Inconsistent evidence for nonmusical cognitive benefits of preschool music enrichment

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Introduction

• Young children’s lives are saturated with musical activities.
• What effects does music enrichment have on child cognition?
• Findings to date are rare and mutually inconsistent: only five randomized controlled trials (RCTs) have been performed1-5.
• None are supported by any published replications.
• These RCTs have only used IQ subtests as outcome measures.
• Measures of specific areas of cognition may be more informative6-10; the present study focuses on such measures.

Method

• We conducted two RCTs with preschool children investigating the nonmusical cognitive benefits of parent-child music classes.
• Exp. 1 compared music enrichment to visual arts training.
• Exp. 2 compared music enrichment to a no-treatment control.
• Children were randomly assigned to groups, equating for demographics and cognitive characteristics.
• After six weeks of classes, we assessed skills in four cognitive areas in which older music students have been reported to excel11.

Music curriculum

• The music enrichment program included parents in the classroom and was designed to foster musical play between parent and child.
• The curriculum was developmentally appropriate and similar in design to many US early childhood music programs12-13.

Outcome measures

• Receptive Vocabulary (PPVT-iii)14
  “Point to dog.”
• Numerical Discrimination15
  “Who has more dots?”
• Map Use/Navigation16
  “Here’s a picture of the room. Put Pete in that spot.”
• Visual Form Analysis17
  “Which one is different?”

Results

• Exp. 1: significant interaction between training type and spatial task performance (F(1, 27) = 9.0, p = .01).
  • Music group outperformed the visual arts group on the Map Use/Navigation task (t(27) = 1.8, p = .03; one-tailed).
  • No interactions or any test (p > .3).
• Exp. 2: no significant interaction (F(1, 43) = .23, p = .89).
• No group differences on any test (p > .2).
• Combined analysis of Exp. 1 & 2: no significant interaction.
• No group differences on any test (p > .2).

Discussion

• We find no consistent evidence for cognitive transfer from music training.
• Exp. 1 appeared to show effects of arts instruction on two spatial abilities, consistent with a past correlational study12.
• Exp. 2, a more powerful follow-up trial, failed to replicate this finding.
• Together, these findings provide no clear evidence that preschool music enrichment increases the spatial, linguistic or numerical skills measured herein.
• Our findings underscore the importance of replication in studies assessing educational interventions.

References


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