#### **ORIGINAL PAPER**



# Daily Sexual Mindfulness is Linked with Greater Sexual Well-Being in Couples

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#### **Abstract**

**Objectives** Individuals in established relationships often report problems with their sexual well-being, including feeling sexually dissatisfied, experiencing low sexual desire, or feeling worried or concerned about their sex life. Cross-sectional and experimental research find that mindfulness—present-moment awareness without judgment—is associated with greater sexual well-being (i.e., high sexual satisfaction, high sexual desire, and low/absent sexual distress). However, most research has focused on trait mindfulness rather than sexual mindfulness—mindfulness during sex—despite evidence that sexual mindfulness is related to sexual well-being over and above trait mindfulness. Research is further limited in that few studies have accounted for the interpersonal context of sex, sampling individuals, rather than couples. Further, no studies have employed a daily experience design which is necessary to capture fluctuations in sexual mindfulness across sexual encounters. The current study addressed these critical limitations by examining associations between daily sexual mindfulness and sexual well-being in a community sample of couples (n = 297 couples).

**Methods** Each partner independently completed validated measures of sexual mindfulness and sexual well-being via an online survey over 35 consecutive days.

Results On days when individuals had sex and were more sexually mindful (compared to their own average across all days), both they and their partners reported higher sexual satisfaction, higher sexual desire, and lower sexual distress that day. Conclusions Findings from this research add to the growing body of literature supporting sexual mindfulness as a factor associated with both intra- and interpersonal sexual well-being benefits in couples. Strategies that increase an individual's ability to be present and non-judgmental during sex may promote greater sexual well-being for oneself and one's partner over the course of their relationship.

Preregistration The study was preregistered on the Open Science Framework (https://doi.org/10.17605/OSF.IO/4KZG9).

**Keywords** Mindfulness · Sexual satisfaction · Sexual desire · Sexual distress · Couples

Sexual well-being—sexual satisfaction, sexual desire, and low/absent distress—is an important contributor to mental and physical well-being, as well as overall relationship quality (Diamond & Huebner, 2012; Kashdan et al., 2018;

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Mitchell et al., 2021; Sprecher & Cate, 2004). Yet, a large proportion of individuals in established relationships report problems with their sexual well-being (Impett et al., 2014). Indeed, approximately 20 to 40% of individuals experience problems with their sexual well-being (Mitchell et al., 2016). The most common problems include declining sexual satisfaction over the course of long-term relationships (McNulty et al., 2016), low or discrepant sexual desire (Ellison, 2002; Impett et al., 2014; Sutherland et al., 2020), and worries or concerns about sex (Witting et al., 2008). Given the prevalence of sexual problems and the importance of sexual well-being for individuals' quality of life (Kashdan et al., 2018) as well as relationship longevity and satisfaction (Balsam et al., 2017; Dewitte et al., 2015; Sprecher & Cate, 2004),



identifying factors that promote sexual well-being among couples in established relationships is critical. One commonly used intervention for individuals with sexual problems is mindfulness—present-moment awareness without judgment (Banbury et al., 2021; Selice & Morris, 2022; Stephenson & Kerth, 2017). Mindfulness addresses issues with self-judgment, insecurity, anxiety, and common distractions that occur during sexual encounters (Arora & Brotto, 2017; Dunkley et al., 2015). Cross-sectional (Dunkley et al., 2015; Khaddouma et al., 2015; McGill et al., 2020; Newcombe & Weaver, 2016; Pepping et al., 2018; Sood et al., 2022), experimental (Seal & Meston, 2020), and intervention studies (Banbury et al., 2021; Selice & Morris, 2022; Stephenson & Kerth, 2017) demonstrate the benefits of general mindfulness for sexual well-being, but links between mindfulness in a sexual context-sexual mindfulness-and couples' sexual well-being have not received equivalent research attention.

