

Objectives: Sleep disturbances and cognitive dysfunction are common features of bipolar disorder (BD); however, the pathways linking mood symptoms, specific dimensions of sleep, and cognitive performance remain insufficiently understood. This study examined the associations of depressive and manic symptoms with individual sleep components and working memory performance in individuals with BD, with particular attention to the potential mediating role of sleep duration.

Methods: Two hundred participants diagnosed with BD (53.4% BD-I and 46.6% BD-II) underwent clinical and cognitive assessments. Depressive and manic symptoms were assessed using the Hamilton Depression Rating Scale and Young Mania Rating Scale, respectively. Sleep characteristics were evaluated using the Pittsburgh Sleep Quality Index (PSQI), and working memory was assessed using the Working Memory Index of the Wechsler Memory Scale–Third Edition (WMS-III). Correlation analyses were conducted to identify sleep components associated with working memory, followed by mediation analyses using PROCESS Model 4 with 5,000 bootstrap samples, adjusting for age and education.

Results: Depressive symptoms were significantly associated with all examined PSQI sleep components, whereas working memory performance was significantly associated with subjective sleep quality, sleep duration, and daytime dysfunction ($p < .05$). Among these sleep components, sleep duration showed the strongest association with working memory. In adjusted mediation analyses, depressive symptoms significantly predicted poorer sleep duration, which in turn predicted poorer working memory performance. The indirect effect of depressive symptoms on working memory through sleep duration was significant (effect = -0.277 , 95% CI [-0.639 , -0.009]), whereas the direct effect became non-significant after accounting for sleep duration ($B = -0.532$, $p = .093$). A similar pattern was observed for manic symptoms: the indirect effect through sleep duration was significant (effect = -0.537 , 95% CI [-1.244 , -0.109]), while the direct association between manic symptoms and working memory was not significant after inclusion of the mediator ($B = 0.027$, $p = .957$).

Conclusion: Sleep duration may represent an important pathway linking both depressive and manic symptoms to working memory dysfunction in BD. These findings suggest that specific sleep dimensions, particularly sleep duration, may be more relevant to cognitive functioning than global subjective sleep quality. Prospective studies are needed to determine the temporal and causal relationships among mood symptoms, sleep duration, and cognitive impairment and to evaluate whether interventions targeting sleep duration can improve cognitive outcomes in BD.

Keywords: Bipolar Disorders, depressive, mania, sleep quality, symptomatology, working memory

中文題目：睡眠時長作為連結雙相情緒障礙憂鬱與躁症症狀及工作記憶功能障礙的共同途徑 Sleep Duration as a Shared Pathway Linking Depressive and Manic Symptoms to Working Memory Dysfunction in Bipolar Disorder

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