

Sexual healing: Daily diary evidence that sex relieves stress for men and women in satisfying relationships

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Abstract

Research investigating the link between stress and sexual activity has been limited and the findings equivocal. We examined the stress–sexual activity link and the moderating effects of gender and relationship satisfaction using a daily diary methodology. Seventy-five heterosexual Israeli adults were asked in an initial session to report on their relationship satisfaction. Then, these participants were asked to provide daily diary measures of stress and sexual activity for a period of 18 consecutive weekdays. We found that stressful days increased the probability of having sex on a subsequent day, and that sexual intercourse relieved stress for both men and women in satisfying relationships, but not in unsatisfying relationships. The discussion emphasizes the importance of sex in regulating emotions and maintaining psychological wellbeing, especially among those satisfied with their relationships.

Keywords

sex, stress

Is sex the perfect remedy for high levels of daily stress, or does stress knock out your sex drive? There seem to be good reasons to believe that stress could be both an aphrodisiac and a lust-buster. Investigations of the link between stress and sex, however, have been

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limited and the findings indefinite (e.g., Bodenmann, Atkins, Schar, & Poffet, 2010; Bodenmann, Ledermann, & Bradbury, 2007). For instance, some research suggests that sexual interest and activity tend to decrease when people experience negative mood (e.g., stress; Bodenmann et al., 2010), but to increase when they experience an elevated mood (e.g., hypomania; Segraves, 1998). Other research has revealed an opposite pattern and suggests that the frequency of sexual intercourse is positively associated with levels of daily stress, such that more stress is related to increased sexual activity (Bancroft et al., 2003; Morokoff & Gilliland, 1993). Because much of the research on stress and sexual activity has relied on correlational, cross-sectional designs, it has been difficult to make inferences about the possible processes underlying the relationship between stress and sex.

Recently, some studies have suggested that relationship satisfaction may be an important moderator of stress and sexual activity (e.g., Bodenmann et al., 2007). The present study examined the link between stress and sexual activity using a daily diary methodology, and examined the role of gender and relationship satisfaction as possible moderators of the stress–sexual activity link. This approach enabled us to investigate the link between stress and sex using a relatively high-resolution methodology that examines the relationship over time, thus allowing us to draw inferences on the directionality (but not the causality) of effects. Moreover, the moderators we used allowed us to determine whether there are individual differences in the relationship between daily stress and sexual activity.

Stress and sexual activity

Research investigating the influence of mood on sexual activity and interest, portrays a complex relationship between these two phenomena. For instance, participants who were induced with negative mood primes in the laboratory responded with impaired physiological responses to erotic stimuli (Mitchell, DiBartolo, Brown, & Barlow, 1998; Wolchik et al., 1980). In other studies, however, experimental inductions of negative states in the laboratory resulted in enhanced sexual responses among sexually functional men (for a review, see Cranston-Cuebas & Barlow, 1990).

Studies using self-report methods have also revealed similarly inconsistent patterns of relations between stress and sexual activity. For instance, Bancroft and his colleagues (2003, Study 1) reported that during stressful times, a similar proportion of male participants showed a decline in sexual interest (28.3%) as those who showed an incline in sexual interest (20.6%). Likewise, a similar proportion of participants reported a decrease in their erectile responsiveness following stress (16.6%) to those showing an increase in erectile responsiveness following stress (10.6%). Other studies found that an elevation in daily hassles was associated with heightened sexual desire for both men and women, but was also associated with stronger negative emotions during sexual intercourse for women (Morokoff & Gilliland, 1993). Recently, Bodenmann and colleagues (2010) used a retrospective diary methodology (i.e., reporting once a week on the events of that week) and revealed that an elevation in subjective stress was associated with lower sexual activity for both men and women. Other studies have linked stress to higher prevalence of sexual problems, such as hypoactive sexual interest, sexual aversion,

vaginismus, and premature ejaculation (Bodenmann, Ledermann, Blattner-Bolliger, & Galluzzo, 2006).

