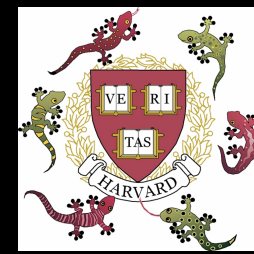


Inconsistent evidence for nonmusical cognitive benefits of preschool music enrichment

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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 studies focus on such measures.

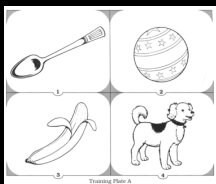
Method

- 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.

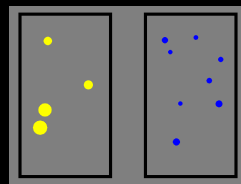
Music curriculum

- 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.

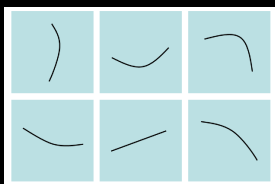
Outcome measures



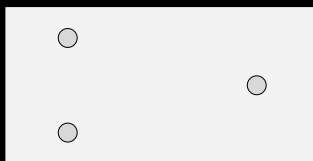
Receptive Vocabulary (PPVT-iii)¹⁴
"Point to dog."



Numerical Discrimination¹⁵
"Who has more dots?"

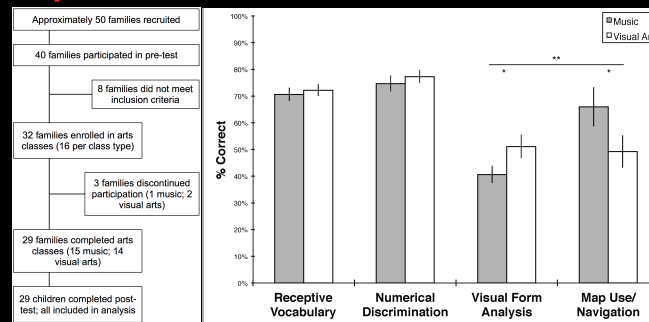


Visual Form Analysis¹⁶
"Which one is different?"

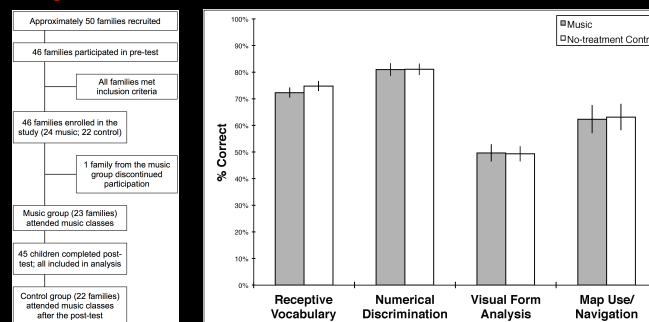


Map Use/Navigation¹⁷
"Here's a picture of the room. Put Pete in that spot."

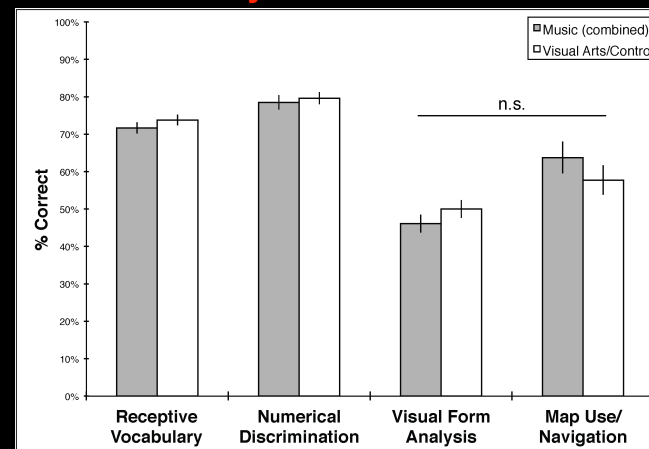
Experiment 1: Flowchart & Results



Experiment 2: Flowchart & Results



Combined analysis



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).
 - Vice versa on the Visual Form Analysis task ($t(27) = -2.0, p = .04$; one-tailed).
 - No differences between groups on Receptive Vocabulary or Numerical Discrimination tests.
- Exp. 2: no significant interaction ($F(1, 43) = 0.23, p = .89$)
 - No group differences on any test ($ps > .3$).
- Combined analysis of Exps. 1 & 2: no significant interaction.
 - No group differences on any test ($ps > .2$).

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.

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