

# The Psychotic Symptoms of Bipolar Disorder Assessed Using the Hamilton Depression Scale

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## Abstract

Bipolar disorder is associated with significant deficits in the decoding of others' mental states in comparison to healthy participants. However, differences in theory of mind decoding ability among patients in manic, depressed, and euthymic phases of bipolar disorder is currently unknown. Fifty-nine patients with bipolar I or II disorder (13 manic, 25 depressed, 20 euthymic) completed the "Reading the Mind in the Eyes" Task (Eyes task) and the Animals Task developed to control for non-mentalistic response demands of the Eyes Task. Patients also completed self-report and clinician-rated measures of depression, mania, and anxiety symptoms. Patients in the manic phase were significantly less accurate than those in the depressed and euthymic phases at decoding mental states in the Eyes task, and this effect was strongest for eyes of a positive or neutral valence. Further Eyes task performance was negatively correlated with the symptoms of language/thought disorder, pressured speech, and disorganized thoughts and appearance.

**Keywords:** Bipolar disorder; Cycle length; Depression; Duration of episodes; Mania; Polarity

## Introduction

These effects held when controlling for accuracy on the Animals task, response times, and relevant demographic and clinical covariates. Results suggest that the state of mania, and particularly psychotic symptoms that may overlap with the schizophrenia spectrum, are most strongly related to social cognitive deficits in bipolar disorder. The pathophysiology of bipolar disorder is not completely clear, and several studies have reported bipolar disorder to be associated with glial dysfunction and oxidative stress. In our previous report, excessive oxidative stress was noted in bipolar patients in a manic phase. Brain cells are vulnerable to excess oxidative stress and blood-brain barrier (BBB) disruption might be associated with oxidative stress. Our previous data showed that levels of thiobarbituric acid reactive substances (TBARS) were significantly decreased in bipolar manic patients after treatment; this result suggested that the excessive oxidative stress in bipolar patients in a manic phase might be transient.

## Discussion

Transient disruption of BBB integrity might be associated with an overload of oxidative stress in bipolar patients in a manic phase. Bipolar disorder (BD) is associated with alterations of cytokines in the immune system. The aim of this study was to assess the serum levels of TNF- $\alpha$ , IL-6 and IL-18 in manic, depressive, mixed state patients of BD. The correlations between the serum cytokines levels with the demographic characteristics and the psychiatric symptoms were also assessed. We measured serum TNF- $\alpha$ , IL-6 and IL-18 levels using an enzyme-linked immunosorbent assay (ELISA) from 59 BD patients (37 in manic state, 12 in depressive state, 10 in mixed state) and 80 healthy control subjects. The psychotic symptoms of BD were assessed using the Hamilton Depression Scale (HAM-D) and the Young Mania Rating Scale (YMRS). The results showed that serum TNF- $\alpha$  and IL-6 levels in manic, depressive and mixed state BD patients were significantly higher than that in controls, while serum IL-18 level was only significantly higher in depressive patients. Serum IL-6 level was significantly positively correlated with YMRS scores in manic episode as well as in mixed episode. When gender and age were added as potentially confounding covariate terms, the differences between controls and each mood state

patients were still significant. Our findings provided additional evidence that elevated TNF- $\alpha$ , IL-6 and IL-18 pathway activities may be involved in the psychopathology of BD. Bipolar disorder (BD) is one of the most complex mental illnesses, characterized by interactive depressive and manic states that are 2 contrary symptoms of disease states. The bilateral amygdala and prefrontal cortex (PFC) appear to play critical roles in BD; however, abnormalities seem to manifest differently in the 2 states and may provide further insight into underlying mechanisms [1-4].

Bipolar disorder (BD) is a severe and recurrent brain disorder that can manifest in manic or depressive episodes. Transcranial Direct Current Stimulation (tDCS) has been proposed as a novel therapeutic modality for patients experiencing bipolar depression, for which standard treatments are often inefficient. While several studies have been conducted in this patient group, there has been no systematic review or meta-analysis that specifically examines bipolar depression. Cannabis is the most commonly used illegal drug among patients with bipolar disorders. The age of onset of the first manic or depressive episode is younger when there is co-occurring cannabis abuse and some studies have shown a poorer medication adherence, a more severe course of illness, and a higher number of manic or depressive episodes with cannabis use. Mania phenomenology seems to be influenced by cannabis, found more frequently in dysphoric than in euphoric manic patients. Although there are still some controversies, data published to date suggest that there may be a causal relationship from cannabis use to onset mania and also to the occurrence of new manic episodes. Further investigations are still necessary to confirm this causal link. Bipolar disorder is a common mental disorder characterized by mood

