



NIH Public Access

Author Manuscript

Psychosom Med. Author manuscript; available in PMC 2010 July 14.

Published in final edited form as:

Psychosom Med. 2010 July ; 72(6): 578–586. doi:10.1097/PSY.0b013e3181de7ff8.

It's More than Sex: Exploring the Dyadic Nature of Sleep and Implications for Health

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Abstract

Sleep is a critical health behavior and one that is typically shared between husbands and wives or romantic partners. However, the science of sleep has traditionally conceptualized and evaluated sleep at the level of the individual. Considering the social context of sleep represents a significant shift in sleep research and also offers a critical opportunity for investigating sleep as a novel pathway linking close relationships with health. The purpose of this review is to integrate research that focuses on how sleep affects or is affected by close relationship functioning and to provide a heuristic framework for understanding the interface between close relationships, sleep, and health. Exploring the links between close relationships and sleep may contribute to our understanding of why some relationships confer health benefits, whereas others confer health risks.

Keywords

close relationships; marriage; marital quality; sleep; sleep disorders; health

INTRODUCTION

Commenting on the elusive nature of sleep in our increasingly sleep-deprived society, journalist Margaret Carlson stated that “sleep is the new sex” (1). If sleep is superseding sex in terms of couples’ priorities for the bedtime, then considering sleep in the couple context would seem a worthwhile area of scientific inquiry. To date, however, the science of sleep has tended to view sleep as an entirely individual phenomenon, despite the fact that the majority of adults sleep with a spouse or partner (2). Considering the social context of sleep represents an important shift in traditional sleep research and opens up a critical opportunity for investigating sleep as a novel pathway that may contribute to the health effects of close relationships (3).

The purpose of this topical review is three-fold: 1) to provide a rationale for considering sleep in the context of couples’ health and functioning; 2) to provide a broad overview of the existing literature pertaining to couples and sleep; and 3) to discuss a conceptual framework that seeks to integrate research from varied perspectives in order to understand the interface between relationships, sleep, and health. Given that comprehensive reviews on couples and health (4) and couples and sleep (3) have previously been published, rather than being exhaustive, the current focus is on synthesizing what is currently known, providing more recent examples of research that was not included in previous reviews, and presenting a heuristic framework to guide future research.

Couples and Health

Socially connected people live longer, healthier, and happier lives than their socially isolated counterparts (5,6). Given that marriage or marriage-like unions are the primary attachment relationships for most adults, a great deal of research has focused on the mental and physical health benefits of marital relationships specifically (7). Consistent with distinctions made in the broader social support literature between structural (the types, quantity, and level of integration of social contacts) versus functional (the quality or function of support provided) aspects of support (8), research on marriage and health has moved beyond structural distinctions that focus on health disparities based on marital status to an increasing emphasis on the degree to which qualitative dimensions of close relationships or the overall relationship functioning may be implicated in health and well-being (9–12). Marital or relationship functioning encompasses both the individual's global assessment of the quality of the relationship and specific relationship domains (such as satisfaction, happiness, conflict, intimacy) as well as specific interpersonal processes that occur within marital interactions (13). In their review of the literature on marital functioning and health, Kiecolt-Glaser and Newton (4) concluded that, although a high functioning marriage may confer health benefits, a low-functioning marriage may be a potent risk factor for mental and physical health morbidities. Despite the collective evidence implicating marital functioning in health, we still lack a thorough understanding of how some relationships may promote health whereas others may confer risk.

Sleep and Health

A highly consistent body of research (14–17) suggested that various dimensions of sleep, including subjective sleep quality, continuity, duration, architecture, and specific sleep disorders, such as insomnia and obstructive sleep apnea (OSA), are critically implicated in diverse aspects of health, well-being, and functioning. Buysse (18) presented a review of sleep/ wake measurements techniques and terms. The close connection between sleep disturbance and psychiatric disorders has long been recognized (19,20). For instance, insomnia is not only a correlate of virtually all psychiatric disorders but it has also been shown to presage the development of specific disorders, most notably, depression and substance use disorders (21– 25). At a functional level, a number of studies (26,27) have also shown that chronic poor sleep quality is strongly associated with diminished quality of life with reductions similar in magnitude to that seen with chronic conditions, such as congestive heart failure and major depressive disorder (27). Compared with individuals without sleep/wake problems, individuals with insomnia report greater daytime fatigue, poorer mood, more anxiety or stress, less vigor, difficulty coping with life demands, less ability to complete tasks, and role impairments across a broad set of domains, such as job performance, social life, and family life (28,29).

