Study explores cognitive function in people with mental illness

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Dr. Philip D. Harvey. Credit: University of Miami Leonard M. Miller School of Medicine

A study funded by the Veterans Administration and directed by researchers at the University of Miami Miller School of Medicine has shown few differences in the profiles of genes that influence cognition

between people with schizophrenia, bipolar disorder and the general population. This surprising finding could provide new insights into therapies designed to improve cognition. The study was published in the *American Journal of Medical Genetics*.

"For years, people have been talking about cognition in schizophrenia and bipolar disorder and how cognitive impairments in these apparently distinct conditions are likely qualitatively different from each other, as well as qualitatively different from what's going on in the general population," said lead author Philip D. Harvey, Ph.D., professor of psychiatry and behavioral sciences. "What we find here is that the biggest signal is normal. The genomics of cognition in the general population appears to be driving all these other findings."

The study assessed more than 9,000 veterans with schizophrenia and bipolar disorder. In addition to analyzing genomic data, the research team went much deeper than previous efforts, confirming participants' diagnoses and giving them cognitive tests. This is the largest study in mental health conditions to combine genome-wide association methods with cognitive assessments.

"Our study is small by comparison—some of the previous studies had 1.2 million people in them," said Dr. Harvey. "But it is completely different in that we personally saw every research participant. The others are all essentially database studies."

In addition, by validating the genomics with actual cognitive testing, the VA/Miller School team has added new context to these large database projects, giving researchers robust cognitive data to better analyze the results from multiple studies with different methods.

Learning that the genomics of cognition for schizophrenia, bipolar disorder and the general population have substantial overlap also

provides new clues to improve therapies.

"If you know what the genomics are, you can start considering gene therapies," said Dr. Harvey. "You can also start understanding whether cognitive impairments in schizophrenia and bipolar disorder are essentially an exaggerated case of normal variation."

This could have an almost immediate impact on patients with severe mental illness. Because the structure and genetic determinants for cognition vary so little between the different illnesses, as well as the general population, assessment and intervention strategies that are proven in schizophrenia may be applicable to people with bipolar disorder and vice versa.

"You may not need specialized assessments for cognition in schizophrenia or bipolar disorder, and you may not need different treatments either," said Dr. Harvey. "We should be pursuing treatment options for people with schizophrenia and bipolar disorder to treat cognitive impairment that are not necessarily different from each other. And we should be doing assessments that differ only in their level of difficulty, not qualitatively different assessments."

More information: Philip D. Harvey et al, Genome-wide association study of cognitive performance in U.S. veterans with schizophrenia or bipolar disorder, *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics* (2019). DOI: 10.1002/ajmg.b.32775