

## **Effects of Gesture Mediated Chinese Tone Teaching in a Chinese-as-a-second-language Classroom**

Acquisition of Chinese tones is extremely difficult for the L1 English learners because of its absence in English. This study replicates Morett and Chang (2014) to examine the effectiveness of pitch-gesture on learning Chinese tones in an intact beginning-level Chinese classroom.

The recent psycholinguistic studies have demonstrated that using metaphoric pitch gesture help the acquisition of intonation (e.g., Kelly, Baily, and Hirata, 2017) and tones (e.g., Morett and Chang, 2014). These findings are consistent with dual coding theory (Paivio, 1986), which posits that learning is reinforced when information is encoded simultaneously through visual and verbal modalities. In addition, recall of enacted action and phrases has been found to be superior to recall of action phrases without enactment (Cohen & Otterbein, 1992; Engelkamp & Cohen, 1991). These studies, however, were conducted with true novice learners and in a highly controlled setting and it is not known if the same results can be found with learners that have been exposed to Chinese previously. Specifically, we asked the following questions: (1) Do seeing and producing pitch gestures facilitate Chinese tone production? (2) Do seeing and producing pitch gestures facilitate Chinese tone identification?

Fifty students from the two classrooms of a first and second-semester Chinese course participated in this study. Each intact class was assigned either to a Gesture condition or No Gesture condition. In the Gesture condition, the instructor orally presented twelve target words while presenting corresponding pitch gestures simultaneously. The target words and their English translation were also shown on slides. The students were asked to reproduce the instructor's gesture and repeat the target vocabulary orally. In the No Gesture condition, students were exposed to the identical instruction, but no gesture was reproduced by the students. All the participants completed a pre-test and post-test which included identification and production tests. Test scores are compared between conditions using one-way ANOVA.

Results show that learners exposed to the See and Do Gesture condition significantly improved in the production post-test. Learners exposed to See and Do Gesture condition received better scores in the tone production test compared to only See Gesture condition. Both learners in the See Gesture Condition and See and Do Gesture condition did not have significant improvement in identification test scores, however, did not improve due to the ceiling effect. The findings correspond to Dual Coding theory and enactment theory and suggest that the use of gestures to teach tones in an intact Chinese classroom is helpful for students' acquisition of Chinese tones especially for tone production.