Using in-depth interviews, Bancroft and colleagues (2003, Study 2) attempted to understand why for some men stress seems to be associated with an increase, and for others with a decrease in sexual interest. Their findings revealed that only men who reported an increased interest in sex when feeling stressed said that they used sex as a means to alleviate distress. Thus, it seems that for some men stress automatically activates thoughts of sex, and that these are also the men who successfully use sex to regulate stress. These findings and others suggest that there are individual differences between those who can and those who cannot regulate distress with sexual activity, but the exact characteristics of these individuals remain unclear.

The possible moderating roles of relationship satisfaction and gender

One possible moderator that may explain individual differences in the propensity to use sex as a stress alleviating strategy is relationship satisfaction. Although sexual intercourse in and of itself may help people relieve stress, it is likely that having sex with someone with whom one shares feelings of closeness and intimacy would be especially effective. Conversely, sex in the context of relationships that are inherently stressful may not have such anxiety-buffering properties, and may even exacerbate distress.

In their classic examination of the relationship between stress and sexual activity, Morokoff and Gilliland (1993) showed that for both partners in a marital relationship, desired frequency of sexual intercourse increased with daily hassles. However, couples' relationship satisfaction moderated this association such that higher relationship satisfaction was associated with greater sexual satisfaction, and with greater perceived spousal sexual satisfaction. Consistent with this view, satisfying sexual relationships (i.e., satisfaction with frequency and quality of sexual relations and absence of sexual dysfunction) have been associated with greater feelings of love (e.g., Hendrick & Hendrick, 2002), marital happiness (e.g., Breznsnyak & Whisman, 2004), and with lower levels of marital conflict and feelings of stress (Metz & Epstein, 2002). Studies have also shown that unsatisfying relationships are characterized by lower sexual satisfaction and with a greater likelihood of sexual dysfunction (e.g., Hurlbert, Apt, Hurlbert, & Pierce, 2000).

Recently, Bodenmann and his colleagues (2007) surveyed individuals in long-term heterosexual relationships and examined whether higher levels of daily stress predict greater frequency of sexual activity, and whether relationship satisfaction moderates this association. In keeping with Morokoff and Gilliland's (1993) findings, the results indicated that higher levels of daily stress were associated with more sexual activity (defined as the frequency of petting, partner stimulation [massages], oral sex, and sexual intercourse). Contrary to expectations, however, the association between stress and levels of sexual activity was not found exclusively among couples with higher relationship satisfaction. Rather, relationship dissatisfaction was associated with a decrease in sexual activity among women, but with an increase in sexual activity

among men. Thus, the association between daily stress and sexual activity may vary as a function of marital satisfaction and gender.

Much of the research exploring the association between stress and sexual activity, as well as the role gender and marital satisfaction have played in moderating this link, has used cross-sectional research designs. The use of cross-sectional research precludes investigators from drawing inferences about the direction of effects. Thus, it is not clear whether levels of stress influence sexual activity or whether sexual activity influences subsequent levels of stress. Moreover, global measures of stress and sexual activity may not be sensitive enough to accurately determine the nature of the relationship between these variables as the relationship between stress and sexual activity is likely to be time-sensitive such that these variables influence each other within a limited time-frame. Recently, Bodenmann and colleagues (2010) used a retrospective daily diary methodology to assess the link between stress and sexual activity. They found that the probability of sexual behavior during a stressful week was lower than on less stressful weeks. In their study, however, the authors did not assess the possibility for a bi-directional influence of stress and sexual activity, and did not assess the possible role of important factors such as gender and marital satisfaction. Also, the retrospective daily diary methodology may result in recall bias. In the current study we employed a daily diary study methodology to address some of these limitations and to examine the temporal fluctuations and interrelations between daily stress and sexual activity.

The current study

In the present study, we examined the hypothesis that relationship satisfaction and gender would moderate the association between sexual experience and daily stress using a daily diary methodology. The study combined between- and within-person levels of analysis, enabling a more accurate examination of the processes underlying the stress–sexual activity link. Further, to investigate the temporal direction of the relationship between sexual activity and stress, we conducted lagged-day analyses that enabled us to determine whether levels of stress were influenced by sexual activity on a previous day, or whether sexual activity followed a previously stressful day. In addition, we examined whether these temporal effects were qualified by relationship satisfaction and gender.

