

Largest study reveals five major psychiatric disorders share common genetic risk factors

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For the first time, scientists have discovered that five major psychiatric disorders—autism, attention deficit-hyperactivity disorder, bipolar disorder, major depressive disorder and schizophrenia—share several common genetic risk factors. In particular, variations in two genes involved in the balance of calcium in brain cells are implicated in several of these disorders and could be a target for new treatments.

The findings from the largest ever genetic study of psychiatric illness, published Online First in *The Lancet*, may help to one day reclassify these disorders on the basis of causes rather than descriptive syndromes.

"This analysis provides the first genome-wide evidence that individual and aggregate molecular genetic risk factors are shared between five childhood-onset or adult-onset psychiatric disorders that are treated as distinct categories in clinical practice", explains Jordan Smoller from Massachusetts General Hospital in Boston, one of the lead researchers.

To examine the possibility of common genetic markers or [nucleotide polymorphisms](#) (SNPs) that might affect susceptibility to the five disorders, the Psychiatric Genomics Consortium (PGC) scanned the genome of 33 332 patients and 27 888 controls of [European ancestry](#).

They identified four risk loci that have significant and overlapping links with all five diseases—regions on chromosomes 3p21 and 10q24, and SNPs in two genes that make components of channels that regulate the flow of calcium in [brain cells](#) (CACNA1C; linked to bipolar disorder and schizophrenia in previous studies and CACNB2).

Polygenic risk scores confirmed cross-disorder

effects, most strongly between adult-onset disorders (bipolar and [major depressive disorder](#), and schizophrenia). Further pathway analysis corroborated that [calcium channel](#) activity could play an important role in the development of all five disorders.

According to Smoller, "Significant progress has been made in understanding the [genetic risk factors](#) underlying psychiatric disorders. Our results provide new evidence that may inform a move beyond descriptive syndromes in psychiatry and towards classification based on underlying causes. These findings are particularly relevant in view of the imminent revision of classifications in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD)."

Writing in a linked Comment, Alessandro Serretti and Chiara Fabbri from the University of Bologna in Italy say, "the present study might contribute to future nosographic [classification] systems, which could be based not only on statistically determined clinical categories, but also on biological pathogenic factors that are pivotal to the identification of suitable treatments."

They add, "genetics...can contribute to prediction and prevention of psychiatric diseases, along with the identification of molecular targets for new generations of psychotropic drugs."

More information:

[www.thelancet.com/journals/lan ...](http://www.thelancet.com/journals/lan...)
[\(13\)60223-8/abstract](http://(13)60223-8/abstract)

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