

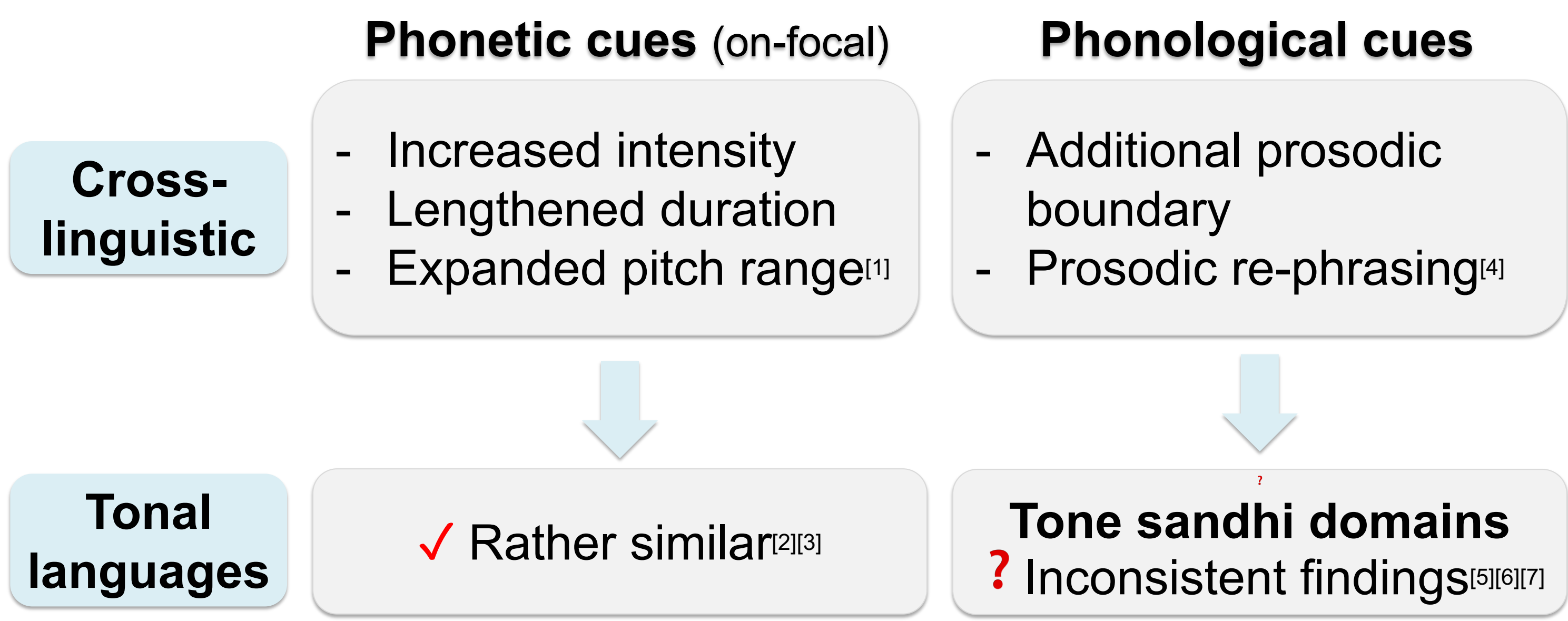
Phonetics and Phonology of Corrective Focus in Xiangshan Wu Chinese: Interaction with disyllabic tone sandhi



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Introduction

1. Prosodic focus realisations



2. Xiangshan Wu Chinese



Tone inventory: 6 lexical tones, 4 non-checked tones (HH, HL, LHL, LH) and 2 checked tones (Hq, LHq)^[8]

RQ: How is focus realised phonetically (via intensity, duration) and phonologically (via sandhi changes), and whether there is any cue-trading relation between the two?

Methodology

1. Participants & Materials

8 Xiangshan speakers (4 female, age range 47-53, mean age 50) * 38 disyllabic tokens (LHL-initial underlying non-checked tone combinations) * 4 focus conditions = 1,216 tokens

2. Focus elicitation paradigm

- **Broad focus:** read test tokens one by one.
- **Corrective focus:** correct a token they heard in a recording using the token presented to them.

Focus	Recording	Desired output
σ_1	These words are CB .	No, they are AB .
σ_2	These words are AD .	No, they are AB .
$\sigma_1\sigma_2$	These words are EF .	No, they are AB .