To address these questions, we asked participants in an initial session to report on their relationship satisfaction. Then, these participants were asked to provide daily diary measures of stress and sexual activity for a period of 18 consecutive weekdays. On this basis, we examined whether relationship satisfaction and gender moderated (a) the contribution of having sex on a given day to next-day reports of stress (after controlling for stress on that day), and (b) the contribution of stress reported on a given day to having sex on the subsequent day. We predicted that the prevalence of sexual intercourse would be higher following a stressful day than following a less stressful day and that the occurrence of sexual intercourse would then be linked with a reduction in the level of stress on a subsequent day. Moreover, we predicted that the palliative influence of sexual

intercourse would be more apparent in men than in women, and would be manifested primarily in satisfying relationships.

Method

Participants

Seventy-five heterosexual Jewish Israeli adults (34 men and 41 women) participated in the study for course credit. Potential study participants were included in the sample if they (a) were in a steady monogamous relationship and were cohabiting with their partners for more than six months, (b) agreed to report on their daily behaviors each evening for a period of 18 weekdays (excluding Friday evening, the Jewish Sabbath, to allow religious people to participate), and (c) were currently sexually active (defined as having vaginal sex at least once a week in the two months preceding the study). None of the men and women in the study was in a relationship with one another.

Women ranged in age from 19 to 35 years ($M = 24.63$, $SD = 3.16$) and in years of education from 12 to 20 years of schooling ($M = 14.95$, $SD = 1.88$). Men ranged in age from 22 to 39 years ($M = 26.15$, $SD = 3.25$) and in years of education from 12 to 21 years of schooling ($M = 14.45$, $SD = 2.06$). Seventy-seven percent of the participants were married and 10% had children. Fifty-three percent of the participants were secular, and 47% were religious.¹ The frequency of reported sexual activity (defined as vaginal, oral, or anal sex) during the 18 days of the study period ranged from 3 to 12 ($M = 4.31$, $SD = 2.69$).

Materials and procedure

To recruit participants, flyers were posted on various campuses in the central region of Israel. Potential participants telephoned a research assistant and those who met inclusion criteria were invited to the laboratory, filled out a background questionnaire, and were instructed on how to complete the diary questionnaires. The instructions emphasized that participants should complete the questionnaire at home every evening, excluding Fridays, on each of the 18 weekdays of the study, and that they should fill out the forms individually and privately. To ensure compliance with the diary protocol a research assistant phone called participants twice a week (for an average of six times). At the end of the study, a research assistant met each participant and collected the completed forms.

Relationship satisfaction was assessed with the 15-item Locke-Wallace Short Marital Adjustment Test (Locke & Wallace, 1959), tapping variations in relationship quality, and amount of agreement on issues affecting the relationship, such as finances, recreation, affection, friends, and conflict resolution. The Locke-Wallace is one of the most widely accepted instruments for measuring marital satisfaction in couples as well as general relationship satisfaction. Possible scores range from 2 to 158, with higher scores indicating greater relationship satisfaction. Men's relationship satisfaction ranged between 67 and 151 ($M = 111.61$, $SD = 17.46$, $Mdn = 111.5$), whereas women's

relationship satisfaction ranged between 65 and 147 ($M = 104.82$, $SD = 15.57$, $Mdn = 105$). Internal consistency assessed using Cronbach's α was .81.

The diary questionnaire included two sections. In the first section, participants reported whether or not they had one or more of 28 stressful events on that day (since completing the last questionnaire in the previous evening), and then rated the level of stress on a seven-point scale, ranging from (1) *very low stress* to (7) *very high stress* (e.g., "I failed a task"; "I had car problems"). The 28 behaviors were sampled from the Daily Hassles and Uplifts Scale (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982) and assessed the occurrence of external stressors (i.e., external to the romantic relationship). We computed a mean stress score for each participant on each day by dividing the sum of stress intensities by the frequency of the stressful events (scores ranged from 1.12 to 6.18, $M = 3.09$, $SD = 1.04$ for men; $M = 2.98$, $SD = 1.16$ for women).² In the second section, participants reported whether or not they had sexual intercourse in the past 24 hours (since completing the last questionnaire in the previous evening).

