RESEARCH

Sleep and Leadership in a Military Context

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ABSTRACT

Sleep can have a profound impact on leadership and overall mission effectiveness. This narrative review summarizes literature related to sleep and leadership, and demonstrates the importance of both leader and subordinate sleep. Evidence is provided for the general lack of sleep among military members, further demonstrating the relevance of this topic. Practical tools are then provided that may aid leaders in improving the sleep and effectiveness of their respective organizations.

Keywords: Sleep, Fatigue, Leadership

Introduction

In a recent article in *Sleep Advances*, we presented findings from a 7-year retrospective analysis where we recorded the sleep and mood of more than 1000 U.S. Navy sailors aboard eight surface ships (McClernon et al., 2024). We found that sailors who reported worse mood slept less, had worse sleep quality, and had a higher incidence of split sleep (i.e., naps). We found numerous other occupational and lifestyle variables that contributed to sleep and mood outcomes. In the Discussion of that paper, we briefly discussed the impact that poor sleep could also have on leadership, chain of command, and ultimately mission effectiveness; but that study did not directly address these topics. The present narrative review expands on the relationship between sleep and leadership in a military context and then provides suggestions on how to improve military effectiveness.

Sleep and Leadership

Numerous studies have addressed the effects that sleep can have on leader-follower relationships. Guarana and Barnes (2017) conducted a study on 123 leader-follower dyads in a wide range of industries where the follower was a new hire

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(i.e., the first 3 days at a new job). Participants were asked to report how much sleep they received prior to a survey assessing the leader-follower working relationship, leader-and-follower hostility, and other demographic and occupational variables (age, gender, experience, etc.). They found that sleep duration did not predict self-evaluations of leader-follower working relationship quality, but sleep did relate to the other coworker's perceptions of their working relationship. More specifically, if a leader slept less, then the subordinate's appraisal of their working relationship was less favorable; likewise, if a subordinate slept less, then their superior rated their working relationship less favorably. Further analyses determined that this relationship between sleep and working relationships was mediated by hostility – if a leader/follower slept less, then they were viewed by their coworker as more hostile, and this hostility negatively affected their working relationship.

To test how pervasive and long-lasting the effects of sleep are on workplace relationships, Guarana and Barnes (2017) conducted a second study on 40 leaders and 120 newly hired subordinates in a large legal service firm over a yearlong period. Every 15 days, the participants were asked to provide their sleep duration over the preceding 15-day period, and then asked questions pertaining to workplace relationships and hostility. Similar to their first study, they found that leader/follower sleep positively correlated with coworker perceptions of the workplace relationship, and this relationship was mediated by hostility. However, they found that after these initial perceptions were formed (first 15 days), they were maintained throughout the 12-month period regardless of sleep duration – sleep was not a predictor of workplace relations later in their tenure together. Other research has also shown that leader-follow relationships are heavily influenced by early social interactions in working relationships (Graen & Scandura, 1987; Nahrgang et al., 2009).

There are existing psychology constructs that may explain these results. First, these results are directly related to attribution theory which posits that individuals interpret others' shortcomings as individual flaws (e.g., "That person is mean!"), while disregarding external influences (in this case sleep), and people bias their own personal affect to external influences (e.g., "Well, I did not sleep well last night"). The overemphasis on interactions early in a relationship is consistent with the psychological concepts of anchoring bias or first impression bias. Initial social interactions and the resulting opinions are weighted disproportionately, and these opinions are difficult to change. This is especially important in a military context when the very first interactions military members have (basic military training) are not flattering for either party. Arguably, most social interactions occurring early in the tenure of a military assignment (or any workplace environment) can consist of uneasiness, nervousness, and poor sleep, negatively influencing future working relationships.

Other research on sleep and leadership indicates that leaders who were sleep-deprived were perceived by their coworkers as less charismatic and less inspirational (Barnes et al., 2016; Johnson, 2009). Sleep-deprived individuals are also unable or unwilling to notice the negative side effects of their poor sleep (Van Dongen et al., 2003) and react more emotionally, especially with negative emotions (Gailliot et al., 2006; Gujar et al., 2011; Muraven & Baumeister, 2000). Compounding this relationship, individuals are typically unaware of or underestimate the negative effects poor sleep can have on their social interactions (Banks & Dinges, 2007).