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disturbances with alternating episodes of mania and depression. Circadian rhythms are rhythms of about 24 h found in many body functions. We repeatedly measured circadian rhythms in bipolar disorder patients during hospitalization. Acute manic episodes were associated with circadian dysregulation of ~ 7 hour phase advances, mixed manias were > 6 hour delayed, whereas bipolar depression was associated with 4–5 hour phase delays compared to the controls. After treatment, the shifted rhythms recovered to the normal range. This study suggests that novel chronotherapy approaches based on our findings might be found useful for the prevention and treatment of bipolar disorder. Although yoga has been recommended as a mood management strategy for bipolar disorder (BD), there are no published studies on yoga for the treatment of BD symptoms. The aim of this pilot study was to develop an adjunctive hatha yoga intervention for bipolar depression, and to evaluate its preliminary feasibility, acceptability, and safety in a 10-week randomized controlled trial. Eighteen adults with bipolar I/II depression were recruited and randomized to yoga (n = 10) or self-directed bibliotherapy (n = 8), both delivered as adjuncts to community pharmacotherapy for BD. Yoga participants were invited to attend at least one of two weekly yoga classes for 10 weeks, following a structured yoga manual. Statistical analyses focused on change in depression severity, assessed post-treatment by a blind rater. Participants also completed assessments of mania symptoms, quality of life (QoL), and treatment satisfaction [5-7].

Although between-groups analysis yielded no significant difference in depression outcomes by condition, within-group analyses of those assigned to yoga revealed medium effects for improvements in depression symptoms (Cohen's  $d = 0.66$ ) and QoL (Cohen's  $d = 0.69$ ). Manic symptom severity remained low throughout the yoga program, in contrast to slight increases in the control arm ( $F(1,13) = 7.25$ ,  $p = 0.021$ ). Participants attended an average of only 4.80 (SD = 5.12) yoga classes, yet overall satisfaction with yoga was rated as fairly high and 6 of 10 participants reported practicing yoga at home. We conclude that yoga for bipolar depression merits future research, with a focus on alternative avenues of delivery (e.g., internet) that may not require weekly class attendance. This study investigated the relative contribution of psychiatric symptoms and psychotropic medications on the sleep-wake cycle. Actigraphy and clinical assessments (Brief Psychiatric Rating Scale) were conducted in 146 youths with anxiety, depression or bipolar disorders. Independently of medications, mania symptoms were predictive of lower circadian amplitude and rhythmicity. Independently of diagnosis and symptoms severity: i) antipsychotics were related to longer sleep period and duration, ii) serotonin-norepinephrine reuptake inhibitors to longer sleep period, and iii) agomelatine to earlier sleep onset. Manic symptoms and different subclasses of medications may have independent influences on the sleep-wake cycle of young people with mental disorders. Mixed depression is a clinical condition accompanied by the symptoms of (hypo) mania and is considered to be a predictor for bipolar disorder. Compared to pure major depression, mixed depression is worse in progress. There are limited data on the prevalence of mixed depression since it is a relatively new entity. Therefore, the present study aimed to investigate the prevalence of mixed depression during the postpartum period which is risky for mood disorders. Pathophysiology of donepezil-induced mania appears to contradict the traditional cholinergic-adrenergic hypothesis. Donepezil-associated mania should be suspected after donepezil initiation/dose up-titration when correlated to new onset of mania. Donepezil should be used more cautiously in patients with current or previous mood episodes or in those who are otherwise at high risk for manic episodes (e.g., cerebrovascular disease). Although this requires

further investigation in different patient populations, there may be subtypes of older patients with neurocognitive disorders who are particularly vulnerable to activation effects of cholinesterase inhibitors. Mounting evidence suggests that infections, autoimmune diseases, and inflammation may contribute to the etiology of mental disorders, and genetic studies have indicated associations between the immune system and severe mental disorders. Several recent studies, including meta-analyses, have found increased levels of inflammatory markers, such as C-reactive protein (CRP) and cytokines, among individuals with schizophrenia, bipolar disorder and depression. According to the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5), the two major mood disorders are major depression (MD) and bipolar disorder (BD); however, despite receiving adequate treatment, most patients continue to have recurrent mood episodes and residual symptoms [8-10].

## Conclusion

The advances in genetic, neurobiological, and pharmacological methodologies have helped in the development of animal models, and these models have been an important tool for investigating new intracellular systems that may be involved in the specific pathophysiology of psychiatric disorders and, consequently, new therapeutic approaches. Valid animal models in psychiatric disorders should demonstrate the following three major criteria: face validity, construct validity, and predictive validity. This chapter seeks to provide a comprehensive overview of traditional and recent animal models for mania and depression, and methods to evaluate depressive- and manic-like behavior in animals, recapitulating their different features, and the possible pathophysiology of mood disorders emulated by those models.

## Acknowledgment

None

## Conflict of Interest

None

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