies on the interpretation of English NPQs have simply assumed that the answering patterns in (1) and (2) are the only possible question-answer pairs in English. However, a closer examination reveals that both languages tend to ignore negation when it is “high” in the NPQ, outside VP, and to count it when it is “low”, inside/adjacent to VP. For instance, as shown in (5) and (6), we could find numerous examples of low-negation NPQ in English and high-negation NPQ in Korean, respectively, which show opposite interpretations to the typical English high-negation NPQ in (2) and Korean low-negation NPQ in (4).

(5) Q: Did you really **not** see him? (English Low-NPQ)

A: Yes. = ‘I really didn’t see him.’ / No. = ‘I did see him.’

(6) Q: ne-nun ku-ul po-ci **anh**-ass-ni? (Korean High-NPQ)

you-NOM he-ACC see-NMLZ NEG.do-PST-Q

‘Didn’t you see him?’

A: ung. = ‘I did see him.’ / ani. = ‘I did not see him.’

yes

no

In (5) and (6), the meanings of short *yes* and *no* answers are opposite to those of answers in (2) and (4). One who adheres solely to the conventional typology of response systems may struggle to account for the atypical response patterns in (5) and (6). Despite the fact that these languages each having all the high and low negations, it is true that each language

tends to have a fairly strong preference of one NPQ type over the other, with their preferences being diametrically opposed. My observation is that, rather than being attributable to any “typological” difference, the divergent interpretive inclinations of the two languages seem due to the fact that English high-negation NPQs as in (2) being used more frequently and being less ambiguous than those in (5). Conversely, in Korean, the situation is reversed. Korean low-negation NPQs as in (4) are more frequent in natural language and less ambiguously have a negative meaning than those in (6).

The inherent ambiguity of NPQs and cross-linguistic discrepancy give rise to several interesting inquiries about the contrast between how native and non-native speakers interpret them. Although English and Korean have both high- and low-negation in common, each language has its own unique structures of NPQs. In English, two distinct NPQs are presented as contracted and non-contracted NPQs, while in Korean, the two equivalents are expressed as LFN- and SFN-NPQs. The distinguished linguistic features and the skewed use of NPQs by native speakers consequently affect the proper interpretation of two NPQ forms in each language. These cross-linguistic differences are likely to cause severe misunderstanding if L2 learners do not have sufficient proficiency to distinguish syntactic differences of two NPQ structures and do not understand the subtle nuance of ambiguous NPQs in the target language. Moreover, if L2 learners have not received adequate instruction on the meaning of two NPQ forms, it would be incredibly challenging to acquire native-like proficiency (i.e., in rapidity and accuracy). In the following section, I highlight several issues related to the traditional dichotomy of answering pattern that have not been addressed in prior studies on L2 acquisition.

### 5.3 Previous L1/L2 studies on the interpretation of English NPQs

Previous acquisition studies have tried to ascertain how child L1 speakers and L2 learners acquire the ambiguous meaning of NPQs in diverse languages focusing solely on the traditional typology of answering patterns (Kim 1985; Choi 1991; Akiyama 1979, 1992; Hiramatsu 2003; Parrish & Tomaoka 2010; Xu & Snyder 2011; Choi 2014; Ko 2017; Liou & Liu 2020; Zhang & Vanek 2021; Woods & Roeper 2021; Tian et al. 2021).

During the 80s and 90s, early studies (Kim 1985; Choi 1991; Akiyama 1979, 1992) put forward the idea that languages could be divided into two types of answering systems: (i) those that indicate agreement and disagreement, such as Japanese, Chinese, and Korean (known as the agreement/disagreement system), and (ii) those that indicate positivity and negativity by disregarding negation in the question, such as English and Spanish (known as the positive/negative system). This dichotomy assumes that Korean speakers might answer “*Yes, I am not a baby*”, whereas English speakers might answer “*No, I am not a baby*” if asked the same negative question “*Are you not a baby?*”. According to this dichotomy, languages in the opposite systems differently interpret negative sentences such as true negative (TN) sentences and false negative (FN) sentences. Most early studies following this dichotomy undoubtedly predict that language learners might have more difficulties if their L1 (such as Japanese and Korean) is distinguished from the target language (such as English) in terms of the two distinct answering systems. In addition, these studies claim that the English answering system is linguistically and cognitively easier to process, and bilingual speakers who speak both languages with opposite answering systems typically acquire the English system first.

More recent L2 studies have investigated the impact of different L2 learning settings on the acquisition of L2 NPQs by testing diverse L2 learners under various conditions. In Choi (2014), English-Korean bilingual speakers and monolingual speakers were compared, and in Ko (2017), answering Korean NPQs were examined with three different groups: EFL learners in Korea, ESL learners in the USA, and English immersion learners in Korea. These studies focused on the emergence of two separate grammars during early language development, involving bilingual speakers and L2 learners at different proficiency levels. In general, they have compared two linguistic systems and tried to investigate cross-linguistic interference. Overall, the results in Choi (2014) seem to suggest that answering English NPQs is easier and acquired earlier than answering Korean NPQs. This supports the dual linguistic system hypothesis showing that bilingual speakers show very similar acquisitional patterns to monolingual speakers. Similarly, in Ko (2017), ESL learners in the USA who had most rarely exposed to Korean NPQs had more difficulties in acquiring the Korean NPQs than other two groups staying in Korea. This result reinforces the previous findings that there exists bi-directional development of language systems which are exemplified by the two distinct answering systems in traditional typology, which does not take into account that NPQ structures in both languages can have either polarity- or truth-based interpretations.

In other recent acquisition studies, two different types of NPQs (e.g., high-negation NPQs and low-negation NPQs), which were ignored in the rampancy of the traditional dichotomy, have begun to be considered. Woods & Roeper (2020, 2021) have brought attention to two distinct English NPQs and studied how child L1 speakers of English acquire high negation with the negation clitic *n't*, using data from the CHILDES corpus.



One of their findings from the corpus-driven study is that child English speakers start using tag questions more accurately and frequently than normal high-negation NPQs with subject-auxiliary inversion (SAI). This finding reveals that the structure of high-negation NPQs and tag questions are syntactically and pragmatically distinguished (e.g., propositional vs. illocutionary negation). In addition, Woods & Roeper further report that even when child English speakers productively use high-negation NPQs, they still struggle to use low-negation NPQs correctly. The developmental sequences in the study propose that L1 children need more time to fully comprehend the semantic values and pragmatic implications associated with high- and low-negation NPQs.

Another experimental study by Tian et al. (2021) investigates how English PQs (e.g., PPQs, high-negation NPQs, and low-negation NPQs) and French PQs (e.g., PPQs and NPQs) are processed in eye-tracking experiments. In this experiment, L1 speakers' eye movements and fixations on *p* images (e.g., an opened window, an ironed shirt, or an egg) or not-*p* images (e.g., a closed window, a crumpled shirt, or a broken egg) were recorded while they listened to dialogues which were composed of the different types of PQs and following positive or negative answers. The results from the eye tracking experiment show that both English and French speakers gaze on both *p* and not-*p* images regardless of the question types. Although there was a small bias on the *p* image with positive questions (and marginally with high-negation NPQs), it was not meaningfully distinct from the similar dual fixation with low-negation NPQs. Nevertheless, they found that the dual fixation on both target images (*p* and not-*p* images) for positive and negative questions was dramatically different from their previous eye tracking experiments with positive and negative assertions, which showed that eye fixations were mainly captured on one of either

*p* or not-*p* image without extra attention to the opposite image (as reported in Tian et al. 2016). The most surprising finding from the eye-tracking experiment involving English PPQs and NPQs was the lack of a significant bias pattern with low-negation NPQs. I am skeptical that this unexpected result was mainly caused by the form of low-negation NPQs that the researchers used. Tian et al. (2021) defined a negative question like “Has John **not** ironed his father’s shirt?” as a typical low-negation NPQ, but this form of NPQ is actually highly ambiguous and can be interpreted as either high-negation or low-negation (commonly referred to as middle-negation in literature). Therefore, it is possible that the participants in the experiments were unable to interpret the NPQs precisely as the researchers intended or designed. It is also assumed that the slight preference for looking at the *p* image in response to high-negation NPQs was due to the potential ambiguity of these types of questions between high and low negation interpretations (such as the inner and outer negation distinction proposed by Ladd (1981) in structurally high-negation questions). Despite the researchers’ careful consideration of two different forms of English NPQs, the experimental stimuli still had issues with clearly distinguishing the structure of high- and low-negation, which is a common problem in the literature. In the next section, I will discuss in detail some common misunderstandings that lead to questionable conclusions regarding the acquisition of L1/L2 NPQs.

#### 5.4 Common misunderstandings in the previous L1/L2 studies

Most previous L1/L2 studies referred in the previous sections mistakenly understand the answering patterns, and these have supported the traditional dichotomy of “truth-based” vs. “polarity-based” or “agree-disagree” vs. “positive-negative” answering systems, without considering the two distinct forms of NPQs. On this theoretical basis, NPQ studies

have merely accepted the traditional typology not considering the syntactic and semantic distinction between two forms of NPQs. Nevertheless, previous findings in the literature pretend to reveal that there are two groups of languages which use mutually exclusive answering patterns. It should be noted, however, that the previous results based on incorrect theoretical backgrounds might not be meaningful and should be reconsidered.

For example, in early L2 studies, Choi (1991) and Akiyama (1992) did not consider that negation in English NPQs could really affect the truth condition of questions (i.e., low-negation NPQs). Thus, they presume that positive and negative answers in (7c) are the only possible answers to English *yes-no* questions in (7a) and (7b).

- (7) a. Q: Are you a baby?  
b. Q: Are you **not** a baby?  
c. A: Yes, I am a baby        /        No, I am not a baby.

According to the traditional answering dichotomy, question-answer pairs in (7) are what English-type languages use. However, the NPQ in (7b) is structurally ambiguous, and some English L1 speakers may answer it with “Yes, I am not a baby” or “No, I am a baby.” Choi (1991) and Akiyama (1992) investigated how L2 learners acquire English NPQs but only focused on question-answer pairs in (7). Unfortunately, “Yes, I am not a baby” or “No, I am a baby” were regarded as wrong answers or non-native like answers.

Additionally, Choi (1991) observed that, in answering “True negative questions” like the example in (8), most child participants regardless of their L1 used the Korean system (i.e., agreement/disagreement answering system). On the other hand, in answering “False negative questions” like the example in (9), most participants used the English system.

(8) (Participants see a bird.)

Q: Isn't it a cup? (True negative question)

A: No.

(9) (Participants see a cup.)

Q: Isn't it a cup? (False negative question)

A: Yes.

In (8) and (9), although the forms of the questions are exactly identical (*Isn't it a cup?*), the anticipated answers to these questions are opposite depending on the context. Despite this difference, these answers actually show the same answering pattern. For example, the *no* answer in (8) means “No, it isn't”, and the *yes* answer in (9) means “Yes, it is.” If this study wants to show the opposite answering patterns between Korean and English system, the answer in (8) should be “Yes, (it isn't.)” or “No, (it is.)” To put it differently, the stimuli used in this study were unclear and led to confusion between two different answering patterns, rendering them useless. Furthermore, Choi argues that some of the answers by young children are not successful since they do not use adult-like answering patterns and concludes there is a universal way of processing question-answering during the early stages of language development. These biased conclusion and incorrect evaluation of the empirical data are caused by a rigid adherence to the traditional dichotomy of answering systems only focusing on one aspect of answering patterns in each language.

This kind of misleading results is ubiquitous in the literature. In Choi (2014), the theoretical background regarding English NPQs assumes that negation in English NPQs is not semantically calculated, and the meaning of English NPQs is identical to PPQs.

Moreover, it is assumed that negation in Korean NPQs unconditionally affects the meaning of NPQs distinguishing it from PPQs. Despite two distinct forms of NPQs are all productively used in English and Korean, Choi (2014) partially compares high-negation NPQs in English and low-negation NPQs in Korean as in (10), and low-negation NPQs in English and high-negation NPQs in Korean are obviously not under consideration.

(10) (Fact: The shoe did fit well to Khongcwi.)

a. khongcwi-nun sinpal-i **an** mas-ass-nayo? (Korean NPQ)

Khongcwi-TOP shoe-NOM NEG fit-PST-Q.HON

‘Did the shoe not fit to Khongcwi?’

b. Didn’t the shoe fit to Khongcwi? (English NPQ)

The Korean NPQ and English NPQ in (10) are typically interpreted oppositely, with the former being a low-negation NPQ and the latter being a high-negation NPQ. Thus, based on the fact given in Korean folk story (i.e., The shoe did fit well to Khongcwi), a negative answer *aniyo* ‘no’ is the correct answer to the Korean NPQ (10a), and a positive answer *yes* is the correct answer to the English NPQ (10b). Unfortunately, this study compares these two clearly distinct NPQs from two different languages and redundantly highlights the consequent difference between the languages. Consequently, the apparent contrast between the responses of English and Korean children in this study seems to be reinforced by the conventional answering systems incorrectly reporting that L1 English and Korean children answer the "seemingly" similar NPQs differently.

Given the strong bias to the typology, similar misunderstandings can be observed in relation to the two distinct forms of NPQs in other languages. In Zhang and Vanek (2021),

English and Chinese PQs are compared, and they argue that Chinese does not have English-like high-negation questions but only have low-negation questions. Thus, in answering a Chinese NPQ like “Didn’t he steal a duck?”, the correct answers should be “Yes, he didn’t” and “No, he did.” However, Liou and Liu (2020) point out a veiled fact that there may also be two distinct forms of NPQs in Chinese depending on the structural relation between *shì* ‘to be’ and *bù* ‘not’ as in (11).

- (11) a. Nǐ (shì) diǎn kāfēi ma?  
           you be order coffee Q  
           ‘Do you order coffee?’
- b. Nǐ shì bù diǎn kāfēi ma?  
           you be not order coffee Q  
           ‘Don’t you order coffee?’
- c. Nǐ bù-shì diǎn kāfēi ma?  
           you not-be order coffee Q  
           ‘Don’t you order coffee?’

- (12) a. Shì a! Wǒ diǎn kāfēi.  
           yes PRT I order coffee  
           ‘Yes, I order coffee.’
- b. Bù, Wǒ mei diǎn kāfēi.  
           no I not order coffee  
           ‘No, I didn’t order coffee.’

(continued on p. 134)

- c. Shì a! Wǒ mei diǎn kāfēi.  
 yes PRT I not order coffee  
 ‘Yes, I didn’t order coffee.’
- d. Bù, Wǒ diǎn kāfēi.  
 no I order coffee  
 ‘No, I order coffee.’

The examples in (11) consist of a PPQ (11a) and two NPQs (11b) and (11c). Additionally, the examples in (12) provide four potential answers to these questions. The correct answers to the Chinese PPQ (11a) are undoubtedly (12a) and (12b), and it is not suitable to use (12c) and (12d) as answers to the PPQ in natural contexts.

Contrary to Zhang and Vanek's (2021) examination of Chinese NPQs, answering the two forms of Chinese NPQs is not as straightforward. Liou and Liu (2020) suggest that the two Chinese NPQs in (11b) and (11c) might have different answering patterns, and the appropriate responses are dependent on the structure of the questions. For instance, NPQ (11b) should be answered with (12c) and (12d), while NPQ (11c) should be answered with (12a) and (12b). That is, the NPQ (11b) can be interpreted as having a low-negation meaning, while the NPQ (11c) can be interpreted as having a high-negation meaning. However, in Zhang and Vanek's (2021) study, they only compared high-negation questions in English and low-negation questions in Chinese, which inevitably led to significant differences in results (i.e., the proportion of *yes* answers and response time) between the two languages. Thus, the study does not provide any new insight into how Chinese and English speakers, as well as Chinese-English bilinguals, actually interpret the different forms of NPQs.