Overall, 5.6% of the data was missing. Missing data was handled using WinMICE software (Jacobusse, 2005) that enables multilevel Multiple Imputation (MI) (Rubin, 1987; Schafer, 1997) as recommended by Bollen and Curran (2006). The imputation algorithm consisted of all main study measures (daily reports of sexual intercourse and stress, participants' relationship satisfaction and gender) as well as participants' age, years of education, family status (married = 1 vs. dating = 0), and religious status (religious = 1 vs. secular = 0).

Results

The contribution of sexual intercourse to stress

In this section, we examined: (a) whether sexual intercourse on a given day was associated with the mean level of stress on the subsequent day; and (b) whether this association was qualified by relationship satisfaction and gender. To address these questions we used Hierarchical Linear Modeling (HLM) (Bryk & Raudenbush, 1992) which enabled us to account for both between-participant (relationship satisfaction and gender) and within-participant (daily reports of sexual intercourse and stress) variance. We effect-coded the occurrence of sexual intercourse to represent whether or not sexual intercourse had occurred on a given day (-1 = no sexual intercourse; 1 = sexual intercourse) and then we examined the main effects and interactions of sexual intercourse, relationship satisfaction, and gender (0 = women, 1 = men) on levels of stress on a subsequent day, controlling for level of stress on the previous day.

Hierarchical linear modeling provides independent coefficients for the associations among constructs at the lower level (i.e., within-person associations between sexual intercourse on a given day and changes in stress from that day to the next) and models them at the upper level (i.e., between-person effects of relational satisfaction and gender) using full maximum likelihood estimation. The lower level of analysis (repeated-measures level) included daily variations in sexual intercourse and stress, which are nested within individuals. Specifically, we examined the main effects of intercourse and participants' reports of stress on a particular day and the interaction between these

Table 1. Unstandardized HLM coefficients predicting daily level of stress from participants' gender, relationship satisfaction, and the occurrence of sexual intercourse on a previous day

		Level of stress
Repeated-measures level	Stress level on previous day (Stress)	.17***
	Sexual intercourse on previous day (Sexual intercourse)	.32***
Person level	Gender	.16*
	Relationship satisfaction	.05
Interactions	Stress × Gender	-.10*
	Stress × Relationship satisfaction	.01
	Sexual intercourse × Gender	-.03
	Sexual intercourse × Relationship satisfaction	.14
	Stress × Sexual intercourse	-.09*
	Stress × Sexual intercourse × Gender	-.01
	Stress × Sexual intercourse × Relationship satisfaction	-.07**

Note. *df* (72, 1263). * $p < .05$, ** $p < .01$, *** $p < .001$.

variables on levels of reported stress the following day. To assess the unique contribution of sexual intercourse on subsequent stress measured the following day, measures of stress from the previous day were included to control for the associations between levels of stress measured on consecutive days.

The upper level (person level) of the two-level model included participants' relationship satisfaction score and gender, allowing us to examine the contribution of these variables to variations in (a) daily reports of stress, and (b) day-level associations between sexual intercourse on one day and changes in stress from that day to the next. To ease interpretation, relationship satisfaction was centered around the grand mean, and variables at the lower level (i.e., day) were centered, for each participant, around their individual means.

As shown in Table 1, men reported having higher levels of stress compared with women, $\gamma = .16, p = .011$. Moreover, the analysis revealed a significant effect of stress on a given day on reports of stress the following day, $\gamma = .17, p < .001$: The higher a participant's stress on a given day, the higher their report of stress the following day. These main effects were qualified by a two-way interaction between gender and stress on a given day, $\gamma = -.10, p = .011$. Using Preacher, Curran, and Bauer's (2006) interaction probing test for HLM, we found a significant association between levels of stress on a given day and levels of stress the following day for women $\gamma = .27, p < .001$, but not for men $\gamma = .06, p = .54$.

