Health Psychology
2014, Vol. 33, No. 8, 813–822

0278-6133/14/$12.00 http://dx.doi.org/10.1037/hea0000077

Daily Self-Disclosure and Sleep in Couples

Heidi S. Kane and Richard B. Slatcher
Wayne State University

Bridget M. Reynolds, Rena L. Repetti, and Theodore F. Robles
University of California Los Angeles

Objective: An emerging literature provides evidence for the association between romantic relationship quality and sleep, an important factor in health and well-being. However, we still know very little about the specific relationship processes that affect sleep behavior. Therefore, the goal of this study was to examine how self-disclosure, an important relational process linked to intimacy, relationship satisfaction, and health, is associated with sleep behavior. ***Method:*** As part of a larger study of family processes, wives ($n = 46$) and husbands ($n = 38$) from 46 cohabiting families completed 56 days of daily diaries. Spouses completed evening diaries assessing daily self-disclosure, relationship satisfaction, and mood and morning diaries assessing the prior night's sleep. Multilevel modeling was used to explore the effects of both daily variation in and average levels across the 56 days of self-disclosure on sleep. ***Results:*** Daily variation in self-disclosure predicted sleep outcomes for wives, but not for husbands. On days when wives self-disclosed more to their spouses than their average level, their subjective sleep quality and sleep efficiency that night improved. Furthermore, daily self-disclosure buffered the effect of high negative mood on sleep latency for wives, but not husbands. In contrast, higher average levels of self-disclosure predicted less waking during the night for husbands, but not for wives. ***Conclusion:*** The association between self-disclosure and sleep is one mechanism by which daily relationship functioning may influence health and well-being. Gender may play a role in how self-disclosure is associated with sleep.

Keywords: self-disclosure, sleep quality, sleep efficiency, couples, daily diary

Happy and satisfying marriages are associated with health benefits, whereas unhappy or ambivalent marriages are associated with health detriments (Kiecolt-Glaser & Newton, 2001; Robles, Slatcher, Trombello, & McGinn, 2013). Sleep may partially explain the association between marriage and health (Troxel, 2010). Despite the fact that approximately 70% of adults sleep in the same bed with a significant other (National Sleep Foundation, 2011) and relationship difficulties often co-occur with sleep disturbance, only recently have investigators approached the study of sleep as a dyadic process embedded in the marital context (Troxel, Robles, Hall, & Buysse, 2007; Troxel, 2010).

Little is known about the specific daily relationship processes that may influence sleep. Only a few studies have examined daily assessments of couples' interactions and sleep (Hasler & Troxel, 2010; Hicks & Diamond, 2011). Self-disclosure, the act of revealing personal thoughts and feelings, is an important interpersonal process that may influence sleep. An optimal sleep environment requires the downregulation of vigilance and arousal and the upregulation of safety and security (Dahl, 1996). Self-disclosure to spouses may be associated with sleep by facilitating an optimal sleep environment. To our knowledge, the association between self-disclosure and sleep has never been explored.

Self-disclosure of thoughts and feelings about stressful experiences is associated with health improvements over time including sleep. However, almost all of this prior work has examined written self-disclosure (Pennebaker & Chung, 2011). For example, in a small university sample of individuals meeting criteria for sleep disturbance on the Pittsburgh Sleep Quality Index, writing thoughts and feelings about traumatic experiences predicted diary-reported shorter time to fall asleep (Harvey & Farrell, 2003), although this effect was not replicated in a small sample of insomnia patients (Mooney, Espie, & Broomfield, 2009). In addition, in an experimental study, healthy sleepers randomly assigned to write thoughts and feelings about an induced failure experience showed greater sleep efficiency and less time awake after falling asleep (assessed via polysomnography) compared to participants assigned to write in a more analytical manner (Vandekerckhove et al., 2012). In everyday life, verbal self-disclosure between spouses is much more likely to occur than written self-disclosure. Yet surprisingly, very few studies have examined the effects of self-disclosure in interpersonal contexts on health-related outcomes.

Self-disclosure to spouses may enhance feelings of safety and security in the relationship and, in turn, the sleep environment. Safety and felt security are derived in part from marriages in which

Heidi S. Kane and Richard B. Slatcher, Department of Psychology, Wayne State University; Bridget M. Reynolds, Rena L. Repetti, and Theodore F. Robles, Department of Psychology, University of California Los Angeles.

This research was supported by a Research Grant (9333) from the William T. Grant Foundation. Preparation of this article was supported by a postdoctoral fellowship to Heidi S. Kane on MH015750 Biobehavioral Issues in Mental and Physical Health training grant and by a NIH Research Grant (1R01HL114097-01). We thank Gayla Margolin for her contributions to the project, and the graduate students, laboratory staff, and research assistants on the project for their time and effort working with families. We thank the parents and children for their participation in this project.

Correspondence concerning this article should be addressed to Heidi S. Kane, Department of Psychology, Wayne State University, 5057 Woodward Avenue, Suite 7908, Detroit, MI 48202. E-mail: hkane@wayne.edu

partners are close, responsive to each other's needs, and value, accept, trust, and understand each other (Collins & Feeney, 2004). The presence of close, responsive partners reduces psychological, neural, and physiological responses to threat (e.g., Coan, Schaefer, & Davidson, 2006; Diamond & Hicks, 2004; Kane, McCall, Collins, & Blascovich, 2012) that can interfere with sleep. Furthermore, close relationships can protect against perceived loneliness and isolation, which are also associated with poor sleep (Hawkley & Cacioppo, 2010). Thus, self-disclosure may be associated with sleep because it promotes intimacy and closeness in relationships (Reis & Shaver, 1988), which can further promote felt security. Emotional self-disclosures that are particularly relevant to the self, compared to merely sharing facts, are particularly beneficial to relationships (Reis & Shaver, 1988; Laurenceau, Barrett, & Pietromonaco, 1998) and should also be particularly beneficial to sleep.

Sleep occurs within the overall context of daily experiences, and negative appraisals and emotional responses to daily events are associated with sleep disturbance. In healthy adults (Åkerstedt et al., 2012; Brissette & Cohen, 2002; Morin, Rodrigue, & Ivers, 2003), greater self-reported negative affect and stress ratings during the day predicted poorer subjective sleep quality that night in daily diary studies ranging from 7 days to 6 weeks. In addition, higher self-reported stress and worry at bedtime was related to lower sleep efficiency and more minutes awake after falling asleep assessed by at-home polysomnography (Åkerstedt, Kecklund, & Axelsson, 2007).

Self-disclosure may improve coping and reduce negative mood that can impair sleep. Self-disclosure, in particular emotional disclosure, may aid in coping by decreasing worry, ruminative thought patterns and arousal (for reviews, see Greene, Derlega, & Mathews, 2006; Pennebaker & Chung, 2011). Emotional self-disclosure may also elicit greater support provision from spouses. Indeed, self-disclosure to a spouse buffers individuals from the negative effects of work worries on physiological stress responses (Slatcher, Robles, Repetti, & Fellows, 2010). Thus, self-disclosure may mitigate the association between negative mood and sleep disturbance.