# Cognitive Distractions During Sex Interfere with Sexual Well-Being

The Cognitive-Affective Model of Sexual Dysfunction (Barlow, 1986) posits that distraction during sex contributes to problems with sexual well-being. Distractions during sex, like concerns about sexual performance or body image, are most often elicited within the interpersonal context. Indeed, some evidence suggests that sexual problems are more likely to occur during partnered sexual activity relative to solitary sexual activity (e.g., masturbation; Belcher et al., 2023; Rowland et al., 2021). It may be that the presence of a partner elicits cognitive distractions (e.g., insecurities, sexual anxieties, relationship issues) that detract from the present moment and interfere with individuals' ability to tune into physical sensations, emotional closeness, and pleasure (Poovey et al., 2022; Silva et al., 2016; Vigil et al., 2021), which in turn contributes to lower sexual well-being. Evidence from cross-sectional, longitudinal, and experimental research supports the Cognitive-Affective Model of Sexual Dysfunction (Arora & Brotto, 2017; de Jong, 2009). Experimental studies find that sexual arousal can be modulated through manipulations of attentional focus (Beck & Baldwin, 1994; Seal & Meston, 2007). For instance, sexual response can be inhibited (e.g., by inducing cognitive distraction) or bolstered (e.g., by attending to bodily sensation) through manipulations of attentional focus. Longitudinal evidence further supports attention as a key predictor of sexual well-being over time (Bergeron et al., 2024; Rosen et al., 2018). Using a dyadic daily diary design, Rosen et al. (2018) found that on days when women and their partners attended more to positive sexual cues (e.g., pleasure, feelings of desire) over negative sexual cues (e.g., negative emotional states, bothersome thoughts) both they and their partners reported higher daily sexual well-being. Together, theory and research support that attention is a key component of sexual well-being (Arora & Brotto, 2017; Tavares et al., 2020). It follows that interventions and strategies that direct attention away from cognitive distractions may promote sexual well-being, not only for oneself but also for one's partner.

# Present-Moment Awareness as the Antidote to Cognitive Distractions During Sex

Mindfulness—a state of present-moment awareness and purposeful attention to the moment without judgment or reactivity (Baer et al., 2006; Kabat-Zinn, 2003)—may be one method to redirect attention away from cognitive distractions by improving present-moment awareness, and in turn, bolster sexual well-being (Banbury et al., 2021; Selice & Morris, 2022; Stephenson & Kerth, 2017). That is, mindfulness may buffer against the negative effects of cognitive distractions on sexual well-being (Arora & Brotto, 2017; Dunkley et al., 2015; Newcombe & Weaver, 2016). Indeed, trait mindfulness—the general tendency or inherent disposition to be mindful—has been associated with higher sexual well-being in several studies (Dunkley et al., 2015; Khaddouma et al., 2015; McGill et al., 2020; Newcombe & Weaver, 2016; Pepping et al., 2018; Sood et al., 2022). It is thought that the general tendency to be present and non-judgmental may translate to the context of sexual activity, where cognitive distractions are common and frequent. Indeed, trait mindfulness has been linked with greater sexual satisfaction for women (Dunkley et al., 2015; Sood et al., 2022) and men (Stephenson & Welch, 2020), for individuals in romantic relationships (Gesell et al., 2020; Khaddouma et al., 2015; Newcombe & Weaver, 2016; Pepping et al., 2018) and for long-term singles (Pepping et al., 2018). Research examining trait mindfulness and sexual desire and distress is limited. Some evidence suggests a positive link between trait mindfulness and sexual desire (Dosch et al., 2016) in women (Sood et al., 2022) and men (Déziel et al., 2018), whereas other research finds no associations (Stephenson & Welch, 2020). Negative associations between trait mindfulness and sexual distress have been found in women (Adam et al., 2015a; Sood et al., 2022) and men (Stephenson & Welch, 2020). Higher trait mindfulness may lend itself to more frequent experiences of state mindfulness during sex. As highlighted in Brown and Ryan (2003), state mindfulness is the practice of mindfulness in the context of a specific daily interaction. Sexual mindfulness is a state of present-moment awareness and non-judgment during sexual activity (Leavitt et al., 2019).

Recent cross-sectional evidence highlights the potential benefits of sexual mindfulness for sexual well-being outcomes over and above trait mindfulness (Leavitt et al., 2019,



2020), revealing an independent effect of sexual mindfulness on sexual well-being. Further, Adam et al. (2015a) found that while both trait mindfulness and sexual mindfulness were negatively associated with sexual distress, sexual mindfulness (54%) predicted greater variability in sexual distress compared to trait mindfulness (15%). It is possible that being mindful in general might not entirely translate to being sexually mindful, since practicing mindfulness in the context of partnered sex presents unique challenges (e.g., overcoming sexual insecurities, processing physical sensations) relative to practicing mindfulness in the context of everyday life (Leavitt et al., 2019, 2022). Despite the promising links between sexual mindfulness for sexual well-being (Dussault et al., 2024; Fraser et al., 2023; Lafortune et al., 2022; Leavitt et al., 2019, 2020, 2021, 2022; Smedley et al., 2021), no research has examined fluctuations in sexual mindfulness occurring across days of sexual activity. Given that people likely experience different cognitive distractions across days and sexual encounters, it is likely that their ability to be sexually mindful also varies. A daily diary design might help overcome limitations of cross-sectional work, including retrospective memory biases (Graham et al., 2003), and improve the ecological validity of research findings by capturing a more fine-grained picture of daily fluctuations in sexual mindfulness and sexual well-being.

