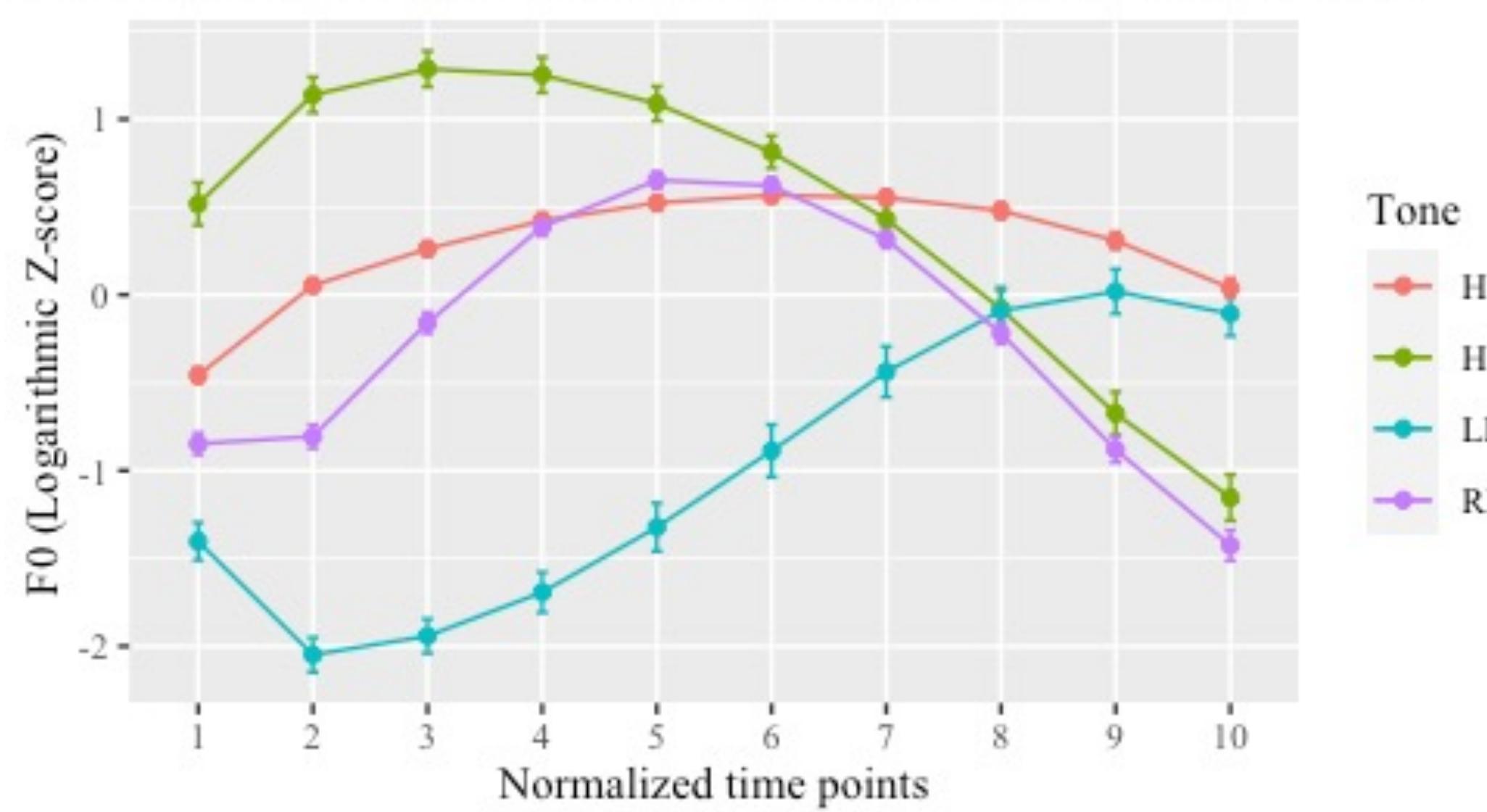


1. Background

- **Focus** marks ‘the communicatively most important element in the utterance’ [1].
 - **Corrective focus**, as one type of focus (also as identificational focus^[2] or contrastive focus^[3]), is usually elicited by correcting or contrasting an utterance under question^[4].
- **Xiangshan Wu Chinese** is an understudied language spoken in the Southeastern part of China.
 - **Tone inventory**: 4 smooth tones (occur with (C)V/(C)VN syllable structures), HH, HM, LM, and RF (Rise-Fall), with H, M, L referring to High, Mid, and Low pitch registers.

Citation tones averaged across speakers



- **Tone sandhi** refers to changes in lexical tones when they occur in combination^[8]. Xiangshan dialect, like other Wu dialects, also exhibits complex sandhi patterns.
- **Corrective focus**: Previous production experiment found that in Xiangshan dialect, items under corrective focus show longer duration, raised pitch level, and optional and inconsistent sandhi changes.

RQ1: Do native Xiangshan speakers also use the three acoustic cues to perceive corrective focus?

RQ2: Which acoustic cue plays a more important role in identification of corrective focus?

2. Methodology

- **Stimuli**: 144 disyllables extracted from the production experiment, which covers 2 focus conditions (focus on 1st syllable or 2nd syllable)
- **Participants**: 27 Xiangshan native speakers, 14 female, aged 38-65, mean=50.37.
- **Experiment**: Listeners were asked to choose the syllable that has been corrected after listening to the speech samples

- **Analysis**: Generalized mixed effect models (using *LmerTest* package in R) are used to test the influence of sandhi changes (categorical vs. non-categorical), normalized mean F0 differences (2nd syllable minus 1st syllable), and normalized duration ratio (1st syllable/2nd syllable) on the accuracy rates, with token numbers, listener numbers, and speaker numbers as the random effects.

3. Results

- Overall, listeners only show marginal, better than chance performances (60% accuracy rate); accuracy rates increase from 50% for samples only showing sandhi changes to 65% for samples manifesting gradient acoustic changes.
- **Significant effects** of categorical sandhi changes, mean F0 differences, and duration ratio on accuracy (focus on the 1st syllable); and only the latter two when focus is on the 2nd syllable.

Focus conditions	Accurate answers			
	Predictors	Odds Ratios	CI	p
Focus on 1 st syllable	(Intercept)	0.24	0.11 – 0.52	<0.001
	sandhi (categorical)	1.93	1.30 – 2.86	0.001
	sandhi (non-categorical)	1.38	0.88 – 2.18	0.165
	meanf0 diff	0.84	0.75 – 0.95	0.006
	duration ratio	3.34	2.00 – 5.59	<0.001
Focus on 2 nd syllable	(Intercept)	3.48	1.75 – 6.92	<0.001
	sandhi (categorical)	0.99	0.73 – 1.33	0.937
	sandhi (non-categorical)	0.87	0.62 – 1.22	0.413
	meanf0 diff	1.44	1.26 – 1.65	<0.001
	duration ratio	0.49	0.29 – 0.82	0.006

Table 1 Effects of sandhi changes, mean F0 differences, and duration ratio on the choice of accurate answers. An odds ratio < 1 indicates a negative correlation, and an odds ratio > 1 shows a positive correlation.

3. Discussion

- Gradient acoustic cues (mean F0 differences and duration ratio) serve as better acoustic cues to identify corrective focus in Xiangshan dialect, while categorical sandhi changes also play a role in certain conditions.

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