Conversely, in the context of positive mood, daily self-disclosure may promote relationship satisfaction and individual well-being through sharing positive experiences. The social sharing of positive events confers added benefit to self-esteem and relationship satisfaction, over and above the effect of the event itself, by allowing individuals to relive positive experiences, make them more salient in their memories, and foster positive social interactions (Gable, Reis, Impett, & Asher, 2004). Thus, self-disclosure in the context of positive mood may provide an added benefit over and above merely self-disclosing.

The present study measured daily spousal self-disclosure, daily positive and negative mood, and sleep outcomes in 46 couples over 56 days. Most of the research on sleep disturbances is guided by insomnia research and recommendations, and reporting standards have been developed for research assessments (Buysse, Ancoli-Israel, Edinger, Lichstein, & Morin, 2006). The sleep outcomes assessed in this study represent the most common sleep disturbances (insomnia symptoms) affecting 30–48% of the population (Ohayon, 2002). They include both difficulty falling asleep (long sleep onset latency; SOL) and difficulty staying asleep (greater waking after sleep onset; WASO). Furthermore, sleep efficiency, time in bed asleep relative to total time in bed, is a key construct in sleep research. It is calculated by subtracting WASO and SOL from the total time in bed to produce sleep duration and then dividing by the total time in bed. So, although sleep efficiency, WASO, SOL, and sleep duration are interrelated they are frequently analyzed separately in the literature because they assess different sleep problems (Buysse et al., 2006). For example, SOL and WASO provide insight into the particular part of sleep that may be disrupted (the beginning of the night trying to fall asleep or later in the night trying to stay asleep) and may have differential health effects (Dew et al., 2003). Therefore, in accord with reporting standards, the sleep outcomes measured in this study included subjective sleep quality, sleep efficiency, SOL, WASO, and sleep duration (Buysse et al., 2006; Morin et al., 2003).

First, the primary hypothesis that greater daily self-disclosure to spouses would be associated with better sleep, even after accounting for daily positive and negative mood and relationship satisfaction was tested. Next, the hypotheses that daily self-disclosure would buffer the effect of daily negative mood on sleep and enhance the effect of daily positive mood on sleep were tested. Then dyadic analyses were conducted to test the degree to which one's partner's report of his or her own daily self-disclosure predicted the other partner's sleep. Given prior research showing that partner self-disclosure is also beneficial for relationships (e.g., Laurenceau et al., 1998; Laurenceau et al., 2005), it was hypothesized that greater daily partner self-disclosure would also be associated with better sleep. Finally, because the associations between sleep and relationship experiences can be bidirectional (Hasler & Troxel, 2010) and sleep deprivation is associated with decreased observed emotional expressiveness (Minkel, Htaik, Banks, & Dinges, 2011), the extent to which the prior night's sleep quality and efficiency influenced self-disclosure the following day was also tested.

Method

Participants

Families ($N = 47$) were recruited from the greater Los Angeles area as part of a study examining family dynamics and upper respiratory infections in children ages 8–13 (Robles, Reynolds, Repetti, & Chung, 2013). To minimize study burden on participating families, only one parent was required to participate although both parents were encouraged. The present analyses included two-parent, cohabiting families, resulting in a sample of 46 wives (M age = 43.2 years, $SD = 6.33$, range 28.5–54.1) and 38 husbands (M age = 43.7, $SD = 8.26$, range = 27.7–62.0), in a married or marriage-like relationship for an average of 16.33 years ($SD = 6.62$, range = 1.3–27.6). Median personal income was within the $31,851–$64,250 tax bracket for the first two cohorts and $34,001–$82,400 for the third cohort. Couple members were 46% non-Hispanic White, 19% Latino/Hispanic, 18% African American, 13% Asian, 1% Native American, and 2% "Other". The average couple reported high relationship satisfaction (wives $M = 116.2$, $SD = 28.07$, range = 44–154; 23.9% distressed; husbands $M = 124.4$, $SD = 22.1$, range = 57–159; 18.4% distressed) (Funk & Rogge, 2007). Participants were screened for medications and

medical conditions that might affect biological measures collected in the study.[1]

Procedure

Spouses completed an 8-week (56-day) daily diary and sleep diary beginning on a Saturday using online or paper diaries. Daily dairies were completed before bedtime, and sleep diaries were completed in the morning after waking. Online diaries were automatically date/time stamped. Paper diaries were electronically date/time stamped (Dymo #47002) and mailed to the laboratory the day after completion. Several measures were taken to encourage compliance, and participants were highly compliant in their completion (for a detailed description, see Robles et al., 2013).

Daily relationship measures. To measure self-disclosure, participants completed a two-item measure (Laurenceau et al., 1998) that assessed the degree to which they disclosed their thoughts and feelings to their spouses ($R_{c,\text{wives}} = .90$, $R_{c,\text{husbands}} = .91$) on a scale from 1 (not at all) to 5 (extremely).[2,3] This measure of self-disclosure is based on the interpersonal process model of intimacy (Reis & Shaver, 1988) and has been widely used in daily diary research (Laurenceau et al., 1998; Laurenceau et al., 2005). Participants also completed a single item assessing daily relationship satisfaction (Gable, Reis, & Downey, 2003) on a scale from 1 (terrible) to 7 (terrific). Relationship satisfaction person means (averaged over 56 days) were highly correlated with the Couples Satisfaction Inventory (Funk & Rogge, 2007), a well-validated self-report measure of relationship satisfaction ($r_{\text{wives}} = .58$, $p < .001$, $r_{\text{husbands}} = .65$, $p < .001$).

Daily positive and negative mood measures. Participants rated how accurately each of a series of adjectives described how they felt over the past 24 hr on a scale from 1 (not at all accurate) to 4 (extremely accurate) (Cohen et al., 2006). The adjectives for positive mood ($R_{c,\text{wives}} = .81$, $R_{c,\text{husbands}} = .79$) were at ease, calm, full of energy, lively, happy, and cheerful. The adjectives for negative mood ($R_{c,\text{wives}} = .80$, $R_{c,\text{husbands}} = .82$) were on edge, tense, sad, unhappy, hostile, and angry. The average daily correlations between positive and negative mood were $r_{\text{wives}} = -.37$ ($SD = .12$) and $r_{\text{husbands}} = -.20$ ($SD = .12$). Person mean (averaged over 56 days) correlations between positive and negative mood were $r_{\text{wives}} = -.32$, $p = .03$, and $r_{\text{husbands}} = -.05$, $p = .75$.

Sleep outcomes. Participants completed a modified version of the Pittsburgh Sleep Diary (Monk et al., 1994). To measure subjective sleep quality, participants rated the quality of their sleep on a single item ranging from 1 (terrible) to 8 (great). Sleep efficiency is the number of minutes participants reported being asleep from sleep initiation to final awakening divided by the number of minutes they reported being in bed, expressed as a percentage (with 7 hr asleep and 8 hr in bed, sleep efficiency = 87.5%). Sleep efficiency is derived from both SOL and WASO. For SOL participants reported how many minutes it took them to fall asleep, and for WASO participants reported the total time in minutes of awakenings experienced after falling asleep. Sleep duration was calculated in hours by measuring a participant's total time in bed (time went to bed - time out of bed) and then subtracting WASO and SOL. Subjective sleep quality was modestly related to the other time-based sleep outcomes in expected directions (|r|'s from .3–.6, with the exception of husbands' subjective sleep quality and sleep duration, $r = .08$). On average, participants reported sleeping fairly well (SOL<30min, WASO<30min, sleep efficiency >85%, sleep duration >6 hr; Buysse et al., 2006), with high subjective sleep quality (see Table 1).

