

Sensorimotor adaptation and aftereffect to frequency-altered feedback in Mandarin-speaking vocalists and non-vocalists

[中文母語聲樂家與非聲樂家對於音頻擾動反饋所產生的感覺動作適性化與後效]

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Abstract

This research examined sensorimotor adaptation and aftereffect in trained vocalists and non-vocalists whose native language is Mandarin. The adaptive frequency-altered feedback paradigm involving a baseline of normal auditory feedback, a training phase of incrementally or decrementally changed feedback, and a test phase of normal auditory feedback was administered. The participants were asked to produce the sustained vowel /a/, Mandarin /ma1/ (“mother”), and Mandarin /ma2/ (“hemp”). The results show that the vocalists compensated less than the non-vocalists, suggesting that the vocalists’ audio-motor representations for pitch could be more entrenched than the non-vocalists’. All the participants displayed sensorimotor adaptation, indicating that online recalibration is an innate and automatic process. The presence of the aftereffect, however, depended on the stimulus type and vocal training experience. It appeared in all speakers’ responses to downward shift of /ma1/ and /ma2/, but only in the non-vocalists’ responses to /a/.

Keywords: sensorimotor adaptation, frequency-altered feedback paradigm, vocal training, tone production

關鍵詞：感覺動作適性化、音頻擾動反饋典範、聲樂訓練、聲調發音

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