

NAME OF PRESENTING AUTHOR: Alexandra Starr

EMAIL ADDRESS OF PRESENTING AUTHOR: alexandra.starr@uni-bielefeld.de

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TITLE: Chasing environmental influences on school grades

FULL AUTHOR LIST: Alexandra Starr¹; Rainer Riemann¹

AFFILIATIONS: ¹Department of Psychology, Bielefeld University, Bielefeld, Germany

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ABSTRACT:

School performance in childhood and adolescence is an important indicator for social inequality and various life outcomes in adulthood. Previous research confirmed genetic as well as environmental influences on individual differences in school grades, yet little is known on what lies behind the environmental influences. The aim of this study is to identify external covariates that account for variance in school grades and to disentangle genetic and (non-)shared environmental components in the association between these seemingly “environmental” variables and school grades. The sample consists of 2101 pairs of monozygotic and dizygotic same-sex twins (aged 11 and 17) from the German *TwinLife* study. Multiple regression analysis showed that our measured external variables explain about 10% of variance in the grade point average (GPA) in both age groups. In order to determine genetic and environmental sources of this variance component, we applied a bivariate Cholesky decomposition. Results indicate that after correcting for parental socio-economic status the relation between external covariates and the GPA is entirely due to shared environmental effects at age 11, while the association between the same set of covariates and GPA at age 17 is due to common genetic sources. This pattern largely remains when considering the covariates individually: Effects are strongest for home environment and controlling parental involvement in both age groups and additionally for delinquent peers at age 17. We discuss possible underlying effects of gene × environment interactions and provide implications for further research.

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