Analytic Strategy

Multilevel modeling is ideal for the hierarchical structure of our data (56 daily observations nested within persons) and it accounts for between-person variation (individual deviation from the grand mean) and within-person variation (an individual's daily deviation from their own 56-day mean). Because of different sample sizes for men and women, separate models for husbands and wives were estimated first and then dyadic models were estimated with both husbands and wives simultaneously. To explicitly model between- and within-person variation, each daily predictor of interest (self-disclosure, mood, and relationship satisfaction) was represented by two variables (Hoffman & Stawski, 2009). For a given participant and predictor, one variable represented between-person variation (designated by the subscript $_{bp}$), defined as the participant's average across all days (person mean), and centered so that 0 was the grand mean. Thus, self-disclosure$_{bp}$ was equal to a participant's self-disclosure ratings averaged across all study days. For each predictor, a second variable represented within-person variation (subscript $_{wp}$) defined as deviation from the person's mean on a particular day. Thus, for a participant with self-disclosure$_{bp} = 2$ and self-disclosure rating on Day 32 = 3, self-disclosure$_{wp} = 1$ on Day 32. Modeling between-person and within-person variation more accurately reflects the inherent association between daily behavior and individual differences (Hoffman & Stawski, 2009). Models were estimated using maximum likelihood estimation and an autoregressive AR(1) error structure for the repeated measures using SPSS 18 software (IBM PASW).

Sleep efficiency, SOL, and WASO were fairly skewed so we $\log_{10}(x + 1)$ transformed these variables to correct for any poten-

[1] Despite attempts to screen out mental and selected physical health problems, one wife and one husband reported taking medications to treat anxiety/depression. Two wives reported current medical conditions and seven wives reported a history of medical conditions potentially associated with impaired sleep. The primary focus of the study was on recruiting children who met inclusion and exclusion criteria; thus, parent screening was less stringent. Therefore, a dummy code for medical conditions (0 = not present, 1 = present) was created to see if medical conditions were related to any of the sleep outcomes for wives and husbands. Medical conditions were not related to any sleep outcome for wives (all ps > .28) or husbands (all ps > .45, with the exception of sleep duration, $p = .18$, and its inclusion in the analyses with sleep duration did not alter the results).

[2] Only items pertaining to emotional self-disclosure were included because theoretically and empirically emotional disclosure of thoughts and feelings are stronger predictors of intimacy (Reis & Shaver, 1988; Laurenceau et al., 1998) than disclosure of facts, and written self-disclosure paradigms use writing thoughts and feelings about traumatic events.

[3] Diary studies complicate traditional approaches to reliability because of the small number of items per construct and the repeated administrations over time. Shrout and Lane (2012) recently described a framework based on generalizability theory for quantifying reliability in diary studies. Two estimates are relevant for this article. First, the reliability of average ratings from all items and all days, which addresses how well the particular scale can differentiate between person differences, was excellent across all the diary measures in the study (.99–1.00 in all cases) and was thus not reported for each scale. Second, the reliability of day-to-day change, which addresses how well the particular scale can estimate within-person differences, is described for each scale with the notation R_c.

Table 1
Descriptive Statistics for the Primary Variables

Variable	Wives *M* (*SD*)	Husbands *M* (*SD*)
Daily diary variables		
Self-disclosure	3.05 (1.00)	3.03 (0.92)
Positive mood	2.76 (0.67)	2.82 (0.61)
Negative mood	1.36 (0.48)	1.30 (0.45)
Relationship satisfaction	5.18 (0.99)	5.25 (0.85)
Sleep diary variables		
Subjective sleep quality	6.21 (1.40)	6.05 (1.33)
Sleep efficiency (%)	95.14 (7.14)	95.54 (6.92)
Sleep onset latency (min)	11.23 (16.31)	10.29 (13.62)
Waking after sleep onset (min)	11.08 (24.34)	10.04 (27.10)
Sleep duration (hr)	7.37 (1.47)	7.15 (1.43)

Note. Descriptive statistics were calculated as averages across all participants and all 56 days. $n_{wives} = 46$, $n_{husbands} = 38$.

tial bias. Sleep efficiency was negatively skewed, so it was reflected by subtracting each value from 101 to make it positively skewed and thus appropriate for transformation (Tabachnick & Fidell, 2007). Reflecting sleep efficiency reversed its direction (best = 1, worst = 101). Therefore, to simplify the interpretation the original direction (high values = better sleep efficiency) was restored by multiplying the parameter coefficients for analyses predicting sleep efficiency by −1 in the tables and the text.

First, using multilevel modeling, sleep was predicted as a function of daily self-disclosure. Because relationship satisfaction and mood have been associated with sleep in prior daily studies (Hasler & Troxel, 2010; Troxel et al., 2007), sleep was then predicted as a function of self-disclosure adjusting for relationship satisfaction and positive and negative mood. Second, sleep was predicted as a function of the interaction between daily self-disclosure and daily mood. Third, using couples with complete data from both partners ($N_{couples} = 38$), an Actor-Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006) was estimated to simultaneously assess the effect of actor and partner self-disclosure on sleep outcomes. This model examined how wives' (actor) and husbands' (partner) self-disclosure predicted wives' sleep and vice versa. In this APIM, contrasts were conducted to statistically test for gender differences in the effects of self-disclosure on sleep (Kenny et al., 2006). Finally, the alternative explanation that sleep the night before may affect self-disclosure the following day was tested. Self-disclosure was predicted as a function of the prior night's sleep (subjective sleep quality and sleep efficiency in separate models) for both wives and husbands.

Results

Wives' Self-Disclosure and Sleep

As shown in Table 2, wives who self-disclosed more in general (self-disclosure$_{bp}$) did not have better subjective sleep quality or sleep efficiency. However, subjective sleep quality, sleep efficiency, and sleep duration were higher on days when wives reported more than their average self-disclosure (self-disclosure$_{wp}$) compared to days when wives reported less than their average self-disclosure. For example, given a participant who typically spends 8 hr in bed, a 1-point increase in self-disclosure ratings above one's average self-disclosure level (self-disclosure$_{bp}$) would result in a 0.35 percentage point increase in sleep efficiency, which translates to an additional 1.5 min of sleep. The effect of self-disclosure$_{wp}$ on sleep efficiency was primarily due to less WASO, rather than shorter SOL (see Table 2). A one unit increase in self-disclosure ratings above self-disclosure$_{bp}$ resulted in a 0.58-min decrease in WASO. Furthermore, self-disclosure$_{wp}$ remained a significant predictor of sleep quality, sleep efficiency, WASO, and sleep duration after adjusting for daily relationship satisfaction, positive mood, and negative mood (see Table 3).