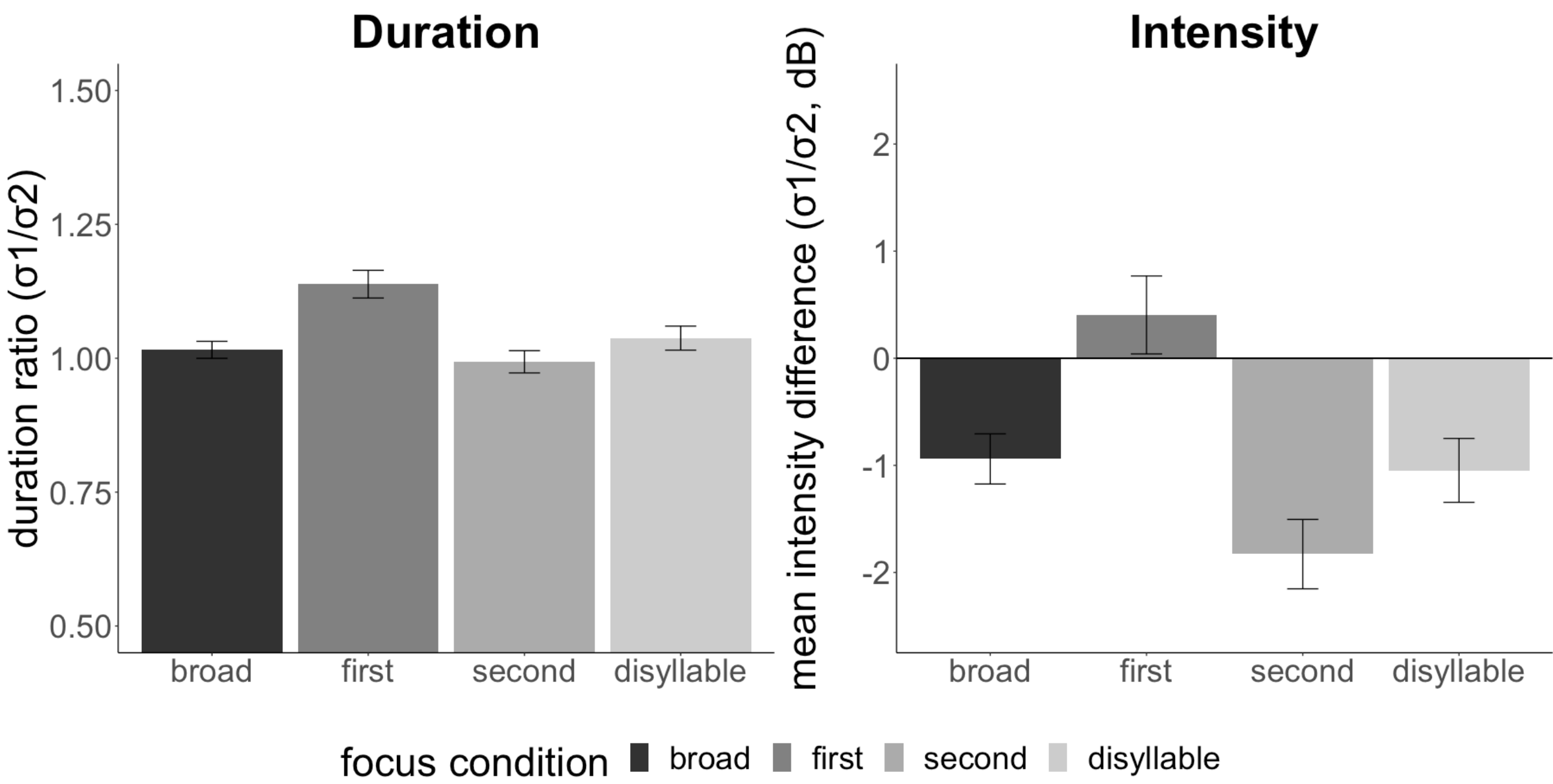
3. Data analysis

- **Phonetic cues:** linear mixed-effects models for comparisons of normalised duration ratio (σ_1/σ_2) and mean intensity differences ($\sigma_1 - \sigma_2$) across different focus conditions; all tokens analysed.
- **Phonological cues:** visualisations and comparisons of tone sandhi patterns across all focus conditions; only lexical compounds & Modifier-Head phrases analysed.
- **Interaction between the two:** linear mixed-effects models