More recently, a burgeoning evidence base from both epidemiologic and experimental studies has documented profound effects of sleep on physiology and physical health morbidities. For instance, several large-scale epidemiologic investigations have demonstrated significant associations between self-reported sleep duration and cardiovascular health. Specifically, both habitually short sleep durations (typically <6 hours) and long sleep durations (≥ 9 hours) are associated with increased risk for hypertension, obesity, metabolic risk factors, coronary heart disease, and mortality (30–34). A growing body of evidence (35–37) further suggested that poor self-reported sleep quality, sleep fragmentation (interruptions in sleep), insomnia symptoms (difficulty falling asleep, maintaining sleep, or nonrestorative sleep), and sleep architecture (percentage of slow-wave sleep) are associated with cardiometabolic outcomes. Experimental studies (38,39) of sleep restriction in healthy adults provided further mechanistic evidence linking sleep restriction with neurohormonal and cardiometabolic changes relevant for health. Taken together, these findings implicate sleep as a critical health

behavior that may be linked to diverse morbidities via physiological and psychological mechanisms and one that is typically shared within close relationships.

Couples and Sleep

Conceptually, sleep can be considered as a fundamental attachment behavior, in that it is a behavioral state that requires a relative cessation of awareness and down-regulation of vigilance (40)—processes that are optimized when one feels a sense of physical and emotional safety and security. Throughout history, humans have derived physical and emotional safety and security, particularly during times of real or imagined threat, through their connections with close others. Mapping onto research suggesting stronger effects of relationship quality on health outcomes for women than for men (4), women's sleep may also be particularly responsive to qualitative aspects of the close social environment, given women's traditional reliance on the larger, more dominant males to ward off potential predators in our evolutionary past. Consistent with this premise, women are also at greater risk for developing transient and chronic sleep disturbances, including insomnia across the life span (41), a finding that may be attributable, in part, to women's heightened physiological and emotional sensitivity to relational stressors (42). As articulated by Venn and colleagues (43), "Far from being a realm where activities cease, the night can be seen as another place, both spatial and temporal, where gender differences are expressed and revealed." Thus, for humans, sleep has evolved not only as a biological necessity but one that is embedded in a social context.

Although sleep has traditionally been evaluated at the level of the individual, clinically, there has been limited recognition of the dyadic nature of sleep with respect to the diagnosis and management of certain sleep disorders. In particular, several studies (44,45) have examined couples in the context of OSA, which is a highly prevalent sleep disorder that is associated with obesity and cardiometabolic morbidities. OSA has been referred to as a "disease of listeners" (46), because snoring and increased arousals, cardinal symptoms of the disorder, often adversely affect the bedpartner's sleep as well as the patient's (47–49). For instance, Beninati and colleagues (50) showed that co-sleeping OSA patients and their spouses showed a reduced number of objectively determined arousals and sleep consolidation, pre to post treatment with continuous positive airway pressure (CPAP)—the treatment of choice for OSA. OSA is also associated with daytime impairments, including excessive daytime sleepiness, irritability, low energy, and depressive symptoms (51)—all of which may be detrimental for functioning within close relationships.