Self-disclosure and daily mood. As shown in Table 3, there were significant independent effects of positive mood$_{wp}$ and self-disclosure$_{wp}$ on subjective sleep quality, sleep efficiency, WASO, and sleep duration, demonstrating that on days when wives reported above average positive mood and above average self-disclosure, their sleep was better relative to only above average self-disclosure or above average positive mood. Additionally, greater positive mood averaged across the 56 days (positive mood$_{bp}$) was associated with better subjective sleep quality, sleep efficiency and shorter WASO. Unexpectedly, wives reporting greater negative mood averaged across the 56 days (negative mood$_{bp}$) had shorter SOL and accordingly higher sleep efficiency. However, in analyses including negative mood as the only predictor, negative mood$_{bp}$ was not significantly related to any sleep outcomes (p's from .09–.51), although the marginal findings ($p < .15$) were such that greater negative mood$_{bp}$ was related to shorter SOL and higher sleep efficiency. In these analyses, days with worse negative mood relative to one's own average (negative mood$_{wp}$) were

Table 2
Associations Between Self-Disclosure and Sleep Outcomes

Predictor	Subjective sleep quality	Sleep efficiency[a,b]	SOL[a]	WASO[a]	Sleep duration
Wives					
Self-disclosure$_{bp}$	0.20 (0.19)	0.02 (0.05)	0.01 (0.07)	−0.02 (0.09)	0.23 (0.18)
Self-disclosure$_{wp}$	0.12 (0.03)**	0.04 (0.01)***	−0.01 (0.01)	−0.07 (0.01)***	0.10 (0.04)**
Husbands					
Self-disclosure$_{bp}$	0.19 (0.22)	0.11 (0.06)†	−0.05 (0.07)	−0.25 (0.10)*	0.10 (0.20)
Self-disclosure$_{wp}$	0.03 (0.04)	0.01 (0.01)	0.00 (0.01)	−0.00 (0.02)	0.06 (0.05)

Note. Parameter estimates are unstandardized beta coefficients, with *SE* in parentheses. $n_{wives} = 46$, $n_{husbands} = 38$. *wp* = within-person; *bp* = between-person; SOL = sleep onset latency; WASO = waking after sleep onset.
[a] $\log_{10}(x + 1)$ transformed variables. [b] coefficient multiplied by −1.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
Associations Between Self-Disclosure and Sleep Outcomes Adjusting for Daily Mood and Relationship Satisfaction

Predictor	Subjective sleep quality	Sleep efficiency[a,b]	SOL[a]	WASO[a]	Sleep duration
Wives					
Self-disclosure$_{bp}$	−0.26 (0.24)	−0.05 (0.07)	0.12 (0.11)	−0.01 (0.13)	0.22 (0.27)
Self-disclosure$_{wp}$	0.09 (0.04)*	0.03 (0.01)**	−0.01 (0.01)	−0.06 (0.02)***	0.11 (0.04)**
Negative mood$_{bp}$	0.03 (0.36)	0.30 (0.11)**	−0.36 (0.16)*	−0.33 (0.19)†	−0.25 (0.40)
Negative mood$_{wp}$	−0.04 (0.08)	0.02 (0.02)	−0.00 (0.02)	−0.06 (0.04)†	−0.20 (0.09)*
Positive mood$_{bp}$	0.86 (0.22)***	0.24 (0.07)**	−0.13 (0.10)	−0.41 (0.12)**	0.37 (0.25)
Positive mood$_{wp}$	0.23 (0.06)***	0.04 (0.02)*	−0.02 (0.02)	−0.07 (0.03)*	0.19 (0.07)**
Relationship satisfaction$_{bp}$	0.34 (0.25)	0.06 (0.08)	−0.16 (0.11)	0.08 (0.13)	−0.15 (0.28)
Relationship satisfaction$_{wp}$	0.04 (0.04)	0.00 (0.01)	−0.00 (0.01)	0.01 (0.02)	−0.04 (0.04)
Husbands					
Self-disclosure$_{bp}$	−0.47 (0.23)*	0.12 (0.07)	−0.02 (0.09)	−0.35 (0.12)**	0.21 (0.26)
Self-disclosure$_{wp}$	0.02 (0.04)	0.00 (0.01)	0.01 (0.01)	−0.01 (0.02)	0.03 (0.05)
Negative mood$_{bp}$	1.00 (0.36)**	0.17 (0.11)	−0.15 (0.13)	−0.16 (0.18)	0.49 (0.41)
Negative mood$_{wp}$	−0.15 (0.09)†	−0.02 (0.02)	0.03 (0.03)	0.01 (0.04)	0.05 (0.11)
Positive mood$_{bp}$	0.61 (0.23)*	0.11 (0.07)	−0.07 (0.08)	−0.26 (0.12)*	−0.16 (0.26)
Positive mood$_{wp}$	0.07 (0.08)	0.02 (0.02)	−0.02 (0.02)	0.03 (0.04)	0.13 (0.10)
Relationship satisfaction$_{bp}$	1.26 (0.29)***	−0.01 (0.09)	−0.07 (0.11)	0.19 (0.15)	−0.10 (0.33)
Relationship satisfaction$_{wp}$	0.02 (0.04)	0.00 (0.01)	−0.02 (0.01)	0.02 (0.02)	0.06 (0.05)

Note. Parameter estimates are unstandardized beta coefficients, with *SE* in parentheses. n_{wives} = 46, $n_{husbands}$ = 38. *wp* = within-person; *bp* = between-person; SOL = sleep onset latency; WASO = waking after sleep onset.
[a] $\log_{10}(x + 1)$ transformed variables. [b] Coefficient multiplied by −1.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

characterized by poorer subjective sleep quality, $b = -0.18$, $SE = 0.07$, $p = .01$, and shorter sleep duration, $b = -0.26$, $SE = 0.08$, $p = .001$, similar to the results in Table 3.

Next, the hypotheses that self-disclosure would be especially beneficial for sleep on days when wives reported greater than their average negative mood or greater than average positive mood were tested. The self-disclosure$_{wp}$ × negative mood$_{wp}$ interaction adjusting for relationship satisfaction and positive mood was significant for sleep latency, $b = -0.04$, $SE = 0.02$, $p = .05$. The regions of significance for this interaction (www.quantpsy.org; Preacher et al., 2006) were explored and revealed that the negative association between self-disclosure$_{wp}$ and SOL was significant on days when women reported negative mood at least 0.66 points (1.83 SD_{wp}) above their average negative mood (see Figure 1). Thus, greater self-disclosure relative to one's average was related to shorter SOL, but only on days characterized by very high negative mood. The interaction between self-disclosure$_{wp}$ and positive mood$_{wp}$ adjusting for relationship satisfaction and negative mood did not significantly predict sleep.

