Wh-intonation in Korean

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1 Introduction

This article provides an overview of the intonation patterns observed in Korean sentences involving so-called *wh*-words, based on recent experimental findings. In Korean, sentences incorporating *wh*-words exhibit a notable degree of ambiguity. To illustrate this point, consider sentence (1), which can be interpreted in three distinct ways: as a *wh*-question 'Who did Mina meet?'; as a yes-no question 'Did Mina meet anyone?'; or as a statement 'Mina met someone.'

(1) 민아가   누구를   만났어
Mina-ka   Nwukwu-lul mannasse
Mina-NOM who-ACC   like-NEUT

The phenomenon of three-way ambiguity is highly prevalent in Korean sentences involving *wh*-words due to multiple factors: the lexical ambiguity inherent in *wh*-words, the absence of explicit *wh*-movement, and the utilization of a neutral sentence ending that can be used for both statements and questions. Given the presence of these factors contributing to sentence ambiguity, the question arises: how can we accurately determine the intended meaning of the speaker? While contextual information certainly aids in disambiguation, even in the absence of context, native Korean speakers can effortlessly discern between the various readings (Jun and Oh 1996; Yun and Lee 2022). This ability is facilitated by the distinct intonation patterns associated with each interpretation. However, the question remains: what are the specific prosodic factors that differentiate these readings and allow for their identification?

There are three notable prosodic factors that have been discussed in previous studies as being relevant to disambiguation of sentences involving *wh*-words. The first two factors are known to directly contribute to distinguishing *wh*-questions from other sentence types. First, in *wh*-questions, the *wh*-word exhibits greater prosodic prominence than other elements in the sentence (Chang 1973; Cho 1990; Choe 1985; Kang 1988; Suh 1989). Second, in *wh*-questions, the *wh*-word and the subsequent words constitute a single prosodic unit, thereby eliminating prosodic boundaries after the *wh*-word (Cho 1990; Jun 1993; Yun 2019). Additionally, sentence-final intonation is also known to interact with the sentence type. Many studies have reported that statements and *wh*-questions have falling terminal intonation, while yes/no-questions have rising terminal intonation in Korean (Hur 1965; Kwon 2002; I. Lee and Ramsey 2000; Martin 1951; Nam and Ko 1985; S. Park 1997; Suh 1989). According to this prevalent view, sentence-final intonation is not directly relevant to the disambiguation of the indeterminate *wh*-words, because the same final falling intonation can be used for both [-WH] and [+WH], but rather provides an indirect clue that at least yes-no questions can be singled out.

This article aims to examine both "direct" and "indirect" clues to the meaning of *wh*-words. First, I will compare the two "direct" factors, namely prominence and phrasing, with regards to their respective significance in the intonation of *wh*-questions. This analysis is primarily a comprehensive overview of my earlier study (Yun 2019). Then, I will discuss the role of sentence-final intonation as an "indirect" factor in *wh*-intonation and its interaction with sentence-final morphology. The implication of these findings on Korean

wh-intonation will also be discussed, including their relevance to crosslinguistic and theoretical perspectives.

Before delving into the discussion, it is worth noting that intonation patterns can vary across different dialects of Korean. This article, however, will primarily focus on Seoul Korean, which is commonly regarded as the standard dialect. Nevertheless, the semantic and phonological principles underlying the analysis presented herein are expected to be applicable to other dialects as well.

2   Phrasing and Prominence

Prominence and phrasing are two critical prosodic factors extensively discussed in the literature concerning *wh*-intonation. It has been widely observed that a *wh*-phrase acquires heightened prosodic prominence when it conveys an interrogative interpretation (Chang 1973; Cho 1990; Choe 1985; Kang 1988; Suh 1989). This is evident in the comparative analysis of the indefinite and interrogative readings of the *wh*-word in sentence (1): with an interrogative reading, the *wh*-phrase 누구를 *nwukwu-lul* 'who-ACC' exhibits a discernible increase in prominence, typically manifested through higher pitch or an expanded pitch range on the *wh*-word.

