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Current Opinion in Psychology

Review

Sleep and deception

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Abstract

Unhealthy sleep is a modern epidemic, and recent research has linked it to unethical behaviors like deception. Yet, scholars are also starting to examine factors that could curtail unhealthy sleep and its consequences. The current paper reviews evidence that indirectly implies or directly documents a relationship between unhealthy sleep and deception, detailing critical mediators and moderators. It concludes with a discussion of the many intriguing research avenues arising from this nascent literature, each with eminent relevance in a sleep-deprived world.

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Current Opinion in Psychology 2022, **47**:101379

This review comes from a themed issue on **Honesty and Deception**

Edited by **Maurice E. Schweitzer** and **Emma Levine**

For a complete overview see the Issue and the Editorial

Available online 2 June 2022

https://doi.org/10.1016/j.copsyc.2022.101379

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Keywords

Sleep, Self-control, Depletion, Deception, Unethical behavior.

Unhealthy sleep, defined as insufficient sleep quantity and/or poor sleep quality [1], is a modern health epidemic [2]. Within the U.S., 35% of adults sleep less than 7 h per night (the recommended minimum [3]), and 50% regularly feel sleepy [4]. Similar statistics have emerged over time [5] and around the world [6], particularly during COVID-19 [7].

In recognition of these trends, scholars in fields from psychology to management and medicine have identified many consequences of unhealthy sleep for health, cognition, affect, motivation, and behavior [8,9]. For example, unhealthy sleep can lead to illness [3], inattention [10], depression [11], withdrawal [8], and impulsivity [12]. Put simply, unhealthy sleep appears to impair many (though not all; [13]) of the abilities people need to function at home or at work.

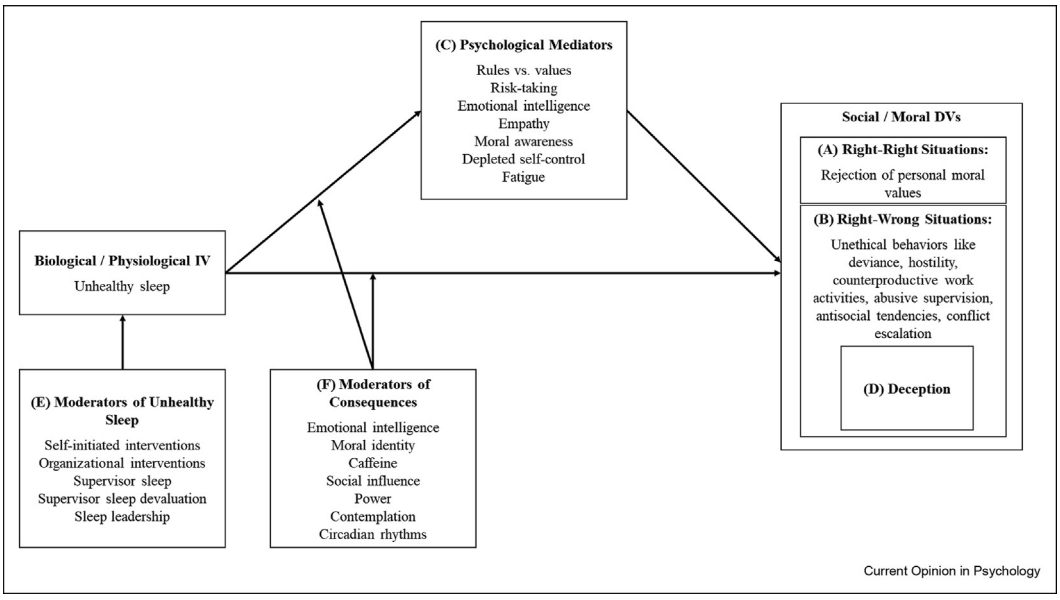
Recently, scholars have shown an interest in the relationship between unhealthy sleep and unethical behaviors like deception [14]. Unethical behaviors matter for many reasons including their economic costs (e.g., $20–$50 billion due to U.S. employee theft [15]), and deception represents a common unethical behavior as well as a component of other unethical behaviors like cheating [16]. Consistent with both the broader sleep literature and the biopsychosocial model of health [17]—the latter of which identifies interrelationships among physiological, psychological, and social factors—much of the research on sleep and unethical behavior shows that the physiological impact of unhealthy sleep prompts psychological states like depleted self-control, which lead to socially disapproved behaviors like deception. However, research has also begun to examine interventions that could curtail unhealthy sleep or moderate its consequences.