Husbands Self-Disclosure and Sleep

As shown in Table 2, husbands who self-disclosed more on average (self-disclosure$_{bp}$) had less WASO. For a husband with an average self-disclosure = 1, average WASO was 8.75 min; if average self-disclosure = 5, average WASO was less than 1 min. Neither self-disclosure$_{bp}$ nor self-disclosure$_{wp}$ was significantly associated with any other sleep outcomes. After adjusting for relationship satisfaction and daily mood, self-disclosure$_{bp}$ remained significantly associated with WASO. In addition, an apparent suppression effect emerged such that greater self-disclosure$_{bp}$ was associated with poorer sleep quality (see Table 3). Both greater negative mood$_{bp}$ and positive mood$_{bp}$ significantly predicted better subjective sleep quality, and greater positive mood$_{bp}$ also predicted shorter WASO. Finally, the interaction effects (self-disclosure$_{wp}$ × negative mood$_{wp}$ and self-disclosure$_{wp}$ × positive mood$_{wp}$) predicting sleep were not significant indicating that self-disclosure was not especially beneficial for sleep on days when husbands reported greater negative mood or positive mood.

Actor-Partner Effects of Self-Disclosure on Sleep

Among wives, actor effects remained relatively unchanged (see Table 4) except that greater self-disclosure$_{wp}$ now significantly predicted shorter SOL. Among husbands, several actor and partner effects emerged (see Table 4). For husbands, higher average self-disclosure ratings (actor self-disclosure$_{bp}$) were associated with significantly better sleep efficiency because of shorter SOL and less WASO. For a husband with self-disclosure$_{bp}$ = 1, average sleep efficiency = 90.2%, SOL = 16.2 min, and WASO = 19.5 min. In contrast, for a husband with self-disclosure$_{bp}$ = 5, average sleep efficiency = 99.8%, SOL = 2.3 min, and WASO = 0 min. Interestingly, higher wives' average self-disclosure ratings (partner self-disclosure$_{bp}$) were associated with significantly lower husbands' sleep efficiency due to significantly longer SOL. For a wife reporting self-disclosure$_{bp}$ = 1, her husband's average sleep efficiency = 99.4% and SOL = 1.4 min. In contrast, for a wife

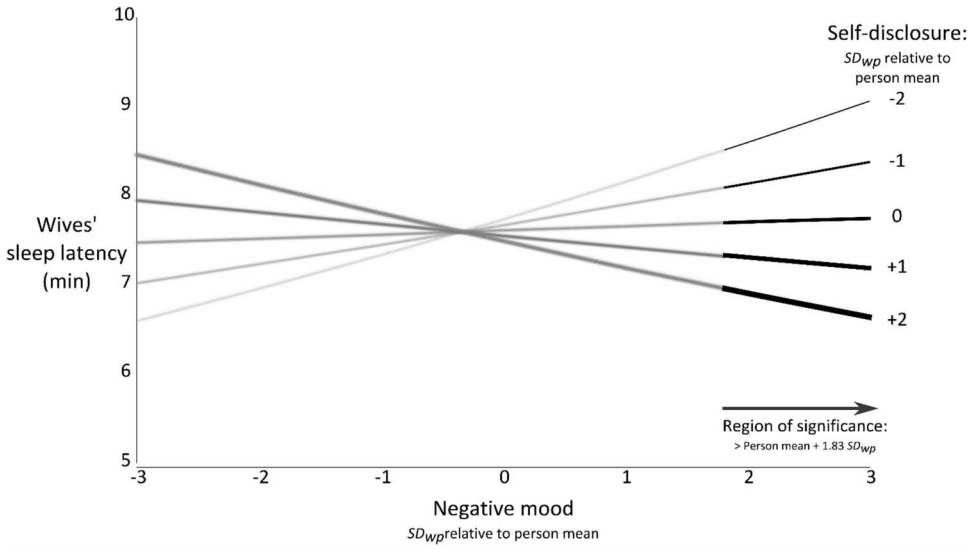

Figure 1. Interaction of wives' daily negative mood and self-disclosure on wives' sleep latency. wp = within-person variation.

reporting self-disclosure$_{bp}$ = 5, her husband's average sleep efficiency = 92.8% and SOL = 21.6 min.

Gender differences. Gender differences in the actor and partner effects of self-disclosure were explored by testing contrasts between husbands and wives in the APIM (see Table 5). There was a significant intercept difference for sleep duration indicating that wives slept significantly longer than their husbands. No other significant intercept differences emerged. The actor self-disclosure$_{wp}$ effects among wives were significantly larger than the actor self-disclosure$_{wp}$ effects for men on sleep efficiency and WASO. In contrast, the actor self-disclosure$_{bp}$ effect among husbands was significantly larger than the actor self-disclosure$_{bp}$ effect for wives on WASO.

Alternative Explanations

For both husbands and wives, neither sleep efficiency nor subjective sleep quality the night before predicted the next day's self-disclosure. Dyadic (actor and partner) effects of sleep from both spouses on self-disclosure were not significant (data not shown).[4]

Discussion

These results are the first to our knowledge to examine the associations between daily self-disclosure and sleep. Emotional self-disclosure predicts health improvements over time (Pennebaker & Chung, 2011) and is related to optimal relationship functioning including increased intimacy (e.g., Laurenceau et al., 1998). On days when wives self-disclosed more than their average, subjective sleep quality and sleep efficiency improved because of shorter WASO and longer sleep duration. Importantly, these effects remained consistent after adjusting for relationship satisfaction, mood, and as revealed in the APIM analysis, after adjusting for partner effects (husbands' self-disclosure). In contrast among husbands, higher average self-disclosure was associated with shorter WASO and this effect remained consistent after adjusting for relationship satisfaction and mood. Further after adjusting for partner effects (wives' self-disclosure) in the APIM analyses, higher average self-disclosure was also associated with better sleep efficiency and shorter SOL. Among wives, but not among husbands, self-disclosure improved sleep on nights when high negative mood was reported. Taken together, these results suggest that although self-disclosure predicted sleep for both husbands and wives, the pattern of how it was associated with sleep differed for husbands and wives.

A major strength of this study was the ability to simultaneously test gender differences in the effects of daily variation in self-disclosure and average self-disclosure ratings on sleep using an APIM approach. Consistent with prior research on self-disclosure in marriage (Greene et al., 2006) and based on the person means, husbands and wives did not differ in their average levels of self-disclosure. These results suggest that wives' sleep, particularly sleep efficiency and WASO, is more influenced by daily changes in self-disclosure, whereas husbands' sleep, particularly WASO, is more influenced by a general tendency to self-disclose to their spouses. The general tendency to self-disclose may be tied to unmeasured personality characteristics that could influence sleep directly or indirectly via relationship functioning. For example, the adult attachment literature suggests that avoidant (insecure) individuals report lower levels of self-disclosure compared to secure individuals (Mikulincer & Nachshon, 1991), and attachment security is associated with better sleep (Scharfe & Eldredge, 2001). Even though experimental studies of the effect of written emotional disclosure on health-related outcomes provide little evidence for gender differences (Epstein, Sloan, & Marx, 2005; Sheese, Brown, & Graziano, 2004), during interpersonal disclo-

[4] Results are available from Heidi S. Kane upon request.

