Intonation processing by Chinese speakers in imitation paradigms

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In this study, we report data elicited with an imitation task on the processing of intonation contours by Chinese speakers. Two variant paradigms of this task have been used in the literature to investigate the imitation of (non-)native intonational contrasts. The immediate paradigm elicits imitation immediately after the stimuli are presented [e.g., 1, 2, 3]. In contrast, the delayed paradigm requires speakers to imitate after a 2-3 seconds' delay [4, 5]. The delayed paradigm has been argued to reflect phonological processing rather than phonetic (echoic) memory based on Baddeley's working memory model [6, 7, 8]. A direct comparison between the two paradigms, however, is not available in the literature.

20 Standard Chinese speakers with Mandarin and Wu dialectal backgrounds participated in the study and imitated pseudo sentences with nine synthesized intonation contours akin to typical intonation events in West Germanic languages. In the first block, they were asked to provide an immediate response, and in the second, a delayed response. Chinese participants were predicted to show more native language interference in the delayed block due to phonological processing [e.g., 5, 9, 10].

Fine-grained analyses of imitated F0 contours were performed using Generalized Additive Mixed Models (GAMMs). The results showed that participants could generally distinguish between all contours within each block. Moreover, significant differences in contour shape were found between immediate vs. delayed imitations for most of the contours. Visualization of the differences between the two variant paradigms suggest that for some contours, deviations in the delayed block are indeed more aligned with Standard Chinese intonation patterns; no patterns contradictory to the predictions were detectable. Jointly, our results lend evidence for phonological processing in delayed imitations.

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