Genetic and environmental contribution to the overlap between ADHD and ASD trait dimensions in young adults: a twin study


Abstract

BACKGROUND:
Traits of attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) are strongly associated in children and adolescents, largely due to genetic factors. Less is known about the phenotypic and aetiological overlap between ADHD and ASD traits in adults.

METHODS:
We studied 6866 individuals aged 20-28 years from the Swedish Study of Young Adult Twins. Inattention (IA) and hyperactivity/impulsivity (HI) were assessed using the WHO Adult ADHD Self-Report Scale-V1.1. Repetitive and restricted behaviours (RRB) and social interaction and communication (SIC) were assessed using the Autism-Tics, ADHD, and other Comorbidities inventory. We used structural equation modelling to decompose covariance between these ADHD and ASD trait dimensions into genetic and shared/non-shared environmental components.

RESULTS:
At the phenotypic level, IA was similarly correlated with RRB (r = 0.33; 95% Confidence Interval (CI) 0.31-0.36) and with SIC (r = 0.32; 95% CI 0.29-0.34), whereas HI was more strongly associated with RRB (r = 0.38; 95% CI 0.35-0.40) than with SIC (r = 0.24; 95% CI 0.21-0.26). Genetic and non-shared environmental effects accounted for similar proportions of the phenotypic correlations, whereas shared environmental effects were of minimal importance. The highest genetic correlation was between HI and RRB (r = 0.56; 95% 0.46-0.65), and the lowest was between HI and SIC (r = 0.33; 95% CI 0.23-0.43).

CONCLUSIONS:
We found evidence for dimension-specific phenotypic and aetiological overlap between ADHD and ASD traits in adults. Future studies investigating mechanisms underlying comorbidity between ADHD and ASD may benefit from exploring several symptom-dimensions, rather than considering only broad diagnostic categories.