Table 4
Actor-Partner Effects of Self-Disclosure Predicting Sleep Outcomes

Predictor	Subjective sleep quality	Sleep efficiency[a,b]	SOL[a]	WASO[a]	Sleep duration
Wives					
Actor effects					
Self-disclosure$_{bp}$	0.08 (0.28)	0.00 (0.09)	−0.03 (0.12)	0.02 (0.15)	−0.09 (0.29)
Self-disclosure$_{wp}$	0.11 (0.04)**	0.04 (0.01)***	−0.02 (0.01)*	−0.07 (0.02)***	0.10 (0.04)*
Partner effects					
Self-disclosure$_{bp}$	0.22 (0.27)	0.04 (0.09)	0.05 (0.12)	−0.12 (0.14)	0.35 (0.28)
Self-disclosure$_{wp}$	0.04 (0.05)	−0.00 (0.01)	−0.01 (0.01)	0.00 (0.02)	0.01 (0.05)
Husbands					
Actor effects					
Self-disclosure$_{bp}$	0.40 (0.31)	0.23 (0.07)**	−0.18 (0.08)*	−0.42 (0.13)**	−0.06 (0.27)
Self-disclosure$_{wp}$	0.04 (0.04)	0.01 (0.01)	0.01 (0.01)	−0.01 (0.02)	0.04 (0.05)
Partner effects					
Self-disclosure$_{bp}$	−0.29 (0.32)	−0.18 (0.08)*	0.19 (0.08)*	0.24 (0.13)†	0.26 (0.28)
Self-disclosure$_{wp}$	0.00 (0.03)	0.01 (0.01)	−0.01 (0.01)	−0.02 (0.02)	0.06 (0.04)

Note. Parameter estimates are unstandardized beta coefficients, with *SE* in parentheses. $n = 38$ couples. *wp* = within-person; *bp* = between-person; SOL = sleep onset latency; WASO = waking after sleep onset.
[a] $\log_{10}(x + 1)$ transformed variables. [b] coefficient multiplied by −1.
† $p < .10$. * $p \leq .05$. ** $p < .01$.*** $p < .001$.

sure gender or factors associated with gender (e.g., social roles) may become important moderators.

Self-disclosure shortened wives' SOL on days when they reported high negative mood. In prior work, higher marital self-disclosure attenuated the negative effects of daily work worries on diurnal cortisol patterns for wives (Slatcher et al., 2010). The present study extends those findings by examining self-disclosure and negative mood at the daily level and their effects on sleep. In other research, greater daily reports of negative mood are associated with lower subjective sleep quality and greater waking during the subsequent night (Åkerstedt et al., 2012). Thus, self-disclosure to spouses not only directly influences sleep, but may also buffer the deleterious effects of daily negative mood on sleep. Furthermore, wives' higher than average daily positive mood and self-disclosure independently predicted better subjective sleep quality and sleep efficiency. However, husbands did not benefit from self-disclosure on higher than average negative or positive mood days.

Unexpectedly, greater wives' average self-disclosure ratings were associated with husbands' lower sleep efficiency in the APIM analysis. Currently, it is only possible to speculate about potential mechanisms because of the unknown content and valence of the self-disclosures. Wives high in self-disclosure may be perceived as complaining, overdisclosing, or demanding, which may lead to negative reactions by husbands during emotional disclosure (e.g., Kleiboer, Kuijer, Hox, Jongen, Frequin, & Bensing, 2007; Zaider, Heimberg, & Iida, 2010). Research on stress crossover in couples (stress in one spouse influencing the other spouse) suggests that husbands might be more susceptible to stress crossover and respond more negatively to stress crossover than wives (Neff & Karney, 2007). For example in another study, wives' higher negative affect during the day predicted increases in husbands' cortisol levels approximately 1 to 1.5 hr later, but the reverse did not occur (Slatcher et al., 2010). Therefore, high self-disclosing wives may expose their husbands to more negative mood, which may increase husbands' own negative mood and impair sleep.

Of note, participants in this study were "good" sleepers free of sleep disorders such as insomnia. As such, even typically good sleepers report better sleep when they self-disclose to their spouses. Short-lived, infrequent sleep disruptions, such as difficul-

Table 5
Gender Differences in Actor and Partner Self-Disclosure Effects

Predictor	Subjective sleep quality	Sleep efficiency[a]	SOL[a]	WASO[a]	Sleep duration
Intercepts	0.13 (0.19)	0.02 (0.05)	−0.02 (0.06)	0.13 (0.08)†	0.33 (0.12)*
Actor effects					
Self-disclosure$_{bp}$	−0.32 (0.45)	0.23 (0.13)†	0.15 (0.15)	0.44 (0.22)*	−0.03 (0.47)
Self-disclosure$_{wp}$	0.07 (0.06)	−0.03 (0.01)*	−0.03 (0.02)†	−0.06 (0.03)*	0.06 (0.07)
Partner effects					
Self-disclosure$_{bp}$	0.51 (0.45)	−0.22 (0.13)†	−0.14 (0.15)	−0.36 (0.22)	0.09 (0.47)
Self-disclosure$_{wp}$	0.03 (0.06)	−0.01 (0.02)	0.00 (0.02)	0.03 (0.03)	−0.05 (0.07)

Note. Parameter estimates are unstandardized beta coefficients, with *SE* in parentheses. $n = 38$ couples. *wp* = within-person; *bp* = between-person; SOL = sleep onset latency; WASO = waking after sleep onset; the direction of the difference estimate is wives - husbands.
[a] $\log_{10}(x + 1)$ transformed variables.
† $p < .10$. * $p \leq .05$. ** $p < .01$.

ties falling asleep or staying asleep at least once or twice a week are related to poorer cardiovascular and metabolic health outcomes (e.g., Engeda, Mezuk, Ratliff, & Ning, in press). Moreover, good sleepers are still at risk for developing insomnia, and negatively valenced events such as work or interpersonal problems are identified by disturbed sleepers as precipitating factors for insomnia symptoms (Bastien, Vallieres, & Morin, 2004) and may sustain sleep disturbances over the long-term (Spielman, 1986). Thus, self-disclosure to spouses may prevent precipitating factors from contributing to and subsequently sustaining sleep problems. Future research should consider the role of self-disclosure to spouses in the context of sleep disorders and sleep-related health conditions (e.g., maternal-fetal health, cardiovascular disease).

Consistent with research on written self-disclosure, merely disclosing thoughts and feelings to a spouse can benefit sleep regardless of content, valence, or spousal response. However, unlike written self-disclosure, marital self-disclosure is an interpersonal process. As such, spousal responses to self-disclosure likely play a large role in the extent to which self-disclosure is beneficial (Laurenceau et al., 2005; Greene et al., 2006). Future research should examine spousal responses to self-disclosure and the self-discloser's perceptions of these responses in both mediating and moderating the association between self-disclosure and sleep. Although it was possible to examine the effect of self-disclosure in the context of positive and negative mood, future research should also examine the content and valence of self-disclosure. How spouses respond to self-disclosure of both positive and negative events influence perceptions of felt security and the availability of spouses to meet disclosers' needs (Collins & Feeney, 2004), and the quality of spousal responses to these different types of disclosure may have consequences for health.

