

CHAPTER 1

Work and Sleep

Looking Back, and Moving Forward

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WORK AND SLEEP: LOOKING BACK, AND MOVING FORWARD

The interdependence of work and sleep has a long history, but the scientific study of their interdependence has a much shorter past. This was all very much of a non-issue until those fateful years of 1878 and 1879 when Thomas Edison first invented and experimented with a mass-produced light bulb, and then in 1880, received a patent for his invention. Prior to this, night work was almost unheard of, save for those few people involved in policing or security. Then, all of sudden, work became possible during the dark hours of night on a much larger scale than was ever thought possible before Edison's invention. Quite simply, the structure and timing of work changed dramatically and forever with the advent of what was to be called "shift work." Today, just under 30% of all employed people in the United States are involved in some form of shift work (Alterman, Luckhaupt, Dahlhamer, Ward, & Calvert, 2013)

In those early times in which safety standards, unions, and government regulation were still very much in the future, very elementary work schedules were established, usually consisting of two large groups of employees who would work 12-hour shifts, changing between nights and days every few weeks. Behind the scenes, academic research aimed at understanding the effects of shift work on sleep and performance was already underway shortly after the turn of the twentieth century. And almost 100 years later, the findings from this early research will not be surprising. For example, after subjecting volunteer college students to 50 hours of continued wakefulness, Herbert Laslett (1924) found that cognitive functioning declined (and in a few cases hallucinations occurred). Based on

further experimentation, 4 years later Laslett concluded that “An individual’s normal amount of sleep cannot be curtailed or eliminated without loss of efficiency” (1928, p. 370).

Not surprisingly, research intensified over the next several decades, with increasing nuance and sophistication in what was being learned about very different work shift systems (Parkes, 2015) and their effects on employees’ work performance, which is reflected in Chapter 2 by Philip Cheng and Christopher Drake. As Alistair W. MacLean shows in Chapter 8, hazardous occupations have received considerable attention in research on the effects of sleep on performance and safety. Thus, we have known for several decades that work, safety, and health are all optimized when shift schedules are compatible with nonwork lives, and rotate in a forward (day-to-night), stable, and predictable fashion (Sauter, Murphy, & Hurrell, 1990), and when employees have a voice in the shift schedules on which they work (Barton, 1994). In addition, it is clear that working shifts also affects the well-being of employees’ spouses or partners and children (Barling, 1990).

Although the study of the effects of shift work on sleep was historically crucial, the focus has now broadened. The amount of time devoted to work, whether through weekly overtime or through night-based overtime, significantly influences sleepiness at work (e.g., Son, Kong, Koh, Kim, & Härmä, 2008). But the effects go beyond sleepiness: Using archival data and an experience sampling study in two different samples, Barnes, Wagner, and Ghumman (2012) showed that there was a negative and nonlinear relationship between time spent working and time spent sleeping: As can be seen in Figures 1.1 and 1.2, which reflect findings from both samples, the negative effects on sleep are worse the more time spent working. Thus, as the authors cogently note, because time is a finite resource, people “borrow” time from sleep to meet increasing work (and family) demands.

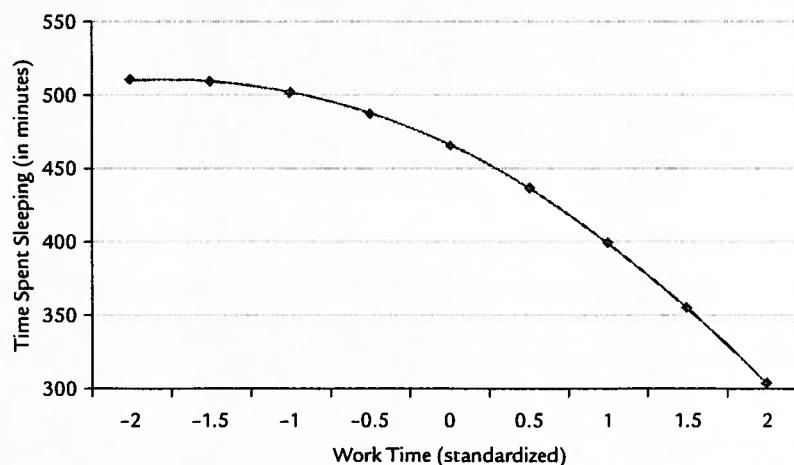


Figure 1.1.
Nonlinear effect of time spent working on sleep (sample 1).
Data for both figures are from Barnes et al. (2012).