Results

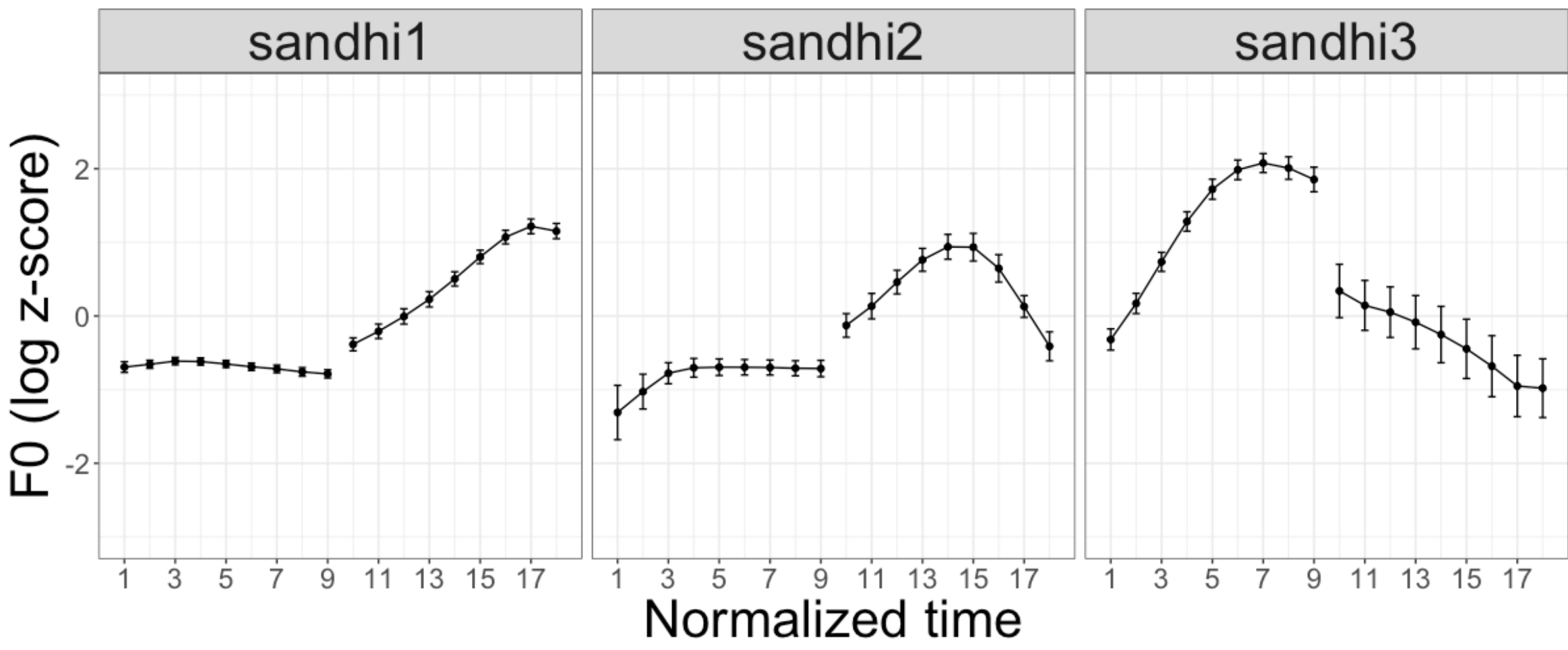
2. Phonetic cues Focus elicitation paradigm

- **Significant increased** relative duration and intensity of the focused syllable (when **only one syllable is focused**)
- No significant differences when both syllables are focused

