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Visual Thinking: Art Students Have an Advantage in Geometric Reasoning

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ABSTRACT

We investigated whether individuals with training in the visual arts show superior performance on geometric reasoning tasks, given that both art and geometry entail visualization and mental manipulation of images. Two groups of undergraduates, one majoring in studio art, the other majoring in psychology, were given a set of geometric reasoning items designed to assess the ability to mentally manipulate geometric shapes in two- and three-dimensional space. Participants were also given a verbal intelligence test. Both training in the arts and verbal intelligence were strong predictors of geometric reasoning, but training in the arts was a significant predictor even when the effects of verbal intelligence were removed. These correlational findings lend support to the hypothesis that training in the visual arts may improve geometric reasoning via the learned cognitive skill of visualization.

KEYWORDS

Visualization, Geometry, Spatial Reasoning, Art Education, Mathematics Education

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