Spouses also play an important role in the management and treatment of OSA. For instance, recent evidence (52,53) suggested that the presence of a co-sleeping spouse (as opposed to sleeping alone) as well as lower levels of marital conflict (but not marital support) were associated with better adherence to CPAP. A randomized control trial of CPAP versus "conservative treatment" (weight loss and sleep hygiene recommendations) found that patients receiving CPAP showed improvements in a global measure of marital satisfaction and decreases in the number of marital disagreements per week (54). On the other hand, patients who reported seeking treatment for OSA in response to prompting by the spouse, rather than being self-referred, demonstrated lower adherence to CPAP in the first 3 months of treatment (55). In aggregate, these findings suggest that, in the context of a highly prevalent and debilitating sleep disorder (OSA), there may be a reciprocal relationship between relationship functioning and initiation and response to treatment. Moreover, positive and negative aspects of relationship functioning may have independent influences on disease management, with negative aspects (conflict) being particularly detrimental for CPAP adherence (52). Given the increasing recognition of the cardiometabolic consequences associated with untreated OSA, and the epidemic rates of obesity, which is a key risk factor for the disorder, conceptualizing and examining the consequences of OSA from a dyadic perspective has considerable public health implications.

Beyond OSA, less is known about how the broader range of sleep disturbances affects and are affected by couples' relationship functioning. However, sleep problems and relationship problems tend to co-occur, particularly during times of significant life events or transitions, such as adjustment to an illness, the birth of the first child, or relationship dissolution (56,57). For instance, Meijer and van den Wittenboer (58) found in a sample of 107 new parents that insomnia symptoms predicted declines in marital satisfaction after the birth of the first child. The co-occurrence of sleep and relationship problems during key life transitions may have important implications for the subsequent health trajectories of individuals as well as their families, given that family stress and chronic negative emotional environments have been shown to have diverse effects on physical and emotional well-being (59).

Cross-sectionally, global measures of marital quality have been linked with insomnia symptoms. For instance, data (60) from 405 couples enrolled in the Alameda County Study showed that spouses' report of insomnia symptoms were associated with lower levels of marital happiness, even after accounting for one's own sleep problems. Similarly, in a study (61) of midlife women drawn from the Study of Women's Health Across the Nation, higher levels of marital happiness were associated with lower rates of insomnia symptoms, even after controlling for sociodemographics, perceived mental and physical health, and overall social support. The cross-sectional nature of both of these studies precludes inferences regarding the direction of the association between marital quality and insomnia symptoms. Nevertheless, these findings are consistent with longitudinal data drawn from a sample of a national probability sample of 927 women, showing that higher marital satisfaction predicted fewer insomnia symptoms, even after controlling for baseline sleep symptoms (62).

Global assessments of marital quality, however, reveal very little about how or why some relationships may confer benefits for sleep or health, more generally, whereas others may confer greater risks. Attachment theory provides a useful heuristic for understanding the links between relationship functioning and sleep, as it is one of the most influential theoretical frameworks for characterizing close relationships and has previously been linked with a variety of stress-related health outcomes (63,64). Given that attachment is purported to be a relatively stable characteristic (65,66), it may be less likely to show reverse associations with sleep than is true for general measures of marital quality or satisfaction (i.e., sleep affecting attachment rather than vice versa).

The attachment theory posits that early interactions with caregivers (or in the case of adult relationships, the romantic partner) leads to the development of expectations concerning the degree to which the caregiver or partner will be consistently warm, nurturing, and responsive to one's needs (66–68). These expectations are thought to play a key role in regulating affect and arousal, particularly during times of real or imagined threat, as the attachment figure is, in the case of secure attachments, reliably associated with distress alleviation and pleasure induction (69).

Attachment is particularly relevant in the context of sleep across the life span. Vigilance and alertness are antithetical to the sleep state, whereas feelings of safety and security are optimal for deep, consolidated sleep—affective experiences that are derived through attachment relationships (70). However, not all attachments are secure. A number of studies in adults have shown that attachment insecurity, specifically attachment anxiety, is correlated with poorer subjective sleep quality (71,72) and less depth of sleep (as indicated by polysomnographically measured Stage 3 + 4 sleep) in adults (73). These findings attest to the importance of applying well-articulated theoretical models of relationships to understand how specific dimensions of relationship functioning relate to key health outcomes. Applying a theory-based relational framework should also guide hypotheses concerning which dimensions of sleep (e.g., architecture [sleep depth according to electroencephalographic activity]; continuity [i.e., sleep

latency, efficiency, fragmentation]; duration; and subjective quality) are most likely to be associated with the particular aspect of relational functioning and, in turn, which health outcomes may be most relevant.

