

NAME OF PRESENTING AUTHOR: Fenja Schlag

EMAIL ADDRESS OF PRESENTING AUTHOR: Fenja.Schlag@mpi.nl

LOCATION OF PRESENTING AUTHOR:

Europe

TIME ZONE OF PRESENTING AUTHOR: Central European Time, UTC/GMT +2

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TITLE: Distinct association profiles between polygenic risk for psychiatric disorder and social skill sets in the general population

FULL AUTHOR LIST:

Fenja Schlag<sup>1</sup>, Marjolein van Donkelaar<sup>1</sup>, Jan Buitelaar<sup>2</sup>, Ellen Verhoef<sup>1</sup>, Chin Yang Shapland<sup>1</sup>, Simon E. Fisher<sup>1,2</sup>, Beate St Pourcain<sup>1,2,3</sup>

AFFILIATIONS:

<sup>1</sup> Language and Genetics, MPI for Psycholinguistics, Nijmegen, The Netherlands

<sup>2</sup> Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands

<sup>3</sup> Bristol Medical School, University of Bristol, Bristol, UK

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ABSTRACT:

Many complex, heritable neurodevelopmental disorders are linked to a spectrum of social behavioural problems. These social difficulties are thought to lie at the extreme negative end of a behavioural continuum that is shared with social traits in the general population, as supported by genetic studies. However, social behaviour is highly complex and requires multiple skills that change at different developmental stages and in different social environments. Here, we investigate associations between polygenic risk scores (PRS) of five psychiatric disorders and a spectrum of social behaviour scores in the general population. Specifically, we study associations between PRS for Attention-Deficit/Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), Bipolar Disorder (BP), Major Depressive Disorder (MDD) and Schizophrenia, as informed by genome-wide summary statistics from large consortia (Cross-Disorder Group of the PGC 2019), and longitudinally assessed parent- and teacher-reports for (i) low prosociality and (ii) peer problems in participants of the from the Avon Longitudinal Study of Parents And Children cohort (4-17 years, N≤6174) (Fraser et al., 2013). For each psychiatric disorder, we assessed the heterogeneity in PRS effects using a random effects meta-regression. Our findings provide evidence for shared genetic liability between social behaviour and ADHD, ASD, MDD, and Schizophrenia, but not BP. PRS effects were developmentally stable, but varied (except for ASD) across reporters and, most notably, social trait; ADHD and MDD were strongly linked with peer problems, while Schizophrenia was solely associated with low prosociality. These findings suggest distinct clusters of genetic overlap between psychiatric disorder and complex social behavioural characteristics.

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