Furthermore, the analysis revealed a significant effect of sexual intercourse on a given day on reports of stress the following day, $\gamma = .32, p < .001$. This main effect was qualified by the expected interaction between sexual intercourse on a given day and stress on a given day, $\gamma = -.09, p = .011$. We found that the association between stress on a given day and next day's level of stress was significantly lower following a day with sexual intercourse: The simple slope relating stress on a given day and next day's stress was lower following a day with sexual intercourse, $\gamma = .08, p = .045$, than following a day without sexual intercourse, $\gamma = .26, p < .001$. In other words, sexual intercourse

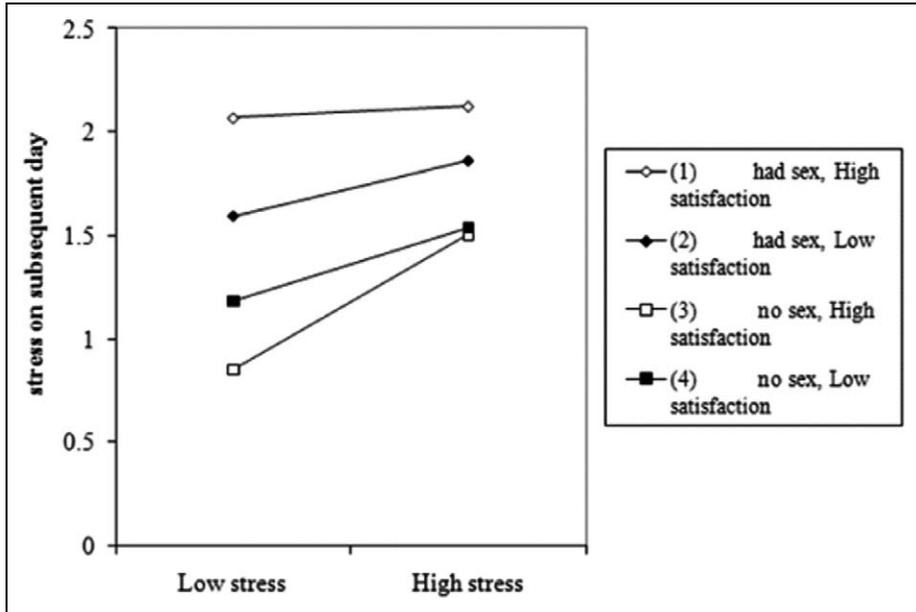


Figure 1. Probing of the interaction between stress on a given day, occurrence of sexual intercourse and relational satisfaction, revealed that sexual intercourse relieves stress only for participants high in relationship satisfaction, but not for participants low in relationship satisfaction.

seems to relieve stress by diminishing the association between levels of stress on a given day and levels of stress on a subsequent day. This two-way interaction was further qualified by the expected three-way interaction between sexual intercourse, levels of stress on a given day, and relationship satisfaction, $\gamma = -.07$, $p = .007$ (see Figure 1). The analysis revealed that sexual intercourse relieves stress only for participants high in relationship satisfaction, but not for participants low in relationship satisfaction. Thus, the simple slope relating stress on a given day and next day's stress for participants low in relationship satisfaction was unaffected by whether they had sexual intercourse or not, $\gamma = .15$, and $\gamma = .17$, $ps < .01$, respectively. For participants high in relationship satisfaction, however, the simple slope relating levels of stress on a given day and the following day's stress was only significant following a day without sexual intercourse, γ of $.31$, $p < .001$, but not following a day with sexual intercourse, γ of $.01$, $p = .81$. In other words, sexual intercourse appears to relieve stress by disrupting the negative escalation of stress, wherein stress on one day contributes to stress on subsequent days. This link, however, was only evident for persons high in relationship satisfaction. All other main effects and interactions were not significant.

The contribution of stress to sexual intercourse

In this section, we examined whether: (a) mean level of stress on a given day was associated with the probability for sexual intercourse on the subsequent day; and (b) whether this association was qualified by relationship satisfaction and gender.

Table 2. Unstandardized HGLM coefficients predicting daily level of stress from participants' gender, relationship satisfaction, and the occurrence of sexual intercourse on previous day

		Sexual intercourse (slope)	Sexual intercourse (odds ratio)
Repeated-measures level	Level of stress on previous day (Stress)	.44***	1.55
Person level	Gender	.78*	1.55
	Relationship satisfaction	.73*	2.08
Interactions	Gender × Relationship satisfaction	-.41	.67
	Stress × Gender	.23*	1.21
	Stress × Relationship satisfaction	-.11 ~	.90
	Stress × Gender × Relationship satisfaction	.16*	1.17

Note. *df* (118, 2066). ~ $p < .06$, * $p < .05$, ** $p < .01$, *** $p < .001$.

