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Differentiating Sleep Problems Most Related to Depression and Anxiety in College Students



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Introduction

- Sleep-related problems are increasingly common amongst college students. Diminished quality of sleep in college students has been correlated with increased anxiety, depression, and an overall decrease in life satisfaction. (Pilcher, Ginter, & Sadowsky, 2007).
- According to one study, 33% of college students required more than thirty minutes to fall asleep. Additionally, 43% of students awake at least once during their sleep (Forquer, Camden, Gabriau, & Johnson, 2008). Both of these cause difficulties for college students.
- Another study supported the hypothesis that a majority of college students suffer from some type of sleep disturbance (Buboltz, Brown & Soper, 2001).
- We predicted that sleep problems most related to depressive symptoms (in order from greatest to least) were daytime dysfunction and sleep latency.
- We also predicted that sleep problems most related to anxiety symptoms (in order from greatest to least) were daytime dysfunction, overall quality of sleep, and sleep duration.

Aims of Current Study

- Daytime dysfunction, sleep latency, sleep duration and overall quality of sleep were measured in college students.
- The ultimate goal of this study is to examine and identify which specific sleep problems predicted more anxiety and depressive symptoms.

Methods

Participants

- Participants were 561 undergraduate college students between the ages of 18-25. The average age of participants was 19.34 years. A majority of the participants were female (70% female, 29% male), freshman (52%), and lived in undergraduate housing. In addition, 55% of the sample identified as Caucasian, 18th Black, 12% other, 10% Asian, and 5% Hispanic.

Methods, con't.

Procedure

- Two multiple regression analysis were run to determine whether specific sleep problems predicted depression and/or anxiety symptoms in college students.

Measures

- The Center for Epidemiological Studies Depression Scale (CES-D) was used to assess the symptoms of depression in participants in the past two weeks (Radloff, 1991). The 20 item self-report measure had responses that were on a 4- point scale, from 0 (rarely or none of the time) to 3 (most or all the time). It included questions such as "I felt depressed" or "I felt fearful."
- The Spielberg State-Trait Anxiety Inventory (STAI) was used to assess symptoms of anxiety in participants (Marteau & Bekker, 1992). The self-report measure included six questions. Responses were rated on a 4 point scale, from 1 (not at all) to 4 (very much so). Sample items include "I feel content" and "I feel upset".
- The Pittsburgh Sleep Quality Index (PSQI) measures quality of participants' sleep, as well as disturbances to their sleep over a one-month period. The 19-item self-report scale measures seven components of sleep: sleep quality, sleep latency, duration of sleep, sleep efficiency, disturbances of sleep, use of sleep medication, and daytime dysfunction (Buysse, et al., 1989). The PSQI uses a 4-point Likert scale, ranging from 0 (little to no sleep problems), to 3 (a great deal of problems). Sample questions include "During the past month, what time have you usually gotten up in the morning?" and "During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?"

Discussion

- These findings indicate that daytime dysfunction was most strongly related to both anxiety and depression symptoms. Other symptoms were individually significant for anxiety and depression, most likely because of the different facets of each illness. Habitual sleep efficiency was significant for anxiety while sleep duration and sleep disturbances were significant for depression.
 - These findings also indicate that overall sleep quality is significantly related to both depression and anxiety.
 - It is important to understand how sleep plays a significant role in the health and daily functioning of college students.
 - In future research, daytime dysfunction may be an important target for intervention. The main goal of this intervention would be to improve sleep and functioning in college students
 - Ultimately, these results suggest that different sleep problems need to be looked at specifically for depression and anxiety.
- Limitations
- All data collected was through self-report measures which are subject to participants responding in a social desirable context.
 - The characteristics of this setting (only residing in an Urban area) need to be considered with regards to the generalizability of these results.

Results

Table 1- Different types of sleep problems related to anxiety

Different types of sleep problems using the PSQI	B	Std. Error	Beta	t	p
Sleep disturbances	.523	.303	.0751	.728	.085
Sleep Latency	.159	.181	.041	.878	.381
Daytime dysfunction due to sleepiness	1.296	.207	.265	6.252	.000
Habitual Sleep efficiency	.448	.198	.102	2.259	.024
Overall sleep quality	.647	.285	.113	2.274	.023
Sleep duration	.339	.220	.074	1.539	.124
Use of sleeping medication	.299	.202	.061	1.477	.140

a. Dependent Variable: The Spielberg State-Trait Inventory- Anxiety Summary Score

- The first multiple regression analysis was conducted to examine the most pertinent sleep problems that are related to greater anxiety symptoms in college students.
- Seven sleep problems were simultaneously entered into the model: sleep duration, sleep disturbances, sleep latency, daytime dysfunction, habitual sleep efficiency, overall sleep quality, and use of sleep medication.
- The overall model showed significantly greater anxiety symptoms, $F(7, 513) = 19.19, p < .05, R^2 = .207$ (See Table 1).
- Together, these sleep problems accounted for 20.7% of the variance in greater anxiety symptoms.
- Daytime dysfunction due to sleepiness, habitual sleep efficiency, and overall sleep quality were significantly related to greater anxiety symptoms.
- However, sleep disturbances, sleep latency, sleep duration, and use of sleep medication were not significantly related to sleep.
- Daytime dysfunction due to sleepiness ($\beta = .265$) was the most strongly related to greater anxiety symptoms, followed by overall sleep quality ($\beta = .113$), and overall sleep quality ($\beta = .102$).

Table 2- Different types of sleep problems related to depression

Different types of sleep problems using the PSQI	B	Std. Error	Beta	t	p
Sleep duration	1.549	.546	.126	2.839	.005
Sleep disturbances	2.866	.750	.153	3.824	.000
Sleep Latency	.655	.447	.063	1.465	.144
Daytime dysfunction due to sleepiness	4.569	.513	.349	8.903	.000
Habitual Sleep efficiency	.323	.491	.027	.658	.511
Overall sleep quality	1.506	.704	.098	2.138	.033
Use of sleeping medication	.921	.502	.070	1.835	.067

a. Dependent Variable: Center for Epidemiological Studies - Depression Summary Score

- The second multiple regression analysis was conducted to examine the relationship between sleep problems and depression symptoms.
- The overall model showed significant depression symptoms, $F(7, 512) = 34.89, p < .001, R^2 = .323$ (See Table 2).
- Together, these sleep problems accounted for 32.3% of the variance in depression symptoms.
- Sleep duration, sleep disturbances, daytime dysfunction due to sleepiness, and overall sleep quality, were all significantly related to depression symptoms.
- However, sleep latency, habitual sleep efficiency, and use of sleep medication were not related to depression.
- Daytime dysfunction due to sleepiness ($\beta = .349$) was the most strongly related to depression, followed by sleep disturbances ($\beta = .153$), sleep duration ($\beta = .126$), and overall sleep quality ($\beta = .098$).

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