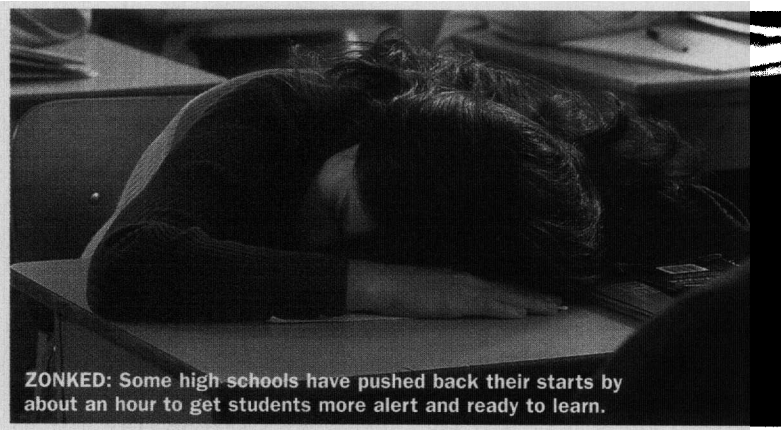


SLEEP 101: For 20 percent of teens, early classes can turn into nap time before the body's natural wake-up time.

BY JOHN DICONSIGLIO

# Let me sleep!

The high school opening bell often rings before a teen's internal alarm clock does. Later start times prevent zombies in morning classes and may lead to student improvements. So why don't more schools shift their schedules? It's a matter of time, money, and grades.



**ZONKED:** Some high schools have pushed back their starts by about an hour to get students more alert and ready to learn.

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## National

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FOR LIZZIE ALLEN, THE DIFFERENCE HAS BEEN LIKE NIGHT and day—almost literally. Last school year, the first bell at her Arlington, Va., high school rang at 7:30 a.m. She had to wake around 6 a.m. and rush for her bus before the sun was up. Adrenaline and caffeine got her through first-period biology. But by third period, Lizzie could feel her eyelids drooping.

The rest of the day would include marching-band practice and work at a local horse stable. She often crawled into bed after midnight for less than six hours of shut-eye. "It's not a great way to get through your day," says Lizzie, a 15-year-old junior at Washington and Lee High School. "But what choice did I have?"

This school year, Lizzie is better rested, surviving first-period Latin without so much as a yawn. That's because her high school delayed its starting time to 8:15, giving Lizzie 45 minutes of extra sleep in the morning. Across the country, many school officials, scientists, and students agree that sleeping-in can make teens more successful in high school. But schools such as Lizzie's are the exception.

With some high schools starting as early as 7 a.m., many teens are caught between the need to sleep and the need to learn. Often, sleeping wins. A University of Minnesota study found that 20 percent of all teens fall asleep in their first two hours of class. They can't help it. In adolescence, sleeping patterns shift to a later, longer cycle unique to teens, with the body needing to sleep from about 11 p.m. to 8 a.m. or later.

"Most teens are walking around like zombies," says Dr. Mary Carskadon, a leading sleep researcher at Brown Uni-

versity. "They don't even know what it's like to be fully awake."

Schools that start at 8:15 or later report remarkable results among students. Influenced by sleep studies, Minneapolis changed its high schools' starting times from 7:15 to 8:40 five years ago. Dr. Kyla Wahlstrom, a sleep researcher at the University of Minnesota, notes that tardiness is down by nearly 5 percent and, in some areas, dropout rates have declined by more than 10 percent. And most students seem to be using the new schedule to get extra sleep, not to stay up longer.

Sleep has such a broad influence because scientists say it cements learning, boosts the immune system, even staves off depression. "I just can't imagine going back to an early start," says Sinouane Chanthraphone, 15, a freshman at Patrick Henry High School in Minneapolis. With a better night's sleep, she says, "I learn more the next day, and I am a whole lot happier."

### THE HIGH COST OF SLEEPING-IN

Changing school starting times isn't an easy task—nor is it universally applauded. So far, most school districts nationwide are resisting the move.

One major concern is that later starting times can disrupt school transportation systems; in many areas, elementary, middle, and high school students often share the same buses in staggered shifts. If the high school schedule is delayed and overlaps with the start of other schools, additional buses would be needed, costing millions at a time when most school districts are cutting back. In Montgomery County, Md., school officials decided against later starting times after learning they'd have to spend \$31 million for additional buses.