It has also been observed that in *wh*-questions, the *wh*-word forms a unified prosodic phrase with the subsequent words in the sentence (Cho 1990; Jun 1993; Yun 2019). For example, in the sentence (1), the *wh*-phrase 누구를 *nwukwu-lul* 'who-ACC' and the verb 만났어 *mannasse* 'met' constitute separate prosodic phrases in a statement reading. However, in a *wh*-question reading, the *wh*-phrase and the verb merge into a single prosodic phrase. Since the prosodic phrase boundaries after the *wh*-word are deleted, this phenomenon is commonly termed as "post-*wh* dephrasing" in the context of *wh*-questions.

To determine the presence or absence of a prosodic boundary, one needs to acquire a foundational understanding of the intonation system in Korean. For this purpose, I adopt the intonation model for Seoul Korean proposed by Jun (1993). This model conceptualizes Korean utterances as comprising Intonational Phrases (IPs), which are further composed of Accentual Phrases (APs), adhering to a prosodic hierarchy (cf. Selkirk 1986). Of particular relevance to the investigation of *wh*-intonation is the notion of the "Accentual Phrase."

To establish a framework for defining Accentual Phrases, it is essential to familiarize ourselves with the fundamental premise of the Autosegmental-Metrical Theory (Pierrehumbert 1980): intonation contours are described as combinations of two abstract pitch levels, namely the high tone (H) and the low tone (L). In Seoul Korean, the fundamental tonal pattern in an Accentual

Phrase (AP) is T H L H, where the initial tone T can be either L or H, depending on the property of the first syllable in the AP. If the first syllable starts with a tense or aspirated obstruent, the initial tone is realized as H; otherwise it is L. For the sake of simplicity, the rest of the discussion will focus on the LHLH pattern, as it is more commonly encountered compared to the HHLH pattern. This foundational LHLH pattern is fully manifested when the AP consists of four or more syllables. In such cases, the initial L and H tones occur on the first two syllables, while the final L and H tones appear on the last two syllables. If the AP consists of fewer than four syllables, only the initial L and the final H tones are fully realized.

Returning to the discussion of wh-questions, post-wh dephrasing can be defined in terms of APs. Specifically, the wh-word and the subsequent words combine to form a single AP. In sentence (1), a statement reading involves three APs, each comprising three syllables, resulting in an intonation pattern as shown in Figure 1a. In a wh-question reading, by contrast, the wh-phrase and the following word constitutes a larger AP with six syllables, leading to an intonation pattern as illustrated in Figure 1b.

As illustrated in this example, post-*wh* dephrasing is commonly observed through the tonal patterns of APs in most cases. A recent experimental study (Yun and Lee 2022) provides evidence that speakers tend to utilize the differences in AP tonal patterns to distinguish wh-questions, even when the expected tonal pattern is the same for interrogative and indefinite interpretations (e.g., a disyllabic *wh*-word followed by a disyllabic word at the end of the sentence).
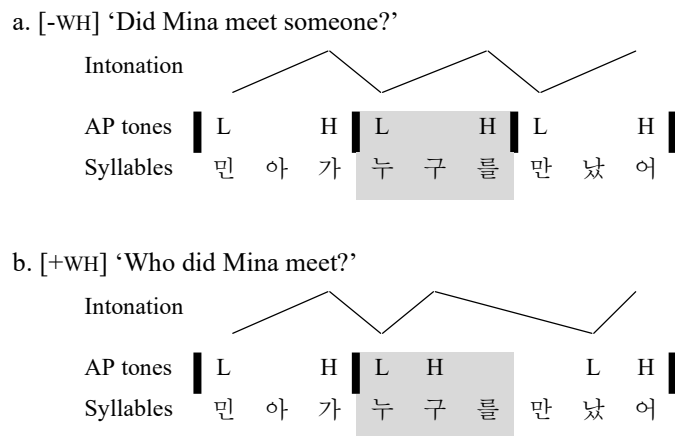
a. [-WH] 'Did Mina meet someone?'

b. [+WH] 'Who did Mina meet?'

Figure 1. Schematic intonation patterns of (1).

Now that we have acquired an understanding of prominence and phrasing in the intonation of *wh*-questions in Korean, a pertinent question arises: which factor plays a more pivotal role in deciphering the meaning of *wh*-words? Is it prominence or phrasing? In order to address this query, it is necessary to draw attention to additional phenomena that bear relevance to the interpretation of *wh*-words in Korean.