The trends are similar in a military context. Olsen et al. (2016) asked 64 cadets at the Royal Norwegian Naval Academy to participate in simulated combat exercises in a naval navigation simulator. Sixteen of the cadets were selected as leaders for multiple simulation trials. Using a repeated measures design, the assigned leaders received either normal unrestricted sleep or limited sleep (<3 hours per day) in the 5 days preceding the simulator trials. Video recordings of the leaders were assessed for leadership characteristics by expert raters

who were blinded to the condition. Results indicated that sleep-deprived leaders exhibited lower ratings of both transformational and transactional leadership (both positive styles of leadership), and they exhibited higher ratings of passive-avoidant leadership (a negative style of leadership).

Sleep in the Military

The relationship between sleep and leadership is especially disconcerting given the prevalence of poor sleep observed in military populations. Matsangas and Shattuck (2020) collected sleep data from 944 U.S. Navy sailors, and using a standardized subjective sleep instrument (Pittsburgh Sleep Quality Index, PSQI) they found that more than 80% of the population was classified as "poor sleepers." Sailors in this study averaged 6.60 hours of daily sleep – below the 7 hours of sleep per day recommended to promote optimal health in adults (Watson et al., 2015) – and 86.9% of the participants took naps. Another issue that further compounds the negative effects of poor sleep in a military context is that many active-duty service members are young adults and therefore require 9 or more hours of sleep per night (Watson et al., 2015). In general, research shows that more than half of military members do not get at least 7 hours of sleep per night (McDonald et al., 2019; Mysliwiec et al., 2013; Seelig et al., 2016).

Poor sleep is not limited to an operational context, and is also prevalent in training environments. A study of soldiers attending the Noncommissioned Officer Academy and the Warrant Officer Candidate School reported that the participants slept, on average, 5.8 hours per night (Killgore et al., 2008). A study of 392 U.S. Army basic combat trainees also found that participants slept less than 6 hours a night (Miller et al., 2012). A longitudinal study at the U.S. Military Academy (USMA) studied a single cohort of cadets during their time as students from 2004 to 2007 (Miller et al., 2010). This population of college-aged participants slept less than 5.5 hours on school nights, with variations in sleep attributed to academic year, season, sex, and day of the week. USMA cadets also received the least nighttime sleep during their first (freshman) year – a formative time in leader-follow relationships – when females and males averaged 5.4 hours and 5.1 hours of sleep per night, respectively.

In an ongoing study by the author investigating the effects that sleep has on marksmanship performance, the trends are the same. This exploratory pilot study on members of the Air Force Academy's Rifle Team during the 2023/2024 NCAA season (9 months) shows that cadets averaged less than 7 hours of daily sleep and received less than 6 hours of daily sleep on 25% of the 213 days observed. This study also revealed a difference in daily sleep when comparing the 2 days leading up to a rifle competition, and the 2 days following competition, 6.3 and 7.0 hours, respectively. This may be attributed to the stress of an impending competition, competing military and academic responsibilities in the days before a meet, or the travel associated with away meets. This sleep debt can have an impact on military effectiveness as observed in the cadets' shooting performance where the average sleep duration in the 2 days prior to a meet was correlated with the average shooting performance at that meet, $r(79) = 0.47$, $p < 0.001$. More data and analysis in addition to a larger study with more participants are needed.

Discussion

This narrative review highlights the impact that sleep can have on leader-follower relations. But what do these findings mean for leadership in the military? What leverage is available to leaders to affect change? The most glaring impedance to proper sleep in the military is a culture that embraces, if not applauds, poor sleep. Late nights of work, copious consumption of caffeine, and tired eyes have historically been the hallmarks of a hard-working officer. However, combined with the findings that sleep-deprived leaders are unaware of their own shortcomings to include hostility

(Barnes et al., 2016), it is likely that tired leaders are less effective and unaware of this fact.[1]

Our Naval Postgraduate School Crew Endurance research team had a recent engagement with a Navy Admiral that highlighted the importance of culture change. This intellectual, insightful (and rested) leader was well-read in sleep literature, and he decided to do something about his own sleep health as a model for his subordinates. He adjusted his schedule around his circadian and sleep cycle. His staff knows that social engagements, especially those involving alcohol (a known hindrance to proper sleep), must finish at a reasonable hour. Dinners must begin early in the evening to prevent late consumption of food (another hinderance). His home sleep environment is modeled after the best sleep guidance: no electronic devices, no food, limited natural light, cool temperature, etc. (see Walker, 2017 for more). His governing philosophy is that proper sleep and all of the benefits that take place during a proper night of rest (again, see Walker, 2017) are more beneficial than the additional time spent working. It is likely that he is a better leader because of it.

