

Spousal Touch during Sleep: Better Sleep Unless You're Anxiously Attached?

by

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ABSTRACT

Affiliative touch, such as physical affection between relationship partners, activates neural systems associated with reward, relaxation, and attachment. Co-sleeping is a common practice among romantic partners, and the social context of sleep is linked to well-being. The effect of touch during sleep, however, remains largely untested. As a first study, 210 married couples were asked how much they generally touched during sleep and how important it was for them to touch during sleep. I hypothesized that perceptions of more spousal touch during sleep, as well as greater importance placed on that touch, would be associated with better quality of sleep. Given the strong links between touch and attachment, and previous findings of poor sleep associated with attachment anxiety, these effects were expected to be greatest among spouses higher in attachment anxiety (who might benefit most from a sense of security arising from touch). Separate regression analyses were run for husbands and wives, controlling for affective symptoms of depression (which were significant predictors of poor sleep for both spouses). For both spouses, higher reports of amount and importance of touch during sleep predicted better quality of sleep. For wives, the predicted interaction was significant, but in the opposite direction: Reported amount and importance of spousal touch during sleep was positively related to sleep quality only among those with lower attachment anxiety, whereas it was unrelated among those with higher attachment anxiety. Higher attachment anxiety also was related to worse sleep among wives, but not husbands. It may be the case that wives who are lowest in attachment anxiety may feel more comfortable when being touched by their partners. As a result, they may touch more often, place more importance on touch, and be more likely to experience rewards of touch

such as better sleep quality. The findings lend support to the idea that social touch can serve a regulatory function, even during sleep.

DEDICATION

I want to thank my parents, Shahid Mahmood and Afshan Shahid, for all that they have done to get me to this point in my life. It has always been important to them that I receive the best education possible. When I was in Pakistan, my parents managed to invest in my education by enrolling me in a private school that taught me English and set me up for a successful life in the United States. Not only have they supported me financially, but they have provided a comfortable life at home and infinite encouragement to get me through the stress and long hours of my undergraduate and graduate programs. All of the hard work they have put in to provide me with these advantages has made me cherish the time

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The mind and body require a good night's sleep for normal functioning, yet sleep problems continue to manifest themselves in many people. Research suggests that many important aspects of life, such as physical health and mental health, depend on getting sufficient high-quality sleep. The importance of sleep has led many researchers to investigate different factors that may influence it. As a result, studies have found that characteristics of romantic relationships, including attachment insecurity and marital satisfaction, are related to sleep quality.

Benefits of Good Sleep

Sleep and physical health. A large body of evidence suggests that sleep influences physical health. Sleep problems increase blood pressure and over time, having high blood pressure can increase one's risk of heart attack, heart failure, and sudden cardiac death. Poor sleep quality is a contributory factor in cardiovascular disease and hypertension (Uchiyama et al., 2011; Tochikubo, Ikeda, Miyajima, & Ishii, 1996; Ogawa et al., 2003; Kato et al., 2000). Other studies show that sleep problems are associated with an increased risk of Type 2 diabetes (Kawakami, Takatsuka, & Shimizu, 2004; Mallon, Broman, & Hetta, 2005; Meisinger, Heier & Loewel, 2005). Over time, poor sleep quality and sleeplessness make the body resist insulin and increases glucose levels in the blood. This can often lead to diabetes.

Sleep and mental health. Sleep problems can have detrimental effects on mental health. For example, depression is a well-known correlate of poor sleep. Some people argue that poor sleep is a symptom of depression, while others think that poor sleep is a risk factor for developing depression. Studies have now established that the relation between depression and sleep problems is bidirectional (Katz & McHorney, 1998; Tsuno,

Besset, & Ritchie, 2005). This is also true for anxiety, which increases agitation and arousal, making it hard for a person to sleep well. Poor sleep quality and anxiety also have a bidirectional relationship (Taylor, Lichstein, Durrence, Reidel & Bush, 2005). In a cross sectional study investigating the relationship between sleep and happiness, Andrew Steptoe found that individuals who reported greater sleep quality and fewer sleep problems also reported greater well-being. Since poor sleep quality is known to affect mood, it makes sense that a person who has good quality sleep, who isn't depressed or anxious, would report higher hedonic and eudaimonic well-being.

Sleep and Close Relationships

Humans sleep best when they know that they are safe in their environment. There is a difference between taking a nap in a public place and falling asleep (deep, hours-long sleep) at home. When we go to bed at night in our homes, where we feel secure, we are not alert to our surroundings and our vigilance is reduced. However, not everyone feels this way about sleeping at home. The social environment in our home plays a big role in whether or not we feel secure falling asleep.