The current paper selectively reviews relatively recent research from psychology, management, and allied fields that illuminate the relationships between sleep and unethical behaviors like deception. Since the literature is growing and emergent, however, it also includes research on conceptually related dependent variables (e.g., choices in moral dilemmas). Guided by the literature and biopsychosocial model, Figure 1 sketches the theoretical relationships among the variables covered here, noting that empirical research has not yet examined each individual relationship in the figure. The paper concludes with some intriguing directions for future research.

Sleep

Sleep is a period of temporary unconsciousness characterized by intense physiological activity that restores a wide variety of physical and cognitive functions [1]. Critically, healthy sleep is integral to the functioning of the prefrontal cortex, and many of the psychological, social, and behavioral consequences of unhealthy sleep trace to its physiological effects on that brain region [18]. Although research has documented numerous sleep-related impairments (e.g., insomnia, restless leg syndrome), psychology-based sleep research generally summarizes such impairments into the categories of insufficient sleep quantity and poor sleep quality, which represent parallel and additive contributors to unhealthy sleep [1], chronic or temporary [19].

Figure 1



Theoretical model of constructs in the current paper.

Unhealthy sleep and deception-related outcomes

Before describing the relationship between sleep and deception, I first review research suggesting that unhealthy sleep leads people facing moral dilemmas to reject their own values (Figure 1, box A). To the extent that people value honesty, this suggests that unhealthy sleep could elicit deception.

Moral dilemmas

A variety of papers have explored the relationship between sleep deprivation (low quantity) and choices between conflicting moral values (e.g., utilitarianism vs. deontology). Much of this research distinguishes between "personal" (emotionally intense and involving) vs. "impersonal" (emotionally neutral and distant) moral dilemmas [20]. Although moral dilemmas differ from deception in that both alternatives involve a moral value (i.e., they are "right—right" situations), such research nevertheless highlights sleepy individuals' tendency to reject their preferred value.

An initial study showed that protracted sleep deprivation makes personal moral dilemmas more difficult (higher response latencies) and leads people to reject the value they typically endorse [20,21]. Conversely, less severe sleep restriction or fatigue makes *impersonal* moral dilemmas *easier* [22]. In both cases, the mechanism appears to be an increased reliance on simple moral rules rather than complex moral values [21,23], which leads individuals—especially those who typically rely on higher-order moral reasoning—to abandon their values [20]. In general, this research suggests that sleepy individuals struggle with tough moral dilemmas and may make decisions less consistent with their own values [9,24,25].

Unethical behaviors

Unhealthy sleep also encourages unethical behaviors that, like deception, involve the rejection of a moral value in favor of an impulse or self-interested outcome (i.e., selecting the "wrong" in a "right-wrong" situation; Figure 1, box B). For example, low sleep quantity heightens workplace deviance and induces hostility [26] as well as counterproductive, unethical work activities [8,27] like cyber incivility [28] or cyberloafing [29]. Additionally, supervisors' sleep-induced hostility may manifest as abusive supervision [30,31]. Finally, unhealthy sleep can contribute to antisocial tendencies [32] and conflict escalation [33,34].

Unhealthy sleep and deception

A variety of factors other than unhealthy sleep are known to elicit deception. A growing body of research suggests that unhealthy sleep can prompt these known antecedents of deception (Figure 1, box C), as well as deception itself (box D).

Antecedents of deception

Unethical behavior is risky given its potential consequences [35], and moderate sleepiness increases risk-taking [36]. Additionally, avoiding deception requires

both emotional intelligence [37] and empathy [38] to understand its impact on others, but unhealthy sleep impairs both [39,40]. Finally, ethical behavior requires at least an implicit awareness that a situation has moral implications (i.e., moral awareness [41]), but sleep deprivation impairs both prospective [42] and current moral awareness [19]. For example, one study documented fewer Google searches for moral content after the sleep-depriving change to daylight saving time [19]. In sum, unhealthy sleep influences several antecedents of deception, implying that it should elicit deception indirectly, through these mediators.

