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The etiology of mathematical self-evaluation and mathematics achievement: understanding the relationship using a cross-lagged twin study from ages 9 to 12.

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Summary: The genetic and environmental origins of individual differences in mathematical self-evaluation over time and its association with later mathematics achievement were investigated in a UK sample of 2138 twin pairs at ages 9 and 12. Self-evaluation indexed how good children think they are at mathematical activities and how much they like those activities. Mathematics achievement was assessed by teachers based on UK national curriculum standards. At both ages self-evaluation was approximately 40% heritable, with the rest of the variance explained by non-shared environment. The results also suggested moderate reciprocal associations between self-evaluation and mathematics achievement across time, with earlier self-evaluation predicting later performance and earlier performance predicting later self-evaluation. These cross-lagged relationships were genetically rather than environmentally mediated.

Classification: C62 C63

Keywords: national curriculum; twins; mathematics achievement; etiology; self evaluation (individuals); prediction; individual differences; children; adolescents; genetics

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