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TITLE: Polygenic prediction of school performance in individuals with and without psychiatric disorders

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ABSTRACT:

Individuals with psychiatric disorders often perform poorly in school compared to the

general population. Both genetic and environmental factors contribute to this poor performance. Existing studies on the association of educational attainment polygenic score (EA-PGS) with school performance were based on individuals from the general population and it is unclear if the results can be generalized to individuals with psychiatric disorders. We studied the association of EA-PGS with school performance in 30,982 individuals from iPSYCH; ~60% of our study individuals were diagnosed with at least one major psychiatric disorder such as attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). The variance explained by the EA-PGS in school performance varied between individuals with and without psychiatric disorders. Importantly, the variances explained in school performance in those with ADHD and ASD were remarkably lower compared to that in general population. Further analysis confirmed that the observed differences were not driven by differences in socio-economic factors such as parents' education or employment status. Given that one third of the association between EA-PGS and school performance is driven by genetic nurture, our results suggest that individuals with ADHD and ASD may not be as much receptive to parental nurturing as individuals without these disorders are. Parent-offspring trios-based studies in the future may help to verify our hypothesis.

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