

Introduction

This study explores the effects of tonal and segmental cues and their interaction on the perception of prosodic phrasing in Seoul Korean (SK)

- In SK, Accentual Phrase (AP) is the domain of tonal and segmental processes [1, 2]
- Tonal: Marked by L(HL)H tones (Fig. 1)
- Segmental: Lenis stops are strengthened (to voiceless) in AP-initial position (Red in Fig. 1), optionally voiced in AP-medial position (Yellow in Fig. 1)
- Listeners can use segmental cues to determine prosodic constituent boundaries in the absence of tonal cues [3], but may rely more heavily on tonal than segmental cues to phrasing [4]
- How do listeners weight the tonal and segmental cues to AP phrasing in Korean?

Present Study

- In Korean, WH-words (when) and indefinite (sometime) are homophones.
- WH- Questions and YN- Questions can be realized string identically and differ only in prosodic phrasing and tonal realization [5]
- Different realization of verb-initial lenis stop: YNQ, AP-initial, strengthened/voiceless; WHQ, AP-medial, (optionally) voiced

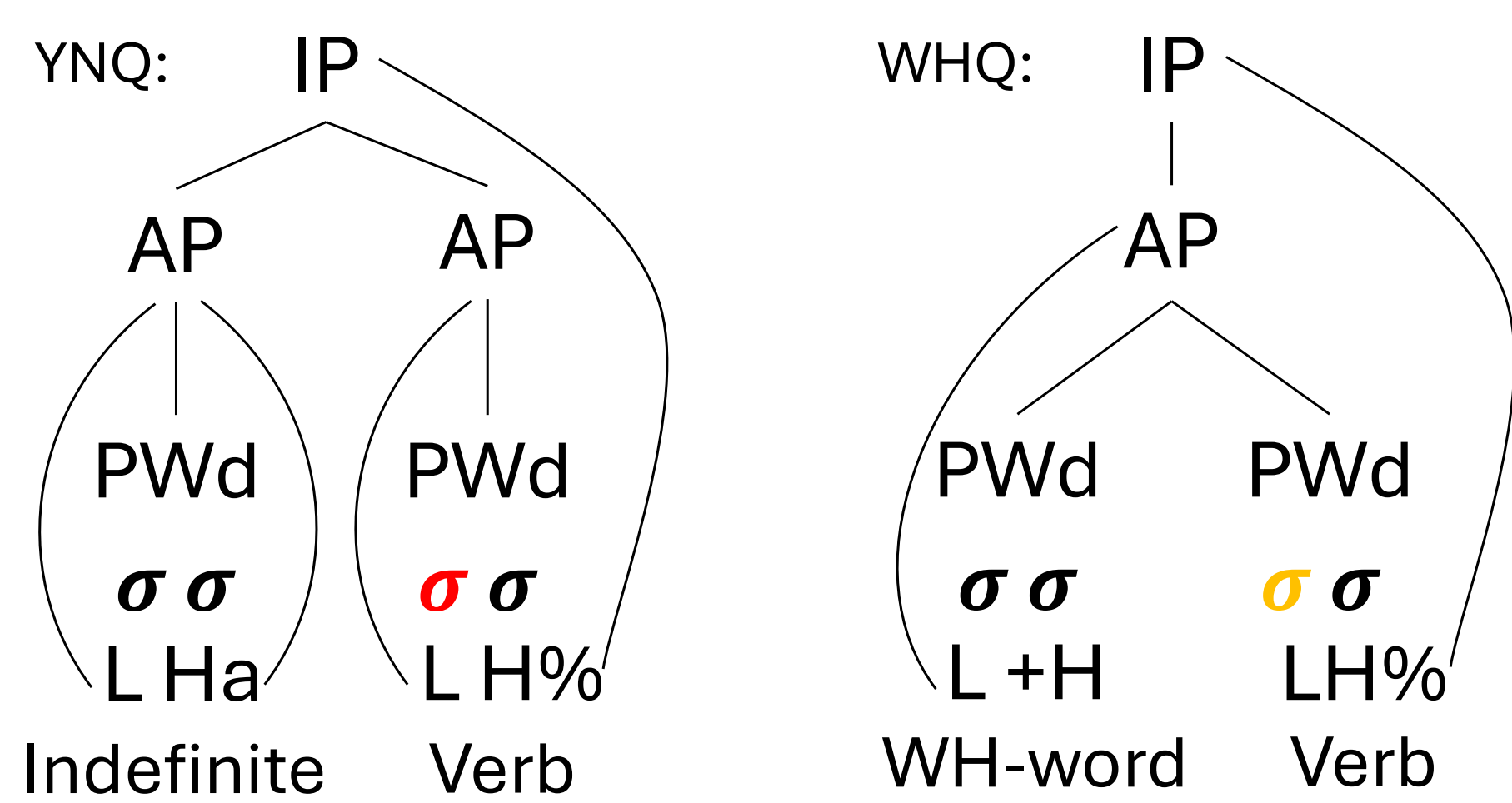


Figure 1. 2 question types

Experiment

- Stimuli: Context word, wh-word/indefinite, and a disyllabic verb (11 pairs, n=22)
- Verb-initial syllable spliced in from a different realization of a question of the same type (same splice) or the opposite type (cross splice)
- Fully crossed 2x2 design: Question Type (WHQ, YNQ) and Splicing Condition (Same, Cross)
- Recorded response choice (WHQ/YNQ), response time (RT), and confidence rating (1 confident - 4 not confident).
