

The Role of Bedtime in Mental Health and Wellbeing

John Egan, Genna Bricker, Abigail Hartwig, Noah Johnson, Michelle Pei, Cade Ferreras; Supervised by Hugh Stephenson, Ph.D.

Introduction

The effect of sleep on one's physical health is widely researched, while the effect on one's mental health has also been a topic of interest. Many studies that have investigated the role of sleep in common mental health disorders (CMD), such as depression and anxiety, have found that poor sleep quality and CMDs occur together (Byrd, et al., 2014).

The current study focuses on bedtime instead of total sleep time as the two are only partially correlated. Also studies on "social jetlag", found that there is delayed bedtime due to socializing, has also been found to impact depression (Oster, H., 2012).

The findings suggest that the amount of sleep and the time people go to sleep are independent factors for mental health. This study also seeks to replicate the relationships between anxiety, depression, psychological resilience, and positive mental health.

Method

The current research uses data from the Healthy Minds study that includes responses from 62,025 college-aged students who self-reported their sleep habits, depressive symptoms, levels of anxiety, feelings of positive mental health, psychological resilience, alcohol use, GPA, and exercise.

Due to limitations in calculating sleep total we created an adaptive bedtime variable which is a related, but different construct. Participants were assigned scores based on their average weekday bedtime ranging from 8pm to 6am.

Hypotheses

- Earlier bedtime will be negatively correlated with depression
- Earlier bedtime will be negatively correlated with anxiety
- Earlier bedtime will be positively correlated with psychological resilience
- Earlier bedtime will be positively correlated with positive mental health
- Earlier bedtime will be positively associated with GPA
- Earlier bedtime will be negatively associated with alcohol use
- Earlier bedtime will be positively associated with exercise
- Anxiety and depression will be positively correlated
- Anxiety will be negatively correlated with positive mental health and psychological resilience
- Depression will be negatively correlated with positive mental health and psychological resilience

Results Continued

- Earlier bedtime was associated with increased exercise, $F(3, 47998) = 119.31, p < .001$.
- Anxiety scores on the GAD-7 was positively correlated with depression scores on the PHQ-9, $r(45352) = .763, p < .001$
- Anxiety scores on the GAD-7 were negatively correlated with positive mental health [Flourishing scale], $r(45356) = -.442, p < .001$
- Anxiety scores on the GAD-7 were negatively correlated with psychological resilience [Brief Resilience Scale], $r(22191) = -.493, p < .001$
- Depression scores on the PHQ-9 were negatively correlated with positive mental health [Flourishing scale], $r(45883) = -.580, p < .001$
- Depression scores on the PHQ-9 were negatively correlated with psychological resilience [Brief Resilience Scale], $r(22189) = -.491, p < .001$

Discussion

The results indicate earlier bedtime is associated with a wide range of positive outcomes. Those with earlier bedtimes reported fewer depressive symptoms, lower anxiety, greater resilience, better mental health, less alcohol use, more exercise, and higher GPAs.

The relationship between sleep and mental health is clearly demonstrated in this data, thus showing the importance of earlier bedtime for wellbeing. Furthermore, while there is a relationship between early bedtime and total sleep time ($r(47685) = .445, p < .001$), earlier bedtime was a better predictor of depression and anxiety than total sleep time. Long sleeping may reflect positive or negative states, relaxation vs exhaustion, while shorter sleeping times may reflect either anxiety or positive goal oriented behavior. Consequently, total sleep time appears to be less predictive than the time someone goes to bed.

These findings add to our understanding of sleep timing in maintaining mental health and wellbeing in college populations. Future studies should include experimental models that can assess whether changes in bedtime are associated with improvements in mental health and wellbeing.

Results

Association between Earlier Bedtime and Facets of Mental Health

	Depression	Anxiety	Resilience
Earlier Bedtime	-.25 **	-.17 **	.12 **

	Positive Mental Health	Alcohol Use	GPA
Earlier Bedtime	.17 **	-.17 **	.15 **

	Anxiety	Depression	Brief Resilience	Positive Mental Health
Anxiety		.76 **	-.49 **	-.44 **
Depression	.76 **		-.49 **	-.49 **

** p < 0.001

- Earlier bedtime was negatively correlated with depression scores on the PHQ-9, $r(37388) = -.253, p < .001$.
- Earlier bedtime was negatively correlated with anxiety scores on GAD-7, $r(37375) = -.167, p < .001$.
- Earlier bedtime was positively correlated with psychological resilience [Brief Resilience Scale], $r(21419) = .119, p < .001$.
- Earlier bedtime was positively correlated with better mental health [Flourishing scale], $r(48022) = .172, p < .001$.
- Earlier bedtime was positively correlated with higher GPA, $r(42580) = .149, p < .001$.
- Earlier bedtime was negatively correlated with alcohol use assessed by the AUDIT scale, $r(5391) = -.172, p < .001$.