In the literature of syntax and semantics, it has been noted that syntactic islands often align with semantic islands (May 1977). This phenomenon is exemplified by *if*-clauses in English, which impose constraints on both overt movement and the interpretation of scope-bearing elements. For example, consider the sentence: *If everyone comes to the party, May will be happy*. The sentence is restricted to a narrow scope reading of *everyone* within the *if*-clause, implying that 'May will be happy in case everyone comes to the party.' It cannot convey the interpretation 'For everyone, May will be happy if that person comes to the party.' Consequently, expressions such as *everyone* are unable to extend their semantic scope beyond *if*-clauses in which they are syntactically located.

However, it has been observed in semantics literature that indefinite expressions, such as *some*, exhibit the phenomenon of free scope (Fodor and Sag 1982), enabling them to extend their scope beyond syntactic islands. This contrasts with the aforementioned restrictions placed on other scope-bearing elements. To illustrate this point, consider the sentence: *If someone comes to the party, May will be happy*. In this case, the sentence can convey either a narrow scope reading of *someone* as 'If anyone comes to the party, May will be happy,' or a wide scope reading as 'There is a certain someone such that if that person comes to the party, May will be happy.' Here, the indefinite expression *someone* demonstrates the ability to take scope beyond the syntactic boundaries typically imposed by islands, underscoring its distinctive semantic behavior.

The previous discussion primarily pertains to regular indefinites that lack morphological association with *wh*-words, such as *someone* or *something* in English. However, what about indefinites that share a morphological form with question words? It has been argued that when it comes to indefinites that have the same form as question words, they are restricted to narrow scope interpretations, unlike regular indefinites that can exhibit free scope (Bruening 2007; Ha 2004). However, this restriction does not always seem to hold, at least in the case of Korean.

In Korean, indefinite expressions derived from *wh*-words possess the capability to take wide scope, even extending beyond *if*-clauses. For example, sentence (2) allows for both a narrow scope reading of the indefinite and a wide scope reading. Notably, based on my informal investigation involving native Korean speakers, it was found that many speakers in fact prefer the

wide scope interpretation (Yun 2019: 633). This observation highlights the significance of incorporating scope considerations into the comprehensive analysis of sentences involving *wh*-words in Korean.

(2) 누가   파티에   오면   연아가   좋아할 거야
    nwuka   *phathi-ey* *o-myen* *Yuna-ka*   *cohahalkeya*
    who.NOM party-DAT come-if Yuna-NOM will.be.happy
    (lit.) 'If who/someone comes to the party, Yuna will be happy'

Returning to the discussion on *wh*-intonation, my proposition unfolds as follows. First, it is the phonological phrasing that plays a pivotal role in discerning the intended meaning of *wh*-words, thereby determining whether they carry a [+WH] or [-WH] interpretation. Second, *wh*-words with an indefinite reading in Korean can take wide scope, and the presence of phonetic prominence enhances the likelihood of a wide scope interpretation.

To verify these claims, I conducted a perception experiment utilizing a 2 × 2 design. The experiment involved two prosodic factors, namely *wh*-pitch raising and post-*wh* dephrasing, each with two levels (i.e., existence or absence). The target stimuli in the experiment were all like (2), consisting of sentences containing a *wh*-word that was embedded within an *if*-clause to allow for different scope readings (i.e. wide or narrow scope). The sentences were deliberately structured to end in a neutral form, thereby creating ambiguity between a statement and a question. Consequently, the stimuli presented in the experiment allowed for three potential interpretations of the *wh*-word: as an interrogative, a narrow-scope indefinite, or a wide-scope indefinite.

The audio stimuli for the experiment were prepared using speech synthesis because analyzing naturally occurring speech poses challenges in isolating the specific impact of phrasing and prominence, as they occur at the same time in *wh*-questions. Initially, a native speaker of Korean recorded the stimuli as neutral statements without any particular focus or prominence. These recordings served as the foundation for the audio stimuli.