- Experiment coded with PC Ixbox [6], 25 participants run on Prolific

e.g., /ki.ko # ɔn.tʃe # pwa.s'ɔ/?
("When did you see that/did you see it sometime?")

Experimental conditions	Same-spliced	Cross-spliced
YNQ	a. [ɔn.tʃe _{AP1}] [pwa.s'ɔ _{AP2}]	b. [ɔn.tʃe _{AP1}] [[*] bwa.s'ɔ _{AP2}]
WHQ	c. [ɔn.tʃe bwa.s'ɔ _{AP}]	d. [ɔn.tʃe [?] pwa.s'ɔ _{AP}]

Instruction given to participants: Listen to the question and choose the most natural response.
F – Yes/No (Intended for YNQ) | J – Monday/Tuesday (Intended for WHQ)

Results

- Consistent results across three types of participant responses: proportion of tune response, RT, and confidence rating.
- When the tune was YNQ or when the segment was **cross**-spliced from the other question type,
 - Fewer tune response (Table (a), Fig. 2), longer RT (i.e., slower) (Table (b), Fig. 3), higher confidence rating (i.e., less confident) (Table (c), Fig. 4).
- The difference between the splicing conditions (**cross** - same) was smaller (but still significant in posthoc comparison tests) when the question type was WHQ, rather than YNQ.

Fixed effects	(a) Tune response type	(b) RT	(c) Confidence rating
(Intercept)	$\beta = 2.08 (***)$	$\beta = -0.006$ (n.s.)	$\beta = 1.70 (***)$
Question type (YNQ)	$\beta = -1.57 (***)$	$\beta = 0.19 (***)$	$\beta = 0.23 (***)$
Splicing (Cross)	$\beta = -1.14 (***)$	$\beta = 0.15 (***)$	$\beta = 0.12 (***)$
Qtype:Splicing	$\beta = -0.66 (***)$	$\beta = 0.05 (*)$	$\beta = 0.05 (***)$