The evidence suggesting that relationship quality covaries with sleep are particularly compelling, given that there is also a small but fairly consistent literature showing that there are objective “consequences” of sleeping with a bedpartner (74–77). That is, in studies that have measured objective sleep parameters (via polysomnography or actigraphy)¹ on cosleeping nights versus “sleeping-alone” nights, research has shown that participants generally sleep better when sleeping alone. For instance, Monroe (77) was the first to demonstrate an effect of sleeping with a partner versus sleeping alone on sleep architecture, showing significantly lower levels of Stage 4 sleep, and a concomitant increase in rapid eye movement (REM) sleep on nights when participants slept with their respective partners versus sleeping alone nights. Despite these changes in sleep architecture, participants reported being less satisfied with their sleep when sleeping alone. Similarly, using actigraphy methods, which provides a behavioral measure of rest-wake activity, Pankhurst and Horne (74) found a greater number of movements during the sleep period when couples were sleeping together versus when sleeping apart. However, these couples also generally reported better subjective sleep quality when sleeping with their partners as compared with sleeping alone. Moreover, a more recent study by Diamond et al. (78) found that temporary physical separations from the romantic partner (e.g., business travel) were associated with an increase in diary-reported sleep problems, whereas reunions with the partner were associated with significant reductions in sleep problems. This study further showed that attachment anxiety (in the nontraveling partner) exacerbated the increase in sleep problems during temporary separations. Taken together, the divergent findings concerning the effects of co-sleeping on sleep based on subjective versus objective sleep parameters suggest that the psychological need for closeness and security, particularly at night, trumps the equally important need for good quality sleep. Furthermore, the findings of Diamond et al. highlight the importance of contextualizing the effects of cosleeping arrangements, as the effects are likely to be moderated by the partners’ relational styles, as well as qualitative dimensions of the specific relationship.

Conceptual Model for Linking Sleep With Close Relationships and Health

There is now accumulating evidence to demonstrate that sleep disturbances have important implications for relationship functioning and that various aspects of relationship functioning are related to sleep disturbances. Implicitly or explicitly, each of the studies summarized herein and in our previous review (3) hypothesized a specific direction of the association (i.e., either sleep disturbance influencing relationship problems or relationship problems influencing sleep problems). However, with the exception of a handful of longitudinal studies (primarily treatment studies in OSA), the cross-sectional nature of the bulk of this literature precludes inferences regarding the direction of the association. It is equally plausible and even more compelling as it relates to health to consider that the association between relationship functioning and sleep may be bidirectional.

As shown in Figure 1, relationship functioning and sleep are hypothesized to be reciprocally related via their influence on shared psychological, behavioral/chronobiological, and neurobiological mechanisms. This mutually interacting system, in turn, is hypothesized to have cumulative effects on proximal physiological pathways that are directly related to health and functioning.

¹ Polysomnography, an adaptation of electroencephalography, refers to the continuous recording of changes in brain waves, muscular tone, and eye movements that can be used to characterize different neurobehavioral states in humans; e.g., wakefulness, REM, and nonREM sleep. Actigraphy is a sleep/wake measurement method that involves wearing a wrist-watchlike device that measures gross motor activity, which can be used to estimate sleep/wake patterns.

Although other systems are likely to be involved, the model focuses on the interplay between close relationship functioning and sleep, as they relate to shared pathways that have demonstrated associations with both relationship quality and sleep and that are linked with physical health morbidity and mortality. This discussion of pathways is necessarily cursory and intended to stimulate further psychosomatic research that takes a more interactive approach to considering how relationships and sleep commingle in ways that are likely to be salient for physical health.