Most adults sleep with their romantic partners. This is one thing that makes up the social environment that we fall asleep in. The quality of the relationship has an effect on sleep. Healthy relationships promote healthy sleep, while unhealthy relationships lead to greater sleep disturbances (Troxel et al., 2007). Troxel and colleagues (2007) speculate that individuals who are in healthy relationships feel a sense of security and belonging with their partners so when they go to bed, they are not vigilant, which leads to better sleep. On the other hand, individuals who are in unhealthy relationships may feel vigilant,

hyper-aroused, or emotionally disturbed due to relationship conflicts, which would impair their sleep.

Sleep and Marital Satisfaction

Research suggests that sleep quality is linked with marital satisfaction. Strawbridge and colleagues studied the relationship between marital satisfaction and sleep problems, keeping the dyadic nature of couples' sleep arrangements in mind. They found that one's spouse's sleep problems were related to higher levels of marital dissatisfaction, even after controlling for one's own sleep problems (Strawbridge, Shema, & Roberts, 2004). Additionally, a longitudinal study, which consisted of 927 women, examined the association between sleep problems and marital harmony at baseline and then three years later. At baseline, the results showed that marital harmony was positively associated with fewer sleep problems. At the follow-up, results showed that married respondents who had harmonious marriages had significantly fewer sleep problems than married respondents who had discordant marriages (Prigerson, Maciejewski, & Rosenheck, 1999). Finally, Troxel and colleagues (2009) found that middle-aged women with better marital satisfaction have fewer sleep disturbances than women with poor marital satisfaction.

Relationships and Adult Attachment Styles

Attachment styles contribute to the health of romantic relationships. What makes a romantic relationship healthy or unhealthy can be distinguished by attachment styles. Securely attached couples who have high levels of trust, interdependence, commitment, and satisfaction with their relationships are inclined towards developing supportive and stable relationships. On the other hand, individuals who are insecurely attached are

constantly ambivalent about their romantic partners because they are insecure about the stability of their relationships. This leads to low levels of trust, interdependence, commitment, and satisfaction with their relationships. This insecure style of attachment prevents them from developing supportive and stable relationships (Simpson, 1990). Attachment anxiety is the extent to which individuals ruminate or worry about rejection and abandonment from their romantic partners. Attachment avoidance is the extent to which individuals feel uncomfortable with closeness and emotional intimacy in relationships, which makes it harder for them to trust their partners (Campbell, Simpson, Boldry, & Kashy, 2005). Individuals who are high in attachment anxiety or attachment avoidance are insecurely attached with their partners. People who are anxiously attached to their romantic partners fall in love easily, are usually subject to fear, anxiety, and loneliness, and typically have low self-esteem (Collins & Read, 1990; Feeney & Noller, 1990). Individuals who are avoidant find it difficult to fall in love, have a strong need for self-sufficiency and independence from their partners, and suppress their needs for emotional intimacy (Hazan & Shaver, 1987). Both attachment styles make an individual vulnerable to loneliness, however, anxiously attached individuals show it and avoidant individuals don't. Consequently, anxious and avoidant individuals experience a higher rate of relationship dissolution than securely attached people (Hazan & Shaver, 1987).

Sleep and Adult Attachment Styles

Since individuals who are securely attached to their partners feel a sense of security and belonging, they show reduced responses to physiological and psychological stress (Carmichael & Reis, 2005). However, individuals who are characterized by attachment anxiety are vigilant in their relationships and are unable to benefit from the

stress-alleviating aspects of social support, which makes them vulnerable to stress. Additionally, insecurely attached individuals show greater physiological stress reactions to interpersonal conflict than do securely attached individuals (Powers, Pietromonaco, Gunlicks, & Sayer, 2006). These stress related characteristics of anxiously attached people, such as vigilance, inability to benefit from stress-relieving aspects of social support from their partners, and showing greater physiological stress reactions to relationship conflict, may affect their sleep quality. According to Carmichael and Reis (2005), attachment-related concerns may surface at bedtime, preventing restful sleep. In their study, after controlling for depressed affect, they found attachment anxiety was associated with higher levels of self-reported sleep difficulties for men and women, whereas attachment avoidance was not related to sleep quality. Another study that looked at the relationship between adult attachment styles and sleep quality found that being fearful and preoccupied (similar to attachment anxiety) predicted poor overall sleep quality for those individuals in committed relationships (Scharfe & Eldredge, 2001).

Touch and Stress Reactions

Earlier in this paper, it was mentioned that social support can provide stress alleviating aspects in a relationship. There is now much research suggesting that social support buffers anxiety, depression, and psychological distress that comes from stressful life events (Cohen & Wills, 1985; Kawachi & Berkman, 2001; Schwartzer & Leppin, 1989). When facing stressful events, social support can be beneficial, as it expresses reassurance, care, and empathy (Cobb, 1976).