The lower level of analysis (repeated-measures level) included daily variations in stress. Specifically, we looked at the main effect of participants' reports of stress on a given day on their reports of sexual intercourse the following day (0 = no sexual intercourse; 1 = sexual intercourse).

The upper level (person level) of the two-level model included participants' relationship satisfaction score, gender (-1 = men; 1 = women), and the interaction between participants' relationship satisfaction score and gender, allowing us to examine the contribution of these variables to variations in: (a) daily reports of sexual intercourse; and (b) day-level associations between stress on one day and sexual intercourse on the next.³ To ease interpretation, relationship satisfaction was centered around the grand mean, and variables at the lower level were centered, for each participant, around their individual means. Because the dependent variable (sexual intercourse on a given day) was dichotomous, we used Hierarchical Generalized Linear Modeling (i.e., nonlinear models) (HGLM) (Bryk & Raudenbush, 1992) with a logit link function.

As shown in Table 2, the probability of men having sexual intercourse was greater than women, $\gamma = .78$, $Exp(B) = 1.55$, $p = .028$.⁴ In addition, participants high in relationship satisfaction were more likely to have sexual intercourse than participants low in relationship satisfaction, $\gamma = .73$, $Exp(B) = 2.08$, $p = .007$. Moreover, the analysis revealed a significant effect of stress on a given day on reports of sexual intercourse the following day, $\gamma = .44$, $Exp(B) = 1.55$, $p < .001$: The greater the intensity of daily hassles on a given day, the greater the probability of having sexual intercourse on the subsequent day. These main effects were qualified by two two-way interactions: level of stress on a given day X gender, $\gamma = .23$, $Exp(B) = 1.21$, $p = .012$, and level of stress on a given day X relationship satisfaction (marginally significant), $\gamma = -.11$, $Exp(B) = .90$, $p = .06$. These interactions were qualified further by the expected three-way interaction between level of stress on a given day, gender, and relationship satisfaction, $\gamma = .16$, $Exp(B) =$

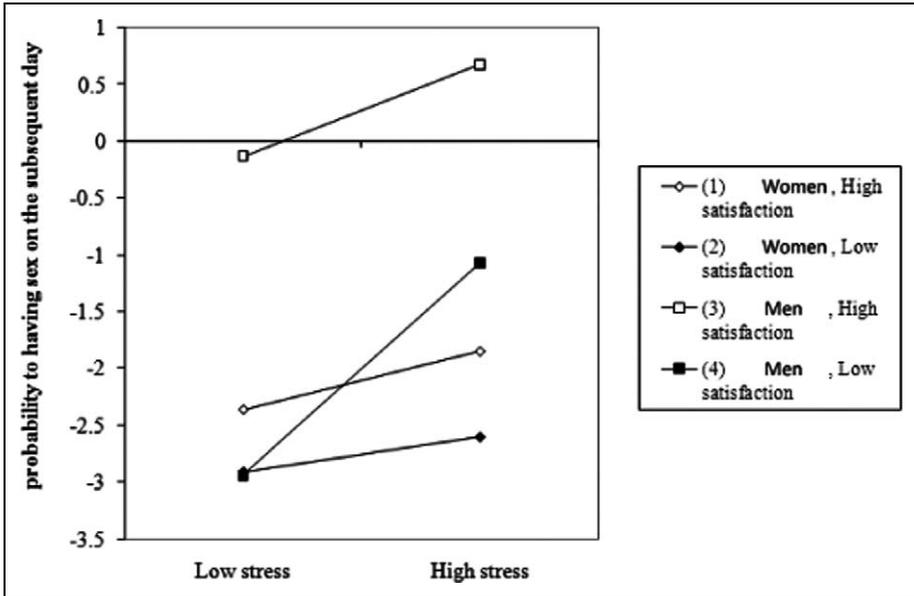


Figure 2. Probing the interaction between stress on a given day, gender and satisfaction revealed that for men, the greater the intensity of daily hassles on a given day, the greater the probability of having sexual intercourse on the subsequent day; however, this link was marginally stronger for men low on relationship satisfaction than for men high on relationship satisfaction.