Acknowledgements

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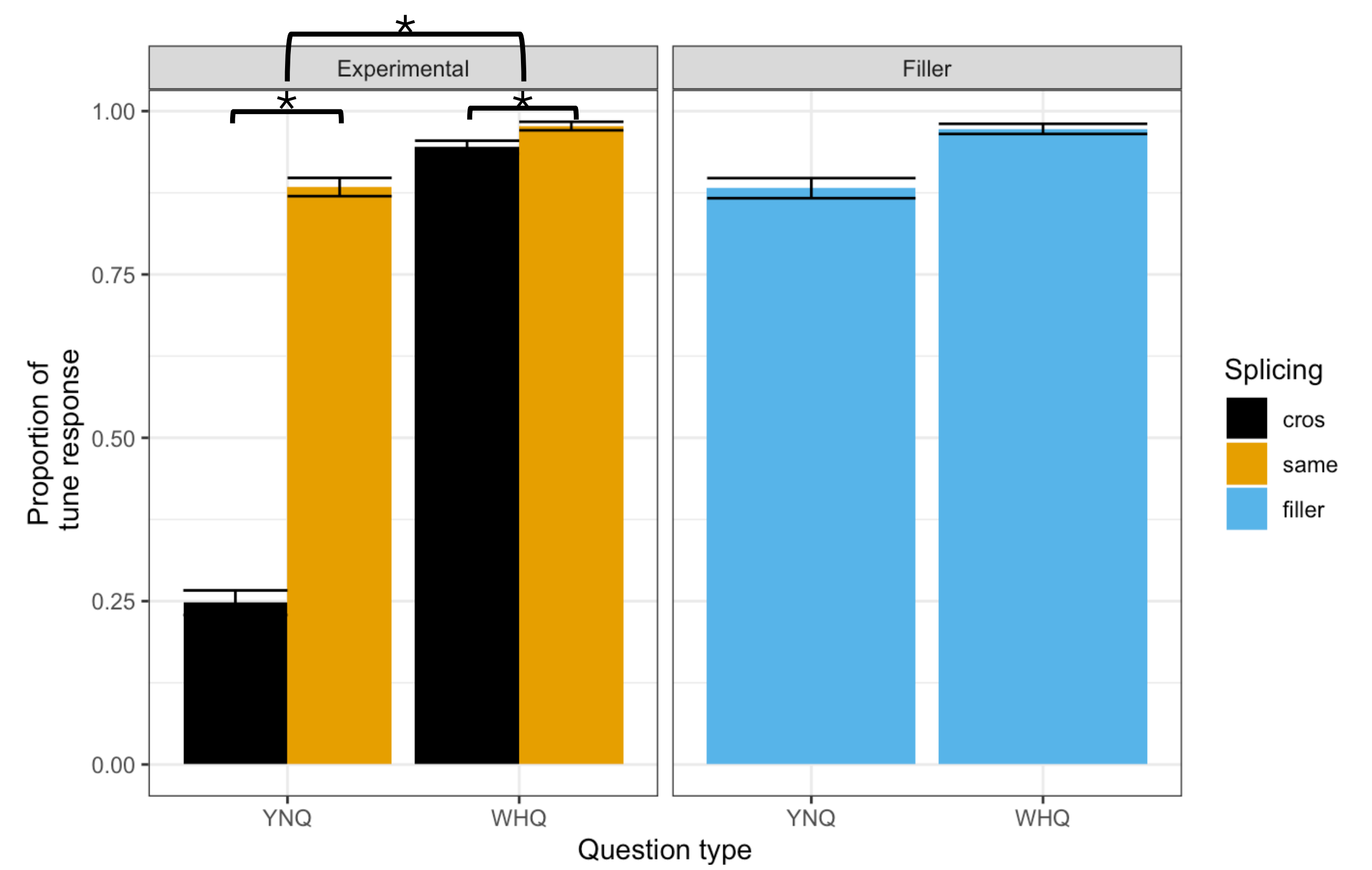


