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Practice Brief

Why Don't We Sleep Enough? A Field Experiment among College Students

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Sleep deprivation is an emerging public health challenge. According to the Center for Disease Control and Prevention, more than a third of American adults sleep less than the recommended minimum of seven hours. Some scholars consider it the most prevalent risky behavior in modern societies and evidence suggests that in many countries people may be sleeping between one and two hours less than what their ancestors used to sleep one hundred years ago. Growing evidence documents the causal effects of sleep deprivation on chronic diseases, health, cognitive skills, decision-making, human capital, and productivity. However, sleep behavior has received little attention in the economic literature.

Most economic models analyzing time allocation regard sleep as a predetermined and homogeneous constraint on time allocation. While for some individuals sleep duration and quality are influenced by medical conditions (insomnia, sleep apnea, etc.), for most individuals, bedtime and sleep duration are choices. Individuals may optimally allocate less time to sleep and delay their bedtime (or wake up earlier) to work longer or enjoy more leisure. And indeed, the few pioneering studies analyzing sleep choice have assumed individuals choose hours of sleep optimally.

Dr. Peiran Jiao, together with his coauthors Dr. Osea Giuntella from Pittsburgh University and Dr. Mallory Avery from Monash University, conducted a field experiment with college students to investigate the behavioral reasons underlying people's suboptimal sleep choices, and how we can help them improve their sleep. In their experiment, they provided experimental participants monetary incentives to sleep and collected data from wearable activity trackers, surveys, and time-use diaries.

MAIN FINDINGS

The find that monetary incentives were effective in improving sleep behavior. Treated participants responded to monetary incentives by sleeping longer. They were 13% more likely to sleep the recommended number of hours (between 7 and 9). Furthermore, the improvement in sleep was persistent. Even after the intervention was removed, treated participants were 9% more likely to sleep between 7 and 9 hours. The intervention also had effects on sleep regularity, reducing variance in sleep duration, bedtimes, and (more weakly) wake-up times. More interestingly, in order to improve their sleep, treated subjects had a decline of screen time (such as watching TV, videos, or using smart devices) before going to bed.

They also uncover evidence that participants voluntarily opted for commitment devices, in the form of certain bedtime and sleep duration targets and receiving monetary rewards for achieving the targets (and foregoing monetary rewards for failing to do so). Our findings are consistent with participants being partially aware of their self-control problem surrounding sleep, but were still overconfident about the quality of their sleep and sleep choices.

IMPLICATIONS FOR POLICY AND PRACTICE

Their results provide evidence that behavioral biases play an important role and affect the heterogeneity of sleep choices. Their findings suggest that time inconsistency and biased beliefs can persist in the face of extensive experience and feedback. Thus, interventions based only on information (such as educational programs on sleep hygiene or fatigue management) may not be effective in the presence of these behavioral biases. Self-control problems may lead to

procrastination and people may constantly delay the start of good sleep habits. Also, people with motivated beliefs may be able to suppress the recall of objective feedback that could challenge their self-image, so that the simple provision of information may be ineffective in correcting such misperceptions. Yet, to the extent they become more aware of their time inconsistency problem due to repeated feedback, sleep is still a domain where demand for commitment may be relevant and commitment devices effective. Their findings also suggest that commitment devices and incentive structures may be more effective than planning tools at improving sleep behavior, and that temporary interventions, as those adopted by some companies, may have persistent effects, particularly when individuals lack a commitment device in natural settings.

Reference: Mallory Avery, Osea Giuntella, Peiran Jiao; Why Don't We Sleep Enough? A Field Experiment among College Students. *The Review of Economics and Statistics* 2022; doi: https://doi.org/10.1162/rest_a_01242