
MUSIC LESSONS ENHANCE IQ

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Abstract—*The idea that music makes you smarter has received considerable attention from scholars and the media. The present report is the first to test this hypothesis directly with random assignment of a large sample of children (N = 144) to two different types of music lessons (keyboard or voice) or to control groups that received drama lessons or no lessons. IQ was measured before and after the lessons with the WISC-III (Wechsler, 1991). Compared to children in the control groups, children in the music groups exhibited greater increases in full-scale IQ from pre- to post-lessons. The effect was relatively small but it generalized across IQ subtests, index scores, and a standardized measure of academic achievement. Nevertheless, children in the drama group exhibited substantial pre- to post-test improvements in adaptive social behavior that were not evident in the music groups.*

Current interest in associations between music and intelligence stems from two independent areas of research (Schellenberg, 2003). One, the so-called *Mozart effect*, focuses on short-term effects of simple listening to music. It refers to the finding that passive listening to music composed by Mozart produces temporary increases in spatial abilities (Hetland, 2000b; Rauscher, Shaw, & Ky, 1993). Subsequent studies indicate, however, that the Mozart effect is difficult to replicate (Steel, Bass, & Crook, 1999; Steele, Dalla Bella, et al., 1999; Chabris, 1999). When evident, it can be attributed to differences in arousal and mood generated by the different testing conditions (Husain, Thompson, & Schellenberg, 2002; Nantais & Schellenberg, 1999; Thompson, Schellenberg, & Husain, 2001). Compared to sitting in silence for 10 minutes, listening to Mozart induces more positive moods and relatively optimal

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levels of arousal, which lead to higher levels of performance on tests of spatial abilities.

The focus of the present report is on a separate line of research, which examines whether music lessons have collateral benefits that extend to nonmusical areas of cognition. Such *transfer* effects (see Barnett & Ceci, 2002) could be unique to children who take music lessons for extended periods of time because their experiences differ substantially from those of other children. Music lessons involve long periods of focused attention, daily practice, reading musical notation, memorization of extended musical passages, learning about a variety of musical structures (e.g., intervals, scales, chords, chord progressions), and progressive mastery of technical (i.e., fine-motor) skills and the conventions governing the expression of emotions in performance. This combination of experiences could have a positive impact on cognition, particularly during the childhood years when brain development is highly plastic and sensitive to environmental influence (Huttenlocher, 2002).

Previous findings are consistent with the hypothesis that music lessons promote intellectual development. For example, musical *aptitude* is associated with literacy (Anvari, Trainor, Woodside & Levy, 2002; Lamb & Gregory, 1993) and general intelligence (Lynn, Wilson & Gault, 1989). Presumably, music lessons would increase musical aptitude as well as the nonmusical abilities associated with aptitude. Indeed, correlational and quasi-experimental studies reveal that music lessons have positive associations with verbal memory (Ho, Cheung, & Chan, 2003), spatial ability (for review see Hetland, 2000a), reading ability (Hurwitz, Wolff, Bortnick, & Kokas, 1975), selective attention (Hurwitz et al., 1975), and mathematics achievement (Cheek & Smith, 1999). Nonetheless, the most parsimonious explanation of these diffuse associations is that they stem from a common component, such as general intelligence. Put simply, children with high IQs are more likely than other children to take music lessons because better educated and more affluent parents tend to provide music lessons for their children (Orsmond & Miller, 1999). To conclude that music lessons have a causal association with IQ that is specific to music, one must rule out potentially confounding factors such as prior IQ, socioeconomic status, and education (Ceci & Williams, 1997), and demonstrate that nonmusical, extra-curricular activities (e.g., sports, drama, etc.) do not have comparable effects on IQ.