# Mindfulness and Couples' Sexual Well-Being

Given the highly interpersonal context of sex and the fact that cognitive distractions occur most frequently during partnered sexual activity, mindfulness may not only be beneficial for individuals but also for their partners, though few studies have examined this using a dyadic design (Eyring et al., 2021; McGill et al., 2020). Studies sampling couples have predominantly focused on mindfulness and relational outcomes (e.g., Lenger et al., 2017; Williams & Cano, 2014; Zamir et al., 2017) rather than sexual outcomes (Eyring et al., 2021; McGill et al., 2020). Nevertheless, research examining trait mindfulness and sexual outcomes in couples has found both actor and partner effects (Eyring et al., 2021; McGill et al., 2020). Actor effects are defined as the associations between a person's own scores and their own outcomes, controlling for partner effects, whereas partner effects are defined as the associations between a person's own scores and their partner's outcomes, controlling for actor effects. Specifically, in a large and diverse sample of couples (McGill et al., 2020), when men reported greater trait mindful non-reactivity (remaining non-reactive to experience, acting consciously), they also reported greater sexual satisfaction. In contrast, when women reported greater trait mindful awareness, they reported greater sexual satisfaction. When men reported greater trait mindful awareness,

this was linked with their women partners' greater sexual satisfaction. No associations were observed between women partners' trait mindfulness and their men partners' sexual satisfaction (McGill et al., 2020). The authors suggested that men partners' capacity to act with awareness may communicate a sense of being in tune to their women partners, which in turn may promote satisfaction in the context of partnered sex. Similar findings have been observed in newly married heterosexual couples (Eyring et al., 2021), such that greater trait mindfulness was positively associated with their own and their partners' greater sexual satisfaction. While neither study examined effects for other facets of sexual well-being, they are the first to reveal intra- and interpersonal associations, and that gender may influence associations between mindfulness and sexual well-being.

Expanding upon research examining general mindfulness and couples' sexual outcomes, several studies to our knowledge have examined the associations between sexual mindfulness and couples' sexual outcomes (Leavitt et al., 2021, 2023, 2024; Leonhardt et al., 2023). Some cross-sectional research has found that sexual mindfulness was positively associated with individuals' own and their partners' orgasm frequency (Leavitt et al., 2021) and sexual harmony—how well sexuality is integrated into an individual's other life interests and responsibilities (Leavitt et al., 2021, 2024). Among community couples, sexual mindfulness was positively associated with one's own and one's partner's sexual satisfaction (Leonhardt et al., 2023). In a sample of people in the postpartum period (Leavitt et al., 2023), mothers' greater sexual awareness was associated with their own, but not their partners' greater sexual satisfaction, whereas mothers' greater sexual non-judgment was associated with both their own and their partners' sexual satisfaction. Fathers' sexual mindful awareness and non-judgment were not associated with their own or their partners' sexual satisfaction. While limited by the cross-sectional design, together, these studies offer preliminary evidence that an individual's greater sexual mindfulness might benefit their own and their partner's sexual outcomes. However, no studies to date have examined associations between sexual mindfulness and sexual desire or sexual distress in couples, despite low desire and desire discrepancies being the most commonly reported distressing concern for couples (Ellison, 2002; Impett et al., 2014; Sutherland et al., 2020).

The current study sought to examine associations between sexual mindfulness and daily sexual well-being in a sample of 297 couples (n = 594) on days of sexual activity over a 35-day period. Based on the Cognitive-Affective Model of Sexual Dysfunction and the interpersonal context of partnered sexual activity, we predicted that greater sexual mindfulness would be associated with individuals' own and their partner's daily sexual well-being. Specifically, we hypothesized that (1) on days when individuals had sex and were



more sexually mindful compared to their own average across all sex days, they and their partners would report higher sexual satisfaction, higher sexual desire, and lower sexual distress and (2) when individuals had sex and were more sexually mindful on average across all sex days, they and their partners would report higher sexual satisfaction, higher sexual desire, and lower sexual distress. We also explored whether gender/sex (man, woman) moderated any of the observed associations.

