NAME OF PRESENTING AUTHOR: Arija Jansen

EMAIL ADDRESS OF PRESENTING AUTHOR: arijajansen@outlook.com

The predictive capacity of psychiatric and psychological polygenic risk scores for distinguishing cases in a child and adolescent psychiatric sample from controls

Arija G. Jansen,[1,2] Philip R. Jansen,[1,2,3] Jeanne E. Savage,[1] Julia Kraft,[4,5], Nora Skarabis,[4] Tinca J. C. Polderman,[1,6] and Gwen C. Dieleman[2]

[1]Department of Complex Trait Genetics, Center for Neurogenomics and Cognitive Research, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands;

[2]Department of Child and Adolescent Psychiatry/Psychology, Erasmus University Medical Center, Rotterdam, The Netherlands;

[3]Department of Clinical Genetics, Amsterdam UMC, Vrije Universiteit Medical Center, Amsterdam, The Netherlands;

[4]Department of Psychiatry and Psychotherapy, Charite, Universitatsmedizin Berlin, Berlin, Germany;

[5]Berlin School of Mind and Brain, Humboldt University of Berlin, Berlin, Germany;

[6]Child and Adolescent Psychiatry and Psychosocial Care, Amsterdam UMC, Vrije Universiteit Amsterdam, Amsterdam Public Health, Amsterdam, The Netherlands

KEYWORDS: Genetics; psychiatry; neurodevelopmental disorders; comorbidity; general P factor

ABSTRACT:

Psychiatric traits are heritable, comorbid and genetically correlated making it plausible that there are shared genetic effects between these disorders. This study quantifies the predictive capacity of 14 polygenic risk scores (PRS) of traits related to psychiatric disorders by means of a case-control study in a child and adolescent sample (N=1,402) with mixed and multiple diagnoses and healthy controls (N=1,448). A PRS is a single measure of the common genetic risk an individual has for a certain trait. Included PRS are educational attainment, intelligence, smoking initiation, Neuroticism, insomnia, risk taking behavior, anti-social behavior, ADHD, ASD, schizophrenia, major depressive disorder, anxiety, alcohol dependence and bipolar disorder. These PRS were first individually tested in univariate regression model. A secondary analysis entails the testing of significantly associated PRS together in a multivariate model. The univariate analysis showed significant association with case control status for educational attainment, intelligence, smoking initiation, neuroticism, anti-social behavior, ADHD, major depressive disorder and alcohol dependence. The two main findings are educational attainment (p-value: 3.53E-20, explained variance: 3.99%, OR: 0.66) and smoking initiation (p-value: 4.77E-10, explained variance: 1.91%, OR: 1.33). The secondary analysis showed significant association of educational attainment and smoking initiation. The explained variance of the PRS in the multivariate model with these eight traits combined was 5.9%. This study provides more insights into the genetic signal that is shared between childhood and adolescent psychiatric disorders might guide future studies on psychiatric comorbidity and offer insights into shared etiology between psychiatric disorders.

GRANT SUPPORT: Sophia Stichting voor Wetenschappelijk Onderzoek (SSWO, grant number 593 and S14-27).