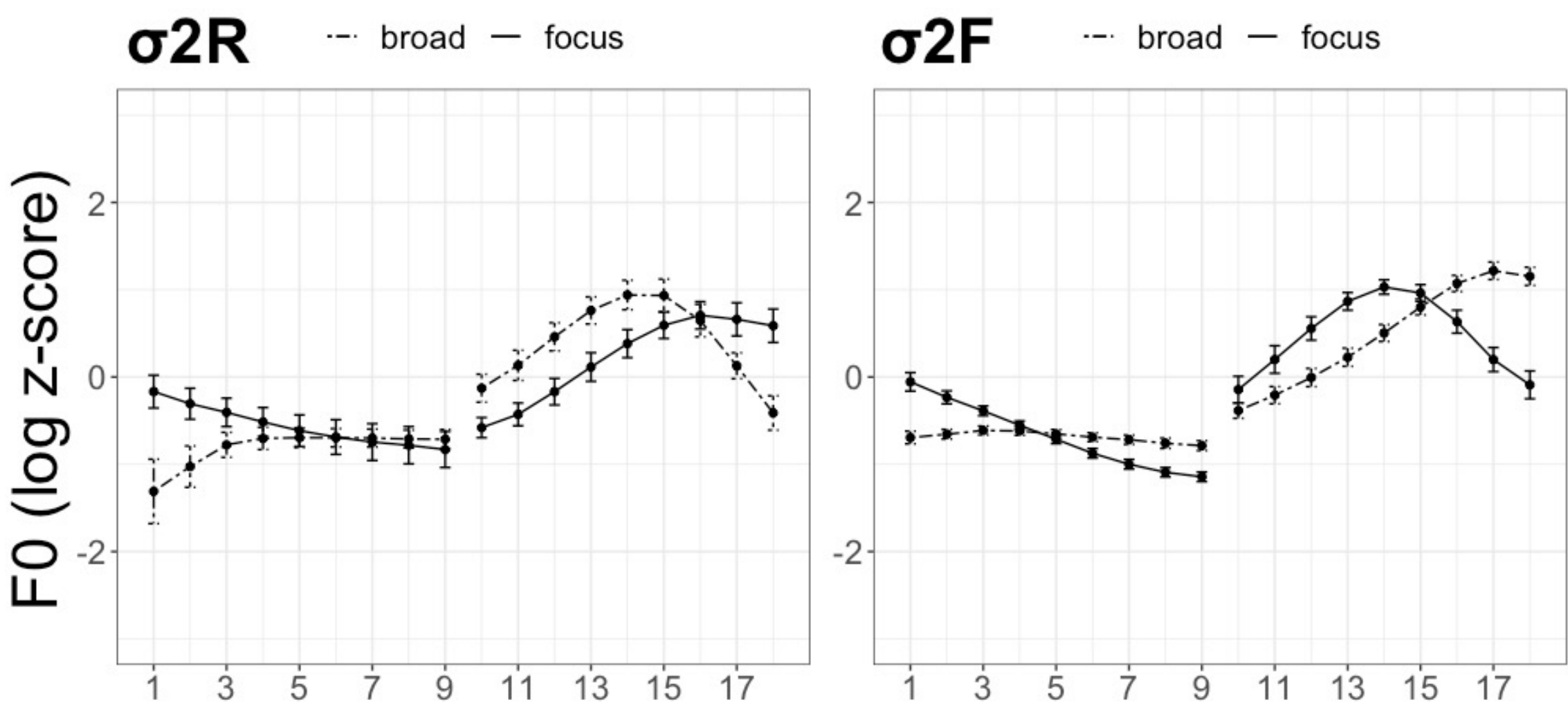


2. Phonological cues: tone sandhi patterns

- Sandhi patterns under **broad focus**
 - **LHL-HH/LHL/LH** underlying tones: **sandhi1** (78.7%)
 - **LHL-HL** underlying tones: **sandhi3** (76.5%)
 - sandhi2: only occur 5.7% across all tokens



- Sandhi patterns under **corrective focus**
 - 1) broad sandhi on the disyllable (BS, 73%);
 - 2) focus realising syllable 2 sandhi as a rise (σ_2R , 13%)
 - 3) focus realising syllable 2 sandhi as a fall (σ_2F , 9.9%)



- 4) the focused syllable carrying its underlying tone (UT, 4.1%)

Focus	UR tones	Broad sandhi	Focus sandhi
σ_1	LHL-HL	LH-ML	LHL-ML
σ_1	LHL-H	L-LH	LHL-LH
σ_2	LHL-HL	LH-ML	L-HL
σ_2	LHL-H	L-LH	L-H

3. Interaction between the two

- Comparisons of phonetic cues across different sandhi types
- No significant differences in duration ratio
- Significantly lower mean intensity difference for UT type

Discussion

1. **Phonetic cues:** focus induces a higher relative intensity and lengthened duration on the focused syllable; not too much change of relative intensity or duration when focus is on the whole disyllable.
2. **Phonological cues:** Tone sandhi patterns can be realised differently under corrective focus, and in some cases focus potentially blocks the sandhi for the focused syllable while having no effect on the sandhi of the non-focused syllable.
3. **Interaction between the two:** a potential cue-trading relation between sandhi and gradient acoustic cues

References: [1] W. E. Cooper, S. J. Eady, & P. R. Mueller (1985) *J. Acoust. Soc. Am.* [2] Y. Chen (2006) *J. Phon.* [3] Y. Chen & C. Gussenhoven (2008) *J. Phon.* [4] S. -A. Jun & H. -J. Lee (1998) in *5th International Conference on Spoken Language Processing (ICSLP 1998)*. [5] B. Ling & J. Liang (2019) *Lingua*. [6] M. Y. Chen, (2000) *Tone Sandhi: Patterns across Chinese Dialects*. [7] J. Tian & J. Kuang (2020) in *Speech Prosody 2020*. [8] Y. Shi (2020) *Tones and Disyllabic Tone Sandhi in Xiangshan Chinese Dialect*.