Four sets of stimuli were created by manipulating the base recordings as illustrated in Figure 2. The first set of stimuli (Figure 2a) was created by simply transforming the base pitch track into a series of dots that indicate tonal targets to facilitate further manipulation in a consistent manner. The second group of stimuli (Figure 2b) involved raising the pitch target on the *wh*-phrase, positioning it as the highest pitch in the sentence. This represented a hypothetical prosody where the *wh*-phrase is emphasized, while maintaining the original pitch contour for the rest of the sentence. In the third group (Figure 2c), the pitch contour following the *wh*-word was smoothed to

simulate the effect of dephrasing. This hypothetical prosody reflected a scenario where the *wh*-phrase is not prominently emphasized, but post-*wh* dephrasing occurs. The final group of stimuli (Figure 2d) incorporated both *wh*-pitch raising and post-*wh* pitch smoothing, representing the typical intonation pattern observed in *wh*-questions. A set of 48 stimuli was generated by manipulating 12 sentences across 4 different types of intonation.

In all stimuli, the pitch points linked to the final syllable of the sentence were consistent and not altered. As a result, the sentence-final intonation remained unchanged throughout, eliminating the possibility of a yes-no question interpretation.
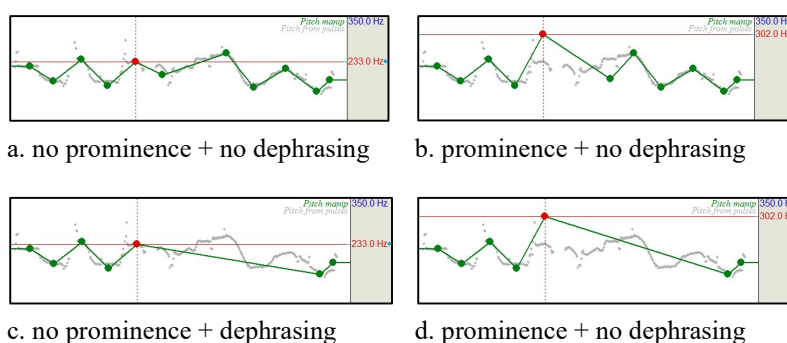

a. no prominence + no dephrasing   b. prominence + no dephrasing

c. no prominence + dephrasing   d. prominence + no dephrasing

Figure 2. Pitch tracks of synthesized speech stimuli (Yun 2019: 637).

The participants were presented with the stimuli and tasked with determining the intended meaning of each sentence. Specifically, they were required to identify whether the sentence conveyed a yes-no question, a *wh*-question, a statement with a wide scope indefinite, or a statement with a narrow scope indefinite. Given the complexity of this judgment, the task was structured as a sequence of two binary choices. Initially, participants were asked to indicate whether the sentence sounded like a question or a statement. If they selected "question," they were then prompted to choose between two paraphrases that represented interpretations of the sentence as either a yes-no question or a *wh*-question. Similarly, if participants initially chose "statement," they were presented with paraphrase options that indicated whether the sentence was interpreted as having wide scope or narrow scope indefinites. This two-step process allowed for a more nuanced assessment of participants' understanding and interpretation of the stimuli.

The analysis was conducted using the response data gathered from a total of 53 participants. The distribution of *wh*-question interpretations across different prosodic types is displayed in Figure 3. Notably, the first prosody type, characterized by the absence of *wh*-prominence and post-*wh* dephrasing, was