Later starting times also mean a later end to the school day.



**TIME TO WORK:**  
When students go to school later, they get out later, cutting into hours at after-school jobs.

Dismissal at the Minneapolis schools went from 1:45 p.m. to 3:20 p.m. The change annoyed football coaches, McDonald's managers, and others who worry that teens will have to cut out after-school activities and jobs. Some teachers and parents also are against such a change. In Pike County, Ky., officials moved the starting time from 7 to 8:30—only to move it back a year later, after parents complained that getting kids off to school at that time interfered with their own work schedules.

Even some students oppose later starts because of the prospect of later dismissals. "There are too many things I have to do after school," says Francisco Morales, a 16-year-old junior at Abraham Lincoln High School in Denver, where the school board is debating a later starting time. "I'm on the wrestling team. I work. Sure, I'd love to get more sleep, but it's not the most important thing to me."

### LOSING SLEEP OVER IT

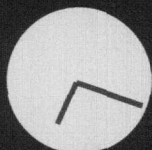
Teens may not realize how sleep-deprived they are, experts say. Eighty percent of teens get too little sleep, reports the National Sleep Foundation. Teens require about nine-and-a-half hours of sleep a night, but average just over seven. Only 15 percent get at least eight-and-a-half hours of sack time.

Sleep is as essential as food. Hormones such as melatonin are released during sleep that help the body absorb nutrients, heal tissue, fight tumors and viral infections, and stimulate the production of immune-system cells. A lack of sleep makes the body susceptible to colds and other diseases, which can lead to school absences or worse. Sleeping-in on the weekends helps repay the accrued sleep debt, but there's no real substitute for a regular sleep schedule.

Sleep deprivation is also a leading factor in car crashes. Of the 100,000 automobile accidents a year linked to drowsy drivers—and the 1,500 deaths that result—half involve drivers aged 15 to 24, according to the National Highway Traffic Safety Administration. And 24 percent of young adults admit they have dozed off while

**SNOOZE CLUES:** Dr. Mary Carskadon of Brown University and Dr. Amy Wolfson of the College of the Holy Cross have studied teenagers' sleep cycles to find out why early morning classes lead to schools of zombies. Some of their findings:

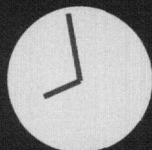
#### AVERAGE MELATONIN "TURN-OFF" TIMES, BY STAGE OF PUBERTY



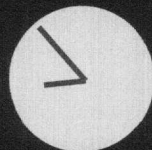
Prepuberty  
7:17 a.m.



Early puberty  
8:34 a.m.



Mid-puberty  
7:58 a.m.



Late puberty  
8:49 a.m.

The hormone melatonin, secreted during the sleep cycle, is an indicator of the body's internal schedule. Its turn-off serves as a biological alarm clock.

Although a concrete cause-and-effect relationship has not been established, surveys by Carskadon and Wolfson have linked lack of sleep and lower grades.

#### SELF-REPORTED GRADES:

Mostly A's	7 hours, 22 minutes
Mostly B's	7 hours, 21 minutes
Mostly C's	7 hours, 4 minutes
Mostly D's or lower	6 hours, 48 minutes

#### AVERAGE AMOUNT OF SLEEP ON SCHOOL NIGHTS:

driving, notes the National Sleep Foundation. "There's not a huge difference between driving tired and driving drunk," says Carskadon of Brown University.

Yet many students treat sleepiness as if it were a badge of honor. "Look how many teens brag about pulling an all-nighter to finish a term paper," says Wahlstrom of the University of Minnesota. "We, as a society, obviously do not take sleep seriously. And that's a big mistake."

So why don't teens just go to bed earlier? If you have to get up at 6 a.m., just hit the hay by 9 or 10 p.m. But it's not that easy, researchers say, because the unique adolescent sleep "clock" makes it harder for a teen to relax and sleep earlier. From shortly after puberty until well into the college years, laboratory experiments have shown that the body's internal clock is set on the sleep block of 11 p.m. to 8 a.m. or later, different than the earlier times of younger children and adults.

