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Musical complexity and cross-modal selective attention: the effects of irrelevant auditory distractors on a concurrent reaction-time task

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Abstract

This study investigates the effects of complex music on concurrent task performance in a response-competition paradigm. Past research in this domain have produced disparate results, ranging from deleterious to facilitative effects. However, such research has failed to account for schematic expectancy violation in its operationalization of melodic complexity. Competing models of cross-modal cognition were therefore evaluated using atonal and tonal musical compositions in a quasi-experimental research design, with response times in the attentional network task (ANT) used to infer whether music had a facilitative or distracting effect on task performance. Participants were recruited from the University of the Witwatersrand's School of Human and Community Development. The computer-based attentional network task (ANT) was administered using the E-prime software, while participants were concurrently exposed to music. Repeated-measure ANOVAs were run to determine whether differences in means attained were significant. The results were consistent with Hockey's (1997) compensatory control model, which predicted faster reaction times during concurrent exposure to complex music due to the activation of a top-down cognitive mechanism which allots greater working memory resources to the primary task. This increase in working memory resources should have led to reduced involuntary attentional switching, thus focused selective attention and enhanced task performance. While the model also predicted a performance-cost tradeoff in the form of physiological distress, self-reported measures of affective and physiological states yielded no statistically significant differences between music conditions. These findings are discussed against a backdrop of past research findings, and recommendations for future studies made accordingly.