

The Advantage of Music Training in Accommodating Speech Variabilities

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The perception of multiple-speaker speech is challenging. People with music training generally show more robust and faster tone perception. The present study investigated whether music training experience can facilitate tonal-language speakers to accommodate speech variability in lexical tones. Native Cantonese musicians and nonmusicians were asked to identify Cantonese level tones from multiple speakers. Two groups were equally well in using context cues to normalize lexical tone variability at behavioral level. However, the advantage of music training was observed at cortical level. The time-domain ERP analysis suggested that musicians normalized lexical tone variability much earlier than nonmusicians (N1: 70-175 ms vs. P2: 175-280 ms). An exploratory source analysis further revealed that two groups probably relied on different cortical regions to normalize lexical tones. Left BA41 showed stronger involvement in musicians in accommodating tone variability, but right auditory cortex (including BA 41, 42 and 22) activated to a greater extent in nonmusicians.

Keywords: Music training experience; speech normalization; lexical tone; time course; source analysis