To summarize, when comparing the interpretation of NPQs in different languages, it is important to take into account how the two different forms of NPQs are actually formed and understood in the target language. The existing L2 research, which has been conducted under the traditional typology, has not fully demonstrated how L2 learners acquire the semantically and pragmatically ambiguous two distinct forms of NPQs. It is likely that many languages possess two separate structures for NPQs that can easily lead to either polarity-based or truth-based interpretations. Despite the possible ambiguity of NPQ structures, It is important to note that in English, the NPQ constructions that are least ambiguous and therefore most commonly used, tend to result in polarity-based interpretations, specifically with high-negation NPQs. Conversely, in Korean, the NPQ constructions that are least ambiguous and hence most commonly used, are interpreted as truth-based, particularly with low-negation NPQs. Attempting to resolve the ambiguity of NPQs has significant implications for L2 acquisition. It is clear that cross-linguistic similarities and differences can lead to misunderstandings if L2 learners are not proficient enough to understand the form and meaning of NPQs. In this experimental L2 study, I investigate how Korean speakers of English interpret three different types of English PQs: PPQs, high-negation NPQs, and low-negation NPQs.

### 5.5 Current study

A series of experiments aims to clarify how Korean L2 learners interpret English NPQs and compare their responses to those of English native speakers. By comparing two distinct L2 learner groups, who differ in their level of proficiency and type of exposure to the language, this study will show how L2 learners gradually acquire semantically ambiguous structures. In order to accomplish these aims, this study will specifically:



- report on a series of online experiments which gather L2 interpretations of PPQs and NPQs under linguistically decontextualized conditions.
- investigate L2 interpretation of English PQs by Korean speakers who live in the USA and South Korea.
- explore to what extent English negation interacts with the L2 interpretation of two distinct forms of NPQs.

#### 5.5.1 Expectation: L2 interpretation of English NPQs

As examined in Section 5.2, both L1 Korean and L2 English show two distinct positions of negation in NPQs. It would be a reasonable assumption that both L1 and L2 response to be identically sensitive to the position of negation in NPQs. Since both languages allow negation to appear in different positions (inside vs. outside VP), these positions appear to correlate with them being interpreted either internal or external to the questioned proposition. If L2 learners are aware of the grammar and naturally follow the syntactic distinction, Korean learners of English should show very similar answering patterns to NPQs in L1 Korean and L2 English. However, L2 learners having underdeveloped L2 proficiency may not be able to distinguish two NPQ structures as they do in their L1. Therefore, it is expected that some L2 learners may answer all English NPQs as low-negation NPQs because of the presence of negation in the question (without regard to the semantics and pragmatics of the negation), or they might interpret all NPQs randomly, and show themselves to be unaware of the differences between high- and low-negation. In either case, there should be a significant gap between L1 and L2 interpretations.

From the baseline experiment with L1 speakers of English and Korean (Park & Dubinsky 2019), it is already ascertained that even L1 speakers are confused with certain NPQs and interpret them differently from the majority of L1 speakers, revealing the inherent ambiguity/complexity of NPQs. Thus, L2 learners might encounter great difficulties while acquiring a native-like understanding of NPQs. With regards to the issues of teachability and learnability issues in the acquisition of NPQs, it is expected that Korean learners of English who have recently exposed to English as a foreign language in classroom-based language learning settings in their home country (e.g., EFL context) will face more challenges compared to L2 learners who have exposed to authentic native English in the USA (e.g., ESL context).

#### 5.5.2 Hypotheses and Method

I tested L2 interpretation of English PQs conducting a series of online experiments which was utilized in Park & Dubinsky (2019). The central hypothesis is that morpho-syntactic and semantic complexity, along with semantic ambiguity, will result in longer response times (RTs) and more unexpected answers (UERs) to the questions. To examine L2 learners' responses to PPQs, high-negation NPQs, and low-negation NPQs in English, I conducted three online experiments as follows, and manipulated the following contrasts:

- Experiment 1 tests PPQs vs. high-negation NPQs
- Experiment 2 tests PPQs vs. low-negation NPQs
- Experiment 3 tests PPQs vs. high-negation NPQs vs. low-negation NPQs

In these experiments, I controlled the beliefs and expectations of experimental participants by presenting them with contextual evidence (CE) that is linguistically decontextualized but ontologically certain. That is to say, I presented them with unambiguous visual cues

that only had one available interpretation. Participants were presented with two successive slides: 1) a slide displaying a symbol having a particular shape and color, and 2) a slide displaying a written question with two answer choices. By presenting subjects with ontological, rather than linguistic, CE (e.g., a red circle, a blue square, etc.), I could be quite certain about what they would then believe. Figures 5.1 and 5.2 illustrate the experimental protocols.

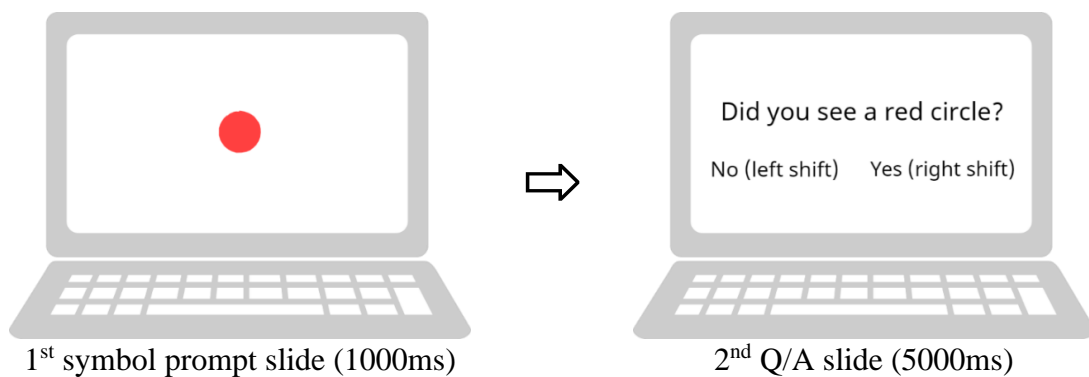


Figure 5.1 Illustration of slides in experimental items

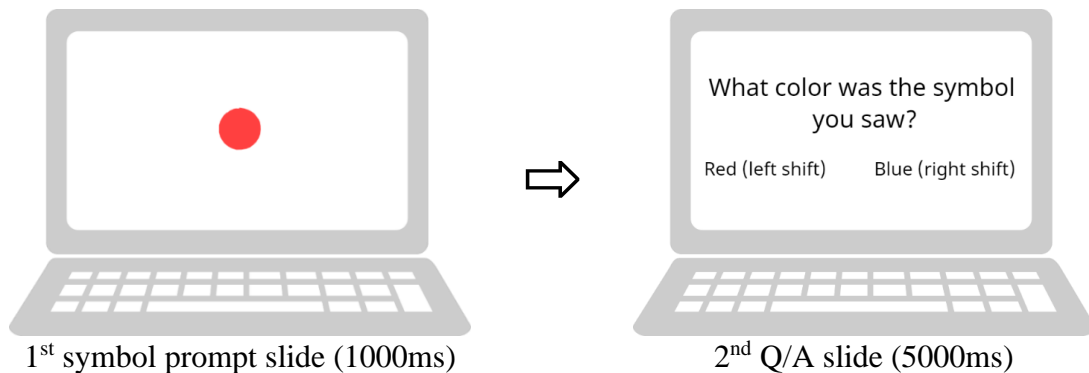


Figure 5.2 Illustration of slides in filler items

As shown in Figures 5.1 and 5.2, the first symbol prompt slide randomly displays, for 1000ms, one of five different symbols (triangle, star, square, X, or circle) in one of five

different colors (red, blue, black, yellow, or green).<sup>10</sup> This 5 x 5 combination allows for twenty-five different possible visual prompts. The second Q/A slide presents a question about the symbol presented in the 1<sup>st</sup> slide. This 2<sup>nd</sup> slide randomly presents, for 5000ms, either a *yes-no* question (Figure 5.1) or a filler question (Figure 5.2), together with two possible answer choices. While the Q/A slide is shown, participants are to read the presented question and then choose their answer by pressing either the right shift-key or the left shift-key on a keyboard. The methods avoid expected confounds which have been problematic in previous experiments in the literature, by presenting a materially certain situation and relying only on that. Participants presented with the symbol prompt slide in Figures 5.1 and 5.2 can be said to have “seen a red circle.” Therefore, it should be confident in assuming them to believe that they just “saw a red circle.”

### 5.5.3 Experimental and filler questions

The examples in (13) present English PQs used in the experiments. There are examples of a PPQ and two distinct forms of NPQs. The answer choices for such questions, as presented to participants in the experiment, are limited to simple *Yes* and *No*.

- |         |   |            |
|---------|---|------------|
| (13) a. | Did you see a red circle?                   | (PPQ)      |
| b.      | Didn't you see a red circle?                | (High-NPQ) |
| c.      | Did you really <b>not</b> see a red circle? | (Low-NPQ)  |

In the experiment, experimental questions in (13) are mixed with filler questions composed of *wh*-questions and tag questions. The filler questions are (i) *wh*-questions

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<sup>10</sup> The present test uses five different symbols in five different colors: red, yellow, green, blue, and black. According to Kay and Maffi (1999), these five colors are categorized in the six basic colors including white. These colors are most frequently used primary colors in psychology, psycholinguistics, and neurolinguistics.

about the color of the symbol, as in (14a), (ii) *wh*-questions about the shape of the symbol, as in (14b), or (iii) *yes/no* tag questions, as in (14c).

- (14) a. What color was the symbol you saw?  
b. What shape was the symbol you saw?  
c. You saw a red circle, didn't you?

Experiments 1 and 2 present each participant with 24 PPQs and 24 NPQs, together with 24 filler questions, for a total of 72 items. Experiment 3 presents each participant with 24 PPQs, 24 high-negation NPQs, 24 low-negation NPQs, and 48 filler questions, for a total of 120 items. In each set of 24 experimental questions, 12 questions are designed to induce *yes*-answers and 12 questions are designed to induce *no*-answers. In each set of 24 filler questions, 12 questions are *wh*-questions, and 12 questions are tag questions.

#### 5.5.4 Participants

In this study, L2 data were collected from two different groups of native Korean speakers learning English. The aim of the study was to determine whether the type of exposure and level of proficiency would influence the interpretation of NPQs by L2 learners. The first group consisted of 33 participants learning English as a foreign language in their home country (EFL group), while the second group comprised 60 participants who had been naturally exposed to English through living and learning in an English-speaking country (ESL group).

At first, the two L2 groups are distinguished by the place of experiments, South Korea and USA. All participants in the EFL group took part in the experiment in South Korea, and they had never traveled any English-speaking countries or studied abroad before the

experiment. They had learned English as a foreign language in classroom settings, without many opportunities to use the language outside of class. Their exposure to English was primarily focused on receptive skills (e.g., reading and listening) than productive skills (e.g., writing and speaking). In contrast, the participants in the ESL group had been studying or lived in the USA at the moment of experiments. All participants in ESL group were also born in South Korea and learned English in elementary and secondary schools. However, differently from the EFL group, ESL participants had stayed in the USA at least one year, and they had recently been exposed to L2 inputs in an immersive context, both intensively and extensively.

Moreover, the two groups are also distinguished by current English proficiency, basic versus advanced levels. The participants in the EFL group had learned English as a school subject in South Korea, and their current proficiency level ranges from basic to low intermediate. On the other hand, all participants in the ESL group are either undergraduate or graduate students at the University of South Carolina or Iowa State University and have an advanced level of proficiency in English. Most of participants in the ESL group are screened for L2 English learners who have a score of 700 or above on the Test of English for International Communication (TOEIC) or a score of 80 or above on the Test of English as a Foreign Language (TOEFL). By comparing these groups of L2 learners who have or do not have previous L2 study abroad experience, this study would ascertain whether advanced L2 learners who have been exposed to the target language in a country where it is an official language can eventually acquire native-like interpretation of NPQs.

## 5.6 Results

### 5.6.1 Response time (RT)

It is undeniable that PPQs are syntactically and semantically unambiguous, and the truth-condition of PPQs is obviously straightforward having no morphological or semantic negation. At this point, it is expected that most L2 learners could quickly respond to simple PPQs without severe problems. As expected, in Experiment 1, Korean L2 learners of English in both L2 groups had longer RTs in answering high-negation NPQs than in answering PPQs. Moreover, ESL group responded to both PPQs and high-negation NPQs more quickly than EFL group. Figure 5.3 illustrates this.

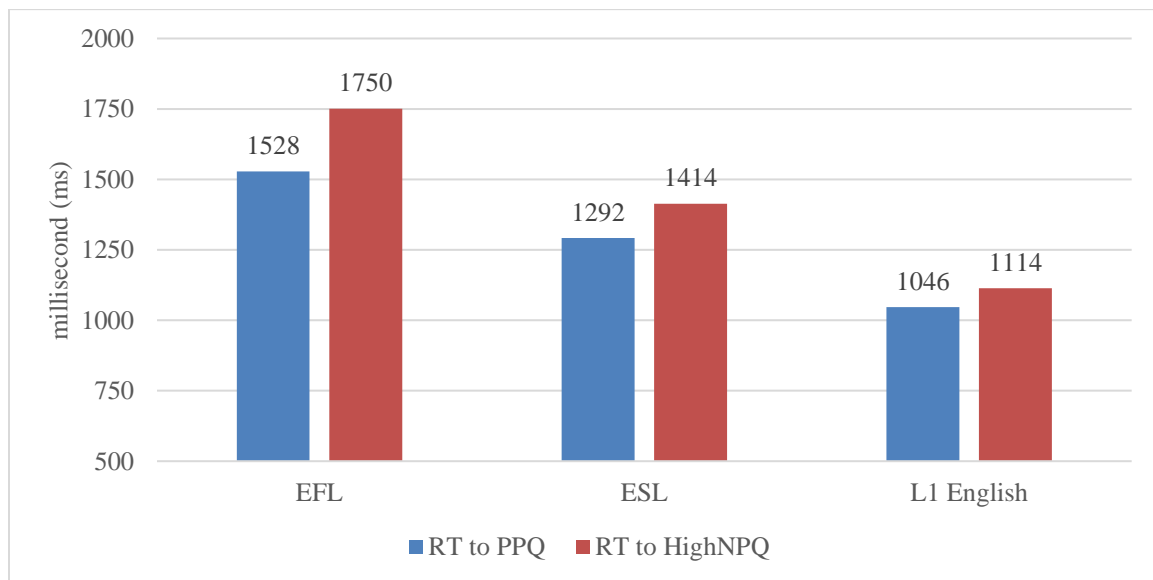


Figure 5.3 RTs for PPQ and high-negation NPQ in Experiment 1

In Figure 5.3, bar graphs show that EFL and ESL group's RTs for PPQs and high-negation NPQs in comparison with L1 English speakers' RTs. ESL group shows not as much as L1 speakers but faster RTs than EFL group. For PPQs, ESL group took significantly shorter RTs than EFL group (ESL PPQ: 1292ms and EFL PPQ: 1528ms;  $t(670)=5.97$ ,  $p<.001$ ).

For high-negation NPQs, ESL group also took significantly shorter RTs than EFL group (ESL high-NPQ: 1414ms and EFL high-NPQ: 1750ms;  $t(670)=6.34$ ,  $p<.001$ ). These results from Experiment 1 suggest that more advanced ESL learners could interpret both PPQs and high-negation NPQs more quickly than EFL learners.

