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## Links between Circadian Rhythms and Psychiatric Disease.

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### Abstract

Determining the cause of psychiatric disorders is a goal of modern neuroscience, and will hopefully lead to the discovery of treatments to either prevent or alleviate the suffering caused by these diseases. One roadblock to attaining this goal is the realization that neuropsychiatric diseases are rarely due to a single gene polymorphism, environmental exposure, or developmental insult. Rather, it is a complex interaction between these various influences that likely leads to the development of clinically relevant syndromes. Our lab is exploring the links between environmental exposures and neurobehavioral function by investigating how disruption of the circadian (daily) clock alters the structure and function of neural circuits, with the hypothesis that disrupting this crucial homeostatic system can directly contribute to altered vulnerability of the organism to other factors that interact to produce psychiatric illness. This review explores some historical and more recent findings that link disrupted circadian clocks to neuropsychiatric disorders, particularly depression, mania, and schizophrenia. We take a comparative approach by exploring the effects observed in human populations, as well as some experimental models used in the laboratory to unravel mechanistic and causal relationships between disruption of the circadian clock and behavioral abnormalities. This is a rich area of research that we predict will contribute greatly to our understanding of how genes, environment, and development interact to modulate an individual's vulnerability to psychiatric disorders.

KEYWORDS: anxiety; biological rhythms; bipolar disorder; depression; schizophrenia

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