

Abstract

This research aimed to investigate how auditory melody transformation tasks could influence visual mental rotation performance in musicians. Previous research (Cupchik, Phillips, & Hill, 2001) showed that performance in melody reversal, a task to imagine a melody playing backward, could predict performance in 3D visual mental rotation; while another task to imagine a melody rotating downward, called melody inversion, was not associated with enhanced mental rotation performance. So mental rotation and melody reversal seemed to share the same cognitive mechanism that manipulates the global features of mental representations, while melody inversion recruited a different mechanism. The current design adopted a priming paradigm in order to observe immediate influences between the two types of tasks. In each trial a melody task (including the melody reversal task, the melody inversion task, and a note counting control task) was always immediately followed by a mental rotation task. 36 musicians were recruited. Results showed a significant main effect of the melody task condition on the mental rotation Accuracy Rates and Reaction Times. This study has provided direct evidence that the melody transformation tasks could influence subsequent mental rotation performance.

Keywords: 3D visual mental rotation, melody reversal, melody inversion, multi-modal mental manipulation, global versus focal analysis strategies