However, in contrast to L1 English speakers whose RTs for PPQs and high-negation NPQs do not show significant difference (PPQ: 1046ms and high-NPQ: 1114ms;  $t(718)=-1.86$ ,  $p=.063$ ), both Korean L2 groups show significantly faster RTs for PPQs than RTs for high-negation NPQs. Specifically, EFL group had significantly longer RTs for high-negation NPQs ( $M=1750.34$ ,  $SD=786.56$ ) than for PPQs ( $M=1528.39$ ,  $SD=539.42$ ),  $t(478)=-3.61$ ,  $p<.001$ . Moreover, ESL group also spent significantly longer RTs for high-negation NPQs ( $M=1413.60$ ,  $SD=577.04$ ) than for PPQs ( $M=1291.79$ ,  $SD=464.53$ ),  $t(862)=-3.42$ ,  $p<.001$ . This difference indicates that PPQs and high-negation NPQs are almost identically processed by L1 English speakers, whereas these PQs are clearly distinguished by EFL and ESL groups.

Experiment 2 showed similar results to Experiment 1, with both Korean L2 groups having longer RTs in answering low-negation NPQs compared to PPQs. This result is consistent with the RTs by L1 English speakers. However, unexpectedly, ESL learners responded more slowly to both PPQs and low-negation NPQs compared to EFL learners. Figure 5.4 illustrates this.



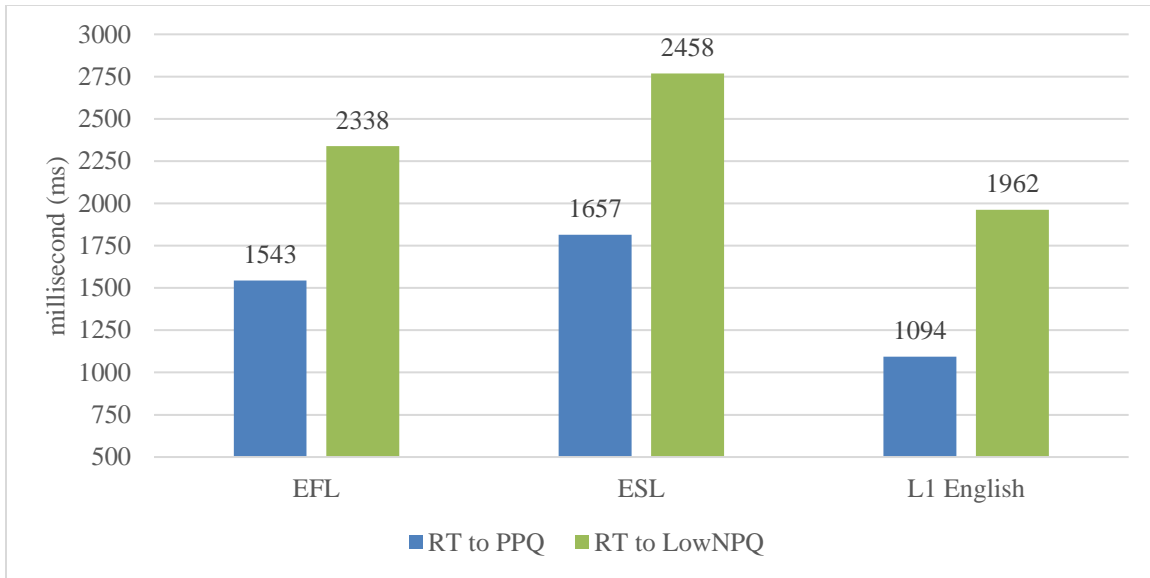


Figure 5.4 RTs for PPQ and low-negation NPQ in Experiment 2

In Figure 5.4, bar graphs show that RTs of EFL and ESL groups for PPQs and low-negation NPQs in comparison with RTs of L1 speakers. Compared to the RTs by L1 speakers, EFL and ESL groups had slower RTs for both PPQs and low-negation NPQs. However, in Experiment 2, which involved low-negation NPQs, the more proficient ESL learners who were staying in the USA had the slowest RTs for PPQs and low-negation NPQs. Specifically, for PPQs, ESL group took significantly longer RTs than EFL group (ESL PPQ: 1657ms and EFL PPQ: 1543ms;  $t(694)=-2.50, p<.05$ ). For low-negation NPQs, ESL group also took relatively (not statistically significant) longer RTs than EFL group (ESL low-NPQ: 2458ms and EFL low-NPQ: 2338ms;  $t(694)=-1.65, p=.099$ ).

In all three groups, the gaps between RTs for PPQs and RTs for low-negation NPQs are much higher than the gaps between PPQs and NPQs in Experiment 1. This reveals that all L1 and L2 participants struggled with low-negation NPQs and took significantly longer RTs to answer them. In EFL group, RTs for low-negation NPQs ( $M=2338.49, SD=765.90$ ) were significantly longer than RTs for PPQs ( $M=1543.10, SD=488.08$ ),  $t(478)=-13.57$ ,

$p < .001$ . Moreover, in ESL group, L2 learners also had significantly longer RTs for low-negation NPQs ( $M = 2457.60$ ,  $SD = 967.17$ ) than RTs for PPQs ( $M = 1656.67$ ,  $SD = 606.60$ ),  $t(910) = -14.98$ ,  $p < .001$ . Experiment 2 yielded an intriguing finding where highly proficient ESL learners took more time to respond to both PPQs and low-negation NPQs, which is opposite to their fast RTs for high-negation NPQs in Experiment 1. This unexpected result indicates that ESL learners who were previously able to answer high-negation NPQs faster than EFL learners were more perplexed when answering low-negation NPQs in Experiment 2. This unexpected result is discussed later in this chapter.

In Experiment 3, two distinct forms of NPQs were presented together alongside PPQs, and it was designed to determine whether the structure of two NPQs might have an effect on RTs relative to each other. Two groups of Korean L2 learners show similar RTs for all three types of questions in Experiment 3. Figure 5.5 shows that both EFL and ESL groups significantly differently answered two distinct forms of NPQs. Similar to L1 speakers, both L2 groups answered PPQs most quickly and low-negation NPQs most slowly.

However, differently from L1 English speakers, both L2 groups clearly differentiated between PPQs and high-negation NPQs. According to the previous experiments with L1 English speakers in Park & Dubinsky (2019), The high-negation NPQs were responded as fast as PPQs by native English speakers. However, the native speakers got confused in answering low-negation questions, and RTs for them were significantly slower than PPQs and high-negation NPQs. Despite these differences, both L2 groups maintained the distinction between the two forms of NPQs based on their structure. This is illustrated in Figure 5.5.

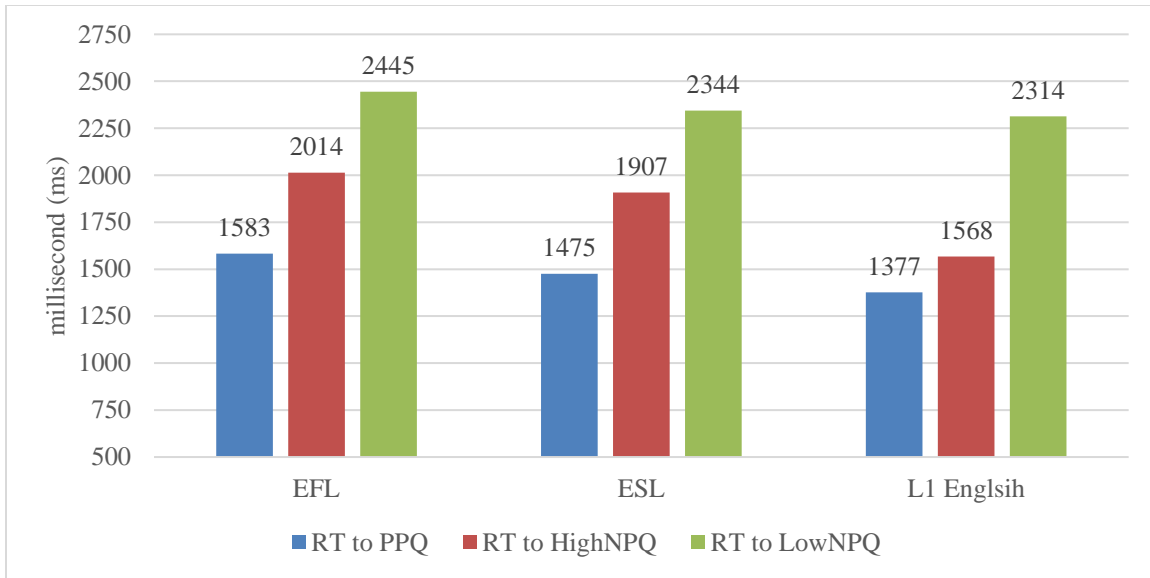


Figure 5.5 RTs for PPQ, high-negation NPQ, and low-negation NPQ in Experiment 3

In EFL group, low-negation NPQs had longer RTs ( $M=2444.75$ ,  $SD=953.86$ ) than high-negation NPQs ( $M=2014.02$ ,  $SD=848.04$ ), and high-negation NPQs in turn had longer RTs than PPQs ( $M=1583.03$ ,  $SD=547.00$ ). A one-way ANOVA revealed that there was a statistically significant difference in RTs among the three types of PQs ( $F(2, 717) = 69.318$ ,  $p < .001$ ). Further analysis using Tukey's Test showed that the mean RTs for all three types of questions were significantly different (PPQ-HighNPQ,  $p < .001$ , 95% C.I. = 259.11, 602.88; PPQ-LowNPQ,  $p < .001$ , 95% C.I. = 689.84, 1033.61; LowNPQ-HighNPQ,  $p < .001$ , 95% C.I. = 258.84, 602.61). In ESL group, low-negation NPQs also had longer RTs ( $M=2343.85$ ,  $SD=1092.50$ ) than high-negation NPQs ( $M=1907.62$ ,  $SD=928.45$ ), and high-negation NPQs in turn had longer RTs than PPQs ( $M=1475.19$ ,  $SD=555.61$ ). A one-way ANOVA revealed that there was a statistically significant difference in RTs among the three types of PQs ( $F(2, 1365) = 109.15$ ,  $p < .001$ ). Further analysis using Tukey's Test showed that the mean RTs for all three types of questions were significantly different (PPQ-HighNPQ,  $p < .001$ , 95% C.I. = 294.50, 570.38; PPQ-LowNPQ,  $p < .001$ , 95% C.I. =

730.72, 1006.60; LowNPQ-HighNPQ,  $p < .001$ , 95% C.I. = 298.28, 574.16). The overall RTs in all three experiments are summarized here in Table 5.1 below.

Table 5.1 The summary of RTs in three experiments

		Experiment 1	Experiment 2	Experiment 3
EFL	PPQ	1528.39(ms)	1543.10	1583.03
	High-NPQ	1750.34	-	2014.02
	Low-NPQ	-	2338.49	2444.75
ESL	PPQ	1291.79	1656.67	1475.19
	High-NPQ	1413.60	-	1907.63
	Low-NPQ	-	2457.60	2343.85

### 5.6.2 Unexpected responses (UERs)

The hypothesis for response patterns is that simpler syntactic and semantic structures would result in fewer UERs. Therefore, it is expected that PPQs, which do not have any negation in their morphology or semantics, would be easier to process, and the responses of L2 learners would be similar to those of L1 learners. In contrast, two forms of NPQs might lead L2 learners to make different calculations due to semantic and pragmatic considerations, resulting in divergent responses from L1 interpretation.

As expected, in Experiment 1, both EFL and ESL groups had more UERs to high-negation NPQs compared to PPQs. Even the less proficient EFL learners committed only 3.8% UERs overall in response to PPQs. This precise answering pattern to PPQs by L2 learners is definitely native-like and show that most L2 learners did not have any problems in interpreting PPQs and choosing correct answers. However, there were significant differences in the answering patterns of the two L2 groups for high-negation NPQs. Some participants in the EFL group systematically provided opposite answers to high-negation NPQs by miscalculating the negation in the question proposition. In contrast, the response

pattern of the ESL group to high-negation NPQs was very similar to that of native English speakers, indicating that they answered PPQs and high-negation NPQs in a similar pattern. This finding is illustrated in Figure 5.6.

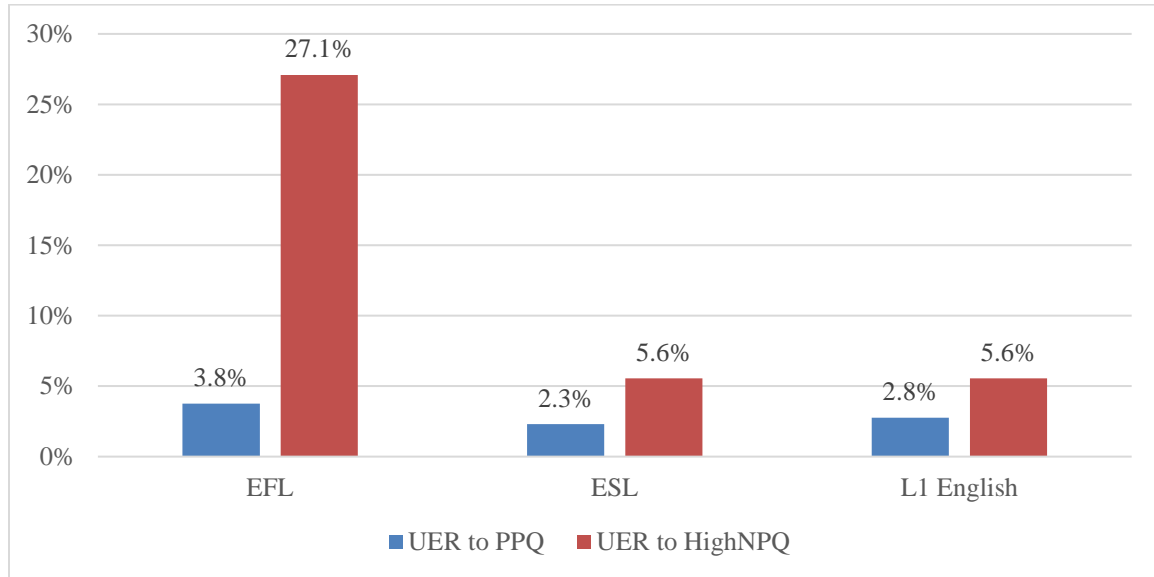


Figure 5.6 Unexpected Response Rates in Experiment 1

The results depicted in Figure 5.6 demonstrate that the UERs for high-negation NPQs (27.1%) was significantly greater than that for PPQs (3.8%) in the EFL group,  $t(478)=-7.46, p<.001$ . Similarly, in the ESL group, the UERs for high-negation NPQs (5.6%) was significantly higher than that for PPQs (2.3%),  $t(862)=-2.46, p<.05$ . However, the UER rates for both PPQs and high-negation NPQs in the ESL group were quite similar to those of native English speakers. The outcomes of Experiment 1 show that proficient ESL learners could easily answer high-negation NPQs without any difficulty, while less proficient EFL learners have not yet acquired the same level of proficiency as native speakers in interpreting high-negation NPQs, which share the same answering pattern as PPQs.

In Experiment 2, the difference in UERs between PPQs and low-negation NPQs was found to be significant in both L2 groups. As expected, L2 learners had low UERs for PPQs, but their UERs for low-negation NPQs were significantly higher than those of L1 English speakers. In the EFL group, the average UER for PPQs was 3.8%, compared to an average of 42.9% for low-negation NPQs,  $t(478)=-11.42$ ,  $p<.001$ . Similarly, in the ESL group, the average UER for PPQs was 5.5%, compared to an average of 60.1% for low-negation NPQs,  $t(910)=-21.99$ ,  $p<.001$ . Figure 5.7 provides a visual representation of these findings.