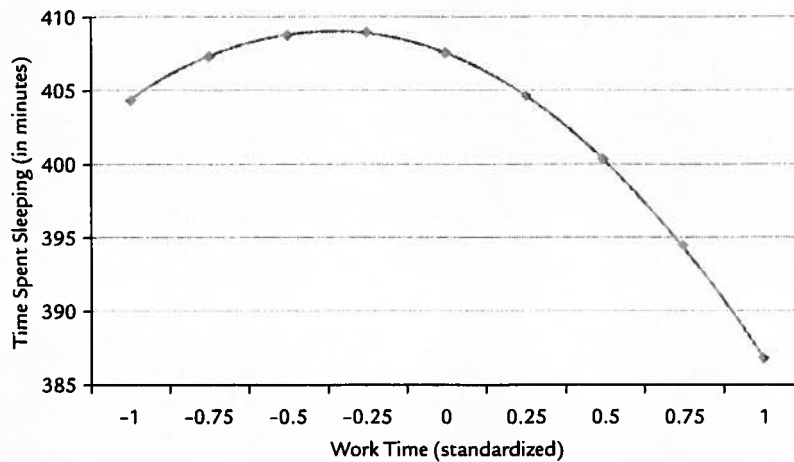


Figure 1.2.
Nonlinear effect of time spent working on sleep (sample 2).

If so much has been known for so long, you might justifiably ask: Why the need for a book on work and sleep? Has anything changed? In short, we suggest that with respect to our understanding of work and sleep, almost everything has changed. An appreciation of what has changed so much provides the perfect introduction to this book.

First and foremost, the contemporary scholarly community whose expertise is understanding the “work” facet of work and sleep is very different from its counterparts of yesteryear. Historically, the scholars most interested in “work” brought with them an expertise in either the cognitive and physical aspects of work performance or safety performance. Not surprisingly, their narrow focus shaped and limited the research that was conducted and the knowledge that was generated.

This is important, because just how much the scholars involved shape and limit a field is also evident from the study of the interdependence of work and family. Until the early 1980s, scholars interested in this topic were primarily developmental and family psychologists and sociologists who brought with them a nuanced approach to the understanding of “family,” although at the same time their appreciation of work was rudimentary (Barling, 1990). Indeed, at that time work was conceptualized in research as parents either being employed or not, or through the number of hours worked per week. It was only when organizational psychologists became interested in work and family in the mid-1980s that the research benefitted from a sophisticated appreciation of the broad nature and subjective experience of work (rather than the presence/absence or amount of work).

Today, the scholars involved in studying work and sleep have a broad background in organizational behavior and/or industrial and organizational psychology, and consequently the focus of research now extends beyond the narrow effects of sleep on either task performance or safety. Instead, as will be seen from the chapters in this book, we now have a vastly different literature available, one that involves a very broad understanding of the nature and experience of work and its interdependence with sleep.

Second, very few topics investigated by academic researchers have received as much public interest as has the study of sleep.¹ As but one example, Ariana Huffington's (2010) TED talk "How to succeed? Get more sleep" has already been watched by no fewer than three million people!²

Third, although the amount of sleep people need has remained unchanged over decades, the amount of time people devote to sleep each night has not. The average sleep duration for adults in the United States has decreased over the past 30 years, with most of the decline occurring by 2004. Moreover, the number of adults who sleep less than the minimum recommended (>7 hours per night) or more than the maximum recommended (<9 hours per night) has increased over the same period (Ford, Cunningham, & Croft, 2015).