Nonverbal social support, such as caring physical touch (hand holding or hugging) may provide comfort and empathy in a stressful situation. Physical touch is

also associated with relaxation and reduced stress responses. Ditzen and colleagues (2007) found that physical touch from a partner reduces both the hypothalamic-pituitary-adrenal axis and autonomic nervous system responses to psychological stress in women. A similar study, which investigated the relationship between physical touch from a romantic partner and stress responses, found that compared to the control group that received no partner contact, couples who underwent the conditions of physical touch (handholding and hugging) prior to receiving laboratory stressors, demonstrated lower systolic blood pressure, lower diastolic blood pressure, and less heart rate increase when undergoing stressful tasks (Grewen, Anderson, Girdler & Light, 2003).

Touch and Romantic Relationships

People experience their partners as warm, attentive, and loving through touch (Sabatelli et al., 1983). Additionally, physical affection provides the partner with nonverbal messages that can be interpreted as positive or assuring. This may be why romantic partners recognize physical affection as an important component of their relationships (Menaghan, 1983). Studies also have found that physical affection serves maintenance functions in romantic relationships (Bell, Daly, & Gonzalez, 1987; Dainton, 1991; Dainton & Stafford, 1993). Finally, Gullede and colleagues (2003) found that among romantic partners, physical affection such as massages, cuddling, hugging, and kissing was positively correlated with relationship and partner satisfaction.

Touch and Sleep

Because physical affection and marital satisfaction are related, and marital satisfaction is linked with sleep problems, physical affection between romantic partners could possibly have an effect on their sleep quality. Physical touch may also reduce the

stress related characteristics of attachment anxiety that insecurely attached individuals experience before going to sleep. Although studies have looked at how touch is inherently rewarding, associated with relaxation, and lowers physiological stress responses, little is known about how the effects of touch impact sleep quality.

In particular, there is limited research regarding the effects of spousal touch that occurs around the sleep period, such as after going to bed, after waking, or during the night. Two studies have looked at the frequency and timing of cuddling in adult romantic relationships; both found that most participants report cuddling at night and that cuddling was associated with relaxation and feeling bonded (van Anders, Edelstein, Wade, & Samples-Steele, 2015; van Raalte & Floyd, 2016).

Current Study

Consequently, the aim of the study was to explore how adult attachment and self-reports of the frequency and importance of spousal touch during sleep were related to overall self-reported sleep quality among married couples, after controlling for depressed affect (a potential cause of sleep problems). The hypotheses were as follows: 1) greater attachment anxiety would predict more sleep problems; 2) greater frequency and importance of spousal touch during sleep would predict fewer sleep problems; and 3) the relation between spousal touch during sleep and sleep problems would be stronger when attachment anxiety was higher. The third hypothesis was based on the idea that because anxiously attached individuals seek high levels of intimacy, approval, and responsiveness from their romantic partners, any effect of spousal touch might be especially strong for those individuals.

Methods

Participants

Married couples from the community were recruited by advertisement through social media, flyers, and word of mouth. A total of 210 couples completed the survey. The ages of the husbands ranged between 21 and 66 with a mean (SD) age of 35 (9). The ages of the wives ranged between 20 and 67 with a mean (SD) age of 33 (9). The marital duration of the couples ranged from 7 months to 40 years with a mean (SD) duration of 10 years (10). To participate in the study, the couples had to be married for at least 6 months, with the current marital happiness rating of at least 3 (scale 1=very unhappy to 7=perfectly happy). 80% of the participants were European American, 13% were Latino, 3% were Asian American and 4% were other.

Procedure

Participants completed online survey administered through SurveyMonkey.com. This survey was part of a bigger study in which the couples came into the lab, where physiological data was collected. In addition, diary data was collected for two weeks after the in-lab study.

Measures

All questionnaires used in the study can be found in Appendix A.

Sleep quality. The Pittsburgh Sleep Quality Index (PSQI) was used to measure retrospective sleep quality and sleep disturbances in adults over a 1-month period (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). This 26-item measure is made up of the following subscales: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction.

The sum of the subscales' scores makes up the global score, which was used in the analysis (Cronbach's alpha = .66). Lower scores indicate better sleep quality and higher scores indicate poor sleep quality.

Attachment anxiety. The Experiences in Close Relationship Inventory-II (ECR-R) was used to measure evaluating attachment-related anxiety and attachment-related avoidance in romantic couples (Fraley, Waller, & Brennan, 2000). It is composed of 36-items that assess how one generally experiences romantic relationships. A 20-item version of the ECR-R was used for this study; the anxiety subscale consisted of seven items (Cronbach's alpha = .80). Responses were made using a 7-point Likert-type scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Higher scores indicate higher attachment anxiety.

