Researchers found that sleep hours and quality affect daily stressors the next day

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Researchers in the Department of Biobehavioral Health (BBH) at Penn State found that sleep quality and quantity at night is affected by that day's stressors, and sleep hours and quality affect daily stressors the next

day.

The relationship can create a cycle that can positively—or negatively—affect individuals and families, especially families in which one or both parents work outside the home.

The findings, from two separate studies, suggest that better sleep may promote positive experiences and less conflict, as well as more time for self, such as exercise, and more time with children, according to the researchers.

"Sleep plays a central role in our daily lives. A day with less stress and conflict is followed by a night where it's easier to get to sleep. Having a good night of sleep is more likely to be followed by a workday with less stress and conflict. In this case, sleep is a powerful source of resilience in difficult times," said Orfeu Buxton, associate professor of biobehavioral health at Penn State, director of the Sleep, Health and Society Laboratory, and senior author of the two studies.

Data for both studies are from a larger study called the Work, Family & Health Study, which was designed to examine multisite companies within the information technology and the extended-care (nursing home) sectors.

In the first study, based on 1,600 daily interviews with 102 midlife employees in the IT industry, daily psychosocial stressors—including stressful events, situations and tensions at work, school or home—and nightly sleep had reciprocal influences, according to Soomi Lee, lead author and Penn State postdoctoral scholar.

Researchers found work interfering with personal and family life, and perception of not having enough time for family and personal life—the most prevalent stressors in midlife—were associated with interrupted

sleep and a longer period of time before falling asleep.

"We found that shorter and lower quality sleep tended to lead to more stressors on the following day," Lee said.

This was a consistent pattern across specific types of daily stressors. On days following shorter and lower quality sleep than usual, participants reported higher work-to-family conflict than usual. And on days following shorter sleep and lower quality sleep than usual, participants reported less time for themselves to exercise, and also less time for their children.

Conversely, higher work-to-family conflict and less time for exercising and children on a given day preceded longer time to fall asleep that night.

One exception to this consistent pattern was that perceiving less time for children also preceded shorter sleep hours and lower quality sleep that night. When participants slept less or poorer than usual, they perceived having less than usual time for their children the next day. Lee said having lack of time for children is a salient stressor among midlife parents, thus may both precede and follow nightly sleep replenishment.

The IT company represented a higher-income, professional-level workforce, whereas the extended-care company was a lower-wage, hourly workforce.

In another study, Nancy Sin, postdoctoral fellow in the Center for Healthy Aging and BBH, and colleagues examined positive and negative emotions, positive events and stressors as predictors of same-night sleep quality and duration, in addition to the reversed associations of nightly sleep predicting next-day experiences.

They found that better sleep quality was linked to improved emotions, more positive events, and fewer stressors on the following day.

Researchers examined 1,900 daily interviews from employees in the IT and extended care industries.

"Our results suggest the possibility that efforts to improve sleep quality may promote better mood and reduce stressors across work and personal contexts," Sin said. "This study underscores the important contributions of psychological and contextual factors in everyday life for sleep and health."

The findings may also inform future research on the work-family balance and the effects of sleep on physical and psychosocial health.

Sin's findings were published online on Feb. 10 in *Annals of Behavioral Medicine*.

Lee's findings were published online in a recent issue of *Journal of Sleep Research*.

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