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People with psychotic-like experiences spend less time in healthy brain states

A new study looks at the brain dynamics of healthy people with psychotic symptoms

Philadelphia, PA, November 1, 2017 – Healthy people experiencing subtle symptoms observed in psychotic disorders, such as hallucinations and delusions, have altered brain dynamics, according to a [new study](#) published in *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*. The alterations were found in patterns of brain activity that reoccur, or “states” that the brain moves in and out of over time. The participants who reported the psychotic-like experiences (PLEs) — considered to be at the low end of the psychosis spectrum — spent less time in a brain state reflecting healthier brain network activity.

Previous studies of PLEs have found alterations in specific brain networks, but the findings reveal that it is not just about damaged connections — the amount of time spent in uncommon brain states may contribute to psychosis.

“These altered brain dynamics are important because they provide a new biomarker for subclinical psychosis,” said Dr. Anita Barber of the Feinstein Institute for Medical Research in New York, first author of the study. The participants were all considered healthy, yet their subtle symptoms demonstrated unique brain fluctuations that could potentially be used to identify signs of psychosis.

In the study, Dr. Barber and colleagues analyzed brain imaging data from the Human Connectome Project of 76 otherwise healthy participants reporting PLEs and 153 control participants. Those experiencing PLEs spent less time in a more “typical” reoccurring brain state involving cognitive networks. They also spent more time in a state characterized by excessive communication in visual regions of the brain, which could be the basis for visual hallucinations experienced in psychosis. The study didn’t include people with a psychotic disorder, but the findings line up with brain alterations found in patients with schizophrenia.

According to Dr. Cameron Carter, Editor of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, the study is an important example of how more sophisticated approaches to analyzing brain imaging data examining transitions between mental states over time can measure altered brain dynamics that can identify subtle risk states or even track the transition from subclinical to clinical psychopathology.

“This has implications for improving health and well-being and for preventing conversion to a psychotic disorder,” said Dr. Barber. PLEs affect many more people than the number who will be diagnosed with a psychotic disorder, and can cause impairments in social and occupational functioning similar to, though less severe than, those experienced by people with psychosis. “The findings suggest that therapies encouraging greater engagement of goal-directed behaviors and less engagement of visual sensory processing could improve outcomes,” said Dr. Barber.

Notes for editors

The article is "Dynamic Functional Connectivity States Reflecting Psychotic-Like Experiences," by Anita D. Barber, Martin A. Lindquist, Pamela DeRosse, and Katherine H. Karlsgodt (<https://doi.org/10.1016/j.bpsc.2017.09.008>). It appears in *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, published by Elsevier.

Copies of this paper are available to credentialed journalists upon request; please contact Rhiannon Bugno at BPCNNI@UTSouthwestern.edu or +1 214 648 0880. Journalists wishing to interview the authors may contact Anita D. Barber, Ph.D., at abarber@northwell.edu.

The authors' affiliations and disclosures of financial and conflicts of interests are available in the article.

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