Fourth, the sheer prevalence of sleep problems in the general population has raised awareness that sleep is an issue (Ferrie Kumari, Singh-Manoux, & Kivimaki, 2011). Exacerbating this is the fact that the prevalence of sleep problems and clinical sleep disorders (as described in Chapter 3 by Helen S. Driver) is likely to increase given increasing work pressures (e.g., Barnes et al., 2012) and the pervasive and insidious reach of smart phones into what was once sacrosanct sleep routines. In turn, these sleep disorders will continue to affect workplace behaviors.

Fifth, the decades-old knowledge that decreased sleep and interrupted sleep were major contributing factors to automobile and transportation incidents is by no means new, and was responsible for public policy initiatives, such as regulations in many jurisdictions restricting excessive hours of work in occupations that could compromise public safety (e.g., airline pilots, heavy duty truck drivers). Add to this the growing awareness that sleep problems also compromise people's own health. For example, research now shows that being at risk for or being diagnosed as having a sleep disorder such as sleep apnea or insomnia is associated with an increased risk for a variety of cardiovascular diseases and type 2 diabetes (Newman et al., 2000) as well as obesity and metabolic disturbance (Spiegel, Leproult, & Van Cauter, 1999; Wolk & Somers, 2007). Poor sleep quality also affects daily physical well-being in the form of muscle pain, headaches, and gastrointestinal problems (Kuppermann et al., 1995).

Last, dramatic developments in the measurement of aspects of sleep over the past several decades have been very important in stimulating the study of work and sleep. This is clearly evidenced in the proliferation of sleep clinics, which invariably specialize in the physiological assessment of sleep disorders as well as their treatment; it would not have been unusual to see nonmedical sleep researchers use such facilities for their research. What has changed most recently, however, is the accessibility of sophisticated assessment devices for sleep via apps on smart phones or through mass-marketed wearable technologies (e.g., fitness trackers) that have enabled organizational and psychological researchers with modest research budgets, who are interested in the interdependence of work and sleep, to collect sleep data that were formerly difficult to obtain at best.

Conceptual and Methodological Advances

As already noted, organizational scholars involved in the study of work and sleep are no longer content to limit their focus to task performance and/or safety. The range of workplace behaviors already investigated reflects many of the major workplace behaviors routinely subject to scrutiny. Thus, researchers have focused their attention on sleep, mood, and emotions (see Chapter 6 by J. Jeffrey Gish and David T. Wagner), occupational safety (see Chapter 9 by Jennifer H. K. Wong and E. Kevin Kelloway), and work withdrawal (see Chapter 10 by Erica Carleton and Julian Barling). Larissa K. Barber and Christopher J. Budnick show in Chapter 7 how insufficient sleep indirectly affects unethical behaviors at work. Consistent with the major emphasis on the spillover between work and family in the organizational literature (e.g., Grzywacz & Butler, 2008), Charlotte Fritz and Tori Crain in Chapter 4 help to unravel the link between nonwork experiences and sleep.

Research over the past decade has also shown that organizational scholars have been willing to apply a range of conceptual theories, models, and approaches in their attempt to understand how these work experiences affect sleep. This is witnessed in studies that have used self-regulation and ego depletion (Wagner, Barnes, Lim, & Ferris, 2012), mindfulness (Hülshager et al., 2014), emotional labor (Diestel, Rivkin, & Schmidt, 2015), and organizational justice (Hietapakka et al., 2013) theories to explain the connections between work and sleep.

Even a cursory examination of the fields of organizational behavior or organizational psychology would point to the major methodological advances that have taken place over the past decades, and these advances have benefited the study of work and sleep. Thus, for example, we now see multiple different experimental approaches used to study the interdependence of work and sleep, such as daily studies (Barnes, Lucianetti, Bhawe, & Christian, 2015), interventions (Greenberg, 2006), laboratory research (e.g., Wagner et al., 2012), longitudinal studies (see Van Laethem, Beckers, Kompier, Dijksterhuis, & Geurts, 2013), multilevel studies (Berkman et al., 2015), and the use of archival data (Barnes & Wagner, 2009).