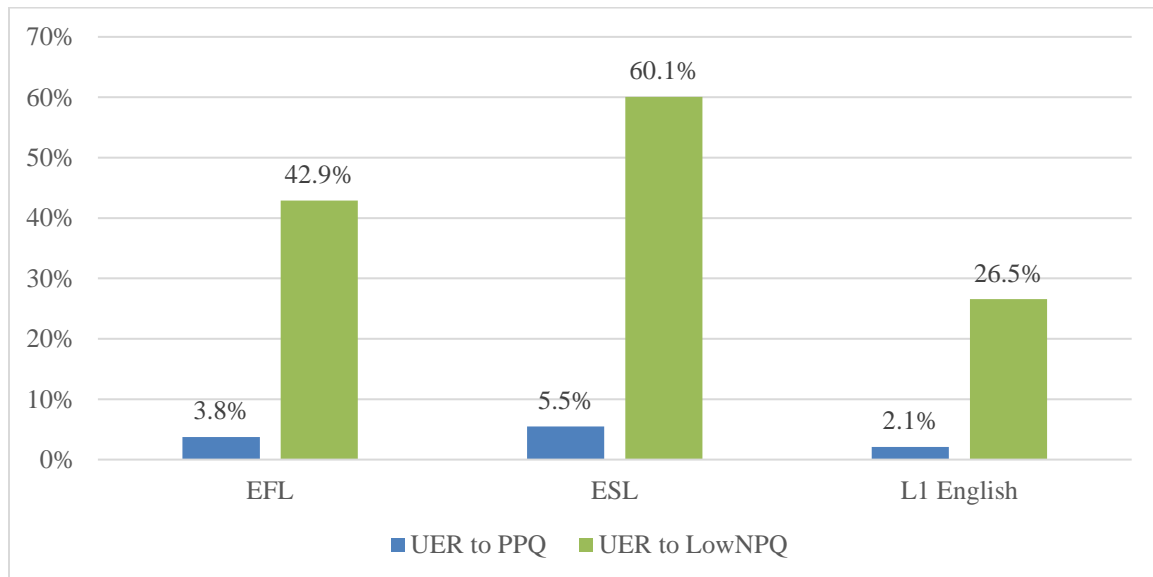


Figure 5.7 Unexpected Response Rates in Experiment 2

In contrast to the results in Experiment 1, the UERs for low-negation NPQs in Experiment 2 were significantly higher for ESL learners (274/456, 60.1%) compared to EFL learners (103/240, 42.9%), with a significant difference between the two groups ( $t(694)=-4.43$ ,  $p<.001$ ). The reason behind the high UERs of EFL learners was their unstable and random responses, as was the case with high-negation NPQs in Experiment 1. However, the

unexpectedly high UERs of ESL learners for low-negation NPQs in Experiment 2 contrast with their native-like responses to high-negation NPQs in Experiment 1. In ESL group, some participants tended to choose answers that were almost the opposite of what was expected for low-negation NPQs. These participants interpreted low-negation NPQs as high-negation NPQs, without even considering the negation in the question. To be sure, L1 English speakers also get confused in answering the inherently ambiguous low-negation NPQs and sometimes answer oppositely, but the UERs for low-negation NPQs by the ESL group were much higher compared to both the EFL and L1 English groups. This phenomenon cannot be explained by their advanced L2 proficiency alone.

Experiment 3 presented both high-negation and low-negation NPQs alongside PPQs and was designed to determine whether the structure of two NPQs might have an effect on UERs relative to each other. Overall, two L2 groups show similar UER patterns in Experiment 3, with PPQs being the most correctly answered and low-negation NPQs being the most difficult for both groups. Since even L1 English speakers had difficulty answering low-negation NPQs when all three types of PQs were presented randomly together in Experiment 3, the high UERs for low-negation NPQs by the two L2 groups were totally expected.

As illustrated in Figure 5.8, ESL group had the highest UER overall for low-negation NPQs (74.3%), a much lower UER for high-negation NPQs (9.9%), and a very low UER for polar questions (PPQs) (2.2%). A one-way ANOVA revealed that there was a statistically significant difference in UERs among all three types of PQs ( $F(2, 717) = 142.52, p < .001$ ). The EFL group also showed similar UER patterns, with the highest overall UER for low-negation NPQs (58.3%), a lower UER for high-negation NPQs

(13.3%), and a low UER for PPQs (5.4%). A one-way ANOVA revealed that there was a statistically significant difference in UERs among all three types of PQs ( $F(2, 1365) = 689.59, p < .001$ ).

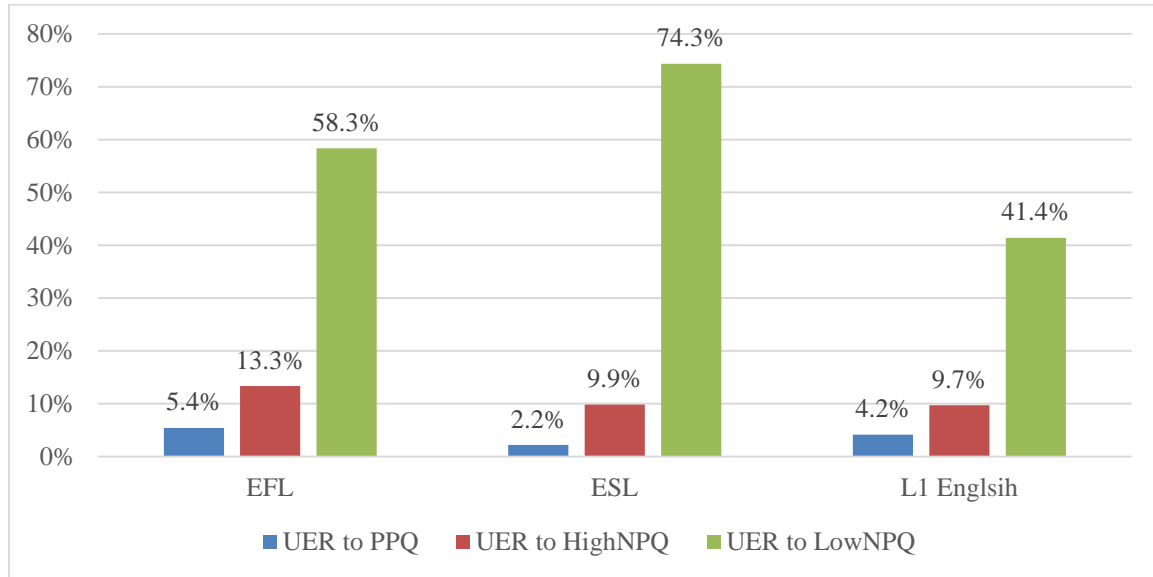


Figure 5.8 Unexpected Response Rates in Experiment 3

When comparing UERs for two NPQ types between L2 groups, I found that ESL group was slightly better (although not statistically significant) than EFL group in answering high-negation NPQs,  $t(694)=0.92, p=.36$ , but they were significantly worse than EFL group in answering low-negation NPQs,  $t(694)=-4.45, p<.001$ . This aligns with the results from Experiment 2, which showed that ESL learners struggle with low-negation NPQs. The ESL group exhibited contradictory patterns in their responses to the two types of NPQs. For high-negation NPQs, their responses were quick and accurate, even comparable to native English speakers in Experiment 1 and 3. In contrast, their responses to low-negation NPQs were the slowest and opposite to those of L1 English speakers in Experiment 2 and 3. Table 5.2 summarizes the overall UERs across all three experiments.



Table 5.2 The summary of UERs in three experiments

		Experiment 1	Experiment 2	Experiment 3
EFL	PPQ	3.8% (9/240)	3.8% (9/240)	5.4% (13/240)
	High-NPQ	27.1% (65/240)	-	13.3% (32/240)
	Low-NPQ	-	42.9% (103/240)	58.3% (140/240)
ESL	PPQ	2.3% (10/432)	5.5% (25/456)	2.2% (10/456)
	High-NPQ	5.6% (24/432)	-	9.9% (45/456)
	Low-NPQ	-	60.1% (274/456)	74.3% (339/456)

## 5.7 Discussion

RTs and UERs collected from a series of experiments show that L2 learners of English are fully aware of the semantic difference between PPQs and NPQs and respond differently to each question type. Responding to PPQs is quite straightforward and does not demand a high processing cost in choosing either *yes* or *no* answer. Most L2 learners from both groups were able to choose the correct answer quickly and accurately for PPQs. However, when negation was involved in the two distinct types of NPQs, high-negation NPQs and low-negation NPQs, two L2 groups showed distinguished developmental trajectories. The dichotomy of high-low NPQs, which is consistent with the structure of NPQs, resulted in significant differences in L2 learners' RTs and UERs.

In Experiment 1, when PPQs and high-negation NPQs were presented simultaneously, two L2 groups displayed different but anticipated RTs and UERs. The more proficient participants in the ESL group responded more accurately and quickly to high-negation NPQs than the less proficient participants in the EFL group. Analysis of the response patterns revealed by the UERs indicated that the ESL learners' responses to high-negation NPQs closely resembled those of native English speakers. In other words, ESL learners who have been exposed to native English for a long time in the USA are fully aware that

negation in high-negation NPQs does not affect the truth of the NPQ, and their response pattern to high-negation NPQs is similar to that of PPQs. In contrast, EFL learners who have low proficiency and have only been exposed to English in a classroom setting make more UERs and take longer time in finding a correct *yes/no* answer. Two EFL participants totally oppositely answered high-negation NPQs, and this answering pattern was extremely rare among both L1 speakers and ESL learners. In sum, ESL group was much more native-like in answering high-negation NPQs.

Interestingly, the native-likeness, which is consistent with L2 learners' proficiency, was completely reversed in Experiment 2 and 3. In these experiments, low-negation NPQs were presented along with other types of questions. Since ESL group was much better than EFL group in Experiment 1, the results from Experiment 2 and 3 should have shown that ESL learners are able to answer all question types better than EFL learners. However, it was consistently detected that ESL learners took longer time and committed more UERs in answering low-negation NPQs than less proficient EFL learners. This unexpected result cannot be explained by their native-like answering patterns to high-negation NPQs in Experiment 1. Due to their lower proficiency (as confirmed in Experiment 1 with slower RTs and higher UERs to high-negation NPQs), it was expected that EFL learners would have more difficulty answering low-negation NPQs in Experiments 2 and 3, which are the most complex and ambiguous type of questions. Two EFL participants almost oppositely answered low-negation NPQs, and the worst case was that many EFL learners randomly answered low-negation NPQs, resulting in inconsistent responses between two opposite answering patterns. Nevertheless, the responses of the ESL group to low-negation NPQs were even more problematic than those of the EFL group.

### 5.7.1 The influence of L1 transfer?

Why did ESL learners perform worse than EFL learners specifically in answering low-negation NPQs? Are they less proficient to properly answer English low-negation NPQs than EFL learners? If it is the case, how did they show better (almost native-like) answering choices to high-negation NPQs in Experiment 1? One might assume that L2 interpretation of NPQs can be ruined by L1-L2 differences. As discussed in Section 5.2, L1 Korean has two different forms of NPQs, SFN-NPQ and LFN-NPQ, which are usually answered in opposite ways. When compared to the English NPQs utilized in the current experiments, Korean SFN-NPQs are typically interpreted as English low-negation NPQs, and Korean LFN-NPQs are typically interpreted as English high-negation NPQs. Repeated below, answering patterns to English and Korean NPQs in (15) and (16) are parallel, and those to NPQs in (17) and (18) are parallel each other.

(15) Q: Didn't you see him? (English high-NPQ)

A: Yes. = 'I did see him.' / No. = 'I did not see him.'

(16) Q: ne-nun ku-ul po-ci **anh**-ass-ni? (Korean LFN-NPQ)

you-NOM he-ACC see-NMLZ NEG.do-PST-Q

'Didn't you see him?'

A: Ung. = 'I did see him.' / Ani. = 'I did not see him.'

yes

no

(17) Q: Did you really **not** see him? (English low-NPQ)

A: Yes. = 'I really didn't see him.' / No. = 'I did see him.'



### 5.7.2 Poverty of the stimulus

Regarding Korean L2 learners' uniform answering patterns to two forms of English NPQs, I could find an answer in post-test interviews. Some ESL and EFL participants mentioned that they had learned that English NPQs should be interpreted oppositely to Korean NPQs from non-native English teachers in middle and high school. During the experiment, these participants consciously tried to answer all English NPQs in the same way regardless of the forms of NPQs. That is, they recognized that there were two distinct NPQs in the experiment, but they anyway treated them as the same English NPQs following the grammar they were taught in school. The idea that English and Korean NPQs are answered oppositely is the key mechanism in the traditional answering dichotomy. In many cases, this simplification of the dichotomy would cause serious misunderstanding for L2 learners when interpreting NPQs in foreign or second languages.

Other participants in the experiment also expressed concerns about the ambiguity of English NPQs. Many ESL participants admitted that they had been consistently confused when native English speakers used NPQs in natural conversation. Despite having lived in the USA for an extended period and self-evaluating their English proficiency as adequate, the use of English NPQs had always been a source of confusion for them. They also reported previous experiences that they often chose a wrong answer, which was opposite to their own intention, and then they recast the answer immediately by themselves. Even in worse cases, questioners who asked an NPQ sometimes tried to ask again to make sure the meaning of the *unexpected* answer. Then, L2 learners could realize that they had provided an incorrect response.

From the current experimental results and new information from the post-experiment interviews, it has been confirmed that authentic L2 inputs play a crucial role in determining the level of ultimate attainment. The “poverty of stimulus” (POS) is a well-known idea in language acquisition studies based on generative grammar, which examines whether young learners acquire their L1 naturally by following a universal sequence of acquisition without requiring enough high-quality input. Nonetheless, there is still debate on whether children who are acquiring their L1 need to be exposed to every aspect of its grammar, given that they eventually attain adult-like proficiency without explicit instruction.

In the present study, proficient L2 learners were unable to accurately answer complex and ambiguous NPQs in a manner consistent with native speakers. They consistently provided opposite answers to low-negation NPQs, reflecting what they had learned in school. Their interpretation of English NPQs relied solely on the grammar rules they had been taught in their L2 classroom. The advanced ESL learners were more adherent to the rules they had learned compared to the less proficient EFL learners. Results from Experiment 2 and 3 indicated that the ESL group had slower RTs and higher UERs for low-negation NPQs. Despite being exposed to native English for a minimum of one year, ESL participants may not have had sufficient exposure to acquire semantically or pragmatically ambiguous and infrequently used English NPQ structures. This suggests that syntactically complex and semantically and pragmatically ambiguous L2 grammar cannot be acquired naturally, as in L1 acquisition. When a particular grammar structure is not as prominent and infrequently used in natural language, it may take a significantly longer time, or even be impossible, to attain a native-like level of proficiency.

The literature has extensively emphasized the significance of inputs in L2 acquisition. Previous studies have attempted to examine the role of POS in native versus non-native language acquisition. In contrast to the results from the present study, research on the acquisition of German word order by English speakers has demonstrated that adult English learners of German can acquire the scrambling of complex XPs and remnant movement naturally, despite these structures being extremely rare in spoken and written German. In Schreiber and Sprouse (1998) and Hopp (2002, 2005)'s research, advanced (and even intermediate) L2 learners could distinguish the possibility and impossibility of remnant movement in German. Despite two facts that i) scrambling does not exist in L1 English and ii) German language instruction does not teach the difference between intact movement and remnant movement, English speakers of German did not have problems in acquiring the complex syntactic derivation. One possible reason for Korean learners' unavailability of Universal Grammar is that the current Korean L2 participants were taught to treat all English NPQs the same, without precise instruction regarding two forms of NPQs. Future studies need to test whether explicit instruction can positively affect the L2 interpretation of English NPQs or not.

