The theory and processing of Korean *wh*-indeterminates

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1. Research Question

How to distinguish WHQ from YNQ by prosody in Korean?

The so-called **wh-indeterminate** in Korean renders a question like (1) ambiguous between a yes/no-question and a wh-question.

(1)

지금	누구	기다려?
ci.kim	nu.ku	ki.ta.ryə
now	who	wait

YNQ: 'Are you waiting for someone now?'
WHQ: 'Who are you waiting for now?'

The interpretation is affected by prosodic factors such as:
- Relative **prominence** of wh (Chang 1973, Kang 1988, Kim 2000)
- Phonological **phrasing** after wh (Lee 1990, Jun & Oh 1996, Yun 2012)
- Sentence **boundary** tone (Martin 1951, Lee 1984, Hwang 2007)

Among these factors, phonological **phrasing** has been argued to be the strongest cue to disambiguation (Jun & Oh 1996, Yun 2012).

2. Theoretical prediction

WHQs and YNQs are distinguished by different phonological phrasing (Jun 1993).

When it is WHQ, there is no phrase boundary between the wh-indeterminate and the following word.

Different phrasing is generally realized with different tonal respresentations (Jun & Oh 1996).

The typical tonal pattern of a phonological phrase. The second and penult tones can be deleted if the phrase consists of fewer than 4 syllables.

YNQs and WHQs are realized with different tonal patterns in general (solid vertical line: phrase boundary, shaded area: wh-word).

(1′) YNQ: ... WHQ: ...

3. When the theory is indecisive

In certain cases, the theory predicts the same tonal patterns for both WHQ and YNQ.

For example, the same LHLH pattern is predicted for a disyllabic *wh*-indeterminate followed by a disyllabic word.

(2′) YNQ: L H L H   WHQ: L H L H

Thus, one might argue that in those cases the other prosodic factors such as relative prominence of wh-words or sentence boundary tone (that overrides the final AP tone) would instead play a decisive role in disambiguation.

In this study, however, we have found that the phrasing difference in terms of tonal pattern is still present and effective in such a case.
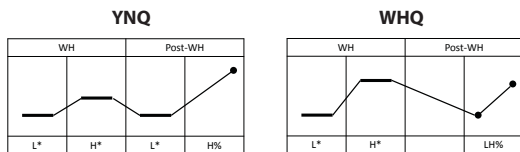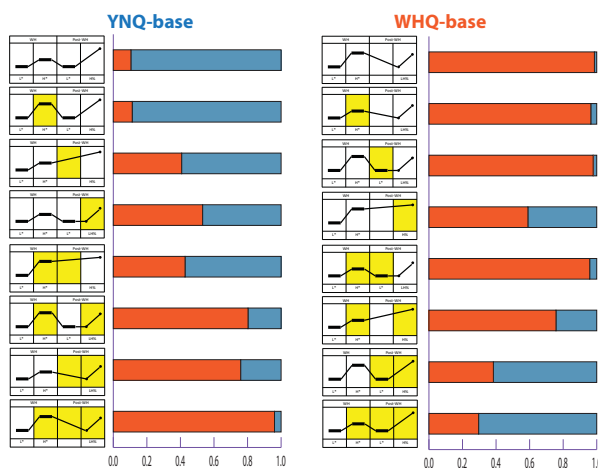
4. Production

The phrasing difference in terms of tonal pattern maintains even when the theory predicts an exception.

We analyzed the production of 160 sentences like the following (9 speakers x 10 sentences x 2 contexts) ...

(2)

내일	누구	만나?
næ.il	nu.ku	man.na
tomorrow	who	meet

YNQ: 'Are you meeting someone tomorrow?'
WHQ: 'Who are you meeting tomorrow?'

... to find three major factors that differentiate YNQs and WHQs:
- **F0 peak on the wh-word**: WHQs showed a significantly higher F0 peak on the wh-indeterminate compared to YNQs (paired t-test: t(7.1) = 88, p < .001)
- **Post-wh L tone**: an L tone was realized on the initial syllable of the post-wh-word in 90% of YNQs, but only 26.7% of WHQs.
- **Sentence boundary tone**: WHQs were mostly realized with an LH% at the end (68%), while YNQs were mostly with H% (78%).

YNQ / WHQ

The absence of the post-wh L tone in WHQ is an additional factor which is not predicted by the theory, but it is a consistent pattern for WHQ (see 3 in discussion).

5. Perception

The attested tonal contrast has influence on perception.

We conducted a perception test (N=57) with one speaker's recording. Each sentence was resynthesized to manipulate the values of selected acoustic factors amont the three: wh-peak (not boosted/boosted) x post-wh L (presence/absence) x sentence boundary tone (H%/LH%).

YNQ-base / WHQ-base

- The non-manipulated intonation was correctly identified for both readings (more than 90%).
- There was a baseline preference for WHQ.
- **Deleting the post-wh L tone in YNQ increased WHQ responses**.

6. Discussion & Conclusion

The phrasing difference in terms of tonal contrast is still present and effective even when the theory predicts an exception.

This may be a processing strategy that enhances the phrasing contrast between YNQs and WHQs, i.e. presence versus absence of the post-wh L tone (3). The finding of this study also reinforces the argument that appropriate phonological phrasing is cross-linguistically important in forming and understanding wh-questions (Hu 2002, Ishihara 2002, Richards 2010).

(3) YNQ: ...   WHQ: ...

7. Selected References

Hu, Fang. (2002). A prosodic analysis of wh-words in Standard Chinese. Paper presented to the *Speech Prosody* 2002, Aix-en-Provence, France, 2002.

Hwang, Heeju (2007). *Wh*-Phrase Questions and Prosody in Korean. *Proceedings of the 17th Japanese/Korean Linguistics Conference*.

Ishihara, Shinichiro (2002). Invisible but audible *wh*-scope marking: Wh-constructions and deaccenting in Japanese. *Proceedings of the 21st West Coast Conference*,180-93.

Jun, Sun-Ah. 1993. *The phonetics and phonology of Korean prosody*. PhD Dissertation. University of California, Los Angeles.

Jun, Sun-Ah & Mira Oh (1996). A prosodic analysis of three types of *wh*-phrases in Korean. *Language and Speech* 39, 37-61.

Kim, Ae-Ryung. (2000). *A Derivational Quantification of "WH-Phrase"*. PhD Dissertation. Indiana University.

Richards, Norvin (2010). Uttering trees: The MIT Press.

Yun, Jiwon (2012). The Deterministic Prosody of Indeterminates. *Proceedings of the 29th West Coast Conference on Formal Linguistics*, 285-93.