1.17, $p = .018$ (see Figure 2). Using Dawson and Richter's (2006) method to calculate the difference between simple slopes in three-way interactions, we found that for men, the greater the intensity of daily hassles on a given day, the greater the probability of having sexual intercourse on the subsequent day; however, this link was marginally stronger for men low on relationship satisfaction (one standard deviation below the mean of relationship satisfaction; $\gamma = .94, p < .001$) than for men high on relationship satisfaction (one standard deviation above the mean of relationship satisfaction; $\gamma = .40, p = .0075$), $t(295) = 1.80, p = .07$. This positive link between the intensity of daily hassles on a given day and the probability of having sexual intercourse on the subsequent day was only significant for women high on relationship satisfaction, $\gamma = .26, p = .0024$, but not for women low on relationship satisfaction, $\gamma = .15, p = .14$. The difference between these slopes, however, was not significant, $t(295) = .26, p = .80$. Thus, relationship satisfaction qualified men's stress–sex link, but not women's.

Discussion

For nearly 20 years, since Morokoff and Gilliland's (1993) examination of the link between stress and sexuality, only a paucity of research has explored this association and the findings have been inconsistent. Some research findings have suggested that sexual activity tends to decrease at times of elevated stress; other findings indicated that the

frequency of sexual intercourse increases when levels of stress are high (Bancroft et al., 2003; Morokoff & Gilliland, 1993; Segraves, 1998). Recently, research has shown that relationship satisfaction and gender are important moderators of the relationship between levels of stress and sexual activity (e.g., Bodenmann et al., 2007). In the present study, we attempted to elucidate the relationship between daily stress and sex and the role gender and relationship satisfaction play in this process by using a daily diary methodology.

Our findings showed bidirectional associations of stress on sex. Sexual activity on one day was linked with lower levels of stress on the other, and higher levels of stress on one day predicted a higher likelihood of having sex on a subsequent day. These links, however, were qualified by gender. Specifically, we found that the probability of having sexual intercourse following a relatively stressful day was higher for men than women. This finding corroborates previous research that demonstrated an association between stress and higher sexual desire among both men and women, with women experiencing more negative emotions during intercourse (Morokoff & Gilliland, 1993). The weaker association between stress and sex among women in our study and the negative emotions women experienced during intercourse in the Morokoff and Gilliland study suggest that the effect of sex as a stress-alleviating behavior is more complex for women than men. Our findings, however, indicate that although men are more likely to have sexual intercourse following a relatively stressful day compared with women, for both men and women sexual intercourse appeared to relieve stress by disrupting the negative escalation of stress from one day to the next.

Our findings also showed that women's stress–sex link was unaffected by their level of relationship satisfaction. For men, however, the calming effects of sexual intercourse were more pronounced when their relationship satisfaction was low. These findings are in keeping with previous research that indicated that for men in unsatisfying relationships, stress was associated with increased sexual activity (Bodenmann et al., 2007). Similarly, recent research has indicated that relationship conflict increases men's, but not women's, attraction to their partner (Birnbaum, Mikulincer, & Austerlitz, 2011). Our findings are also consistent with Baumeister's (2000) contention that men's sexual desire is driven by internal factors (e.g., physiological arousal), whereas women's sexual desire is more responsive to changes in the interpersonal environment. Thus, for men, sex may sometimes be merely an act of physical relief, and not necessarily a manifestation of emotional closeness (Birnbaum et al., 2011). It is also possible that men in unsatisfying relationships are unable to get relief from stress through emotional closeness and social support, and therefore rely more strongly on physical intimacy.