#### 5.7.3 Are two distinct forms of English NPQs teachable?

Many Korean participants in the present experiments reported being taught that L2 English NPQs should be answered oppositely to L1 Korean NPQs. Analysis of the in-person interview has raised two questions: First, does explicit instruction in the classroom guide L2 learners in sequential L2 development? And second, can L2 learners acquire particular grammar rules outside the classroom following universal development stages, similar to L1 child speakers? The current experimental study did not strictly control for the

learning experience of English NPQs, making it challenging to determine if the instruction in L2 English classroom in Korea negatively affects the slower RTs and higher UERs of ESL participants. The effectiveness of explicit rule instruction in L2 classroom regarding the interpretation of English NPQs is still questionable. It is important for future research to examine how L2 learners develop their understanding of NPQs while controlling for explicit instruction in the classroom. Pienemann (1989) previously demonstrated that the teachability of language is constrained by their current proficiency. In other words, learners must reach a certain prerequisite level of proficiency before they can successfully learn more complex structures through natural acquisition.

As indicated above, the order of acquisition from Stages  $X$  to  $X + 3$  can be explained by the processing complexity implied in the corresponding structures. It has been shown that the processing operation characterizing Stage  $X + 1$  is also required for Stage  $X + 2$ , and that likewise the operation characterizing Stage  $X + 2$  is required for Stage  $X + 3$ . In addition, however, for each later structure an additional operation has to be performed. Thus structures from Stage  $X + 3$  cannot be processed by learners at Stage  $X$  or  $X + 1$ , since these learners have not yet acquired a necessary processing prerequisite for the operation in question. (Pienemann 1989, p. 60)

Furthermore, Pienemann cautions that formal language teaching cannot alter the natural process of language acquisition. In other words, it is almost impossible that Stage  $X + 3$  is completed before Stage  $X$  is completed. However, if adequate formal instruction is presented to learners who are able to fully digest it, the instruction can accelerate the natural acquisition process.



In order to investigate the development stages in the acquisition of English NPQs, several recent studies have tried to examine how L1 English-speaking children use different types of NPQs. Woods & Roeper (2020, 2021) conducted corpus studies analyzing the developmental sequences of English NPQs among child L1 speakers. The data from the corpus shows that children first start using tag questions before they can accurately produce high-negation NPQs with subject-auxiliary inversion. The data also indicates that the use of tag questions follows the productive use of positive *yes-no* questions. This parallel sequence between PPQs and tag questions is explained by the fact that these two question types do not contain propositional negation inside. In contrast, high-negation NPQs are syntactically and pragmatically more complex, and the acquisition of them is slightly delayed until child L1 speakers fully understand the pragmatic function of high-negation NPQs. Moreover, low-negation NPQs without contraction of sentential negation are very rarely used by child L1 speakers even after they have correctly used other NPQ forms. This suggests that even native speakers require a long time to use low-negation NPQs precisely and productively in natural language.

Turning back to the current study, the majority of novice EFL learners could not distinguish two forms of English NPQs and almost randomly answer them. In contrast, advanced ESL learners were able to recognize the distinct forms of high- and low-negation NPQs but treat them as the same NPQs since they had limited exposure to NPQ structures that are interpreted differently in English and Korean. Aligning with the Teachability Hypothesis, the findings from L1 corpus studies and the current L2 experiment suggest that Korean EFL learners much lag behind ESL learners in the natural acquisition trajectory of English NPQs. Considering the effect of teaching in L2 acquisition, basic and intermediate

learners of English might need more time to fully understand semantics and pragmatic implicatures intertwined with high- and low-negation NPQs, whereas advanced L2 learners of English might easily overcome the problems with the ambiguity of English NPQs if they are provided with well-organized language instruction and ample opportunities to practice a variety of NPQs both inside and outside of the L2 classroom.

## 5.8 Conclusion

In the present study, I conducted experiments to compare two L2 groups (EFL and ESL) and found that acquiring syntactically and semantically ambiguous structures is challenging for L2 learners. The data collected from online experiments revealed that L2 learners of English are aware of the semantic difference between PPQs and NPQs and respond differently to each question type. Responding to PPQs is relatively straightforward, and most L2 learners quickly and accurately answered them. However, when negation is involved in the two distinct types of NPQs, Korean L2 learners of English showed different acquisitional trajectories depending on their proficiency level.

As expected, the ESL group outperformed the EFL group in terms of accuracy and speed in answering high-negation questions. The UERs show that ESL learners' responses to high-negation questions almost analogizes with those of native English speakers. This means that ESL learners who have been exposed to native English for a considerable period of time are fully aware that negation in high-negation questions is not usually considered in the truth condition of the NPQ. Interestingly, unlike the finding that ESL learners performed almost as well as native speakers in answering high-negation questions, their responses to low-negation questions were much worse than those of EFL learners. The high UERs generated by EFL learners can be attributed to their inadequate proficiency,

leading to random responses to both types of English NPQs. On the other hand, ESL learners consistently answered low-negation questions as if they were high-negation questions. Many L2 participants reported that they were taught in middle and high schools that English NPQs should be answered opposite to Korean NPQs. As a result, they answered all English NPQs in the same way, regardless of their form.

It is still unclear why advanced ESL learners have difficulty exclusively with low-negation NPQs. It could be because these forms of English NPQs are not taught adequately in the L2 classroom, or the L2 learners may lack explicit knowledge of the distinction. Additionally, it is somewhat uncertain if this grammatical knowledge can be taught or if the current L2 participants are not yet capable of understanding the two NPQ structures. Further research is needed to address these questions.

## CHAPTER 6

### L2 LEARNER AWARENESS OF NPQS AND POTENTIAL/LIMITATION OF INSTRUCTION

#### 6. 1 Introduction

This chapter focusing on cross-linguistic similarities and differences between English and Korean negative polar questions (NPQs) (i) reports that Korean L2 learners of English have difficulties in answering English NPQs, (ii) highlights the negative effects of the traditional answering dichotomy in L2 acquisition of NPQs, and (iii) proposes a way of presenting authentic materials that would help L2 learners to acquire the native-like interpretation of English NPQs.

The previous chapter demonstrated that Korean learners of English, regardless of their proficiency level, commonly struggle with responding to English NPQs. Moreover, it was also revealed that advanced L2 learners had more difficulties answering low-negation NPQs, with slower response times (RTs) and higher unexpected responses (UERs). By analyzing post-experiment interviews, two findings emerged: firstly, advanced ESL learners were able to distinguish between the two distinct forms of English NPQs used in the experiments, which caused confusion. Secondly, many participants mentioned that they had learned that English NPQs should be answered in the opposite way to Korean NPQs. Advanced ESL learners are cognizant of the two distinct types of English NPQs and might engage in more thoughtful interpretation of their meanings in real-time. One potential explanation for the unexpected results from the online experiments is that structured L2

classroom instruction, which instructs learners to answer English NPQs in the opposite way to Korean NPQs, could contribute to the difficulty in comprehending and responding to ambiguous NPQs.

This chapter is structured as follows: In Section 6.2, I maintain the position that the traditional approach to teaching English NPQs, which relies on a dichotomy of answering patterns, is the main cause of inappropriate instruction and negatively impacts L2 acquisition of NPQs. In Section 6.3 and 6.4, it is examined that most English grammar books and English language textbooks used in L2 classroom do not present sufficient learning materials to acquire the form and meaning of English NPQs. While L2 learners do not necessarily acquire everything taught in the classroom or fail to learn anything that is not taught, there is no doubt L2 learners are limited in their exposure to learning materials compared to L1 acquisition, where child L1 speakers are exposed to a variety of comprehensible inputs. Finally, Section 6.5 tries to suggest a pedagogical agenda for future SLA research about how L2 interpretation of NPQs can be enhanced in L2 classroom.

## 6.2 The myth of traditional answering typology in L2 acquisition

According to the traditional view of the interpretation of NPQs, languages are categorized in regard into either polarity-based or truth-based systems (Holmberg 2013; Jones 1999; Kuno 1973; Pope 1976). English-type languages are taken to use polarity-based interpretation of NPQs, wherein a *yes* answer to an NPQ confirms the positive proposition, and a *no* answer denies it. In contrast, Korean-type languages are deemed to use truth-based NPQ interpretations, where *yes* answers deny the proposition contained in the question, and *no* answers affirm it. Most of previous L1 and L2 studies have examined the acquisition of NPQs based on the traditional approach to the answering typology, and

they commonly reported that L2 learners have difficulties in the acquisition of L2 NPQs caused by L1-L2 differences.

As demonstrated in (1) and (2), English is recognized for employing polarity-based responses, which entail responding to positive polar questions (PPQs) and negative polar questions (NPQs) in the same way. In contrast, (3) and (4) illustrate that Korean, known for its truth-based response patterns, has opposite responses to PPQs and NPQs.

(1) Q: Are you hungry?

A: Yes, I am hungry.

No, I am not hungry.

(2) Q: Aren't you hungry?

A: Yes, I am hungry.

No, I am not hungry.

(3) Q: pay kop-ni? 'Are you hungry?'

stomach hungry-Q?

A: ung, pay kopha. 'Yes, I am hungry.'

yes stomach hungry

ani, pay an kopha. 'No, I am not hungry.'

no stomach NEG hungry

*(continued on p. 166)*

- (4) Q: pay            **an**       kop-ni?                            ‘Aren’t you hungry?’  
                  stomach       NEG       hungry-Q?
- A: ung,       pay            an       kopha.                            ‘Yes, I am not hungry.’  
                  yes       stomach       NEG       hungry  
                  ani,       pay            kopha.                            ‘No, I am hungry.’  
                  no       stomach       hungry

The comparison of English and Korean NPQs clearly demonstrates that responses of *yes* and *no* have completely opposite meanings. Exclusively with these question-answer pairs, previous descriptions of these differences cast them as typological. Under the traditional typology, the majority of previous L2 studies agree that L2 learners’ poor performance on the interpretation of NPQs is taken for granted and is mainly caused by the opposite answering pattern between learners’ L1 and the target language (Kim 1985; Choi 1991; Akiyama 1979, 1992; Lim 2002; Hiramatsu 2003; Parrish & Tomaoka 2010; Xu & Snyder 2011; Choi 2014; Park 2015; Ko 2017; Zhang & Vanek 2021;). This kind of analysis is based on the theoretical assumption that L1 English and L1 Korean speakers exclusively use one of two opposite interpretations when responding to NPQs in their native language.

The idea that English and Korean NPQs can be categorized solely based on polarity-based or truth-based interpretations, as illustrated in (2) and (4), is an oversimplified generalization. In reality, both languages allow for both polarity-based and truth-based interpretations, and native speakers of these languages are fully aware of this. As such, English and Korean NPQs can be answered in both ways, as shown in (5) and (6), respectively.

(5) Q: Are you (really) **not** hungry?

A: Yes, I am not hungry.

No, I am hungry.

(6) Q: pay                      kop-ci                      **anh**-ni?                      ‘Aren’t you hungry?’

stomach                      hungry-NMIZ                      NEG.do-Q?

A: ung                      pay                      kopha.                      ‘Yes, I am hungry.’

yes                      stomach                      hungry

ani                      pay                      an                      kopha.                      ‘No, I am not hungry.’

no                      stomach                      NEG                      hungry

The answering patterns in (5) and (6) are totally opposite to the typical English and Korean answers in (2) and (4). Despite the fact that these two types of NPQs are frequently used in natural language conversation, previous L1 and L2 acquisition studies have not taken into account the semantic and pragmatic difference between these questions. As well as the inherent linguistic ambiguity of NPQ constructions, the quality and quantity of L2 input might strongly influence on native-like attainment of L2 NPQ. It should be noted that the existence of two distinct NPQs in each language has been ignored and not explicitly taught in L2 classrooms. L2 learners who have ordinarily been taught to be aware of the traditional typology, which one-sidedly focuses on the distinction in (2) and (4), might not much been exposed to the atypical forms of NPQs in (5) and (6). Recent literature on L2 acquisition shows that even advanced L2 learners struggle to differentiate between two types of NPQs in English. Given the challenges related to both teachability and learnability of NPQ structures, it is assumed that the existing difficulties in the acquisition of L2 NPQs are not



simply caused by its own linguistic complexity and ambiguity. Instead, it is highly questionable whether even proficient L2 learners cannot correctly answer L2 NPQs since they have not explicitly taught the distinct form and meaning of L2 NPQs. In the following section, I will investigate how English and Korean grammar books and L2 textbooks teach the two distinct forms of NPQs.

### 6.3 English and Korean NPQs in grammar books

#### 6.3.1 English NPQs in English grammar books

The traditional typology of answering systems divides languages into two groups, and English and Korean have been considered using the opposing answering patterns to NPQs. With blind trust and acceptance of the traditional dichotomy, the amount of exposure to various types of NPQs in L2 classrooms has been insufficient. Compared to L1 acquisition, which is enhanced by diverse authentic learning resources, L2 inputs are seemingly depending on what is actually instructed in L2 classrooms. This is especially problematic in EFL settings where classroom-based learning materials are the primary source of L2 input. As a result, L2 learners may struggle to acquire grammatical structures and expressions that are not explicitly taught in the classroom. The idea behind the importance of L2 input brings this section to investigate the examples of NPQs in learning materials.

This section closely examines English grammar books and English language textbooks in order to demonstrate how English NPQs are actually taught in classrooms. Thus, the current examination of English learning materials reveals why L2 English learners cannot easily acquire native-like answering patterns, often hesitate to choose a proper *yes* or *no* answer to NPQs, and sometimes (mistakenly) choose a wrong/opposite answer. The bottom line here is that while most English grammar books deal with the differences between

positive and negative *yes-no* questions, they do not clearly distinguish the meaning of high-negation NPQs (i.e., contracted NPQs) and low-negation NPQs (i.e., non-contracted NPQs). These books normally explain that English NPQs are biased questions compared to its counterpart non-biased neutral PPQs. *Cambridge grammar of English* by Carter & McCarthy (2006) explains that English NPQs are mostly used to check questions' previous believes or expectations.

Negative *yes-no* interrogatives are typically used to ask questions which function to check or confirm something which the speaker believes or expects to be the case, or which the speaker considers to be a viable course of action.

(*Cambridge grammar of English*, p.537)

Similarly, the book *English Syntax* by Baker (1995) explains that questioners use NPQs as a means of reconciling current information with their prior knowledge when the two are not matched.

When questioner has just discovered grounds for doubting the truth of something that had previously been taken for granted.

(26) Didn't you pay the light bill?

Carol has been assuming all along that Henry paid the light bill for their apartment, but then they get a letter threatening them with a cutoff of electrical service.

(*English Syntax*, p. 463)

*The Cambridge grammar of the English language* by Huddleston & Pullum (2002) also maintains the same position regarding the use of English NPQs. More specifically, it

suggests that English NPQs are biased to a positive answer and allow positive polarity items (PPIs) in the scope of negation.

Negative interrogatives are normally used to ask biased rather than neutral questions, and when there is bias towards a positive answer this is sufficient to admit the PPIs even though they are in the scope of the negative.