Depressive symptoms. The Center for Epidemiological Studies Depression Scale (CES-D) was created by the National Institute of Mental Health and is used to screen for depression (Radloff, 1977). The CES-D is a 20-item self-report measure of frequency during the past week of both feelings and behaviors typical of depression. It is made up of four subscales: depressive affect, somatic symptoms, positive affect, and interpersonal relations. Each item was reported on a 4-point scale which ranged from 1 ("rarely or less than one day") to 4 ("most of the time or 5-7 days"). The scores range from 0 to 60, with higher scores reflecting greater levels of depressive symptoms. Based on results from Carmichael and Reis (2005), the depressed affect subscale was used for this analysis (Cronbach's alpha = .87).

Spousal touch during sleep. The Couples Sleep Questionnaire (Roberts & Burleson, unpublished) assesses individuals' couple-related sleep characteristics. This 8-

item measure is made up of the following subscales: frequency and importance of touch during sleep, satisfaction with couple sleep habits, and synchrony of sleep habits. The subscale, frequency and importance of spousal touch during sleep, was used for this study (Cronbach's alpha = .91). The ratings made using 5-pt Likert-type scale from 1 ("not at all") to 5 ("very much"). Higher scores reflect more frequency and importance of touch.

Data Analysis

The Statistical Package for Social Science (SPSS) version 23 was used to conduct the statistical analyses. The analyses were with alpha set at $p < .05$ (two-tailed).

Correlations and regressions were conducted separately for husbands and wives.

Preliminary analyses for the correlations between study variables was conducted using the Pearson correlation. To test if the scores on the variables differed between the spouses, independent samples *t*-tests were conducted. To test the study hypotheses, simple moderation analyses were conducted using PROCESS macro by Hayes in SPSS (Hayes, 2013). Attachment anxiety and spousal touch during sleep were mean centered preceding the analyses in order to avoid multicollinearity.

Results

Preliminary Analyses

Correlation analyses of all the study variables were conducted for the wives and husbands (see Table 1). Results show that higher depressed affect and higher attachment anxiety were significantly correlated with more sleep problems for both wives and husbands. Depressed affect and attachment anxiety were positively correlated. For both wives and husbands, frequency and importance of touch during sleep was not significantly correlated with depressed affect, nor attachment anxiety. Higher frequency

and importance of spousal touch during sleep was significantly correlated with fewer sleep problems for husbands only. For wives, frequency and importance of touch during sleep and sleep problems were not correlated.

Table 1

Means, Standard Deviations (SD), and Pearson Correlations among Sleep Problems, Depressed Affect, Attachment Anxiety, and Frequency and Importance of Spousal Touch during Sleep for Wives (Lower Triangle) and Husbands (Upper Triangle)

	Wives		Husbands		1	2	3	4
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>				
1) Sleep problems	5.21	2.80	5.55	2.91	-	-.19**	.22**	.23**
2) Frequency & importance of spousal touch during sleep	3.07	1.33	3.17	1.24	-.13	-	-.09	.02
3) Attachment anxiety	2.17	.98	2.26	.96	.26**	.03	-	.53**
4) Depressed affect	1.31	.44	1.23	.33	.24**	.04	.45**	-

Note. Lower triangle comprises correlations among wives; $N = 218$. Upper triangle comprises correlations among husbands; $N = 219$

** $p < .01$.

Group Differences

Independent samples *t*-tests were conducted to determine if wives' and husbands' reports of sleep problems, attachment anxiety, spousal touch during sleep, and depressed affect differed. The difference in depression scores between husbands and wives was significant, $t(453) = 2.25, p = .03$, with wives reporting higher scores (see Table 1 for means and *SD*). There was no significant difference in sleep problems between wives and husbands, $t(453) = -1.28, p = .20$. Frequency and importance of touch during sleep did not differ between the spouses, $t(453) = -.86, p = .39$, nor did they differ significantly in levels of attachment anxiety, $t(453) = -.97, p = .33$.

Hypothesis Tests

Based on the hypotheses, identical path models including moderation were proposed for both spouses (see Figure 1 for example). The models hypothesized that frequency and importance of touch during sleep would predict fewer sleep problems, whereas attachment anxiety and depressed affect would predict more sleep problems. They also proposed that the negative relationship between touch during sleep and sleep problems would be stronger when attachment anxiety was higher.