Together, this has expanded the causal questions asked, such that scholars are now equally interested in whether and how work affects sleep and whether and how sleep affects work (see Chapter 5 by Sabine Sonnentag, Anne Casper, and Anna Sophia Pinck).

Work and Sleep: Moving Forward

Though the authors of the different chapters in this book collectively make it clear just how far research has come in a short period of time, nothing in this book suggests that we have reached an endpoint in knowledge generation. Instead, we see this book as a platform for advancing evidenced-based knowledge, management education, and practice regarding work and sleep. Although only fools would look backward while trying to predict where they are headed, we suggest that several directions are already discernible.

Perhaps the easiest prediction is that research on the topic of work and sleep will continue to flourish and develop in different directions as new questions are asked. For example, with researchers beginning to investigate the work and sleep experiences of older workers (see Chapter 11 by Peter Bamberger and Rona Cafri), can research on the work and sleep experiences of younger workers be far behind? Similarly, increasing numbers of people are now forced to work more than one job—what of their work and sleep? In a different area, research has begun to focus on the effects of poor sleep on destructive leadership (Barnes et al., 2015). To what extent might sufficient sleep and quality sleep enhance high-quality leadership?

Second, as Christopher M. Barnes, Maartje E. Schouten, and Evelyn van de Veen make clear in Chapter 13, discussions to date about the effects of sleep on work and work on sleep have been largely absent from management education. We suspect that this will change in the future for several reasons. (1) Research findings on work and sleep now regularly find their way into scholarly management journals with a volume that will be difficult if not impossible to ignore for management educators. (2) The interest displayed by management practitioners (and to some extent policymakers) will make it more likely that the topic of work and sleep finds its way into management curricula. (3) Popular media coverage in outlets such as the *Wall Street Journal*, *Huffington Post*, and the *Harvard Business Review* blog (<https://hbr-blogs.wordpress.com/>), and books such as this, will make current evidenced-based knowledge easily accessible to management educators, enhancing the likelihood that work and sleep will be included in management education in the future.

Finally, organizations are beginning to take findings from research on work and sleep very seriously. For example, the U.S. Federal Aviation Association now mandates that pilots must have 10 hours of rest between 8- and 9-hour shifts (“Pilot rest rules,” 2014). It is also not uncommon to find that major professional sports teams, including basketball (McCauley, 2015) and football (Clark, 2012) in the United States and the world-famous soccer team Real Madrid (Fenn, 2015), all have experts advising them on optimal conditions for sleep, and optimal sleep duration, for their players. In addition, some “traditional” companies (e.g., *Huffington Post*, Google) regularly encourage positive sleep hygiene. As organizations look for a competitive edge to help them thrive, and as evidenced-based knowledge becomes more accessible, organizations are more likely to proactively implement interventions, such as those based on positive organizational scholarship (see Chapter 12 by Gretchen M. Spreitzer, Charlotte Fritz, and Chak Fu Lam) or even napping, the benefits of which have long been apparent both from empirical research (Taub, Tanguay, & Clarkson, 1976) and from those on the front lines of leadership: As Robert Sutton (2012) notes in his widely read book *Good Boss, Bad Boss*, when Sir Peter Parker, a former chief executive with British Rail, was asked for management advice, he would respond: take an afternoon nap!

To conclude, our hope is that this book will capture the current state of the literature on work and sleep, and help bring that knowledge back into management education. We also look forward to this book serving as a launch point for more research on this issue of vital organizational and social importance, and to seeing

the results of these endeavors find their way into organizations, thereby enhancing management practice and employee well-being and performance.

NOTES

1. Exceptions would include topics such as the study of leadership.
2. Information accessed on May 17, 2015.

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