rarely perceived as a *wh*-question, aligning with the typical prosodic pattern associated with indefinites. Conversely, the final prosody type, incorporating both *wh*-pitch raising and post-*wh* dephrasing, elicited a high proportion of *wh*-question interpretations. Of particular interest are the intermediate columns. The second column reveals that when the *wh*-pitch was raised without subsequent dephrasing, the intonation pattern was seldom perceived as a *wh*-question. In contrast, the third column demonstrates that even in cases where the *wh*-word lacked prominence but was accompanied by post-*wh* dephrasing, it elicited *wh*-question interpretations as frequently as the final prosody type. This finding highlights the significance of post-*wh* dephrasing in determining the perceived *wh*-question structure, independent of *wh*-word prominence.
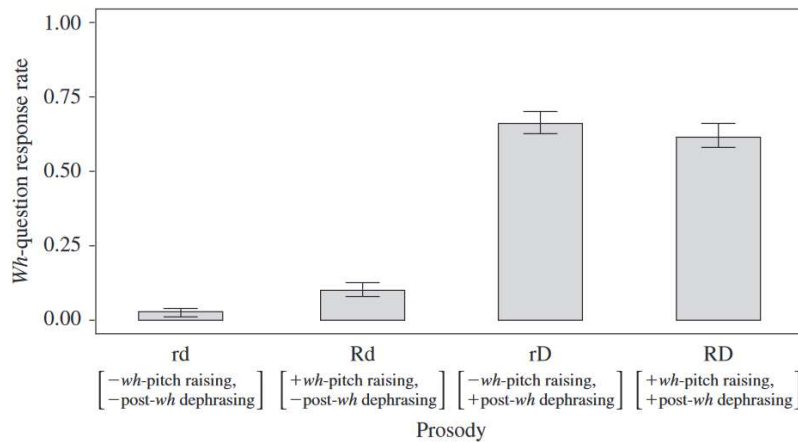

Figure 3. Proportion of wh-question responses (Yun 2019: 641).

The proportion of wide-scope responses relative to all statement responses is demonstrated in Figure 4. A notable observation emerges from the comparison of the first and second columns, as well as the third and fourth columns, indicating a significantly higher rate of wide-scope interpretations when the pitch of the *wh*-word was raised, as expected from my hypothesis. In addition, the presence of post-*wh* dephrasing also exerted a significant effect on scope configuration. Although the effect of dephrasing was not originally hypothesized, it can be readily explained within the proposed hypotheses. Post-*wh* dephrasing has the potential to enhance the prominence of the *wh*-word because when all post-*wh* words lose their AP tones due to dephrasing, the *wh*-word becomes perceptually more prominent, even without receiving a higher pitch. Consequently, the elevated response rate observed for

stimuli featuring dephrasing can be attributed to the enhanced prominence of the *wh*-word.
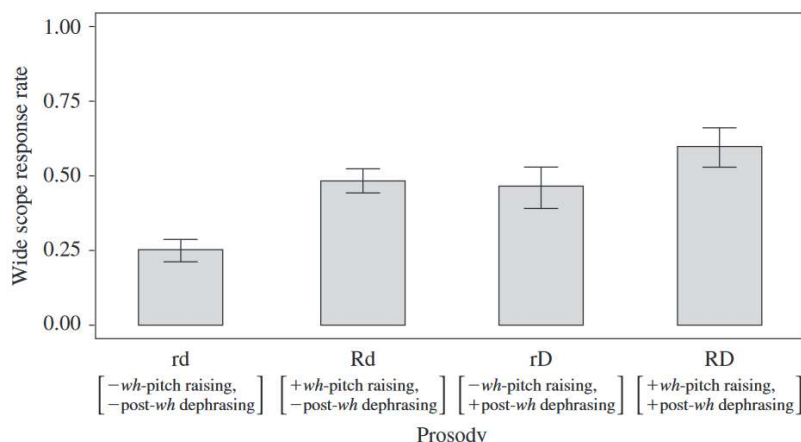

Figure 4. Proportion of wide scope responses (Yun 2019: 643).

In summary, the findings indicate that the meaning of *wh*-indeterminates is primarily influenced by post-*wh* dephrasing rather than *wh*-prominence. *Wh*-prominence does not significantly enhance the likelihood of *wh*-question interpretation, but it does contribute to an increased probability of wide scope interpretation.

The findings of this study have broader implications across languages. First, the observed significance of phrasing in *wh*-intonation supports a unified theory of *wh*-question formation, wherein the *wh*-word and its corresponding complementizer are integrated within the same prosodic phrase, regardless of whether the language employs *wh*-movement or dephrasing (Richards 2010).