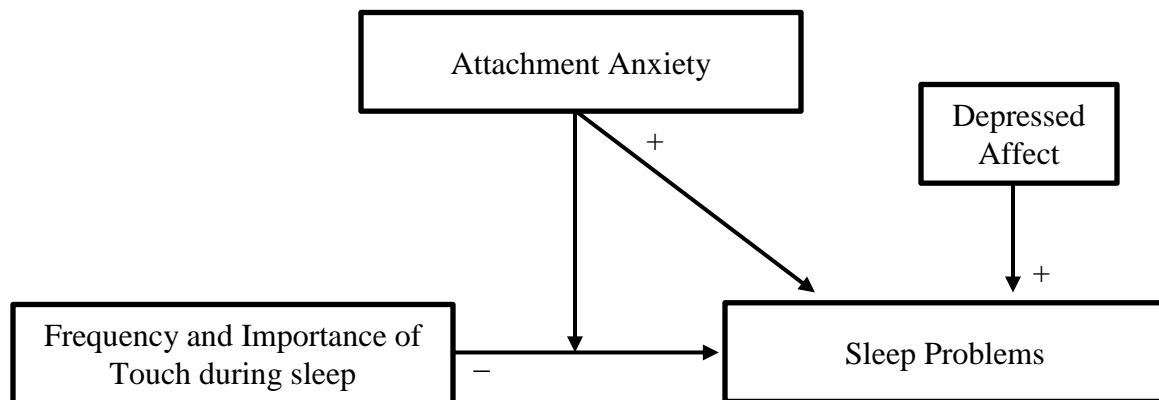


Figure 1. Hypothesized model

Wives. As predicted, both depressed affect and attachment anxiety significantly predicted more sleep problems, and frequency and importance of spousal touch during sleep predicted fewer sleep problems (see Table 2 for parameter estimates).

Table 2

Summary of Hierarchical Regression Analysis for Variables Predicting Wives' and Husbands' Sleep Problems

Variable	Wives			Husbands		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Frequency & importance						
of touch during sleep	-.29	.13	-.14*	-.29	.13	-.18*
Attachment anxiety	.51	.20	.18*	.38	.23	.12
Depressed affect	1.00	.46	.16*	1.47	.67	.17*
Touch importance ×						
Attachment anxiety	.37	.13	.18*	-.00	.19	-.00
R^2 for model		.14***			.10***	
ΔR^2 for interaction		.03**			.00	

Note. Attachment anxiety and frequency and importance of spousal touch during sleep were centered at the means for calculation of interaction terms. $N=218$ for wives. $N=219$ for husbands.

* $p < .05$. ** $p < .01$. *** $p < .001$.

The interaction between attachment anxiety and spousal touch during sleep also was significant and accounted for 3% of the variance in sleep problems, but the direction of the interaction was opposite to what was predicted. For wives who reported lower

levels of attachment anxiety, frequency and importance of touch during sleep predicted fewer sleep problems, but for wives who reported higher attachment anxiety, spousal touch during sleep was not related to sleep problems (see Figure 2 for illustration of interactions).

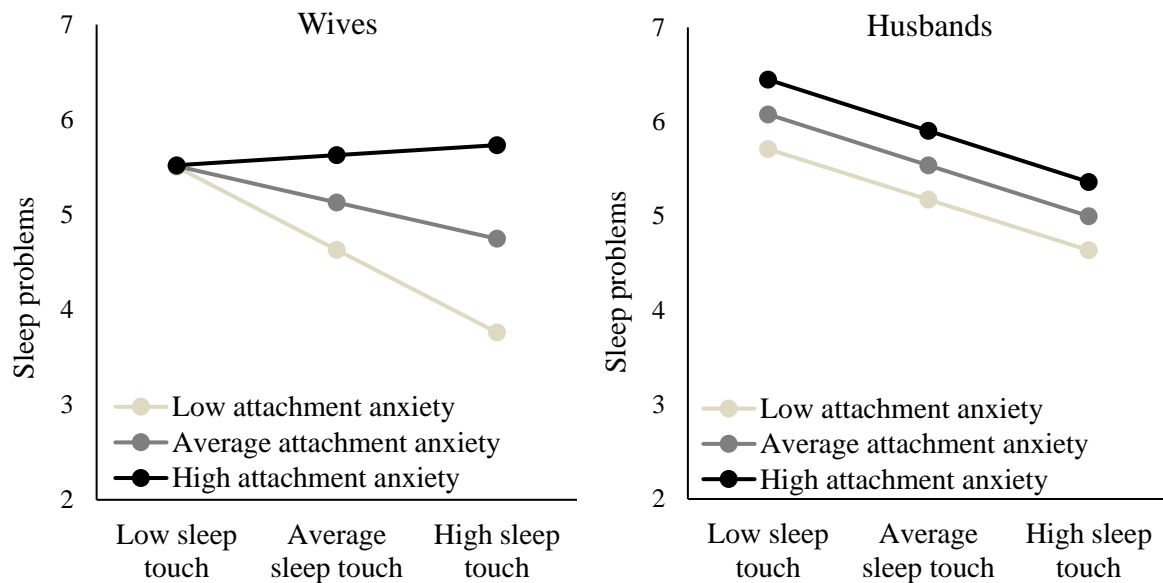


Figure 2. Sleep quality as a function of level attachment anxiety and self-reported frequency and importance of spousal touch, separately for wives and husbands.