The bulk of the literature relevant to sleep and deception, however, focuses on another set of interrelated antecedents of deception: depleted self-control and fatigue. Studies outside the sleep domain show that people with temporarily depleted self-control and/or heightened fatigue engage in elevated deception [[26,41,43–45]; but see Ref. [46]]. For example, experimental depletion manipulations (e.g., writing a paragraph without A's or N's) elicit heightened deception in the matrix task [41]. Similarly, in a field study, a demanding exam led Hungarian school children to deceive on a subsequent task to earn a prize [43]. Likewise, emotional fatigue elicits heightened unethical behavior among salespeople [47], and evening fatigue may heighten everyone's risk of deception late in the day [48]. These studies are relevant because unhealthy sleep can deplete self-control and elicit fatigue [1,18,28,47,48], and studies documenting a direct effect of sleep on deception often examine the mediating role of these interrelated variables, as described next.

Deception itself

Barnes and colleagues were among the first to document a direct effect of sleep on deception [49]. Three multimethod studies showed that unhealthy sleep leads to deception and other unethical behaviors, mediated by fatigue—both self- and superior-rated, and both between- and within-person. Similarly, Welsh and colleagues [50,51] documented direct effects of experimentally manipulated sleep deprivation on lying in the deception game, mediated by depleted self-control. Finally, unhealthy sleep led to lax attitudes toward plagiarism and academic dishonesty among Korean university students, with depletion as the theorized mediator (but with mixed empirical support) [44].

Other studies that do not measure self-control or depletion nevertheless provide compelling evidence of a direct relationship between sleep and deception. For example, a careful experimental study showed that 5–6 h of sleep restriction for one week heightens dishonesty in the dice and matrix tasks [14]. Additionally, employees who observe their supervisors devaluing sleep model this behavior by sleeping less well themselves, which then leads them to display more deception-related behaviors [52]. Collectively, these and the studies in the previous section build a compelling case that unhealthy sleep prompts deception, at least partially through the interrelated mediators of depleted self-control and fatigue.

Interventions and moderators

Importantly, research has also begun to document interventions that either moderate unhealthy sleep (Figure 1, box E) or sever the links between sleep and deception (box F).

Improving sleep health

Research has identified several self-initiated interventions that may help individuals suffering from unhealthy sleep rectify the situation (e.g., mindfulness [53], physical exercise [31], cognitive-behavioral therapy) [54]. Other research has highlighted ways that organizations and their leaders might mitigate unhealthy employee sleep. For example, a narrative review of organizational interventions concluded that educational programs focusing on sleep hygiene or fatigue management, naps, physical health interventions, and modifications of workplace environmental factors all hold promise for improving employee sleep [55]. However, the review characterized the findings as weak and fragmentary, identifying a "pressing need for additional research" (p. 653), with experimental studies of social support being a key priority.

Some of the work already mentioned suggests that interventions involving supervisors' social support may be particularly fruitful. For example, since poor supervisor sleep results in poor employee sleep [31], simply targeting supervisors' own sleep health may help them support employees' sleep health. Similarly, since leader sleep devaluation results in unhealthy employee sleep [52], training leaders to avoid statements that devalue sleep should support employee sleep health. Other papers have investigated these ideas more directly by showing that "sleep leadership"—supervisory behaviors that encourage and enable healthier employee sleep—improves employee sleep health and its consequences [56,57]. For example, Gunia and colleagues [57] showed that strong sleep leadership at an initial time point improved Army soldiers' sleep and self-regulatory resources several months later, with direct implications for deception [37]. Collectively, these studies suggest that organizations and their leaders can rectify unhealthy sleep, with benefits for consequences like deception.

