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## HEALTH

### The less college students sleep, the worse their grades, study finds

Every lost hour of average nightly sleep at the start of an academic term predicted a 0.07-point drop in a student's GPA

BY TEDDY AMENABAR

**T**here are countless reasons to stay up late in college. Here's one good reason to go to bed.

The less a student sleeps every night, the lower their grade-point average will be, according to a two-year study of the sleep habits of more than 600 college freshmen that was published Monday in the Proceedings of the National Academy of Sciences.

Researchers found that every lost hour of average nightly sleep at the start of an academic term was associated with a 0.07-point drop in a student's end-of-term GPA. When a student slept less than six hours a night, the effect of lost sleep on a student's grades was even more pronounced, said David Creswell, the lead author of the study and a professor in psychology and neuroscience at Carnegie Mellon University.

"You're accumulating this sleep debt," Creswell said. "And that has a pretty negative role in terms of people's academics."

Sleep, especially undisturbed sleep, helps the brain process and retain information it has learned. And when someone is sleep-deprived, attention span and memory also are impaired.

But students have a number of "competing pressures" to stay up late in college, especially in their freshman year,

which is often the first time students are living away from home, Creswell said. The average student in the study fell asleep about 2:30 a.m. Barely any of the students went to bed before midnight. And, on average, they slept 6½ hours a night.

#### Sleep recommendations vary

Sleep recommendations shift by age, and the amount of sleep an individual actually needs can vary person to person. In general, for teenagers, the recommendation is eight to 10 hours of sleep. For those 18 to 25 years old, it drops to seven to nine hours.

Creswell said he doesn't want to "lecture" students about the findings but, according to the research, it appears that getting enough shut-eye does boost a student's GPA.

"A lot of students say, 'I should just stay up a lot later and study a lot longer,'" Creswell said. "Well, what we're showing here is that sleep may be your friend, in terms of helping consolidate this information."

Creswell and the team of researchers conducted five studies, recruiting college freshmen taking courses in a range of majors at Carnegie Mellon, the University of Notre Dame and the University of Washington. To monitor sleep, the students

wore either a Fitbit Flex or a Fitbit HR for the entire academic term, a spring semester or a winter quarter, depending on the school, Creswell said.

Creswell said they avoided studying students' sleep habits around final exams and term papers because they assumed that the average student's sleep would just continue to drop off.

"We really wanted to look at this critical period in the semester where you're starting to establish sleep patterns," Creswell said. "Because once you start to hit midterm and finals period, you're sort of too late in the game for actually doing effective intervention."

After controlling for other factors — such as whether a student takes naps, their number of class credits and their GPA the previous term — the researchers found that average nightly sleep continued to predict a student's end-of-term GPA. What time a student went to bed and whether their bedtime varied day to day did not seem to play a role, Creswell said.

A similar study of 100 engineering students at the Massachusetts Institute of Technology published in 2019 found the same association between a student's grades and the amount of sleep they were getting. That study also showed it was tough to make up for bad sleep habits. There was no improvement in scores

among students who made sure to get a good night's sleep right before a big test.

### **Insufficient sleep may create 'sleep debt'**

It's not clear why less sleep would cause someone to have a lower GPA, Creswell said. Sleeping for longer, uninterrupted periods of time allows for REM sleep, a period of unconscious rapid eye movement that corresponds with high activity in the brain. Creswell said he suspects a regular pattern of insufficient sleep creates a "sleep debt" over time, leaving students unable to concentrate.

"These college students are going to class with a ton of sleep debt, and they're having trouble staying focused and learning in college classrooms," Creswell said. "Those things can really harm your ability to really engage with the material."

Aric Prather, a psychologist at the University of California, San Francisco and author of the book, "The Sleep Prescription," said the findings could inform systemic changes at universities, campaigns or workshops to help students

have a better night's sleep.

"There are multiple pathways to get to a GPA, and sleep is like the glue that holds our lives together in lots of domains," Prather said. "When that whittles away, or is less sticky, bad things happen."

Grace Pilch, an 18-year-old freshman who lives in a dorm at Pennsylvania State University, said she needs to get at least eight hours of sleep to function in class and during workouts at the gym.

"I can always tell if I didn't get enough sleep," Pilch said.

Pilch, who's majoring in graphic design, said she cares more about getting enough sleep in college than she did in high school because "the classes are expensive," and she wants to do well. Pilch said she has around a 3.8 GPA so far. And she and her roommate are in bed by 11 p.m. during the week.

"But I do go out with my friends," Pilch said. "Sleep is important, grades are important, but it's also important to make connections."

Academic success early on in college has been shown to predict whether students stay in school or drop out years later, and

campus programs to address sleep habits could help freshmen during a "critical period" in school, Creswell said.

"We could really teach them, in that first year of college, better sleep patterns that could help them with their academic achievement," Creswell said.

At the University of Pennsylvania in Philadelphia, 200 students and staff members have enrolled in a seven-week online course on building better sleep habits. Rebecca Huxta, the director of public health and wellness at the university, said that since starting the program, participants have reported an overall decrease in symptoms of insomnia.

Roxanne Prichard, a professor of psychology at the University of St. Thomas in St. Paul, Minn., said that she finds students "have been exhausted since puberty," and they've "grown accustomed" to always feeling lethargic.

"Fundamentally, it comes down to: If we're not sleeping well, all systems are not a go," Prichard said. "Our body is not prepared for the day ahead of us and what we're asking it to do if we don't have that good, basic chunk of nighttime sleep."