Husbands. As predicted, depressed affect was significantly associated with more sleep problems, whereas frequency and importance of spousal touch during sleep predicted fewer sleep problems (see Table 2 for parameter estimates). Contrary to prediction, attachment anxiety was not related to sleep problems, and the interaction between attachment anxiety and spousal touch during sleep was not significant.

Discussion

Physical touch is an important element of romantic relationships and has positive effects on an individual's physical and emotional well-being. However, the impact of touch on sleep quality is not well understood. In the present study, I investigated in

married couples whether (1) the frequency and importance of spousal touch during sleep and (2) attachment anxiety predicted problems with sleep, and (3) whether the effect of touch frequency and importance differed depending on level of attachment anxiety. Depressed affect, a known cause of sleep problems, was statistically controlled. The hypothesis that greater frequency and importance of spousal touch during sleep would predict fewer sleep problems was supported. Additionally, the hypothesis that higher attachment anxiety predicted more sleep problems was supported for wives but not for husbands. Higher depressed affect also predicted more sleep problems for both spouses. Finally, attachment anxiety was a significant moderator of the relationship between touch and sleep problems for wives, but not in the predicted direction.

Depressed Affect and Sleep

According to previous literature, depression and sleep problems have a bidirectional positive relationship (Katz & McHorney, 1998; Tsuno, Besset, & Ritchie, 2005). As expected, for both wives and husbands, higher depressed affect predicted more sleep problems. Although wives reported higher levels of depressed affect than husbands, there was no difference between spouses in the nature of the relationship between depressed affect and the other variables in the study.

Attachment Anxiety and Sleep Problems

After controlling for increases in sleep problems associated with depressed affect, higher attachment anxiety predicted more sleep problems for wives. However, for husbands, attachment anxiety did not predict sleep problems. In two previous studies, greater attachment anxiety predicted poorer sleep quality for both men and women; one study controlled for depressed affect and included attachment avoidance as a second

predictor (Carmichael & Reis, 2005), whereas the other did not (Scharfe & Eldredge, 2001). In the current data, the zero-order correlation between attachment anxiety and sleep problems was significant and positive for both spouses, but the addition of depressed affect and sleep touch rendered it non-significant for husbands.

In the past, most attachment researchers have studied attachment insecurity between parents and their children. Over the recent years, attachment researchers have been investigating attachment insecurity in romantic relationships. It is important to show the health costs of attachment anxiety in married couples since married adults are significantly attached to their spouses. The fears of abandonment from a spouse or worry over the unavailability of a spouse may contribute to sleep problems, which in turn can harm both physical and mental health.

Spousal Touch and Sleep Problems

Consistent with the study hypotheses, spouses who placed more importance on touch during sleep, and who reported touching more during sleep, reported fewer sleep problems. The effects of touch during sleep may be explained by previous research, which suggests that physical affection between spouses, mediated by autonomic pathways, is gratifying and associated with relaxation (Depue & Morrone-Strupinsky, 2005). Thus, spouses who touch more around sleep may be more relaxed.

Although an interaction between attachment anxiety and touch during sleep was hypothesized for both spouses, the interaction was significant only for wives. Furthermore, the interaction found was in the opposite direction from what was hypothesized. The hypothesis was based on the idea that touch during sleep would predict better sleep among those with higher attachment anxiety, because it would help to

compensate for negative effects of attachment anxiety. Instead, touch during sleep predicted better sleep among those with lower attachment anxiety, and was unrelated to sleep quality in those with higher attachment anxiety.

A potential explanation for this unexpected finding is that individuals with high attachment anxiety long for attention or physical affection from their partners to a greater degree than do others. It may be the case that even when they are getting this physical affection from their partner that they want, they are unable to fully benefit because their minds are preoccupied with insecurities about their relationships. As a result, despite the physical affection from their partner, the stress related to their relationship is present before falling asleep, leading to sleep problems.

Limitations

One limitation to this study is that the data are correlational and therefore strong causal inferences cannot be made about the relationships among the study variables.

Another potential limitation is that the hypotheses were tested using retrospective self-reports of sleep problems, which, like most retrospective self-reports, may be prone to bias. However, Lauderdale and colleagues (2008) investigated the correspondence of self-reported measures of sleep (using the PSQI) with objective sleep measures and found that adults' estimates of sleep problems using the PSQI were similar to objective measures of sleep. Nevertheless, it is important next to extend this research to objective indicators of sleep quality, possibly in a sleep laboratory study.

