

ZMATH 06670932

Lindskog, Marcus; Winman, Anders; Poom, Leo

Individual differences in nonverbal number skills predict math anxiety.

Cognition 159, 156-162 (2017).

Summary: Math anxiety (MA) involves negative affect and tension when solving mathematical problems, with potentially life-long consequences. MA has been hypothesized to be a consequence of negative learning experiences and cognitive predispositions. Recent research indicates genetic and neurophysiological links, suggesting that MA stems from a basic level deficiency in symbolic numerical processing. However, the contribution of evolutionary ancient purely nonverbal processes is not fully understood. Here we show that the roots of MA may go beyond symbolic numbers. We demonstrate that MA is correlated with precision of the Approximate Number System (ANS). Individuals high in MA have poorer ANS functioning than those low in MA. This correlation remains significant when controlling for other forms of anxiety and for cognitive variables. We show that MA mediates the documented correlation between ANS precision and math performance, both with ANS and with math performance as independent variable in the mediation model. In light of our results, we discuss the possibility that MA has deep roots, stemming from a non-verbal number processing deficiency. The findings provide new evidence advancing the theoretical understanding of the developmental etiology of MA.

Classification: C20 F20 C30

Keywords: numerical cognition; approximate number system; math anxiety

doi:10.1016/j.cognition.2016.11.014