Psychological/Cognitive Pathways

Sleep and marital problems may be both causes and consequences of psychological distress and specific psychiatric disturbances, such as depression, anxiety, and substance abuse disorders (79–82). Marital problems are a potent source of stress, which may lead to ruminative thoughts, particularly at bedtime, when one is likely to be sleeping next to the object of their animosity. Rumination and intrusive thoughts are, in turn, risk factors for insomnia (83). Conversely, a supportive marriage may serve as a powerful stress-buffer, promoting positive mood states and protecting against social isolation, all of which have been associated with sleep (84). The ritual of going to bed with a trusted other may also serve as a powerful cue, allowing one to recover from the stresses of the day and reduce psychological and physiological arousal before falling asleep.

Experimentally induced sleep deprivation is associated with increases in negative affect and irritability as well as decreases in friendliness, elation, positive mood, and empathy (85–87). In addition, Zohar et al. (88) found that sleep loss diminished positive affect in response to a goal-enhancing event as compared with conditions of more adequate sleep. Moreover, Kahn-Greene et al. (89) found that sleep-deprived individuals gave extrapunitive and blaming responses when presented with frustrating situations in the laboratory and were less likely to accept blame as a means of alleviating conflict—behaviors that have been identified among the most damaging in marriages and predictive of dissolution (90). In particular, marital research has shown that the presence of intense negative affect during the first 7 years of marriage is the strongest predictor of marital dissolution, whereas in longer-term marriages (lasting >7 years), the absence of positive affect, particularly in situations that “should” elicit positive affect, is most predictive of dissolution, perhaps as an indication of the partners’ emotional distancing and increasing loneliness within the marriage (90).

Diminished or disrupted sleep also has profound effects on cognitive performance, with particularly marked effects for tasks related to frontal lobe functioning, such as sustained attention, working memory, response inhibition, verbal fluency, and cognitive flexibility (91). These cognitive skills are critically important for problem-solving and emotion regulation (92). Within the context of marriage or close relationships, such decrements in cognitive and self-regulatory skills may manifest as an inability to regulate anger even in low-intensity disagreements and a tendency to escalate hostile interactions that are hallmarks of marital maladjustment and risk factors for dissolution (90). Thus, compromised sleep may be particularly deleterious for marital functioning by increasing negative affect, reducing positive affect, and compromising communication and self-regulatory skills that are directly related to indices of marital functioning.

Behavioral/Chronobiological Pathways

Consistent with the social control literature (93), in a high-functioning marriage, the spouse can play an important role in motivating health behaviors that promote healthy sleep and health more generally, such as maintaining a consistent sleep-wake routine, engaging in physical activity, or treating medical problems, including sleep disorders (52,94). Conversely, marital distress may contribute to unhealthy behaviors that are known to impair sleep and overall functioning, such as use of excessive alcohol or substance abuse.

In addition, spouses may have a direct effect on sleep by operating as *social zeitgebers* (i.e., “time-keepers”), which facilitate entrainment of circadian rhythms (95). Although exposure to light is the primary zeitgeber that entrains human circadian rhythms, social zeitgebers, including meal-times and prebedtime rituals (which typically occur with the spouse), have also been shown to influence circadian rhythms. The pervasive effects of spousal bereavement on the mental and physical well-being of the surviving spouse may be attributable, at least in part, to the loss of such a powerful influence on circadian entrainment (69,96). Just as the effects of social control on health behaviors have been shown to be moderated by qualitative aspects of the couples’ relationship functioning, the degree to which spousal members influence each other’s sleep-wake rhythms may also depend on the quality of the relationship. To date, however, only a handful of cross-sectional studies (97,98) have addressed this question, by examining the covariation between relationship quality and couple concordance (or discordance) in sleep-wake preferences. Overall, these studies suggested that couples who are “mismatched” in terms of circadian preferences (i.e., night owls with morning larks) reported poorer marital functioning as compared with “matched” couples. The cross-sectional nature of these studies, however, precludes inferences regarding the directionality of the relationship. It is equally plausible that, in distressed marriages, spousal members may actively change their sleep-wake rhythms as a means of avoiding the partner.

