Testing Theories of Working Memory and Their Links to Mathematics Achievement (Education)

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Abstract

Numerous studies have suggested a relationship between working memory and mathematical ability. However, despite the clear relationship between these two constructs, it is still unclear why working memory might be related to mathematical ability. In the current study, we tested three possible theories, the Positive Manifold, a mediation model, and a Transactional model. Using path analyses in a structural equation modeling (SEM) framework, fit indices indicated an excellent fit for the Transactional model, while a poor fit was shown for the remaining models. This finding may suggest that working memory and mathematical ability interact in a recursive manner over time, and essentially influence one another over a developmental trajectory. Findings may demonstrate the continued importance of working memory early in development and understanding how improving working memory may help struggling students in mathematics.