*(The Cambridge grammar of the English language, p.830)*

A biased question is one where the speaker is predisposed to accept one particular answer as the right one. A neutral question lacks such bias towards one answer rather than another: it is the default category on this dimension. The distinction between neutral and biased questions applies primarily to polar questions. Compare, for example:

- (32)i. Did you get any annuity, superannuation, or other pension? [neutral]
- ii. Doesn't she like it? [biased]

*(The Cambridge grammar of the English language, p.879)*

A slightly different explanation is found in *the Oxford Handbook of English Grammar* by Aarts et al. (2020). This emphasizes that the insertion of negation in neutral PPQs makes them to be either positively or negatively biased.

Polar questions are basically neutral in their expectations of an answer. There are, however, various lexical and grammatical means for expressing a bias. The most important of these is the insertion of a negation. Interestingly enough, an interrogative

clause like (16a–b) can express either a negative or a positive bias, depending on the context (cf. Huddleston and Pullum 2002: 879ff.).

- (16) a. Didn't I tell you that Bill is in France at the moment? (I thought I did, but your reactions suggest I did not.)
- b. Didn't I tell you that Bill was in France at the moment? (So, how can you suggest that we go and see him!)
- c. Did I tell you that Bill is in France this week? (neutral)

(*The Oxford Handbook of English Grammar*, p. 388)

In addition to all the citations above, it is a common consensus among many grammar books and language textbooks that questioners who ask NPQs have a preexisting expectation or belief which may influence their bias towards a particular answer based on the current conversational context.

Interestingly, most of these sources provide examples of high-negation NPQs (i.e., those with a contracted form of negation). While some grammar books do briefly touch on the form and meaning of low-negation NPQs (i.e., non-contracted NPQs), they simply treat the low-negation NPQ as a more formal version of the contracted NPQs. *The grammar book* by Celce-Murcia & Larsen-Freeman (1999) does offer a comparison between contracted and non-contracted NPQs, but it does not delve into the semantic and pragmatic differences between the two forms of English NPQs. In most English grammar books, examples of non-contracted NPQs are typically discussed in terms of their formality of use.

In English negative y/n questions, the negative may appear in both contracted and uncontracted forms. Only the contracted form, however, may appear sentence-initially as part of an operator.

Isn't it appropriate to ask?

Is it not appropriate to ask?

The question with the uncontracted negative after the subject is more formal than its counterpart with a question-initial contracted negative.

(*The grammar book*, p. 217–218)

*Cambridge grammar of English* by Carter & McCarthy (2006) also provide some examples of low-negation NPQs, but they primarily focus on the different positions of *not* and *n't* within the NPQs. There is no further clarification regarding the semantic distinction between contracted and non-contracted NPQs.

The negative is formed with *not*, and is most frequently contracted to *n't*. Sentences with the full form *not* are more formal than those with contracted *n't*:

Wasn't he here at the party?

Don't you want any tea or coffee?

When the full form is used, *not* comes after the subject:

Could you not hear me? (Please confirm, yes or no)

Should we not photocopy it? (I consider this a desirable action)

(*Cambridge grammar of English*, p.537)

Apart from its formality, *Advanced grammar in use* by Hewings (2013) notes that the non-contracted form of NPQs can be used to convey a sense of anger, surprise, or persuasion. In other words, “*Did you not...?*” is a more emphatic question than “*Didn’t you...?*”.

In formal contexts, or when we want to give some special emphasis to the negative (perhaps to show that we are angry, very surprised, or to strongly persuade someone), we can use *not* after the subject in negative questions. This happens particularly in *yes/no* rather than *wh*-questions.

Did she not realize that she’d broken it? (*less emphatically* Didn’t she realize that...?)

Can you not get there a bit earlier? (*less emphatically* Can’t you...?)

(*Advanced grammar in use*, p. 54)

Other grammar books also provide explanations regarding the level of formality of NPQs with and without the contraction of negation. According to *Understanding and Using English Grammar* by Azar & Hagen (2009), non-contracted NPQs are considered formal but are not used as frequently as contracted NPQs. Moreover, *Collins COBUILD English Grammar* by Collins UK (2017) asserts that in formal English NPQs, only auxiliary *do/did* moves to the sentence initial position, leaving the negation behind the subject.

In a *yes/no* question in which the verb is negative, usually a contraction (e.g., *does + not = doesn’t*) is used, as in (a). Example (b) is very formal and is usually not used in everyday speech. Negative questions are used to indicate the speaker’s idea (i.e., what she/he believes is or is not true) or attitude (e.g., surprise, shock, annoyance, anger).

(a) Doesn't she live in the dormitory?

(b) Does she not live in the dormitory? (very formal)

(*Understanding and Using English Grammar*, p. 458)

You can form negative questions by putting *didn't* in front of the subject, followed by the subject and *used to* or *use to*.

Didn't they use to mind?

In more formal English, *did* is put in front of the subject and *not* after it, followed by *used to* or *use to*.

Did she not use to smile?

(*Collins COBUILD English Grammar*, p. 607)

With the grammatical descriptions of English NPQs in grammar books mentioned above, L1/L2 learners of English may be able to clearly understand the unique function of NPQs distinguished from neutral PPQs. Ironically, however, most grammar books fail to provide clear instructions on how to respond to diverse NPQs. They typically offer examples of questions without demonstrating potential answers. It seems that these books assume that contracted and non-contracted NPQs should be answered in the same way. The only resource that provides some guidance on answering positive and negative NPQs is *the Cambridge grammar of the English language*, which suggests that *yes* and *no* answering particles can be used alone or in combination with following phrases.

*Yes* and *no* serve as markers of positive and negative polarity in answers to questions. They may stand alone, or combine with a clause that expresses the answer more explicitly.

- (7) i a. A: Is this car yours? B: Yes (it is). No (it isn't).  
 b. A: Isn't this car yours? B: Yes (it is). No (it isn't).  
 ii a. A: He has gone, hasn't he? B: Yes (he has). No (he hasn't).  
 b. A: He hasn't gone, has he? B: Yes (he has). No (he hasn't).

(*The Cambridge grammar of the English language*, p.848)

*The Cambridge Grammar of the English Language* provides additional information, stating that the selection of *yes* or *no* as answering particles is determined by the polarity of the response rather than the polarity of the question. That is, the answers to both (7ia) and (7ib) should be the same, regardless of the type of questions. The book also highlights that “*Yes, it isn't*” and “*No, it is*” are grammatically incorrect. However, in some abnormal or unusual contexts, native speakers of English may use these answers grammatically, and it is more common when answering non-contracted NPQs. Despite this possibility, none of the English grammar books offer any explanations on how to properly respond to non-contracted NPQs.

### 6.3.2 Korean NPQs in Korean grammar books

Korean grammar books extensively cover the structure of sentential negation and interrogative sentences (including *wh*-questions, tag questions, and *yes/no* questions). Since Korean interrogatives do not operate subject auxiliary inversion like English interrogatives, grammar books especially focus on the use of unique question ending particles and intonation contour to form question formations. They present examples of Korean NPQs with both short form negation (SFN) and long form negation (LFN), which are distinct structures of negation in Korean. According to *Basic Korean* by Byon (2009),



the Korean negator *an* ‘not’ can be used in interrogative sentences, but not in imperative or propositive sentences.

The short form negation is used for declarative and interrogative sentence types, but not for imperative and propositive sentence types. For instance, consider the deferential speech level that has four different endings for each sentence type:

Declarative: 고기를 안 먹습니다 “(I) do not eat meat”

Interrogative: 고기를 안 먹습니까? “Don’t (you) eat meat?”

Imperative: 고기를 안 먹으십시오 (X)

Propositive: 고기를 안 먹으십시오 (X)

(*Basic Korean*, p. 142)

Just like the short form negation, the long form negation is used only for declarative and interrogative sentence types, but not for imperative and propositive sentence types.

Declarative: 고기를 먹지 않습니다 “(I) do not eat meat”

Interrogative: 고기를 먹지 않습니까? “Don’t (you) eat meat?”

Imperative: 고기를 먹지 않으십시오 (X)

Propositive: 고기를 먹지 않습니다 (X)

(*Basic Korean*, p. 144)

Regarding the difference between SFN-NPQs and LFN-NPQs, *Standard Korean grammar* by Nam et al. (2019) explains that some Korean verbs and adjective predicates are not allowed in SFN-NPQs, but there are no such restrictions in LFN-NPQs (see Nam et al. (2019) for more examples). Moreover, Nam et al. (2019) point out that LFN-NPQs

can sometimes be used as a confirmation question, and this question should be intonated with a falling tone at the end of the question. *The Korean language* by Sohn (1999) also provides a similar explanation for this special use of LFN-NPQs.

One productive rhetorical pattern is the confirmatory expression *-ci an-h?* and its contracted form *-c-an-h?* ‘doesn’t/didn’t it?!, isn’t/wasn’t it?!’ This pattern is similar in meaning to tag questions in English. The sentence has a falling intonation, and the main clause is always in the present tense regardless of the embedded tense. Compare a regular negative expression in (222a) and the rhetorical expression in (222b).

- (222) a. pi-ka            o-ci            an-h-ass-e.yo?  
          Rain-NOM    come-NMLZ    NEG-do-PST-DECL.POL  
          ‘Didn’t it rain?’
- b. pi-ka            w-ass-ci            an-h-a.yo?  
          rain-NOM    come-PST-NMLZ    NEG-do-DECL.POL  
          ‘It rained, didn’t it?!’

In regular long-form negation, the embedded verb is always in the non-past tense, being controlled by the matrix tense. In rhetorical negation, however, *-ci an-h/-c-an-h* may be regarded as having been grammaticalized as a kind of modal suffix whose meaning is the speaker’s seeking of the hearer’s confirmation. Thus, the embedded predicate functions as if it is the only predicate in the sentence, taking a tense suffix of its own.

(*The Korean language*, p. 394)

However, in natural Korean conversations, the regular LFN-NPQs which tense markers are amalgamated in negative auxiliary complex at the end of question can also have the confirmation function to check questioner's expectation. Many other Korean grammar books provide similar explanations for this function of LFN-NPQs. *Korean grammar for international learners* by Ihm et al. (2001) presents various examples of Korean NPQ with LFN which are used to confirm the questioner's assumptions.

Though negative in form, this pattern has no negative meaning and instead is used to seek confirmation of the content of the predicate. In such cases, only the Long Form negation can be used.

Examples :

이 김치가 맵지 않아요?

Isn't this kimchi hot? [I assume so, please confirm]

철수는 집에 갔지 않니?

Didn't Cholsu go home? [I assume so, please confirm]

너는 밥을 먹지 않았니?

Haven't you eaten? [I assume so, please confirm]

이 문장은 벌써 배우지 않았습니까?

Haven't you learned this sentence already? [I assume so, please confirm]

제가 지난 번에 알려 드리지 않았습니까?

Didn't I inform you (about this) last time? [I assume so, please confirm]

(*Korean grammar for international learners*, p. 217)

Unfortunately, Korean grammar books do not provide any examples of positive and negative answers to Korean NPQs. Despite that confirmation NPQs and regular NPQs

might carry different interpretations and should be answered differently, these grammar books do not clarify the proper use of *yes* and *no* answers to ambiguous NPQs. It is assumed that answering patterns to confirming LFN-NPQs are similar to English high-negation (contracted) NPQs, provided that they have a similar meaning to English tag questions. I could find an example of a negative answer with *ani* ‘not’ in *the Korean language* by Sohn (1999). However, it only shows a negative answer to an SFN-NPQ. The primary explanation for how to answer NPQs rests on the old notion that the meaning of *yes* and *no* answers to English NPQs and Korean NPQs is divergent. This idea aligns with the traditional answering dichotomy.

The adverb *ani* is used as a sentential adverb in the sense of ‘No’ in response to a question, as in (215). Notice here that unlike in English, *ani* is not related to the truth of the event, but negates the semantic content of what the interlocutor is asking.

(215) A: Cihwan.i an ttena-ss-ni?

Cihwan NEG leave-PST-Q

‘Didn’t Cihwan leave?’

B: ani-yo.

no-POL

‘No. (She did.)’

(*The Korean language*, p. 390)

In addition to Korean grammar books, numerous Korean language textbooks designed for foreign learners are currently in use at various universities and institutions in South Korea. These textbooks have been created by institutions such as Seoul National

University, Ehwa Women's University, King Sejong institute, Yonsei University, Sogang University, Kyunghee University, University of Hawaii at Manoa, and some others to teach L2 Korean to international students. These L2 Korean textbooks are well organized in line with various proficiency levels, ranging from beginner to advanced.

As speaking is considered one of the most important language skills for L2 learners, Korean language textbooks present sufficient example dialogues and speaking activities that could be encountered in a variety of conversational contexts. Through these activities, Korean *yes-no* questions and *wh*-questions are frequently exposed in all proficiency levels, allowing L2 learners to naturally practice asking and answering to the questions. Most Korean textbooks focus heavily on teaching how to respond to simple *yes-no* questions at lower levels, and later apply this knowledge to longer and more complex dialogues in higher levels. However, the current examination of Korean textbooks reveals that the examples of *yes-no* questions in the textbooks are excessively skewed to PPQs, and the majority of NPQs are SFN-NPQs as in (7)-(9) below.

(7) Q: cikum      sa-nun          cip-i          maum-ey      an          tul-eyo?  
          now      live-MOD      house-NOM      mind-to          NEG          get.in-HON.Q

‘Don’t you like the current house?’

A: ney,      hoysa-eyse          com      mel-ese-yo.  
      yes,      company-from      little      be.far-because-HON.DECL

‘Yes, (I don’t like it) because it is a little far from my office.’

(*Sejong Korean 2*, p.150)

(continued on p. 181)

(8) Q: cikum an pappu-seyyo?

now NEG busy-HON.Q

‘Are you not busy now?’

A: ney, kwaynchanh-ayo.

yes, be.okay-HON.DECL

‘Yes, I am not busy.’

(*Yonsei Korean I*, p.272)

(9) Q: kamki acik an na-ass-eyo?

flu yet NEG recover-PRES-HON.Q

‘Have you not got over your flu yet?’

A: ney, kichim-i kyeysok na-yo.

yes, cough-NOM continuously come.out-HON.DECL

‘Yes, I continuously have a cough.’

(*Seoul University Korean 2b*, p.50)

While Korean textbooks do include examples of both SFN- and LFN-NPQs, they do not provide clear and explicit grammatical instructions on the different meanings of these two forms of NPQs and appropriate responses to each type. The more confusing case is that examples (10) and (11) of LFN-NPQs demonstrate contradictory meanings despite being in the same construction.

(10) Q: haksayngcung-ul        mantul-ci        anh-ass-eyo?

Student ID-ACC        make-NMLZ        NEG.do-PST-Q

‘Didn’t you make a student ID card?’

A: ney,        acik        mantul-ci        anh-ass-eyo.

yes,        yet        make-NMLZ        NEG.do-PST-DECL

‘Yes, I haven’t made it yet.’

(*Ehwa Korean 1-2*, p.26)

(11) Q: wuntonghanun-key        himtul-ci        anh-ayo?

Exercise-NMLZ.NOM        difficult-NMLZ        NEG.do-Q

‘Isn’t working out hard?’

A: ney, haciman kenkang-ul wihayse yelsimhi wuntong-ul hal-kkeyey-yo.

yes, but        health-ACC for        hard        exercise-ACC will-HON.DECL

‘Yes, (it is). But (I) will work out hard for my health.’

(*Ehwa Korean 2-1*, p.116)

When comparing in (10) and (11), it becomes evident that the same *ney* ‘yes’ answers to Korean LFN-NPQs can lead to opposite interpretations. In other words, the interpretation of NPQ (10) is similar to an English NPQ with a non-contracted low negation, whereas the interpretation of NPQ (11) is similar to an English NPQ with a contracted high negation. Thus, a *yes* answer to LFN-NPQ (10) means ‘I haven’t made my ID yet’, whereas a *yes* answer to LFN-NPQ (11) means that ‘Exercise is hard.’ Unfortunately, the textbook does not give explicit instructions on the difference. This lack of clarification could lead to

confusion, especially for low-proficiency L2 learners who are not yet familiar with Korean NPQs.