Neurobiological Pathways

The neurohormone, oxytocin (OT), is particularly compelling to consider as a potential neurobiological substrate linking close relationships with sleep and ultimately with health. OT is present in both male and female mammals and has been called the “social hormone” due to its effects on pair-bonding and other attachment-related behaviors (e.g., physical contact, sexual activity) (99–101). OT has been shown to have anxiolytic and sedating effects in animal models (102–104) and has been shown to attenuate neuroendocrine, neuroimmune, and autonomic stress responses in both human and animal models (105,106). Given OT’s location in the paraventricular nucleus of the hypothalamus, an area that is critical for regulating sleep and arousal, it may also play an important role in influencing sleep-wake behavior. Emerging evidence (107,108) has also suggested a putative etiological role of OT in the development of psychiatric disorders, including depression, anxiety, and autism spectrum disorders, all of which are characterized by sleep disturbances. However, to my knowledge, only one previous study (109) has examined the effects of OT on sleep-wake patterns in male rats, with equivocal results depending on the dose of oxytocin administered. Given compelling evidence concerning OT’s anxiolytic properties, as well as its role in promoting affiliative behaviors that are most likely to manifest within the context of close relationships, considering how OT may be directly implicated in human co-sleeping relationships remains an important area of future investigation.

Proximal Physiological Mechanisms

Poor marital functioning and sleep disturbance are (individually) associated with elevated sympathetic-adrenal medullary activity (110,111) and hypothalamic-pituitary-adrenal activity (112,113), as well as markers of systemic inflammation, such as interleukin (IL)-6 (114,115) and C-reactive protein (116,117), all of which have been implicated in the pathogenesis of chronic health problems (118,119). Given that sleep occurs in a dyadic context for most adults, an important unanswered question is whether the co-occurrence of marital distress along with sleep disturbance potentiates the risk for stress-related physiological responses and mood disturbance, which could cumulatively affect health risk. Consistent with this reasoning, Friedman and colleagues (120) found that plasma levels of IL-6 in women were predicted by both laboratory-assessed sleep efficiency and by more positive social relationships. In addition, there was a significant interaction such that women with the highest levels of IL-6 were those with poor sleep efficiency and poor relationships, suggesting synergistic effects of sleep and the social context on physiological risk markers. In a related vein, Bonnet and Arand

(121) found stronger adverse effects of arousal-provoking situations on the sleep efficiency and variability of poor sleepers than good sleepers. Taken together, these findings suggest that close relationship stressors may have particularly deleterious effects in individuals at high risk for sleep disturbance. Thus, identifying such a synergy between sleep and qualitative aspects of the most important adult relationship (i.e., marriage) may elucidate a key dynamic process in health risk trajectories. On the other hand, a high-quality relationship may buffer the adverse consequences of sleep disturbances, or conversely, maintaining healthy sleep in the context of relationship distress may mitigate the negative effects of distressed relationships.

DISCUSSION

As humans, we spend roughly one third of our lives in bed, and for many, this critical health behavior is shared with a partner. Only recently, however, has evidence emerged that specifically examines the dyadic nature of sleep and the degree to which relationships affect and are affected by sleep. The preliminary nature and limitations of the extant literature offer several important areas for future inquiry. In particular, the cross-sectional nature of the bulk of this literature precludes inferences regarding the directionality of the relationship. As well, the tendency to focus on the individual as the unit of analysis rather than the dyad precludes examination of critical questions regarding dyadic synchrony or desynchrony in sleep-wake rhythms and implications for health. The first step in evaluating such a dynamic model is to conduct longitudinal studies in couples that permit us to evaluate the degree to which sleep and relationship functioning are reciprocally related and to determine the relative strength of each direction of influence, as this will have important implications for future intervention research. Utilizing statistical models that are appropriate for modeling longitudinal data with both within- and between-couple effects are also necessary for understanding the dyadic nature of sleep and couple functioning. Finally, it is important to directly assess how sleep and relationship functioning interact with biologically plausible mechanisms that may explain the effects on physical health outcomes.