These suggested changes in culture sound simple in an uncontested environment. However, combat presents many challenges to sleep, and our enemies do not wait for us to be well rested. Even in a high operational tempo environment, strategies can be implemented that have an empirical basis. After numerous complaints from Navy sailors, the Crew Endurance team investigated an alternative approach to revolving watchstanding schedules. The previous shift schedules had sailors working at a different time each day, never allowing their body to maintain proper circadian entrainment, and thus resulting in poor sleep. After collecting data and minimizing fatigue with modeling tools, they developed a novel, circadian-based watchstanding schedule that allowed sailors to sleep at the same time each day with the same manning. These data-driven watch schedules are still in use today. Even with these successes, the military still falls short in minimizing fatigue. One military context that likely presents the most control of daily schedules is a training environment, and as shown above, it is in these controlled environments that our military members still experience poor sleep.

Changes can be made to training environments that are proven to improve numerous metrics of readiness. In a study at Navy Basic Training, the sleep schedule of trainees was adjusted to increase the allotted sleep time from 6 to 8 hours a night. As a result of this single change, test scores improved, attrition was drastically decreased, and illnesses among the trainees were significantly decreased (Andrews, 2004; Miller et al., 2004). Most leaders would agree that a reduction in daily productivity by 2 hours for these dramatic improvements in overall organizational effectiveness is good value and good leadership.

As stated, research also shows that working relationships are formed and hardened in the early days of a relationship. Given the difficulties associated with reassignments in the military to include often crossing numerous time zones and increasing fatigue, these relationships are more likely to get off on the wrong foot in a military setting. Policy that allows for smooth transitions and circadian alignment could have long-term benefits in the form of better leadership, higher retention rates, and overall better combat effectiveness.

Training on proper sleep hygiene is another strategy for combating sleep and, thus, improving leadership in the military. A study investigating the efficacy of sleep training provided a 1-hour sleep training course to 39 U.S.

1 There is a population of military members that have either diagnosed or undiagnosed sleep disorders, and these comments are only implied to refer to healthy individuals who are not receiving proper sleep due to self-imposed or external demands.

Army leaders while another 37 leaders did not receive the training (Adler et al., 2021). The training expanded on the following five leader behaviors that can improve a unit's sleep outcomes:

1. Set conditions for adequate sleep through addressing work stress and creating a good physical sleeping environment in terms of light, noise, and temperature.
2. Lead by example, such as demonstrating sleep discipline, maintaining a reasonable work-rest schedule, and not sending unnecessary work emails and texts at night.
3. Educate soldiers about the role of caffeine, alcohol, and medications in sleep health.
4. Encourage soldiers to take responsibility for their sleep, be aware of signs of insufficient sleep in unit members, and follow effective sleep habits.
5. Prioritize and plan for sleep during missions to allow for sleep extension, targeted napping, and adequate recovery following mission-related periods of restricted sleep.

The leaders that received the training reported fewer of their own sleep problems, and 88.2% reported that "The training will help me as a leader" (Adler et al., 2021, p. 27). Subordinates assigned to the leaders enrolled in the study (N = 448) were given questionnaires before and after their leader's training. Members assigned to leaders that received the training rated their leader more positively, and these subordinates also reported more sleep duration following their leader's training.

Conclusion

Sleep deprivation is commonplace in the military, and it can have a negative impact on leadership. While this review presents numerous findings that identify the relationship between sleep and leadership, there is still a lot we do not know. More research is needed that directly assesses the role that sleep has on military leadership and readiness, followed by guiding principles that leaders can follow to enhance military effectiveness. Until these critical gaps are addressed, as mentioned in the original article that was the motivation for this review, sleepy and grumpy will continue to go hand in hand for our military members.

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