In some cases, answers to *yes-no* questions in real-life conversations may not include the typical *yes* or *no* particles and instead use a positive or negative statement that directly answers the question. However, this can be more confusing for L2 learners, as the absence of the specific particles makes it difficult to understand the intended meaning of the response.

(12) Q: hankwuk salam-un nwukwuna maywun umsik-ul cohaha-ci anh-ayo?

Korean people-TOP everyone spicy food-ACC like-NMLZ NEG.do-HON.Q

‘Doesn’t every Korean like spicy food?’

A: hankwuk salam-ilako ta maywun umsik-ul cohaha-nun-ken ani-eyyo.

Korean people-COP.MOD all spicy food-ACC like-MOD-NMLZ NEG-HON.DECL

‘Not all Korean people like spicy food.’

(*Seoul University Korean 3b*, p.200)

The answer in (12) has a negative meaning in response to the previous question, which is interpreted as a high-negation NPQ. Thus, if *aniyo* ‘no’ is used as the response particle, it would be appropriate. Since this LFN-NPQ is ambiguous between high-negation and low-negation NPQ interpretations, besides simply presenting examples of Korean NPQs, it is important to clearly explain the difference in L2 classroom.

Based on the analysis of grammar books and language textbooks in this section, it has been determined that there are two distinct types of NPQs that are commonly used in both English and Korean languages. This finding highlights the fact that the traditional



classification of answering patterns is not accurate. While English is considered a polarity-based language and Korean is considered a truth-based language, examples of natural language conversations indicate that both English and Korean NPQs can be interpreted as either truth-based or polarity-based. Despite this, current grammar books and textbooks continue to ignore the semantic and pragmatic differences between the two forms of NPQs and follow the traditional dichotomy. The limitations of L2 inputs have a more significant impact on L2 learning in classroom settings that heavily rely on these materials. In such settings, the misunderstandings of answering patterns originating from the traditional typology can be reinforced by incorrect or skewed instructional content. While L2 learners can naturally encounter diverse types of NPQs outside of the classroom, this is literally impossible in foreign language learning contexts. Additionally, further research is necessary to determine whether semantically and pragmatically ambiguous and infrequent structures like the two distinct NPQs can be acquired naturally with or without explicit instruction in SLA contexts.

#### 6.4 English NPQs in Korean formal secondary education

As previously mentioned, it was surprising to discover that most English and Korean grammar books and L2 textbooks do not provide clear explanations on how the two distinct forms of NPQs are interpreted and answered correctly. Moreover, it is common for these books to have an unbalanced number of examples for the two types of NPQs. In this section, the analysis of grammar books is expanded to investigate how English NPQs are actually taught in secondary schools in South Korea.

English is one of key school subjects in Korean regular schooling, so it is very intensively taught throughout elementary and secondary schools. The Ministry of

Education has provided guidelines through the *National Curriculum* to ensure that teaching and learning align with the set achievement standards. In the most recent *National Curriculum*, amended in 2015, the guideline provides example English expressions under 11 core communication skills that L2 learners should learn though elementary to high school. As one of the key conversational skills, the guidelines recommend diverse *yes-no* questions which can be used in various proficiency levels. However, the provided example questions in the *National Curriculum* predominantly focus on PPQs across all school grades. This indicates that the two distinct types of English NPQs, which are particularly challenging for L2 learners, cannot be adequately taught through classroom instruction. As a result, most non-native English instructors and teachers in Korea do not differentiate between the two types of NPQs or teach how to answer them differently. This situation leaves Korean L2 learners of English, who have studied English as a foreign language in regular schooling, with limited opportunities to learn the two types of English NPQs. Despite the potential negative consequences, the issue has not received significant attention in Korean English education (Kim 2014, Sung 1999 Kim's (2014) research on English question types in middle school textbooks revealed that the examples of *yes-no* questions in English textbooks only concentrate on positive *yes-no* questions and do not present diverse conversational contexts that could aid in teaching more authentic English *yes-no* questions and answers.

In order to ascertain how English NPQs are delivered in formal schooling overall, I have investigated the frequency of all English NPQs in English textbooks used in middle and high schools (similar to 6<sup>th</sup> – 12<sup>th</sup> grades in the US system). In Korean secondary schools, each school is allowed to choose an English textbook from those published by

major educational publishers and approved by the Ministry of Education. For the current research, I have examined 13 textbooks for 1<sup>st</sup> grade of middle school, 13 textbooks for 2<sup>nd</sup> grade of middle school, 12 textbooks for 3<sup>rd</sup> grade of middle school, and 11 textbooks for 1<sup>st</sup> grade of high school. The frequency of NPQs found in these textbooks is summarized in Table 6.1.

Table 6.1 The frequency of NPQs in English textbooks in secondary schools

	not	n't	+YNQ	-YNQ	+whQ	-whQ
Middle 1	86 (6.6*)	173 (13.3)	145 (11.2)	23 (1.8)	188 (14.5)	8 (0.6)
Middle 2	137 (10.5)	183 (14.1)	190 (14.6)	20 (1.5)	188 (14.5)	12 (0.9)
Middle 3	209 (17.4)	264 (22.0)	152 (12.7)	16 (1.3)	197 (16.4)	10 (0.8)
High 1	386 (35.1)	216 (19.6)	170 (15.5)	17 (1.5)	192 (17.5)	19 (1.7)
Total	818 (16.7)	836 (17.1)	657 (13.4)	76 (1.6)	765 (15.6)	49 (1.0)

\*The numbers in parentheses show the number of categories per textbook.

\*\*+YNQ means positive *yes-no* questions, -YNQ means negative *yes-no* questions, +whQ means positive *wh*-questions, and -whQ means negative *wh*-questions.

In Table 6.1, it is shown that the number of negation slightly increase in higher grades. This can be attributed to the fact that higher level textbooks contain longer and more sentences, thereby increasing the exposure to English negation. However, the frequency of negative *yes-no* questions and negative *wh*-questions remains relatively constant from the 1<sup>st</sup> grade of middle school to the 1<sup>st</sup> grade of high school. Moreover, the total number of both PPQs and NPQs is too small at all levels. On average, Korean L2 learners of English in middle and high schools are exposed to English NPQs just one or two times through their year-round textbooks. Too seriously, the types of English NPQs in the textbooks are limited to certain structures. Here are some examples of common NPQs in English textbooks, as shown in (13).

- (13) a. Isn't that wonderful?  
 b. Was Sangho **not** afraid?  
 c. You want to stay in shape, don't you?

From the first year of middle school to the first year of high school, Korean learners of English could be exposed to NPQs a total of 76 times across all 49 textbooks. This number means that a student can only encounter NPQs once or twice per school year through their textbooks. More specifically, out of the 76 NPQs in the English textbooks, the majority are high-negation NPQs (as seen in example 13a) or tag questions (as seen in example 13c). Low-negation NPQs (as seen in example 13b), on the other hand, are only found a total of six times throughout all 49 textbooks. Unfortunately, the numbers available for practicing English NPQs are inadequate for beginner L2 learners. For four school years, Korean students can see almost zero examples of low-negation NPQs in their textbooks, which explains why most of Korean learners of English regard English NPQs as being oppositely answered to Korean NPQs. Even worse is that only seven examples of NPQs in the textbooks were presented with answers to the questions. Except the example question-answer pairs in (14), the students could not practice answering English NPQs in their textbooks.

- (14) a. Q: Aren't they both opinions? (High-negation)  
 A: That's a great question, Kyle.  
 b. Q: Didn't I myself give you a ride on this horse? (High-negation)  
 A: Yes, but who knows? We are both strangers here.

*(continued on p.189)*

- c. Q: Isn't it in your bag? (High-negation)  
A: No, it's not there. I think I lost it.
- d. Q: Isn't the rice enough? (High-negation)  
A: No! It's the other ingredients that make bibimbap taste so great!
- e. Q: Didn't you say you wanted to be a comics artist in the future?  
A: Yes, I did. I love drawing cartoons. (High-negation)
- f. Q: You can't stay? (Low-negation)  
A: I'm sorry. I never wanted to hurt you, but I should go.
- g. Q: Are you still **not** satisfied? (Low-negation)  
A: Of course not!

Although 15 tag questions with corresponding answers were identified, they are not very helpful for learning how to respond to low-negation NPQs. This is because most of the tag question examples in the textbooks are answered in the same way as normal high-negation NPQs with subject-auxiliary inversion, as seen in (14a)-(14e). Moreover, among the six examples of low-negation NPQs, four of them do not have subject-auxiliary inversion, which is an ordinary syntactic operation in English question formations. Only two examples are presented in the typical form of low-negation NPQs. Examples in (15) show all the cases of low-negation NPQs in Korean English textbooks.

- (15) a. Q: Was Sangho **not** afraid?  
b. Q: You don't believe me?  
c. Q: you're **not** sure that it's true?

*(continued on p.189)*

d. Q: You didn't know?

e. Q: You can't stay?

A: I'm sorry. I never wanted to hurt you, but I should go.

f. Q: Are you still **not** satisfied?

A: Of course not!

As shown above, Korean L2 learners of English who have learned English as a foreign language in classroom settings do have extremely few opportunities to learn English NPQs. Despite this limited exposure, the relatively higher number of high-negation NPQs and tag questions indicate that Korean L2 learners must have been trained that all English NPQs are answered in the same way as the typical high-negation NPQs are answered. Only six examples of low-negation NPQs were found from 49 textbooks across four school grades. That is, Korean L2 learners of English have literally no exposure to low-negation NPQs in their textbooks. How can L2 learners acquire any grammars that they have never learned before? When L2 learners are exposed to ambiguous and complex grammars with sufficient examples and practical materials, they might eventually follow natural or universal acquisitional sequences. However, without sufficient learning experiences, even advanced L2 learners cannot obtain native-like attainment of syntactically, semantically, and pragmatically ambiguous and complex structures.

#### 6.5 Pedagogical application in English and Korean L2 classroom

In the review of English and Korean grammar books and textbooks for L2 learners, it was found in common that these books do not distinguish the interpretation of two types of NPQs clearly. Although they provide various examples of *yes-no* question-answer pairs, the focus is primarily on PPQs and their corresponding answers. Despite the fact that PPQs

and NPQs can be interpreted differently in both languages, it is difficult to find precise grammar instruction regarding how to correctly answer these questions.

In the traditional view on answering patterns, English NPQs have been considered as having the same interpretation as PPQs. The examination of English grammar books reveals that they unilaterally deal with examples of high-negation NPQs and explain that answering patterns to PPQs and NPQs are identical in English. Regarding the answers to English NPQs, some English grammar books caution that *Yes it isn't* and *No it is* are ungrammatical in English. However, English L1 speakers indeed use these answers in natural conversation in appropriate contexts. Unfortunately, the examples of low-negation NPQs are extremely rare in grammar books, and most books do not teach that high-negation and low-negation NPQs can be answered oppositely. Similarly, although Korean grammar books and textbooks provide examples of both SFN- and LFN-NPQs, no grammar books and textbooks clearly explain how these two distinct types of Korean NPQs are differently or similarly answered depending on diverse contexts.

Given the limitations of current English and Korean grammar books and textbooks, this section suggests how answers to NPQs in English and Korean would be effectively and efficiently taught in L2 classroom. At first, to improve grammar instruction and help L2 English and L2 Korean learners to get familiar with both types of NPQs, grammar books and L2 textbooks should offer more balanced examples of high-negation and low-negation NPQs (LFN- and SFN-NPQs in Korean) in addition to their counterpart PPQ examples. To avoid the problems with the traditional answering typology, it should be taught that both English and Korean NPQs can have either polarity-based or truth-based interpretations. For example, English NPQs in (16) below are not just distinguished in the formality of the

question, as current English grammar books describe. In reality, these NPQs actually ask the truth condition of distinct propositions.

- (16) a. Isn't it appropriate to ask? (*The grammar book*, p. 217)  
b. Is it **not** appropriate to ask?

In most English grammar books, two distinct NPQs as in (16) are considered as having the same semantic value. In other words, *yes* and *no* answers to these NPQs have the same meaning. However, NPQ (16a) is typically asking if a positive proposition 'It is appropriate to ask' is true or false, whereas NPQ (16b) is typically asking if a negative proposition 'It is not appropriate to ask' is true or false. Thus, the meaning of *yes* and *no* answers to these NPQs should be opposite each other. In an even more extreme case, high-negation NPQ with a negative polarity item (e.g., *either*) can have the same interpretation as NPQ (16b), as shown in (17).

(17) Q: Isn't it appropriate to ask **either**?

A: Yes, it is not appropriate to ask.

No, it is appropriate to ask.

Korean grammar books and textbooks should also have sufficient examples of both SFN- and LFN-NPQs. With the examples, the books should accurately instruct that SFN- and LFN-NPQs are typically interpreted oppositely. Moreover, it should be clearly informed that Korean LFN-NPQs can be more flexible to ask about the truth value of either a positive or negative proposition, depending on the context of the conversation. As in (18),



SFN-NPQs are more rigidly interpreted as asking about the truth value of a negative proposition, such as ‘Mr. Yengmin hasn’t eaten lunch yet.’

(18) Q: yengmin ssi      acik      cemsim      **an**      mek-ess-cyo?

Mr. Yengmin      yet      lunch      NEG      eat-PST-HON.Q

‘Hasn’t Mr Yengmin eaten lunch yet?’

A: ney,      hayya      hal      il-i      cokum      nam-ase-yo.

yes      must      do.MOD      work-NOM      little      leave-because-HON.DECL

‘Yes, because (there) is a little of work to do.’

(*Ehwa Korean 3-1*, p.18)

In (18), Korean SFN-NPQ has a similar interpretation with English low negation NPQs. Thus, a *yes* answer affirms that Mr. Yengmin has not eaten lunch yet, while a *no* answer denies it denoting that he has already eaten lunch. This interpretation is quite common for SFN-NPQs, and many grammar books and textbooks include similar examples. However, Korean LFN-NPQs in (19) have the opposite interpretation of SFN-NPQs.

(19) i kimchi-ka      mayp-ci      **anh**-ayo?

this kimchi-NOM      spicy-NMLZ      NEG.do-HON.Q

‘Isn’t this kimchi hot?’

(*Korean grammar for international learners*, p. 217)

The Korean NPQ in (19) is structured with a negative auxiliary complex that ends with LFN *-ci anh-ayo* at the end of the clause. The interpretation of this NPQ is identical to English high-negation NPQs asking if a positive proposition ‘This kimchi is spicy’ is true

or false. Thus, a *yes* answer to this NPQ means that this kimchi is spicy, whereas a *no* answer means that this Kimchi is not spicy. The semantic value of LFN-NPQ (19) is exactly contrary to those of SFN-NPQ (18).

More importantly, Korean grammar books and textbooks must make clear that Korean LFN-NPQs can sometimes be interpreted identically to SFN-NPQs, as in (20).