To advance this line of research, future studies are needed that utilize prospective designs and methodologies that readily permit the study of nightly sleep and daily relationship functioning in couples' naturalistic environments, such as ambulatory polysomnography or actigraphy for the measurement of sleep, and ecological momentary analysis of daily relationship processes. Actigraphy, in particular, may be especially useful for examining couples' habitual sleep patterns over extended periods of time, as it is both relatively inexpensive and non-invasive. This methodology has recently been used to examine the association between the marital stability over time and habitual sleep patterns in women for up to 35 days or the duration of one menstrual cycle (122).

Importantly, actigraphy provides a behavioral measure of rest/activity patterns and can be used to derive measures of sleep duration and sleep continuity; however, it does not measure sleep stages or the depth of sleep (typically quantified as visually scored Stage 3 + 4 sleep or delta activity utilizing quantitative electroencephalographic methods) nor does it measure sleep-disordered breathing. Thus, augmenting actigraphic methods with in-home polysomnography may be important for understanding how relationship processes and downstream biobehavioral mechanisms relate to specific sleep stages or sleep-disordered breathing. However, the decision to use actigraphy, polysomnography, or self-report methods for the assessment of sleep should be guided by the research questions, rather than a priori assumptions that one technique is necessarily superior to another. Similarly, the selection of methodologies for evaluating relationship functioning should be guided by the study's research hypotheses. For instance, the majority of the extant literature on relationships and sleep has utilized questionnaire methods, which yield important information regarding the degree to which the individual's perception of his/her relationship quality is associated with his/her sleep. However, future studies utilizing observational methods are needed to examine

whether specific behaviors within couple interactions are most relevant for sleep and health outcomes.

Finally, studies that also incorporate ambulatory measures of stress-related physiology, such as daytime and nighttime blood pressure and heart rate variability, and daily cortisol rhythms, are critical for understanding how the interface between daily relationship functioning and sleep may have downstream influences on physical health.

Evaluating sleep from a dyadic perspective also has a number of important clinical implications. Referring a sleep patient to marital or couples' therapy may be a useful adjunct treatment if relationship problems are thought to play a key role in the etiology or course of the sleep disorder. Conversely, in the context of couples therapy, assessing couples' sleep patterns and evaluating for common sleep disturbances (e.g., snoring) is relevant for identifying important sources of distress in the relationship and may also help to identify occult sleep disorders, which—when left untreated—may have significant health implications as well. More generally, recognition of the dyadic nature of sleep may have therapeutic benefits by encouraging couples to have a more open dialogue about their particular sleeping arrangements. The stigma attached to the “marital bed” may lead some couples to sleep together, even when in some cases sleeping apart may be healthier for the relationship and for both partners' sleep.

Over the past two decades, there has been a great deal of research focused on the associations between sleep and health and relationships and health; however, for the most part, these research areas have developed independent of one another. The purpose of this review was to summarize what is known about sleep in the context of couples and to provide a heuristic framework for future research aimed at understanding the links between close relationships, sleep, and health. Consistent with this framework, future interdisciplinary research that focuses on the association between sleep and health should consider the influence of the social context; similarly, research on relationships and health should consider the influence of sleep. The interdisciplinary nature of this topic is both a challenge and an opportunity for innovative research, as it represents an important shift in sleep research as well as a shift away from the traditional focus on daytime pathways that may link close relationships with health.

Considering sleep and relationship functioning as a mutually interacting system may not only provide a more ecologically valid model (and perhaps one with even greater predictive power) but may also help to uncover the role of relationships in regulating affect and arousal, with effects on health and functioning both day and night.

Glossary

OSA	obstructive sleep apnea
CPAP	continuous positive airway pressure
OT	oxytocin

Acknowledgments

Dr. Troxel is supported, in part, by an Early Career Award, Grant HL093220, from the National Heart Lung Blood Institute and Grants HL076852/HL076858.

I thank Daniel J. Buysse, MD, Brant Hasler, PhD, Kelly Glazer-Baron, PhD, Khaleelah Glover, MS, Gregory E. Miller, PhD (Associate Editor), and one anonymous reviewer for feedback on an earlier version of this manuscript. As well, I would like to acknowledge my co-authors from a previous review paper (3) (Theodore Robles, PhD, Martica Hall, PhD, and Daniel J. Buysse, MD), from whom many of these ideas were originally formulated.