Additionally, participants were asked to estimate retrospectively the frequency of spousal touch during sleep, as well as rating its importance to them. Better estimates of

touch behavior frequency could be obtained using a diary study, in which every morning, participants would report spousal touch from the night before.

For touch behavior frequency, the participants were asked to estimate how often they and their spouses typically touched one another while sleeping. In asking this question, it is understood that sleep partners may be unaware of touching when deeply asleep. Nevertheless, may be the case that awareness of touch before falling asleep, before arising, and during potential nighttime awakenings allowed participants to make subjective estimates of their touch during sleep. Subjective experiences of touch during sleep are still not as accurate as objective measures of touch during sleep. Future studies should measure frequency of spousal touch during sleep using objective measures.

Another potential limitation of this study is that even though touch importance and frequency were two separate items on the questionnaire, they were analyzed as one composite variable. This is problematic because it is possible that a participant could report high touch importance and low touch frequency. The high Cronbach's alpha for this subscale, however, suggests that this was not a common pattern of responses.

Another limitation of this study is that cross-partner effects (e.g., husbands' attachment anxiety predicting wives' sleep problems) were not taken into account. A person's attachment concerns might influence their partner's sleep patterns, for example, by promoting distress in the partner or by restlessness interfering with a partner's sleep.

Finally, the omission of marital satisfaction as a predictor of sleep quality was unfortunate. Future studies should include this important variable.

Conclusion

Even though research has established that sleep is vital for mental and physical well-being, the impact of physical touch within romantic relationships on sleep problems is poorly understood. This study adds to the literature on relationship characteristics and processes that may influence sleep. Given that physical affection promotes relaxation, reduces stress, and is important for marital satisfaction, its role in the social context of sleep is important and deserves further investigation.

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APPENDIX A
STUDY QUESTIONNAIRE

Pittsburgh Sleep Quality Index

The following questions relate to your usual sleep habits during the past month *only*. Your answers should indicate the most accurate reply for the *majority* of days and nights in the past month. Please answer all questions.

1. During the past month, when have you usually gone to bed at night?
USUAL BED TIME _____
2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?
NUMBER OF MINUTES _____
3. During the past month, when have you usually gotten up in the morning?
USUAL GETTING UP TIME _____
4. During the past month, how many hours of *actual sleep* did you get at night? (This may be different than the number of hours you spend in bed.)
HOURS OF SLEEP PER NIGHT _____

For each of the remaining questions, check the one best response. Please answer *all* questions.

5. During the past month, how often have you had trouble sleeping because you...
 - a. Cannot get to sleep within 30 minutes
Not during Less than Once or Three or more
the past month ____ once a week ____ twice a week ____ times a week ____
 - b. Wake up in the middle of the night or early morning
Not during Less than Once or Three or more
the past month ____ once a week ____ twice a week ____ times a week ____
 - c. Have to get up to use the bathroom
Not during Less than Once or Three or more
the past month ____ once a week ____ twice a week ____ times a week ____
 - d. Cannot breathe comfortably
Not during Less than Once or Three or more
the past month ____ once a week ____ twice a week ____ times a week ____
 - e. Cough or snore loudly
Not during Less than Once or Three or more
the past month ____ once a week ____ twice a week ____ times a week ____

f. Feel too cold
Not during Less than Once or Three or more
the past month ___ once a week ___ twice a week ___ times a week ___

g. Feel too hot
Not during Less than Once or Three or more
the past month ___ once a week ___ twice a week ___ times a week ___

h. Had bad dreams
Not during Less than Once or Three or more
the past month ___ once a week ___ twice a week ___ times a week ___

i. Have pain
Not during Less than Once or Three or more
the past month ___ once a week ___ twice a week ___ times a week ___

j. Other reason(s), please describe

How often during the past month have you had trouble sleeping because of this?

Not during Less than Once or Three or more
the past month ___ once a week ___ twice a week ___ times a week ___

6. During the past month, how would you rate your sleep quality overall?

Very good _____
Fairly good _____
Fairly bad _____
Very bad _____

7. During the past month, how often have you taken medicine (prescribed or “over the counter”) to help you sleep?

Not during Less than Once or Three or more
the past month ___ once a week ___ twice a week ___ times a week ___

8. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

Not during Less than Once or Three or more
the past month ___ once a week ___ twice a week ___ times a week ___

9. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

- No problem at all _____
- Only a very slight problem _____
- Somewhat of a problem _____
- A very big problem _____

10. Do you have a bed partner or roommate?

- No bed partner or roommate _____
- Partner/roommate in other room _____
- Partner in same room, but not same bed _____
- Partner in same bed _____

If you have a roommate or bed partner, ask him/her how often in the past month you have had...