In terms of limitations, the small sample size limited the ability to detect between-person differences in self-disclosure and to adjust for mood and relationship satisfaction in the APIM analyses. Moreover, small sample size plus restricted between-subjects range in sleep outcomes may have contributed to the counterintuitive findings that after accounting for self-disclosure, greater negative mood was related to better sleep (sleep efficiency for wives, subjective sleep quality for husbands). These findings may also not generalize to individuals for whom sleep may be tied to medical problems, such as older adults or patients with chronic illness. Therefore, these findings need replication in larger samples. In addition, after accounting for relationship satisfaction and mood, greater average self-disclosure was associated with husbands' worse sleep quality. It is currently unclear what might explain this effect, and further research is needed to explore potential mechanisms. Self-disclosure was examined in the context of healthy sleepers, but it might be particularly important for couples dealing with chronic stressors (Hall, Buysse, Nofzinger, Reynolds, & Monk, 2008) or disordered sleeping. Thus, the findings may actually understate the potential impact of self-disclosure on sleep and its health consequences. Future work should also examine whether self-disclosure during particular times of the day may be more important for sleep than others. Finally, although self-reported sleep measures are important predictors of health outcomes (e.g., Chandola, Ferrie, Perski, Akbaraly, & Marmot, 2010), future research would benefit from including objective sleep measures such as actigraphy and polysomnography.

Sleep is critical to individual health and well-being and is increasingly recognized as a dyadic experience that is influenced by the quality of couple relationships (Troxel et al., 2007). These findings highlight the importance of relational activities that occur during the day, such as daily self-disclosure to spouses, in affecting sleep generally and protecting bed partners from the detrimental effects of daily negative mood on sleep. Overall, the association between disclosing thoughts and feelings to a significant other and sleep is a potential mechanism that may explain, in part, the association between close relationships and health and well-being.

References

Åkerstedt, T., Kecklund, G., & Axelsson, J. (2007). Impaired sleep after bedtime stress and worries. *Biological Psychology, 76,* 170–173. doi:10.1016/j.biopsycho.2007.07.010

Åkerstedt, T., Orsini, N., Petersen, H., Axelsson, J., Lekander, M., & Kecklund, G. (2012). Predicting sleep quality from stress and prior sleep: A study of day-to-day covariation across six weeks. *Sleep Medicine, 13,* 674–679. doi:10.1016/j.sleep.2011.12.013

Bastien, C. H., Vallières, A., & Morin, C. M. (2004). Precipitating factors of insomnia. *Behavioral Sleep Medicine, 2,* 50–62. doi:10.1207/s15402010bsm0201_5

Brissette, I., & Cohen, S. (2002). The contribution of individual differences in hostility to the associations between daily interpersonal conflict, affect, and sleep. *Personality and Social Psychology Bulletin, 28,* 1265–1274. doi:10.1177/01461672022812011

Buysse, D. J., Ancoli-Israel, S., Edinger, J. D., Lichstein, K. L., & Morin, C. M. (2006). Recommendations for a standard research assessment of insomnia. *Sleep: Journal of Sleep and Sleep Disorders Research, 29,* 1155–1173.

Chandola, T., Ferrie, J. E., Perski, A., Akbaraly, T., & Marmot, M. G. (2010). The effect of short sleep duration on coronary heart disease risk is greatest among those with sleep disturbance: A prospective study from the Whitehall II cohort. *Sleep: Journal of Sleep and Sleep Disorders Research, 33,* 739–744.

Coan, J. A., Schaefer, H. S., & Davidson, R. J. (2006). Lending a hand: Social regulation of the neural response to threat. *Psychological Science, 17,* 1032–1039. doi:10.1111/j.1467-9280.2006.01832.x

Cohen, S., Alper, C. M., Doyle, W. J., Treanor, J. J., & Turner, R. B. (2006). Positive emotional style predicts resistance to illness after experimental exposure to rhinovirus or influenza A virus. *Psychosomatic Medicine, 68,* 809–815. doi:10.1097/01.psy.0000245867.92364.3c

Collins, N. L., & Feeney, B. C. (2004). An attachment theory perspective on closeness and intimacy. In D. Mashek & A. Aron (Eds.), *Handbook of closeness and intimacy* (pp. 163–187). Mahwah, NJ: Erlbaum.

Dahl, R. E. (1996). The regulation of sleep and arousal: Developmental and psychopathology. *Developmental Psychopathology, 8,* 3–27. doi:10.1017/S0954579400006945

Dew, M. A., Hoch, C. C., Buysse, D. J., Monk, T. H., Begley, A. E., Houck, P. R., . . . Reynolds, C. F., III. (2003). Healthy older adults' sleep predicts all-cause mortality at 4 to 19 years of follow-Up. *Psychosomatic Medicine, 65,* 63–73. doi:10.1097/01.PSY.0000039756.23250.7C

Diamond, L. M., & Hicks, A. M. (2004). Psychobiological perspectives on attachment: Implications for health over the lifespan. In W. S. Rholes & J. A. Simpson (Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 240–263). New York, NY: Guilford Press Publications.

Engeda, J., Mezuk, B., Ratliff, S. & Ning, Y. (in press). Short report: Epidemiology association between duration and quality of sleep and the risk of pre-diabetes: Evidence from NHANES. *Diabetic Medicine*. doi:10.1111/dme.12165

Epstein, E. M., Sloan, D. M., & Marx, B. P. (2005). Getting to the heart of the matter: Written disclosure, gender, and heart rate. *Psychosomatic Medicine, 67,* 413–419. doi:10.1097/01.psy.0000160474.82170.7b

Funk, J. L., & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the Couples Satisfaction Index. *Journal of Family Psychology, 21,* 572–583. doi:10.1037/0893-3200.21.4.572

Gable, S. L., Reis, H. T., & Downey, G. (2003). He said, she said: A quasi-signal detection analysis of daily interactions between close relationship partners. *Psychological Science, 14,* 100–105. doi:10.1111/1467-9280.t01-1-01426

Gable, S. L., Reis, H. T., Impett, E. A., & Asher, E. R. (2004). What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events. *Journal of Personality and Social Psychology, 87,* 228–245. doi:10.1037/0022-3514.87.2.228

Greene, K., Derlega, V. J., & Mathews, A. (2006). Self-disclosure in personal relationships. In A. Vangelisti & D. Perlman (Eds.), *The Cambridge handbook of personal relationships* (pp. 409–427). Cambridge, UK: Cambridge University Press.

Hall, M., Buysse, D. J., Nofzinger, E. A., Reynolds, C. F., III, Thompson, W., Mazumdar, S., & Monk, T. H. (2008). Financial strain is a significant correlate of sleep continuity disturbances in late-life. *Biological Psychology, 77,* 217–222. doi:10.1016/j.biopsycho.2007.10.012

Harvey, A. G., & Farrell, C. (2003). The efficacy of a Pennebaker-like writing intervention for poor sleepers. *Behavioral Sleep Medicine, 1,* 115–124. doi:10.1207/S15402010BSM0102_4

Hasler, B. P., & Troxel, W. M. (2010). Couples' nighttime sleep efficiency and concordance: Evidence for bidirectional associations and daytime relationship functioning. *Psychosomatic Medicine, 72,* 794–801. doi:10.1097/PSY.0b013e3181ecd08a

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine, 40,* 218–227. doi:10.1007/s12160-010-9210-8

Hicks, A. M., & Diamond, L. M. (2011). Don't go to bed angry: Attachment, conflict, and affective and physiological reactivity. *Personal Relationships, 18,* 266–284. doi:10.1111/j.1475-6811.2011.01355.x

Hoffman, L., & Stawski, R. S. (2009). Persons as contexts: Evaluating between-person and within-person effects in longitudinal analysis. *Research in Human Development, 6,* 97–120. doi:10.1080/15427600902911189

Kane, H. S., McCall, C., Collins, N. L., & Blascovich, J. (2012). Mere presence is not enough: Responsive support in a virtual world. *Journal of Experimental Social Psychology, 48,* 37–44. doi:10.1016/j.jesp.2011.07.001

Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: The Guilford Press.