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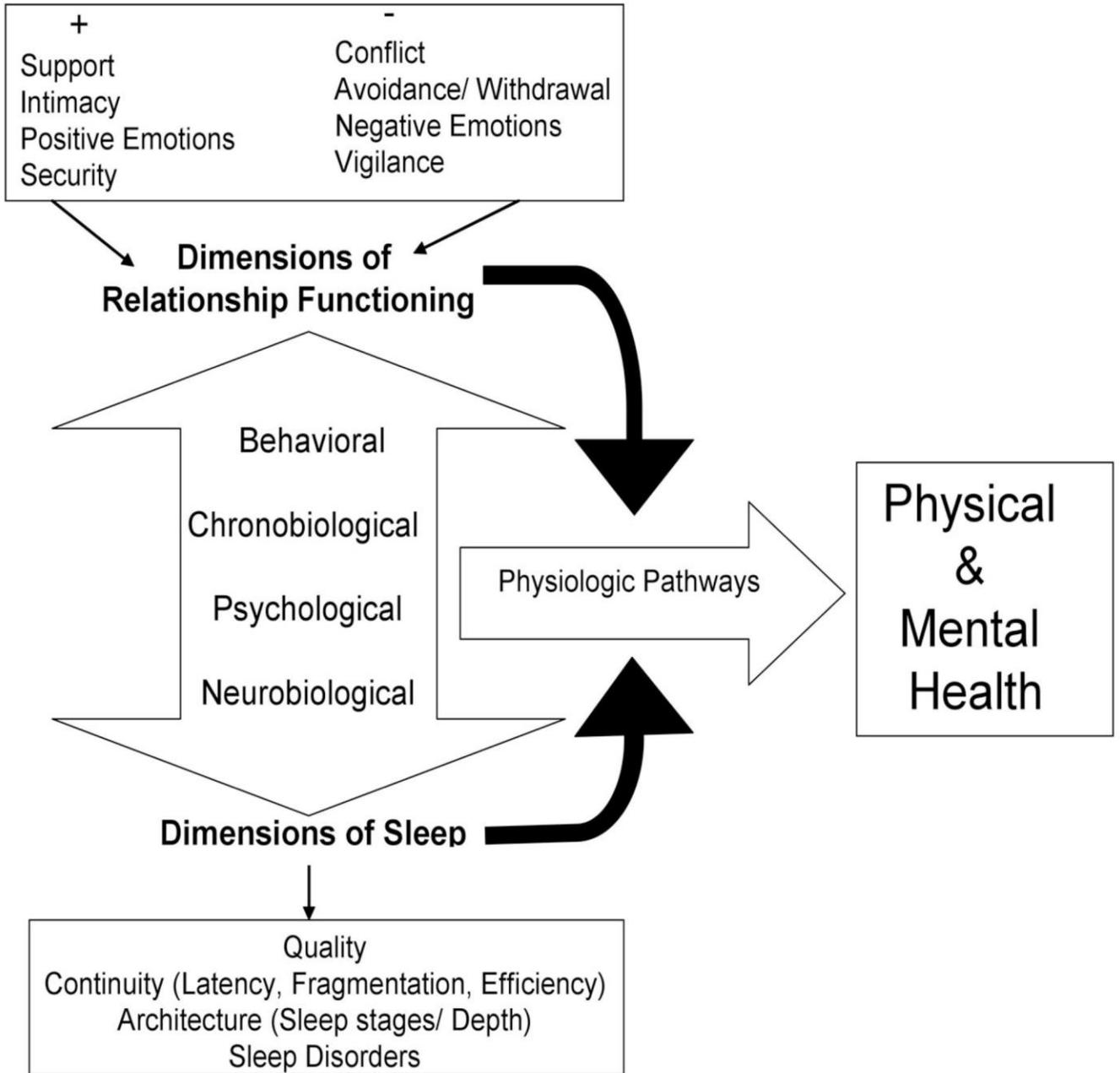


Figure 1. Dimensions of relationship functioning and dimensions of sleep.