Moderators

Research has also documented several individual or situational factors that may (in addition to their potential main effects on deception) moderate the direct or indirect links between unhealthy sleep and deception. For example, emotionally intelligent individuals are less likely to abandon personal moral principles following sleep deprivation [20] and may thus be better equipped to avoid deception following sleep loss [37]. Likewise, individuals high in moral identity are less likely to deceive following depletion [41], perhaps because they have chronically higher moral awareness [19].

Other papers demonstrate moderation of self-control as a mediator of the unhealthy sleep–deception relationship. Welsh and colleagues [50] showed that caffeine suppresses the influence of sleep deprivation on depletion and deception, whereas others' encouragement to deceive amplifies these relationships. The latter finding is consistent with other work showing that social influence can amplify or suppress deception depending on its content [58], and that sleep-deprived individuals are particularly susceptible to others' advice [59]. In another paper, Welsh and colleagues [51] argued that self-control consists not just of resources but also of motivation and effort. Operationalizing self-control motivation as power and self-control effort as contemplation, they showed that both power and contemplation moderate the mediated relationship between sleep deprivation, self-control resources, and deception (the contemplation effect is also consistent with [58]).

Finally, as noted, people may be more deceptive in the evening than in the morning due to fatigue [48]. However, this effect applies more readily to "morning people" than "evening people," as the latter actually feel energetic in the evening [60]. This finding highlights the important role of individual differences in circadian rhythms, which could exacerbate or dampen the effects of unhealthy sleep on deception depending on time-of-day (also see Ref. [61]). Collectively, these studies suggest that both individual and situational factors can temper the links between sleep and deception.

Future research and conclusion

The growing yet incipient literature on sleep and deception highlights many intriguing avenues for future research. First, since much of the literature focuses on the adverse consequences of unhealthy sleep, further research on its potential *benefits* would help. For example, does unhealthy sleep prompt socially sanctioned, prosocial forms of deception (e.g., white lies [62]), or does its depletion of self-control reduce the desire to benefit others by lying prosocially?[1] Similarly, an emphasis on the potentially salutary effects of *healthy* sleep might prove interesting. Building from the finding that healthy sleep elicits organizational citizenship behaviors [63], for example, such research could explore a variety of positive moral correlates of healthy sleep (e.g., honesty, fairness, justice).

Research could also unpack some important questions about the mediators and moderators of the sleep–deception relationship. In terms of mediators, for instance, unhealthy sleep tends to heighten creativity [64], which may prompt deception [65]. By linking these separate findings, research might document creativity as another important mediator of the sleep–deception relationship. Likewise, in terms of moderators, moderate levels of unhealthy sleep may elicit deception through heightened risk-taking, but *highly* sleepy individuals tend to take *fewer* risks due to lethargy [36]. This raises the possibility that the sleep–deception relationship might show some curvilinearity. Conversely, naps have shown some promise in reducing moderate daytime sleepiness [66]. Could naps move individuals far enough down the sleepiness curve to counteract deception?

Finally, research could usefully unpack some societal implications of the sleep–deception relationship. For example, since unhealthy sleep heightens people's intentions to start a business (partially through increased risk-taking) [13], do early-stage entrepreneurs face an elevated risk of deception (all else equal)? What about the members of notoriously sleep-deprived occupational groups (e.g., investment bankers, doctors, shift workers)? Alternatively, do the moral imperatives of these jobs (e.g., "do no harm" among doctors) or even the proclivity to consume caffeine [50] counteract such temptations? Finally, as society experiences increasingly unhealthy sleep, is our collective moral compass wavering?

In sum, and consistent with the biopsychosocial model of health [17], research has now amassed compelling evidence that unhealthy sleep elicits psychological states conducive to deception along with deception itself. More recently, research has started to document interventions that can counteract unhealthy sleep or its downstream effects on deception. Further research into these issues presents many opportunities for theoretical development and practical impact in a sleep-deprived world.

Credit author statement

This paper is sole-authored by Brian C. Gunia. The sole author is responsible for all stages of the research process and all of the paper's contents.

Conflict of interest statement

Nothing declared.

[1] My thanks to Guest Editor Maurice Schweitzer for raising the latter possibility.

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