Second, the correlation between prosodic prominence and wide scope interpretation of *wh*-indefinites aligns with the observation that prominence also influences the scope configuration of regular indefinites (Milsark 1974). If a language lacks the possibility of wide scope interpretation for *wh*-indefinites, it could be attributed to a prosodic constraint where *wh*-indefinites are inherently devoid of prominence. This is evident in various languages such as Classical Greek (Haspelmath 1997) and Mandarin Chinese (Dong 2009) where *wh*-indefinites exhibit prosodic unmarkedness or reduction. In the case of Korean, while a default pattern exists wherein *wh*-interrogatives

receive prominence while *wh*-indefinites do not, it does not prohibit *wh*-indefinites from acquiring prosodic prominence.

3   Sentence-final Intonation

The sentence-final intonation in Korean has been extensively discussed in previous studies, which typically state that statements and *wh*-questions exhibit a falling intonation pattern, while yes-no questions display rising intonation (Hur 1965; Kwon 2002; I. Lee and Ramsey 2000; Martin 1951; Nam and Ko 1985; S. Park 1997; Suh 1989). This conventional understanding, which I will refer to as the "traditional description," suggests that sentence-final intonation does not offer sufficient cues for distinguishing between the three sentence types or discerning the meaning of *wh*-words.

Nevertheless, Jun and Oh (1996) conducted a production experiment that yielded different results. In their study, statements predominantly ended with a low boundary tone (L%), yes-no questions with a high boundary tone (H%), and *wh*-questions with a rising-falling boundary tone (LH%). These findings suggest that sentence types can indeed be differentiated based on sentence-final intonation. However, it should be noted that the rising-falling tone (LH%) of *wh*-questions contradicts the aforementioned traditional description, which posits that *wh*-questions exhibit falling intonation. By contrast, another production study conducted by (Hwang 2007) supported the traditional description. In that study, yes-no questions exhibited a high-falling tone (H%), while *wh*-questions displayed a falling-rising tone (HL%), aligning with the falling intonation pattern.

A summary of the previous discussions is provided in Table 1. It demonstrates that the descriptions of statements and yes-no questions are consistent across studies. However, there is inconsistency and even conflicting observations regarding the intonation patterns of *wh*-questions, particularly concerning the presence of falling or rising contours.

	Traditional Description	Experiment by Jun and Oh 1996	Experiment by Hwang 2007
Statements	Fall	L% (Fall)	
Yes-no questions	Rise	H% (Rise)	H% (Rise)
Wh-questions	Fall	LH% (Rise)	HL% (Fall)

Table 1. Previous observations on sentence-final intonation.

Why do these conflicting observations exist? One possibility is that there is no one-to-one correspondence between sentence types and sentence-final

intonation. Instead, multiple intonation patterns may be possible for the same sentence type. For example, H.-Y. Lee (1997) proposes a one-to-many correspondence, suggesting that the choice of sentence-final intonation depends on the speaker's attitude or mental state. This analysis offers the advantage of accommodating all the observed variations. However, it is important to note that there appears to be a discernible tendency in the choice of sentence-final intonation observed in each experiment in previous studies, which cannot be solely attributed to the speaker's attitude or mental state.

My proposal aligns with H.-Y. Lee (1997)'s proposal of allowing multiple sentence-final tones for the same sentence type. However, I argue that the assignment of sentence-final intonation is not always subjective but rather systematic in most cases. The central idea of my proposal is that sentence-final morphology plays a critical role in determining sentence-final intonation in Korean. First, I suggest categorizing sentence endings into three groups based on their prosodic patterns. The first group consists of typical neutral endings that can be used for both statements and questions, such as -어/아 *e/a* or their polite variants, -어요/아요 *eyo/ayo*. The second group comprises explicit question endings, such as -니 *ni*, -까 *kka*, or the polite ending -습니까 *supnikka*. The third type of ending is -지 *ci*, which technically falls under the neutral category since it can be used with any sentence type. However, I have singled it out due to its distinct prosodic pattern compared to other neutral endings. Additionally, *-ci* carries a specific pragmatic meaning that emphasizes the speaker's commitment to the conveyed message. Hence, I refer to this ending as the "committal ending," following the terminology proposed by H. S. Lee (1999).

	Neutral Ending	Interrogative Ending	Committal Ending
Statements	L%		L%
Yes-no questions	H%	H%	HL%
Wh-questions	LH%	HL%	H%

Table 2. Proposal: The default boundary tones.