- (20) Q: (i tosekwan) konghyuil-ey-nun swi-ci **anh**-supnikka?  
 This library Holiday-on-TOP rest-NMLZ NEG.do-PRES.HON.Q  
 ‘Don’t you close on holidays?’
- A: ney, ilyoil-kwa konghyuil-un swi-ci anh-supnita.  
 yes, Sunday-and holiday-TOP rest-NMLZ NEG.do-PRES.HON.DECL  
 ‘Yes, we don’t close on Sundays and holidays.’
- (*Yonsei Korean 2*, p.216)

It is important for Korean grammar books and textbooks to clarify that LFN-NPQs can have the same interpretation as SFN-NPQs, as shown in example (20). A *yes* answer to this type of LFN-NPQ confirms that the library does not close on Sundays and holidays, which is the same as the answering pattern of SFN-NPQ (18) but opposite to the typical interpretation of LFN-NPQ (19). Despite having the same LFN construction, they are interpreted oppositely showing opposite answering patterns. Unfortunately, current Korean grammar books and textbooks do not explain this difference, even though they use both interpretations of LFN-NPQs. Without an explicit grammar instruction, it can be challenging for L2 learners to interpret Korean NPQs like a native speaker.

Secondly, grammar books and language textbooks should provide instruction on the different contexts in which PPQs and NPQs are used. PPQs (with normal *yes-no* question intonation) are used in neutral contexts, so questioners usually do not have any biases and do not have a preference for one answer over the other. In contrast, NPQs are mostly biased questions and additionally add questioners' surprise, shock, annoyance, anger, pleasure, etc. depending on the context of utterance. The *Longman grammar of spoken and written English* (1999) by Biber et al. explains that English NPQs is biased toward a specific answer.

Positive interrogatives, in fact, are the neutral 'open-minded' kind of interrogatives which are not biased either positively or negatively. Negative interrogatives have a more complex effect: they challenge a negative expectation that has been assumed to exist in the context, and thus indicate the speaker's inclination towards a positive answer.

(3) A: Don't mention her name please.

B: Why? Don't you like her?

In (3), A's turn implies displeasure at the unnamed woman referred to; B's negative question indicates surprise at this implication: its force is 'I would have expected you to like her, now it appears you don't.' Negative questions disown a negative expectation and embrace a positive one.

(*Longman grammar of spoken and written English*, p.1114)

As a PPQ and a high-negation NPQ are distinguished in regard with questioners' bias, high-negation and low-negation NPQs might also slightly differ regarding questioners'

intention of choosing one form instead of the other. For example, looking at a lovely baby, one might ask a high-negation NPQ like ‘Isn’t she lovely?’ since the questioner definitely expects that an addressee also thinks the baby is lovely. However, in case the questioner has heard that the addressee says the baby is not lovely, the questioner might ask a low-negation NPQ like ‘Is she NOT lovely?’ since the addressee’s utterance is totally unexpected and not acceptable. Of course, the meaning of *yes* and *no* answers to these NPQs would differ.

Most language textbooks just present examples of NPQs and possible answers, but they do not explicitly describe how PPQs and NPQs are differently used in diverse contexts. Although these NPQs are used by L1 speakers, they are much less frequent than PPQs in natural language. Without explicit instruction in L2 classroom, it is certain that L2 learners will take a long time to acquire the difference through unstructured and unguided natural interaction alone.

The issue of questioner’s bias and expectation also applies to the distinction between Korean PPQs and NPQs. As demonstrated in example (21), there are three *yes-no* questions in Korean that can be used in different situations.

- (21) a. cikum    pi            wa?  
           now      rain        come.Q  
           ‘Is it raining now?’
- b. cikum    pi            o-ci            **anh**-a?  
           now      rain        come-NMLZ   NEG.do-Q  
           ‘Isn’t it raining now?’

- c. cikum    pi            **an**            wa?  
          now        rain        NEG        come.Q  
          ‘Is it not raining now?’

Korean PPQ in (21a) is absolutely neutral, so the questioner has no expectation or preference for a particular answer. Without contextual information, it may be raining or not raining. However, when a questioner uses one of NPQs between (21b) and (21c), the acceptability of NPQs between (21b) and (21c) depends on different conversational contexts, and these contexts differ from those of PPQs. Maybe, the questioner’s friend might enter the office wearing a wet raincoat (e.g., (21b)), the questioner has already checked the weather forecast before asking a question (e.g., (21b)), or the friend might be completely dry although the questioner already knows it is raining outside (e.g., (21c)). These distinctions must be explicitly taught in L2 classroom.

Finally, it is important to provide a detailed explanation of the cross-linguistic similarities and differences between English NPQs and Korean NPQs. Both languages share two distinct types of NPQs, which can be interpreted as either high-negation NPQs (e.g., LFN-NPQs in Korean) or low-negation NPQs (e.g., SFN-NPQs in Korean). Moreover, the questioners’ biases or expectations in asking these NPQs are very much alike between two languages.

However, a cross-linguistic difference is observed in that LFN, the basis for high-negation NPQs in Korean, is less commonly used in spoken language than SFN, the basis for low-negation NPQs, by a factor of approximately 5. This difference is supported by a corpus-based study conducted by Lee (2008), which found that SFN and LFN constructions have significantly different distributions in spoken and written corpora. Specifically, the

Sejong Raw Corpus shows that SFN appears approximately five times more frequently in spoken language, while LFN is found about five times more frequently in written language.

Despite the identical semantic nature of logical negation, two Korean negation constructions show semantic and pragmatic asymmetry in question formation. In the case of English NPQs, the frequency of high-negation NPQs and low-negation NPQs is the reverse of that in Korean. The contracted negation form in English, which forms the basis for high-negation NPQs, is much more common than the uncontracted form, which forms the basis for low-negation NPQs (Biber et al. 1999, González 2007, Kjellmer 1997).

The frequency of the more common negation form could potentially influence how native speakers interpret NPQs. The syntax of English contracted NPQs and Korean LFN-NPQs is similar, but English speakers tend to interpret contracted NPQs as high-negation NPQs while LFN-NPQs in Korean can be ambiguous. Similarly, English non-contracted NPQs and Korean SFN-NPQs have similar syntax, but non-contracted NPQs can be ambiguous between high- and low-negation interpretations while SFN-NPQs are typically interpreted as low-negation. These differences in usage may be a contributing factor to the difficulties Korean learners have with English NPQs.

## 6.6 Conclusion

This chapter has tried to point out the potential and limitation of teaching L2 NPQs. Given that L2 learners of English commonly have problems in answering English NPQs regardless of their proficiency, I found that even advanced L2 learners of English consistently struggle with answering English NPQs and provide unexpected responses not distinguishing two types of English NPQs. Most EFL learners in South Korean who learn English as a foreign language in classroom settings have limited access to authentic L2

learning materials. Due to the infrequency of low-negation NPQs in natural language, both EFL and ESL learners find it difficult to encounter diverse NPQ structures outside of classrooms.

After reviewing grammar books and language textbooks, it has been observed that two distinct forms of NPQs and their interpretations have not sufficiently been dealt with in L2 classroom. Most teaching materials adhere to the traditional answering typology, which teaches that English NPQs and Korean NPQs should be answered in opposite ways, without considering that both languages can have high- and low-negation NPQs. In this circumstance, it is almost impossible that L2 learners have the native-like interpretation of L2 NPQs which are inherently ambiguous and complex. To address this issue, it is essential for L2 instructors to provide well-organized and precise instruction, along with sufficient input, to enhance L2 learners' understanding effectively and efficiently of ambiguous and complex structures. In order to help L2 learners acquire the native-like interpretation of the two distinct forms of NPQs, the importance of explicit and precise instruction cannot be overlooked.

## CHAPTER 7

### CONCLUDING REMARKS

The current study first started from my own longstanding question as a Korean speaking L2 learner of English. Why do people think that English NPQs and Korean NPQs are opposite each other? Are they really different? Are they interpreted and answered oppositely by native speakers? Looking back on my school days in middle and high school in South Korea, I remember that my English teachers taught that English NPQs and Korean NPQs are different, so in English I should say “yes” when my answer is positive and “No” when my answer is negative regardless of the type of the questions. However, while having lived in the United States for a long time, I realized that the previous understanding about English and Korean NPQs was incorrect. Upon recognizing something wrong in the answers, whenever someone asked me negative questions, I experienced great difficulty in providing an accurate response and occasionally felt frustrated when met with the questioning gaze of the person asking the negative question.

The answering patterns of NPQs are commonly divided into two categories: polarity-based and truth-based answering systems. Previous studies have focused on reinforcing the traditional typology without fully exploring the various patterns of answers across different languages. In this dissertation, I have tried to answer several questions as follows:

- How does the structure of NPQs lead to this distinction?
- Are all NPQs in English polarity-based and are all NPQs in Korean truth-based?
- If not, how would such a traditional typological distinction be maintained?



In the second chapter, I have discussed the structure of sentential negation in English and Korean in detail. The syntactic and morphosyntactic analyses reveal that these languages in common show two distinct positions of negation. In English, the negator *not* can appear in two positions in the space between a sentential subject and a verb: high in the clause and potentially contracted with the auxiliary, or low in the clause and adjacent to the verb. Similarly, in Korean, the negator *an* ‘not’ can also appear in two positions: high in the clause and prefixed to an auxiliary *ha* ‘do’ (i.e., LFN), or low in the clause and prefixed to the main verb itself (i.e., SFN).

In the following considerations of the scope of negation, I have proposed that two negations are interpreted in distinct positions, and the position of negation in negative constructions determines the scope of negation in the clause. As such, English low-negation and Korean SFN, which appear before the main verb inside vP/VP, have a narrow scope, whereas English high-negation and Korean LFN, which are assumed to be in the head of NegP, can have scope over the whole clause. Slightly different from English sentential negation, LFN in Korean is likely to show relatively ambiguous scope relations with regard to quantified subjects and objects. Adopting Han et al. (2007)’s original analysis and developing it, I propose that LFN can raise to the head of CP or lowers down to the head of VP. On this account, negation winds up (optionally) in the head of CP, where it can scope over both subject and object, or resides inside VP, leading to ambiguous interpretations. Theoretically, this raising or lowering of negation is also possible in SFN constructions having both VP-external and VP-internal interpretations. Nevertheless, because of the prefixhood properties of SFN, it is more rigidly interpreted within the vP/VP.

Next, the discussion on the structure of negation has been expanded into the structure of NPQs in English and Korean. In these languages, the meaning of PPQs is relatively straightforward, so the truth condition of PPQs can be decided easily. In contrast, the meaning of NPQs may vary, and simple *yes-no* answers to NPQs have seemingly unpredictable interpretations. In the comparison of English and Korean NPQs, it was found that these languages commonly have two distinct forms of NPQs which involve either VP-internal or VP-external negation. Moreover, these distinct forms of NPQs eventually lead to two different interpretations in each language. From the current investigation of two forms of NPQs in both languages, I newly propose that English and Korean NPQs can have either truth-based or polarity-based interpretations, which appears to run counter to the traditional typology of answering patterns.

However, in both English and Korean NPQs, the position of the negator strongly influences its scope, but it is not the only factor that determines the interpretation of NPQs. In other words, the interpretations are merely canonical and typical, rather than definitive and semantically rigid. In order to better account for the puzzle of NPQs, I have proposed the PIN-PEN dichotomy considering both form and meaning of NPQ structures. In cases where the negative morpheme actually negates the proposition denoted in the question, it is *Proposition Internal Negation* (PIN), and in cases where the negative morpheme does not affect the truth of the proposition, it is *Proposition External Negation* (PEN). Under this dichotomy of negation, a PIN-NPQ asks if the negative proposition ( $\neg p$ ) is true, and a PEN-NPQ (like a PPQ) asks if the positive proposition ( $p$ ) is true. For example, all answers in (2) below are possible to the given NPQ in (1). If someone thinks answers in (2a) and (2b) are the correct answers, then she/he interprets this NPQ as a PEN-NPQ which is truth-

conditionally identical to a PPQ. In contrast, if someone thinks answers in (2c) and (2d) are the correct answers, this NPQ is interpreted as a PIN-NPQ. Of course, the first two answers are more typical and frequent in English, but in some specific conversational contexts, the other two are also definitely acceptable by native English speakers.

(1) Didn't Hana eat lunch today?

- (2) a. Yes, she did.  
b. No, she didn't  
c. Yes, she didn't.  
d. No, she did.

To explore how two distinct forms of NPQs are actually interpreted by English and Korean L1 speakers and to elucidate the relationship between the surface structures and actual interpretations of NPQs in both languages, I conducted a series of online experiments under linguistically decontextualized conditions. The experimental results show that English and Korean L1 speakers normally distinguish two distinct NPQ structures. Nevertheless, English speakers had more difficulties in answering NPQs with the more ambiguous low negation structures (which have PIN interpretation), and Korean speakers had more difficulties in answering NPQs with the more complex and also ambiguous LFN structures (which have PEN interpretation). Rather than being attributable to any “typological” difference, it is highly speculated that the contrary interpretive tendencies of two languages seem due to English high-negation NPQs being used more frequently and being less ambiguous than low-negation NPQs. For Korean, SFN-NPQs are

more frequent in natural language and less ambiguously have a negative interpretation than LFN-NPQs.

The cross-linguistic similarities and differences between English and Korean NPQs raise several intriguing questions regarding the discrepancy between L1 and L2 interpretation. To investigate this, I collected L2 data from two different groups of L2 learners of English (ESL vs. EFL) and compared their performance to that of native speakers. As expected, the results show that advanced ESL learners who have been exposed to natural L2 inputs longer time more correctly and quickly answered PPQs and high-negation NPQs than less proficient EFL learners. However, in contrast to ESL group's native-like responses to high-negation NPQs, their responses to low-negation NPQs were much worse than EFL group. ESL learners very systematically oppositely answered low-negation NPQs as high-negation NPQs. Here, based on post-experiment interviews with the participants, it was discovered that Korean L2 learners of English are taught in L2 classrooms that English NPQs should be answered oppositely to Korean NPQs. The advanced ESL learners who have studied L2 English for a longer period of time tend to follow what they have been taught more sincerely. This experimental result reveals that semantically and pragmatically complex and ambiguous structures like negative *yes-no* questions cannot be easily acquired. Despite staying in the USA for at least one year and having extensive previous English learning experience, it was challenging to achieve native-like interpretations of two distinct NPQ structures, which are extremely rare in natural language and have not been explicitly taught.

Throughout this dissertation, I have argued that the traditional typology oversimplifies the way people respond to NPQs in various languages. It is a very risky generalization that

languages are strictly distinguished into two groups, and they must be answered oppositely to NPQs. Through syntactic, semantic, and some pragmatic analyses on English and Korean NPQs in the earlier three chapters, I have tried to demonstrate that English and Korean NPQs are not fundamentally different, and these languages share two forms of NPQs which have polarity-based and truth-based interpretations. In the last three chapters, by implementing online experiment with L1 English, L1 Korean, and Korean L2 learners of English, I have tested my hypothesis that there are two distinct forms of NPQs and two possible interpretations in both languages. Keeping existing limitations and constraints in mind, I have tried to shed light on the puzzle of NPQs.

In future studies, it will be important to explore further how ambiguous NPQs are constructed and interpreted in a wider range of languages. To achieve this, it is recommended to include various types of NPQs within well-organized conversational contexts in experimental designs. Moreover, to address the issues of teaching and learning NPQs in both L1 and L2 acquisition, future studies should explore how NPQs are currently taught in classrooms, how L1 and L2 teachers understand the two forms of NPQs, how L2 learners encounter NPQs outside of the L2 classroom, and whether highly advanced L2 learners can eventually achieve native-like proficiency. As a final note, I sincerely hope that this study can serve as inspiration for other linguists and researchers to undertake further investigations in this field.

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<sup>i</sup> DMDX is a Win 32-based display system used in psychological laboratories around the world to measure reaction times to visual and auditory stimuli. It was programmed by Jonathan Forster at the University of Arizona [<http://www.u.arizona.edu/~kforster/dmdx/dmdx.htm>].