"Sending kids to school at 7 a.m. is the equivalent of sending an adult to work at 4 in the morning," says Dr. William Dement, a Stanford University sleep expert. "It's almost abusive to them."

### Z's TO A's

Although several school districts from New York State to California to Alaska have debated a change, no more than a few dozen have gone ahead with it.

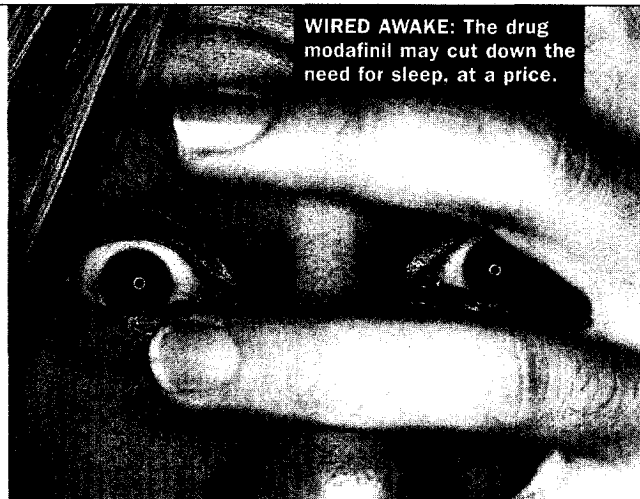
What may ultimately persuade schools and parents is a link between better sleep and better grades. If further research can establish that teens' extra sleep in the morning means improved performance reflected on report cards and tests, more schools would be pressured to change.

In Minnesota, Wahlstrom found that SAT scores rose more than 100 points since area schools began starting later. Initial analysis of grades before and after the change revealed a slight improvement. This fall, three more school districts in suburban Minneapolis delayed starting times.

At Brown, Carskadon says she has seen a direct correlation between sleep and grades among her university's students: Those who get more sleep earn more A's and B's. Those who don't, she says, are more likely to score C's and D's.

Of course, these results are based on small samples and there could be many explanations for the improved scores other than altered starting times. While some lawmakers are pushing the issue and calling for more money to implement the shift, don't count on nationwide change anytime soon. "This is gaining momentum," Wahlstrom says. "But it's got a very long way to go."

For Arlington's Lizzie Allen, the benefits of her school's new starting time are already paying off. "I'm more rested. I'm doing better in my classes. I think I'm probably nicer to be around," she says. "They are giving us an extra hour of sleep every night. I don't hear a lot of kids complaining about that." ■



**WIRED AWAKE:** The drug modafinil may cut down the need for sleep, at a price.

## the no-sleep pill

Forget sleeping an extra hour or two in the morning—maybe we don't need to sleep much at all.

That is the tantalizing idea behind a new stimulant called modafinil (mo-DAW-fi-nil), made by the drug company Cephalon. So far, the Food and Drug Administration has approved the drug only for the treatment of narcolepsy, sudden episodes of deep sleep. Studies are under way to see how it could help people such as workers on the graveyard shift and military pilots on long-range missions stay awake when their brains are telling them to sleep.

Media hype says this pill could replace regular sleep, but some experts aren't so sure.

The need for a good night's sleep is a biological law of nature, scientists say. Wanting to fully function on four hours of sleep is like wanting to eat at McDonald's three times a day and not gain weight, says Dr. Thomas Roth of the Henry Ford Sleep Disorders Center in Detroit. "Eventually you'll crash," he says. "Will this be a long-term solution to finals week? No, no."

Still, modafinil is sending a new buzz through sleep science. Its development is a step toward controlling sleepiness, if not replacing sleep itself. Dr. Jodi Mindell of St. Joseph's University in Philadelphia says she can't see how any drug could replicate what goes on during sleep, from the secretion of growth hormone during puberty to the memory storage of a calculus lesson. "In our society, when we're going for the quick fix, yeah, it makes sense at 7 a.m. to grab a modafinil on the way to school," she says, "but you may be hurting adolescents more than you're helping them."

—Chris Tauber

### SCHOOL NIGHTS

15% of teens sleep 8 1/2 hours or more

26% sleep 6 1/2 hours or less

40% go to bed after 11 p.m.

Source: "Adolescent Sleep Patterns," Sleep 1998.