

Science News

from research organizations

Nightly sleep is key to student success

A new study shows the impact of nightly sleep on a student's academic performance

Date: February 13, 2023

Source: Carnegie Mellon University

Summary: A multi-institutional team of researchers conducted the first study to evaluate how the duration of nightly sleep early in the semester affects first year college students end-of-semester grade point average (GPA). Using Fitbit sleep trackers, they found that students on average sleep 6.5 hours a night, but negative outcomes accumulate when students received less than six hours of sleep a night. The results are available in the Feb. 13 issue of the *Proceedings of the National Academy of Sciences*.

Share:     

FULL STORY

College is a time of transition for young adults. It may be the first time students have the freedom to determine how to spend their time, but this freedom comes with competing interests from academics, social events and even sleep.

A multi-institutional team of researchers conducted the first study to evaluate how the duration of nightly sleep early in the semester affects first year college students end-of-semester grade point average (GPA). Using Fitbit sleep trackers, they found that students on average sleep 6.5 hours a night, but negative outcomes accumulate when students received less than six hours of sleep a night. The results are available in the Feb. 13 issue of the *Proceedings of the National Academy of Sciences*.

Previous studies have shown that total sleep is an important predictor for a broad range of health and performance outcomes. Sleep guidelines recommend teenagers get 8 to 10 hours of sleep every night. Many college students experience irregular and insufficient sleep.

David Creswell, the William S. Dietrich II Professor in Psychology and Neuroscience at the Dietrich College of Humanities and Social Sciences, led a team of researchers to evaluate the relationship between sleep and GPA. College students often push themselves to achieve, and GPA is the important marker of academic success.

"Animal studies have shown how critical sleep is for learning and memory," said Creswell. Here we show how this work translates to humans. The less nightly sleep a first year college student gets at the beginning of the school term predicts lower GPA at the end of the term, some five to nine weeks later. Lack of sleep may be hurting students' ability to learn in their college classrooms."

Past work with animals has shown that memories that form during the day are consolidated during sleep. When normal sleep patterns are interrupted, the content learned during the day is lost. Extending this logic to students, the researchers were curious if interrupted or inadequate sleep could impair their academic learning and if this would be apparent by academic achievement.

The study evaluated more than 600 first-year students across five studies at three universities. The students wore wrist Fitbit devices to monitor and record their sleep patterns. The researchers found that students in the study sleep on average 6.5 hours a night.

More surprising, the researchers found that students who receive less than six hours of sleep experienced a pronounced decline in academic performance. In addition, each hour of sleep lost corresponded to a 0.07 decrease in end-of-term GPA.

"Once you start dipping below six hours, you are starting to accumulate massive sleep debt that can impair a student's health and study habits, compromising the whole system," said Creswell. "Most surprising to me was that no matter what we did to make the effect go away, it persisted."

The study controlled for past academic performance, daytime napping, race, gender and first-generation status. Several of the studies also controlled for total academic course load. None of these factors affected the overall impact of nightly sleep on GPA.

"A popular belief among college students is value studying more or partying more over nightly sleep," said Creswell. Our work here suggests that there are potentially real costs to reducing your nightly sleep on your ability to learn and achieve in college. There's real value in budgeting for the importance of nightly sleep."

This works suggests the importance of building structured programs and interventions at institutions of learning that encourage undergraduate students to focus on their sleep.

Creswell was joined by Stephen Price, Sheldon Cohen, Janine M. Dutcher, Daniella Villalba, Kasey Creswell and Marsha Lovett at CMU; Michael J. Tumminia at the University of Pittsburgh; Yasaman Sefidgar, Jennifer Brown Jennifer Mankoff, Yiyi Ren, Anind K. Dey and Xuhai Xu at the University of Washington; Afsaneh Doryab at the University of Virginia and

Stephen Mattingly, Aaron Striegel, Gonzalo Martinez and David Hachen at the University of Notre Dame on the project titled, "Nightly sleep duration predicts grade point average in the first year of college." The project received funding from the National Science Foundation and the National Institute on Disability, Independent Living and Rehabilitation Research.

Story Source:

Materials provided by **Carnegie Mellon University**. Original written by Stacy Kish. *Note: Content may be edited for style and length.*

Journal Reference:

1. J. David Creswell, Michael J. Tumminia, Stephen Price, Yasaman Sefidgar, Sheldon Cohen, Yiyi Ren, Jennifer Brown, Anind K. Dey, Janine M. Dutcher, Daniella Villalba, Jennifer Mankoff, Xuhai Xu, Kasey Creswell, Afsaneh Doryab, Stephen Mattingly, Aaron Striegel, David Hachen, Gonzalo Martinez, Marsha C. Lovett. **Nightly sleep duration predicts grade point average in the first year of college.** *Proceedings of the National Academy of Sciences*, 2023; 120 (8) DOI: 10.1073/pnas.2209123120

Cite This Page:

MLA	APA	Chicago
-----	-----	---------

Carnegie Mellon University. "Nightly sleep is key to student success: A new study shows the impact of nightly sleep on a student's academic performance." ScienceDaily. ScienceDaily, 13 February 2023.

<www.sciencedaily.com/releases/2023/02/230213201029.htm>.

Explore More

from ScienceDaily

RELATED STORIES

Children Who Lack Sleep May Experience Detrimental Impact on Brain and Cognitive Development That Persists Over Time

July 30, 2022 — Elementary school-age children who get less than nine hours of sleep per night have significant differences in certain brain regions responsible for memory, intelligence and well-being compared to ...

'I'll Sleep When I'm Dead': The Sleep-Deprived Masculinity Stereotype

Sep. 29, 2020 — In the United States, the average American sleeps less than the minimum seven hours of sleep per night recommended by the Center for Disease Control, and nearly half of Americans report negative ...

Better Sleep Habits Lead to Better College Grades

Oct. 1, 2019 — Two professors have found a strong relationship between students' grades and how much sleep they're getting. What time students go to bed and the consistency of their sleep habits also make a big ...

World's Largest Sleep Study Shows Too Much Shut-Eye Can Be Bad for Your Brain

Oct. 9, 2018 — Preliminary results from the world's largest sleep study have shown that people who sleep on average between 7 to 8 hours per night performed better cognitively than those who slept less, or more, ...

Free Subscriptions

Get the latest science news in your RSS reader with ScienceDaily's hourly updated newsfeeds, covering hundreds of topics:

 [List of All RSS Feeds](#)

Follow Us

Keep up to date with the latest news from ScienceDaily via social networks:

 [Facebook](#)

 [Twitter](#)

 [LinkedIn](#)

Have Feedback?

Tell us what you think of ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?

 [Leave Feedback](#)

 [Contact Us](#)

[About This Site](#) | [Staff](#) | [Reviews](#) | [Contribute](#) | [Advertise](#) | [Privacy Policy](#) | [Editorial Policy](#) | [Terms of Use](#)

Copyright 1995-2022 ScienceDaily or by other parties, where indicated. All rights controlled by their respective owners.

Content on this website is for information only. It is not intended to provide medical or other professional advice. Views expressed here do not necessarily reflect those of ScienceDaily, its staff, its contributors, or its partners.

Financial support for ScienceDaily comes from advertisements and referral programs, where indicated.

— [CCPA/CPRA: Do Not Sell or Share My Information](#) — [GDPR: Manage My Privacy Settings](#) —