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## Good News for Night Owls

By Elsa Youngsteadt  
*ScienceNOW* Daily News  
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Night owls seem to have a cognitive edge over early risers--at least when they're on their natural sleep schedule. That's one upshot of a new brain-imaging study that also gives surprising new insights into how the brain manages the urge to sleep and wake. The results, sleep researchers say, may improve predictions of when people are most at risk for drowsy accidents.

Two factors control our bedtime. The first is hardwired: A master clock in the brain regulates a so-called circadian rhythm, which synchronizes activity patterns to the 24-hour day. Some people's clocks tell them to go to bed at 9 p.m., others' at 3 a.m., ([ScienceNOW](#), 24 June 2003). The second factor--called sleep pressure--depends not on time of day but simply on how long someone has been awake already.

Because sleep pressure accumulates during waking hours, logic suggests that we should be most alert--and hence sharpest--shortly after we get up versus right before we go to bed, regardless of whether we're night owls or larks.

But that's not what Christina Schmidt found. The doctoral student at the University of Liège in Belgium and her collaborators, led by sleep researcher Philippe Peigneux, recruited 16 morning people and 15 night people to take alertness tests in a brain scanner. Subjects had to pay attention to numbers on a computer screen and hit a button whenever the numbers began to change. To control for the effect of the circadian clock, the subjects were allowed to sleep on their own natural schedules and take the test 1.5 hours and 10.5 hours after waking, regardless of the actual time of day.

Both groups performed equally well on the test when they took it 1.5 hours after waking. But after 10.5 hours without sleep, the night owls pulled ahead. Their reaction times improved by about 6% relative to the morning people and to their own earlier performance, the researchers report in tomorrow's issue of *Science*. This suggests that once they wake up, sleep pressure builds up faster in early birds, says Peigneux, and that this hurts their cognition over time.

It's a result with "real-world consequences," says sleep researcher David Dinges of the University of Pennsylvania School of Medicine in Philadelphia. Current risk analyses use the time of day and hours worked to predict when people are in greatest danger of accidents--such as aviation errors. But now, Dinges says, they may need to take into account that morning people tend to lose their concentration faster. At the very least, according to sleep researcher Amita Sehgal, also at the

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