Figure 2. Response Results

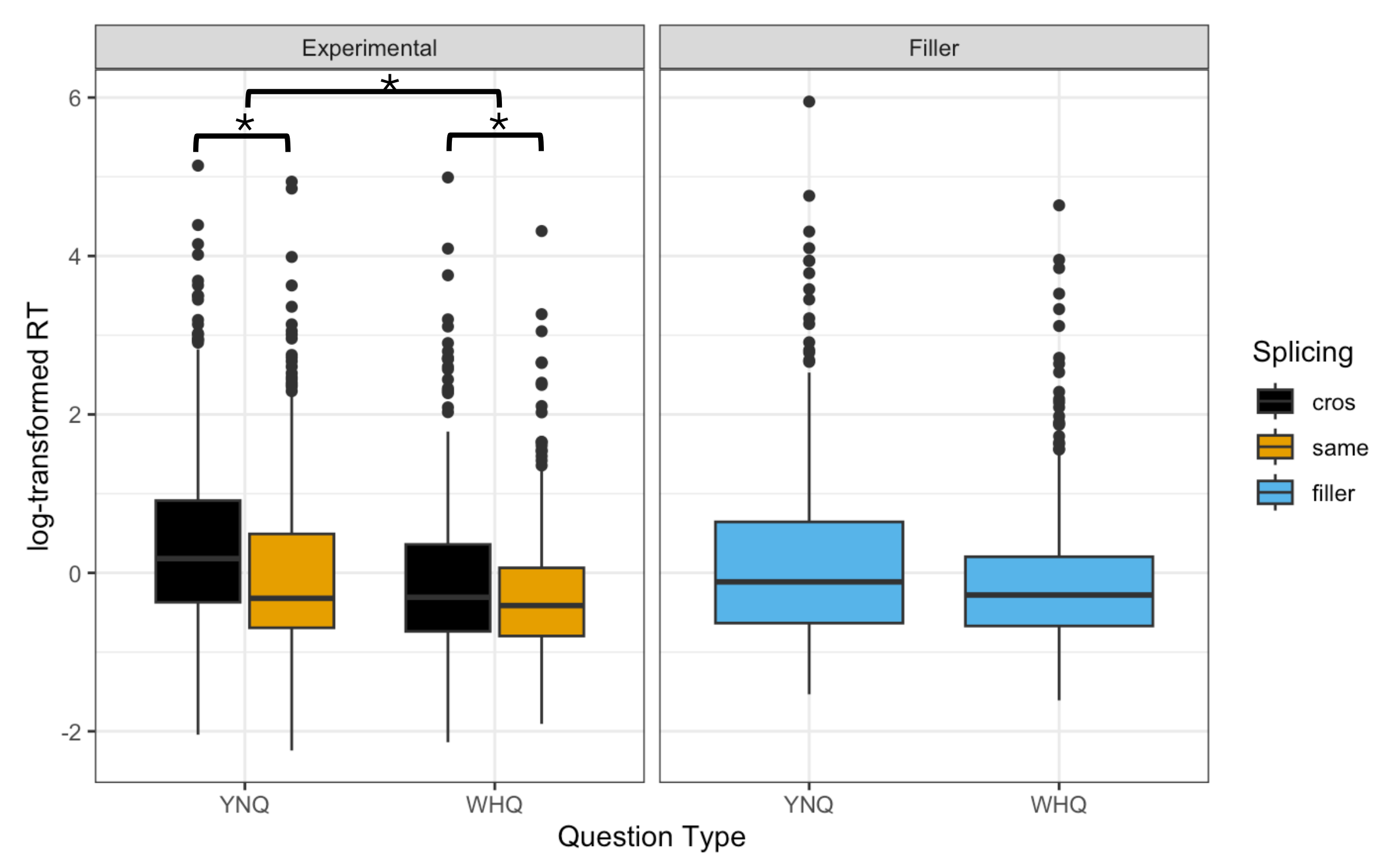


Figure 3. Response Time Results

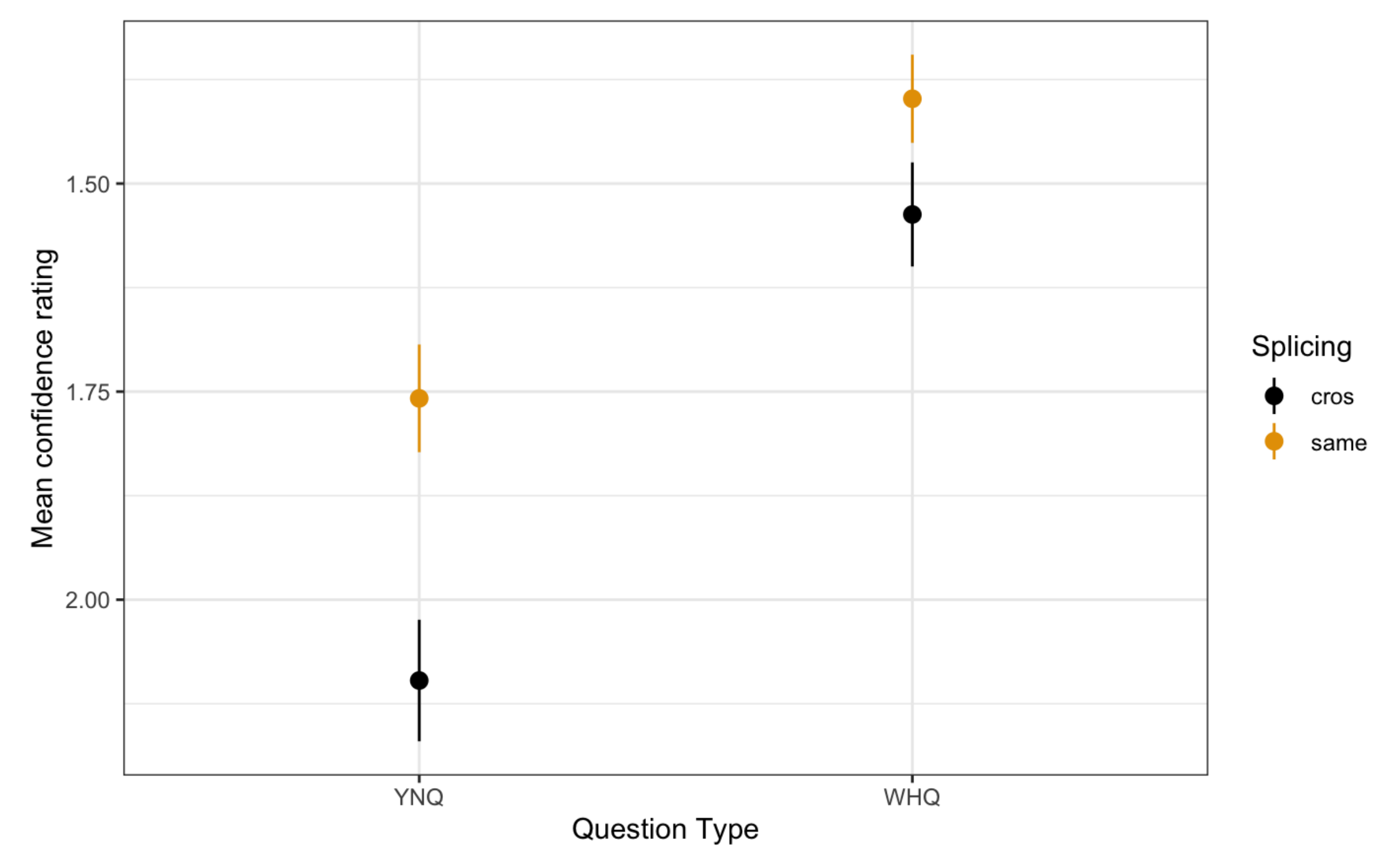


Figure 4. Confidence Rating Results

Discussion

Both tonal and segmental cues played a significant role in the perception of question type

- In cross splice condition, participants chose the 'tune' response less often and they responded with longer RT, and less confidence.
- But the effect of splicing was greater for YNQ tunes in all three results.
- This may be because lenis stops are only optionally voiced in the AP-medial position, so both voiced and voiceless realizations may be acceptable for WHQs (smaller effect of splicing for WHQ).
- In contrast, voiced segments were not acceptable in the AP-initial position, i.e. Cross spliced YNQ condition, and there was less tune response (YNQ) and the participants responded more slowly and less confidently.
- However, it also seemed that there was a general bias against the YNQ response *was even when tonal and segmental correlates suggested YNQ (in the Same splice condition and fillers)*.
- This may indicate a general preference for a WHQ interpretation or response, possibly because the response to the WHQ response contains more information than a yes/no response.

References

- [1] Jun, S-A. (1998). The accentual phrase in the Korean prosodic hierarchy. *Phonology*. [2] Jun, S-A. & Oh, M. (1996). A prosodic analysis of three types of wh-phrases in Korean. *Language and Speech*. [3] Yoo, K. (2020). The production and perception of domain-initial strengthening in Korean. [4] Choi, Y., & Mazuka, R. (2003). Young children's use of prosody in sentence parsing. *Journal of psycholinguistic research*. [5] Yun, J., & Lee, H. S. (2022). Prosodic disambiguation of questions in Korean: theory and processing. *Korean Linguistics*, 18(1), 18-47. [6] Zehr, J., & Schwarz, F. (2018). PennController for Internet Based Experiments (IBEX).