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Spatial and Math Anxiety Differentially Predict Spatial and Math Performance

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Abstract

Spatial skills are crucial for math learning and success in STEM fields, including computer science and artificial intelligence. Given that math anxiety harms math learning and interests, understanding how spatial skills moderate the relationship between STEM-specific anxieties (e.g., math and spatial anxiety) and math and spatial performance is important for providing insights into STEM readiness. In a pilot study (N=41; 30 females), undergraduate students reported their levels of spatial and math anxiety, along with their spatial (block rotation and spatial relations) and math calculation performance, while controlling for general anxiety and cognitive fluency. Although spatial anxiety did not correlate with math and spatial performance, math anxiety negatively correlated with spatial relations and math performance. Thus, math anxiety seems to extend beyond mathematical domains, whereas spatial anxiety does not. Future research should explore spatial interventions aimed to improve math efficacy, reduce math anxiety, and determine whether these effects support STEM learning.