My proposal for the default sentence-final intonation for each combination of sentence type and sentence ending is provided in Table 2. It demonstrates that sentences of the same type can be expressed with different boundary tones depending on the specific sentence-ending morphology. It should be noted that I am not the first to observe this pattern: M. J. Park (2003) also acknowledges a similar observation regarding how different endings interact with interrogative morphology. However, M. J. Park (2003) primarily

describes the difference between the endings in terms of politeness levels, e.g., *-a* is considered more polite than *-ni*. In contrast, I argue that what is crucial in this context is not the politeness of the ending but rather its functional aspect, specifically whether it indicates a question and whether it carries additional pragmatic meaning.

To verify the hypothesis about the default sentence-final tones, I conducted a production experiment. Materials consisted of all possible combinations of three sentence types (statement, yes-no question, *wh*-question) and three sentence endings (neutral, interrogative, committal), with the exception of the combination of a statement and an interrogative ending due to their inherent incompatibility. A total of 40 native speakers of Seoul Korean, consisting of 20 females and 20 males, participated in the experiment. Each participant was presented with target sentences accompanied by appropriate contexts to elicit a specific sentence type and was instructed to read the target sentence as if conversing with their friends.

In total, 480 utterances (12 sentences × 40 participants) were recorded for each combination of sentence type and sentence ending. The results with the most frequent tone for each combination of sentence type and sentence ending are given in Table 3, which coincides with the proposed default tones in Table 2. It further provides an explanation for the conflicting observations reported in previous studies. A thorough examination of the data from each study reveals the influence of sentence endings on the observed intonation patterns. Specifically, Jun and Oh (1996) employed neutral endings in their stimuli, while Hwang (2007) utilized interrogative endings, aligning with the identified effects of sentence endings on the resulting tones.

	Neutral *-a*	*Interrogative* *-ni*	*Committal* *-ci*
Statements	L% (93.5%)		L% (62.9%)
Yes-no questions	H% (91.3%)	H% (90.8%)	HL% (45.2%)
Wh-questions	LH% (90.4%)	HL% (52.1%)	H% (67.9%)

Table 3. Experimental results: Most frequent boundary tones.

Let us now look beyond the default tones and examine the distribution of boundary tones across different sentence types and endings, which helps us gain further insights into the interplay between sentence-final intonation and morphology. In the case of neutral endings, the distribution of boundary tones

was highly concentrated on the default tone, indicating a nearly one-to-one correspondence between sentence type and boundary tone, namely, L% for statements, H% for yes-no questions, and LH% for *wh*-questions Figure 5. However, for interrogative endings, the distribution of boundary tones for *wh*-questions was not limited to a single tone but instead spanned across two tones: LH% and HL% as shown in Figure 6. This suggests that the association between sentence type and sentence-final intonation is stronger for neutral endings compared to interrogative endings. This disparity can be attributed to the fact that neutral endings introduce greater ambiguity regarding sentence types compared to interrogative endings. Consequently, the utilization of intonation as an additional disambiguating cue becomes more crucial in the context of neutral endings. This observation aligns with the increased prevalence of neutral endings in contemporary Korean, where they are more commonly employed than explicit question endings for forming questions (Kwon 2002). Thus, it is reasonable to assume that speakers employ distinct sentence-final intonation patterns to mitigate heightened ambiguity.
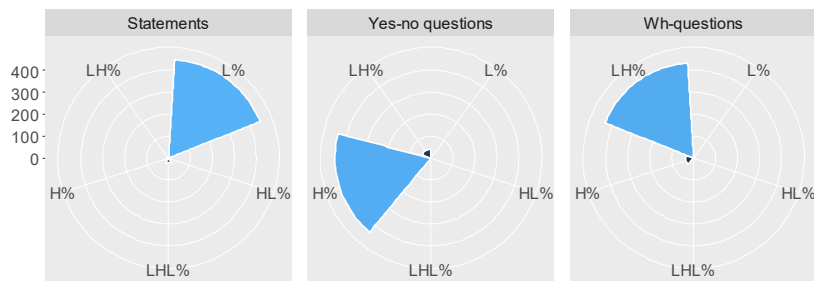

