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Predicting school performance by non-cognitive factors self-control and grit in a genetically informed design

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KEYWORDS: Self-control, Grit, School performance, SES, Genetically Informed Regression Analysis

ABSTRACT:

Understanding individual differences in school performance has been a topic of interest for decades. Non-cognitive factors have gained increasing attention as a possible explanation on why some children do better in school than others. Two non-cognitive factors that have been related to school success are self-control and grit. We analyzed teacher-rated data that indexed these non-cognitive skills (self-control and grit) and data on academic performance in twelve-year-old twins from the Netherlands Twin Register ($N \leq 9568$). Information on parental SES was available from parental reports on educational attainment and occupation. Children from high SES had better academic performance, more self-control and were grittier than children from lower SES backgrounds. Girls had better academic performance, more self-control and were grittier than boys. We tested for moderation of genetic and environmental variance components by SES and saw no evidence for SES by genotype or SES by environment interaction. However, the variance in children from higher SES backgrounds was lower. This indicates that children from higher SES backgrounds are more similar to each other than lower SES children, but the portion of these individual differences that can be explained by genetic and environmental factors is the same across SES strata. Next, we will test the differential prediction of self-control and grit for school performance, by simultaneously fitting a genetic covariance structure model and a regression model to these data from mono- and dizygotic twins. This method allows for differential prediction of school performance by the correlated non-cognitive factors self-control and grit.

GRANT SUPPORT: Gravitation program of the Dutch Ministry of Education, Culture, and Science and the Netherlands Organization for Scientific Research (NWO grant number 024.001.003).