Kiecolt-Glaser, J. K., & Newton, T. L. (2001). Marriage and health: His and hers. *Psychological Bulletin, 127,* 472–503. doi:10.1037/0033–2909.127.4.472

Laurenceau, J., Barrett, L. F., & Pietromonaco, P. R. (1998). Intimacy as an interpersonal process: The importance of self-disclosure and perceived partner responsiveness in interpersonal exchanges. *Journal of Personality and Social Psychology, 74,* 1238–1251. doi:10.1037/0022-3514.74.5.1238

Kleiboer, A. M., Kuijer, R. G., Hox, J. J., Jongen, P. J., Frequin, S. T., & Bensing, J. M. (2007). Daily negative interactions and mood among patients and partners dealing with multiple sclerosis (MS): the moderating effects of emotional support. *Social Science & Medicine, 64,* 389–400. doi:10.1016/j.socscimed.2006.07.016

Laurenceau, J. P., Barrett, L. F., & Rovine, M. J. (2005). The interpersonal process model of intimacy in marriage: A daily-diary and multilevel modeling approach. *Journal of Family Psychology, 19,* 314–323. doi:10.1037/0893-3200.19.2.314

Mikulincer, M., & Nachshon, O. (1991). Attachment styles and patterns of self-disclosure. *Journal of Personality and Social Psychology, 61,* 321–331. doi:10.1037/0022-3514.61.2.321

Minkel, J., Htaik, O., Banks, S., & Dinges, D. (2011). Emotional expressiveness in sleep-deprived healthy adults. *Behavioral Sleep Medicine, 9,* 5–14. doi:10.1080/15402002.2011.533987

Monk, T. H., Reynolds, C. F., Kupfer, D. J., Buysse, D. J., Coble, P. A., Hayes, A. J., Machen, M. A., Petrie, S. R., & Ritenour, A. M. (1994). The Pittsburgh sleep diary. *Journal of Sleep Research, 3,* 111–120. doi:10.1111/j.1365-2869.1994.tb00114.x

Mooney, P., Espie, C. A., & Broomfield, N. M. (2009). An experimental assessment of a Pennebaker writing intervention in primary insomnia. *Behavioral Sleep Medicine, 7,* 99–105. doi:10.1080/15402000902762386

Morin, C. M., Rodrigue, S., & Ivers, H. (2003). Role of stress, arousal, and coping skills in primary insomnia. *Psychosomatic Medicine, 65,* 259–267. doi:10.1097/01.PSY.0000030391.09558.A3

National Sleep Foundation. (2011). *Sleep in America bedroom poll*. Washington, DC: Author.

Neff, L. A., & Karney, B. R. (2007). Stress crossover in newlywed marriage: A longitudinal and dyadic perspective. *Journal of Marriage and Family, 69,* 594–607. doi:10.1111/j.1741-3737.2007.00394.x

Ohayon, M. M. (2002). Epidemiology of insomnia: What we know and what we still need to learn. *Sleep Medicine Reviews, 6,* 97–111. doi:10.1053/smrv.2002.0186

Pennebaker J. W., & Chung C. K. (2011). Expressive writing: Connections to physical and mental health. In H. S. Friedman (Ed.), *Oxford handbook of health psychology* (pp. 417–437). New York, NY: Oxford University Press.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31,* 437–448. doi:10.3102/10769986031004437

Reis, H. T., & Shaver, P. (1988). Intimacy as an interpersonal process. In S. Duck, D. F. Hay, S. E. Hobfoll, W. Ickes, & B. M. Montgomery (Eds.), *Handbook of personal relationships:Theory, research and interventions* (pp. 367–389).

Robles, T. F., Reynolds, B. M., Repetti, R. L., & Chung, P. J. (2013). Using daily diaries to study family settings, emotions, and health in everyday life. *Journal of Social and Personal Relationships, 30,* 179–188. doi:10.1177/0265407512457102

Robles, T. F., Slatcher, R. B., Trombello, J. M., & McGinn, M. M. (2013, March 25). Marital quality and health: A meta-analytic review. *Psychological Bulletin*. Advance online publication. doi:10.1037/a0031859

Scharfe, E., & Eldredge, D. (2001). Associations between attachment representations and health behaviors in late adolescence. *Journal of Health Psychology, 6,* 295–307. doi:10.1177/135910530100600303

Sheese, B. E., Brown, E. L., & Graziano, W. G. (2004). Emotional expression in cyberspace: Searching for moderators of the Pennebaker disclosure effect via e-mail. *Health Psychology, 23,* 457–464. doi:10.1037/0278-6133.23.5.457

Shrout, P. E., & Lane, S. P. (2012). Psychometrics. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 302–320). New York, NY: Guilford Press.

Slatcher, R. B., Robles, T. F., Repetti, R. L., & Fellows, M. D. (2010). Momentary work worries, marital disclosure and salivary cortisol among parents of young children. *Psychosomatic Medicine, 72,* 887–896. doi:10.1097/PSY.0b013e3181f60fcc

Spielman, A. J. (1986). Assessment of insomnia. *Clinical Psychology Review, 6,* 11–25. doi:10.1016/0272-7358(86)90015-2

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate satistics* (5th ed). USA: Pearson Education Inc.

Troxel, W. M. (2010). It's more than sex: Exploring the dyadic nature of sleep and implications for health. *Psychosomatic Medicine, 72,* 578–586. doi:10.1097/PSY.0b013e3181de7ff8

Troxel, W. M., Robles, T. F., Hall, M., & Buysse, D. J. (2007). Marital quality and the marital bed: Examining the covariation between relationship quality and sleep. *Sleep Medicine Reviews, 11,* 389–404. doi:10.1016/j.smrv.2007.05.002

Vandekerckhove, M., Kestemont, J., Weiss, R., Schotte, C., Exadaktylos, V., Haex, B., Verbraecken, J., & Gross, J. J. (2012). Experiential versus analytical emotion regulation and sleep: Breaking the link between negative events and sleep disturbance. *Emotion, 12,* 1415–1421. doi:10.1037/a0028501

Zaider, T. I., Heimberg, R. G., & Iida, M. (2010). Anxiety disorders and intimate relationships: A study of daily processes in couples. *Journal of Abnormal Psychology, 119,* 163–173. doi:10.1037/a0018473

Received June 16, 2013
Revision received December 30, 2013
Accepted December 31, 2013 ■