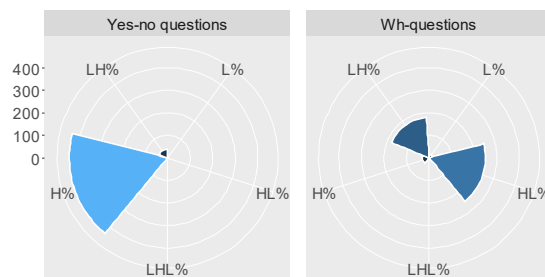*Figure 5. Distribution of IP boundary tones with the neutral ending -a.*

Figure 6. Distribution of IP boundary tones with the interrogative ending -ni.

In contrast to typical neutral endings, the committal ending *-ci* (Figure 7) deviates from the expected pattern. Despite being syntactically a neutral ending, *-ci* exhibits distinctive default tones, as previously observed. Moreover, the distribution of boundary tones associated with *-ci* is far from a one-to-one correspondence and displays a scattered pattern. The deviation and variation in the intonation of the committal ending *-ci* can be attributed to its strong association with the pragmatic meaning, which potentially overshadows the grammatical function of intonation.
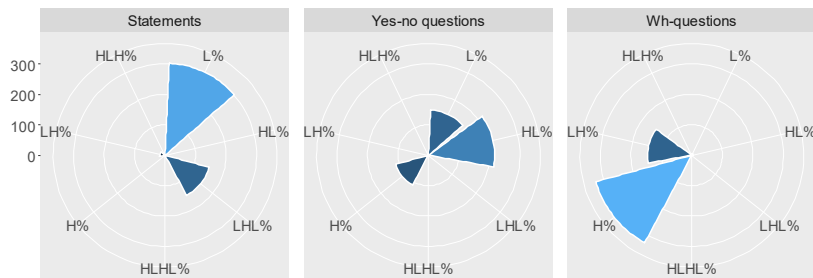

Figure 7. Distribution of IP boundary tones with the committal ending -ci.

Let us now examine the crosslinguistic implications of the findings in Korean sentence-final intonation. Across languages, low or falling intonation is typically associated with statements, while high or rising intonation is associated with questions. For example, *She's going to Vancouver* is a statement with falling intonation, while the same string of words is a question with rising intonation. However, *wh*-questions in many languages including English (e.g. *Where is she going?*) exhibit the same falling intonation pattern as statements, despite being questions. This poses an intriguing puzzle, as the expected rising intonation for questions is not consistently observed. Lieberman (1967) proposed an explanation for this phenomenon, suggesting that questions only exhibit distinctive intonation when they are not sufficiently distinguished from statements by other linguistic elements, such as question words (e.g. *where*). In such cases, speakers do not rely on intonation because the form of the sentence provides enough information. In the case of Korean, the experimental results support this trading relation between form and intonation. Since Korean *wh*-words are not exclusively used for *wh*-questions, intonation does serve as an additional cue to convey meaning. It highlights the role of intonation in disambiguating sentence types in Korean by providing supplementary information beyond the linguistic form.

4 Conclusion

In this article, we have examined three main prosodic factors in *wh*-intonation. The first part of the article discusses two prosodic factors that previous studies have proposed to be directly related to clarifying the meaning of *wh*-words: i) the prosodic prominence of the *wh*-word, and ii) the prosodic dephrasing that occurs after the *wh*-word. While anecdotal observations have often emphasized the significance of *wh*-prominence in the intonation of *wh*-questions, experimental findings suggest that the crucial factor is rather the post-*wh* dephrasing than the prominence of the *wh*-word itself. These results support the theory that prosodic phrasing plays a crucial role in the formation of *wh*-questions (Richards 2010).

The second part of the article focuses on sentence-final intonation, which has been a topic of debate in the literature regarding its relevance to the disambiguation of the meaning of *wh*-words. While previous studies have commonly reported that both *wh*-questions and statements exhibit a final falling intonation, experimental results demonstrate that *wh*-questions in Korean display a distinct sentence-final intonation, and this specific pattern is determined by the interaction with sentence-final morphology. These findings provide support for the hypothesis that a systematic interaction between form and intonation exists (Lieberman 1967).

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