



Press Release

Media contact

Rhiannon Bugno

+1 254 522 9700

BPCNNI@sobp.org

A neurobehavioral signature of risk for mania

Prediction could lead to better, earlier treatment according to new study in Biological Psychiatry: Cognitive Neuroscience and Neuroimaging

Philadelphia, July 11, 2023 – Mania, in which mood and energy level are extremely elevated for at least a week, and hypomania, which is less severe and lasts at least four days, are the defining features of bipolar spectrum disorders (BSD) and can be the most disruptive symptoms. A [new study](#) in *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, published by Elsevier, now identifies a signature of risk for developing future mania or hypomania.

BSD are psychiatric conditions that typically emerge in young adulthood, often severely disrupting lives and requiring intensive treatments. Mania risk has remained challenging for clinicians to predict; the ability to do so would aid in directing treatments to at-risk patients sooner.

The researchers, led by Adriane M. Soehner, PhD, at the University of Pittsburgh, built on previous research showing that heightened reward motivation and sleep-circadian rhythm disruption are associated with mania/hypomania onset. Brain imaging studies have also shown that BSD is associated with elevated reward expectancy activation in the left ventrolateral prefrontal cortex, a key reward- and salience-processing hub.

For the current study, Dr. Soehner and colleagues clustered these markers together; they hypothesized that a signature of increased mania risk would be marked by elevated reward sensitivity, impulsivity, and sleep-circadian characteristics. Young adult participants, who did not have a diagnosis of BSD, completed assessments and underwent functional magnetic resonance imaging. About half the participants also underwent follow-up assessments at six and 12 months.

Three “profiles” emerged from the sample: one healthy, one at moderate risk, and one at high risk. Individuals at high risk had elevated mania symptoms at baseline compared to the other two groups. Over the 12-month follow-up interval, mania symptoms in both the high-risk and moderate-risk groups exceeded the healthy group.

Dr. Soehner said of the findings, *“Here, we identified neurobehavioral profiles based on reward sensitivity, impulsivity, and sleep-circadian characteristics that help distinguish those with elevated mania vulnerability. These characteristics, in combination, may help detect mania risk and provide targets to guide and monitor early interventions.”*

Cameron Carter, MD, Editor of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, said of the work, *“New findings such as these highlight our emerging ability to combine neurobiological and clinical measures to identify groups of patients at highest risk for serious mental health problems such as mania, allowing for early identification and intervention for those at highest risk. Future research is*

needed to show that this can lead to reduced suffering and better outcomes in individuals identified in this way.”

Notes for editors

The article is "Neurobehavioral Reward and Sleep-Circadian Profiles Predict Present and Next-Year Mania/Hypomania Symptoms," by Adriane M. Soehner, Meredith L. Wallace, Kale Edmiston, Henry Chase, Jennette Lockovich, Haris Aslam, Richelle Stiffler, Simona Graur, Alex Skeba, Genna Bebko, Osasumwen E. Benjamin, Yiming Wang, and Mary L. Phillips (<https://doi.org/10.1016/j.bpsc.2023.04.012>). It appears as an Article in Press 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 +1 254 522 9700 or BPCNNI@sobp.org. Journalists wishing to interview the authors may contact Ashley Tentrock at tentrockar@upmc.edu.

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

Cameron S. Carter, MD, is Professor of Psychiatry and Psychology and Director of the Center for Neuroscience at the University of California, Davis. His disclosures of financial and conflicts of interests are available [here](#).

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Media contact

Rhiannon Bugno, Editorial Office

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+1 254 522 9700

BPCNNI@sobp.org