(Please note that while we'd like you to complete all of your questionnaires separately, for this particular question, do go ahead and ask your partner about your sleep patterns)

a. Loud snoring

Not during the past month _____ Less than once a week _____ Once or twice a week _____ Three or more times a week _____

b. Long pauses between breaths while asleep

Not during the past month _____ Less than once a week _____ Once or twice a week _____ Three or more times a week _____

c. Legs twitching or jerking while you sleep

Not during the past month _____ Less than once a week _____ Once or twice a week _____ Three or more times a week _____

d. Episodes of disorientation or confusion during sleep

Not during the past month _____ Less than once a week _____ Once or twice a week _____ Three or more times a week _____

e. Other restlessness while you sleep; please describe

Not during the past month _____ Less than once a week _____ Once or twice a week _____ Three or more times a week _____

Couples Sleep Questionnaire

1. When you wake up in the morning, how refreshed do you typically feel? (please circle one number)

Not at all refreshed Somewhat refreshed Very refreshed
1 2 3 4 5

2. When **you** get tired, are you more likely to: (check all that apply)

become irritable or angry
 become sad
 become hyper or excitable
 have trouble concentrating
 Other (please specify): _____

3. When **your spouse** gets tired, is he/she more likely to: (check all that apply)

become irritable or angry
 become sad
 become hyper or excitable
 have trouble concentrating
 Other (please specify): _____

4. How often do you and your spouse sleep **in the same bed**?

Every night
 Most nights
 Sometimes
 Rarely
 Never

5. How often do you and your spouse sleep **in different beds in the same room**?

Every night
 Most nights
 Sometimes
 Rarely
 Never

6. How often do you and your spouse sleep **in different rooms**?

Every night
 Most nights
 Sometimes
 Rarely
 Never

7. How much do you ordinarily touch one another when you and your spouse sleep together in the same bed?

Not at all Somewhat Very much
1 2 3 4 5

8. How important is it to you for you and your spouse to touch one another when you sleep together in the same bed?

Not at all Somewhat Very much
1 2 3 4 5

9. How satisfied / comfortable are you with your and your spouse's sleeping arrangements?

Not at all satisfied Somewhat satisfied Very satisfied
1 2 3 4 5

10. How much are sleep habits / sleep patterns a source of tension in your relationship? (please circle one number)

Not at all Somewhat Very much
1 2 3 4 5

11. How much are sleep habits / sleep patterns a source of enjoyment in your relationship? (please circle one number)

Not at all Somewhat Very much
1 2 3 4 5

12. Does your spouse influence: (check all that apply)

- your bedtime
- your wake-up time
- the number of times you awaken during the night

13. Over the years, have your and your spouse's sleep habits:

- become more similar to each other
- become more different from one another
- stayed the same as they were before you met

14. Please describe any ways in which your sleep patterns or sleeping arrangements affect you and/or your relationship with your spouse.

Experiences in Close Relationships-Revised

The statements below concern how you feel in emotionally intimate relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with the statement.

		Strongly Disagree		Strongly Agree
1.	I worry that I won't measure up to other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	I'm afraid that once my spouse gets to know me, he or she won't like who I really am.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	I am very comfortable being close to my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	When I show my feelings for my spouse, I'm afraid he or she will not feel the same about me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	I often worry that my spouse will not want to stay with me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	I prefer not to show my spouse how I feel deep down.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	I am nervous when my spouse get too close to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Sometimes my spouse changes his or her feelings about me for no apparent reason.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	It makes me mad that I don't get the affection and support I need from my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	I find it relatively easy to get close to my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	It's easy for me to be affectionate with my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	I feel comfortable depending on my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	I find it easy to depend on my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	I find it difficult to allow myself to depend on my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	When my spouse is out of sight, I worry that he or she might become interested in someone else.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	It's not difficult for me to get close to my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	I prefer not to be too close to my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.	I'm afraid that I will lose my spouse's love.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	I talk things over with my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	I feel comfortable sharing my private thoughts and feelings with my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.	My desire to be very close sometimes scares people away.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	I tell my spouse just about everything.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	I usually discuss my problems and concerns with my spouse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Center for Epidemiologic Studies Depression Scale (CES-D Scale)

Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way during the past week.

- 1 Rarely or none of the time (Less than 1 Day)
- 2 Some or a little of the time (1-2 Days)
- 3 Occasionally or a moderate amount of time (3-4 Days)
- 4 Most or all of the time (5-7 Days)

During the past week:

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from family or friends.
4. I felt that I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
14. I felt lonely.
15. People were unfriendly.
16. I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people dislike me.
20. I could not get "going."