The current research constitutes an attempt to examine the temporal fluctuations and interrelations between daily stress and sexual activity. It offers several benefits and contributes both theoretically and methodologically to the growing literature on the way sexual activity affects stress (and vice versa) differently for men and women, and for people in satisfying and unsatisfying relationship. There are, however, certain limitations to this research that need to be acknowledged. First, the reliance on self-report methods to assess sexual activity may be biased due to false accommodation to gender norms (distorted reporting consistent with gender stereotypes), and social desirability. This limitation is partially addressed by recent research showing that different methods of measuring sexual activity produced similar patterns of results (Alexander & Fisher,

2003). Second, we used a pencil-paper diary procedure that precludes the ability to be certain about the level of compliance with the timing of completion of the diaries (see Broderick, 2008 for a review). Thus, we cannot rule out the possibility that retrospective recollection biased some of our data. Although, the use of volunteers and bi-weekly contacts with the participants may have increased the rates of compliance (Tennen, Affleck, Coyne, Larsen, & DeLongis, 2006), future research would benefit from the use of internet-based diaries that can monitor the timing of responses more accurately. Third, we demonstrated that both men and women in satisfying relationships benefited from sexual intercourse to relieve stress. Sexual intercourse, nevertheless, may relieve stress regardless of relationship satisfaction as seems to be the case with men. Thus, our research cannot determine whether the quality of the sexual act, the quality of the relationship or both are responsible for the stress-buffering properties of sex. Future research would benefit from differentiating sexual frequency and sexual satisfaction. Fourth, in the current study, men reported more daily hassles than women; yet large community surveys (e.g., Matud, 2004) indicate that women score significantly higher than men in chronic stress and minor daily stressors. This gap may be partly bridged by findings showing that women experience stress related to family and health-related events (i.e., personal and relational events), whereas men experience stress that is related to financial and work-related events (i.e., events outside of the relationship; see Matud, 2004). The daily hassles scale used in the current study assessed the occurrence of external stressors (i.e., external to the romantic relationship). Thus, the daily stress measured in our study may have tapped issues that are more stressful to men than to women. Future studies, however, would benefit from exploring both external and internal events in respect to relationships. Finally, sexual intercourse is a dyadic experience. The current study was conducted on individuals in steady relationships, but not on their relationship partners. It is likely that examining levels of stress and sexual activity over time on both relationship partners would reveal a more complete picture of the dynamic interplay of stress and sex. These important questions may be addressed in future research using longitudinal dyadic design, which may enable a broader understanding of the link between stress and sexual activity.

In spite of these limitations, the current research provides a glimpse at the temporal fluctuations and interrelations between daily stress and sexual activity, and indicates that one of the upshots of sexual activity in the context of satisfying relationships is that it helps men and women regulate emotions and cope with ongoing daily distress.

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Notes

1. Preliminary analysis revealed that secular participants report significantly more sexual activity than religious participants [$Exp(B) = 10.96, p < .001$]. Therefore in subsequent analyses we controlled for participants' religious orientation. Conversely, participants' family status

- (married vs. single) and parenthood status (having children vs. no children) were not related to their sexual activity [$Exp(B) = 1.12, p = .43$, and $Exp(B) = 1.21, p = .26$, respectively].
2. Previous research (e.g., Lazarus & Folkman, 1984) has shown that the outcome of stress is best predicted by its intensity and less by its frequency; other studies have shown that the intensity and frequency of stress are redundant and should be collapsed (Elhai et al., 2006). Therefore, in the current study we used the average intensity of daily stress to measure daily fluctuations of stress.
 3. Because we measured the occurrence of sexual intercourse in this study as a binary variable (yes/no) we did not examine change in the frequency of sex over time, only the occurrence of sex, and thus did not control for the occurrence of sexual activity on the previous day.
 4. $Exp(B)$ are odds ratios. In the current analysis, odds ratios reflect the degree of change in the probability that participants would have sexual intercourse on a subsequent day. A score of 1 reflects no change in the probability. A score of less than 1 reflects a decrease in the probability of having sexual intercourse with one unit increase of the predictor (e.g., an odds ratio of .5 predicts that one unit increase in the predictor decreases the chance of having sexual intercourse by 50%). Conversely, a score higher than 1 reflects an increase in the probability of having sexual intercourse with one unit increase of the predictor (e.g., an odds ratio of 1.5 predicts that one unit increase in the predictor increases the chance of having sexual intercourse by 50%).

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