#### Method

# **Participants**

A sample of 297 adult couples (n = 594) were recruited through online advertisements and email lists between December 2020 and June 2021. Online advertisements were available on various social media pages using the leading research lab's Facebook page (i.e., SAIL Lab—Sexual and Intimate Life Research Lab, www.SailLab.ca). Paid advertisements were also broadcast via the host university Header system of the Université du Québec à Trois-Rivières Communications Department.

To be eligible for the study, both partners had to be at least 18 years of age and cohabitating for at least six months. Participants were not invited for the daily diaries and excluded from this study if they (a) failed two out of three attention checks in the baseline survey, (b) separated before completing the daily diaries, or (c) both partners did not complete the baseline survey. Of the 1249 interested couples who contacted the team about the study, 401 completed screening. Of them, 372 (744 participants) were eligible and gave their informed consent, and thus were directed to the online survey. Of the 744 participants (n = 372 couples) who started the survey, those who failed at least two attentionchecking questions at baseline, dropped out of the study or did not complete the baseline survey were deemed ineligible to proceed with the subsequent daily diary component of the study (n = 33 couples). Of the 339 invited for daily diaries, two couples separated during the daily diaries, six couples stopped completing them within the first 2 days and four couples dropped the study before starting the daily diary component of the study (n = 12 couples). Couples who completed the daily diary portion of the study (n = 327) but who had missing data for the sexual mindfulness measure were not included in the analyses (n = 30). Thus, the final sample used in the present study included 297 couples (594) individuals). Couples were together between six months to 34.67 years (M = 6.08 years, SD = 5.56) and were aged 18to 63 years ( $M_{age} = 31.04$ , SD = 8.26). As for biological sex assigned at birth, 52.9% (n = 314) of the individuals were females, and 47.1% (n = 280) were males. Full demographics are included in Table 1.

#### **Procedure**

Data were collected as part of a larger daily diary and longitudinal study among couples. This project was advertised

**Table 1** Sample characteristics (n = 594)

	$M \pm SD$ or $n$
Sexual well-being	
Sexual satisfaction	$19.21 \pm 3.44$
Sexual desire	$24.87 \pm 17.12$
Sexual distress	$1.13 \pm 2.87$
Sexual mindfulness	$4.21 \pm 0.70$
Age (years)	$31.04 \pm 8.26$
Gender	
Woman	304
Man	271
Gender diverse <sup>a</sup>	11
Agender	3
Prefer not to say/something else	5
Sexual orientation	
Heterosexual	442
Gay or lesbian	18
Pansexual	20
Asexual	2
Queer	15
Something else	97
Ethnicity/culture <sup>b</sup>	
Arab	4
Black	5
Caribbean	4
Central Asian	1
East Asian	6
Indigenous	11
Latin American	9
South/Southeast Asian	15
West Asian	3
White	547
Something else	14
Relationship status	
Married	52
Living together	542
Relationship length (years) <sup>c</sup>	$6.08 \pm 5.56$
Annual income	
>\$0-\$39,999	276
\$40,000–\$79,999	246
>\$80,000	72

<sup>&</sup>lt;sup>a</sup>Non-binary, genderfluid, multi-gender, or genderqueer. <sup>b</sup>Participants were allowed to select all options that applied to them. <sup>c</sup>Relationship length data based on n = 559 due to missing values



as an online study on emotions and sexual and relational well-being of couples. Specifically, participation involved the completion of five online questionnaires on Qualtrics over the course of two years (baseline, 6-, 12-, 18-, and 24-month follow-up) as well as 35 short daily surveys "diaries." Interested couples responded to advertisements for the study by email or clicked on a link that took them to the eligibility questionnaire. Interested participants who entered their contact information online were contacted by a research assistant for a brief telephone interview to confirm eligibility. Couples deemed eligible were then independently directed to a survey hosted on Qualtrics, which included the study description and an informed consent form. For baseline (Time 1), survey completion time was estimated to be approximately 60 min. After both partners completed this first survey (Time 1), a research assistant contacted them again by phone to explain the daily diary surveys and direct them to the first daily survey. Each partner accessed a unique hyperlink received via email or text message each evening to complete a brief survey for 35 consecutive days. Participants were instructed to complete the survey independently from each other every day before going to sleep. A period of 35 days was chosen to ensure that sexual activity was likely to occur at some point across the 35 days, and participants reported on their sexual activity of the current day. Sexual mindfulness and sexual satisfaction measures were branched on reported sexual activity, but sexual desire and sexual distress were administered regardless of reported sexual activity. Each daily diary entry was estimated to take between 5 and 15 min each evening. Couples also completed subsequent longitudinal surveys at 6-, 12-, 18-, and 24-month follow-up (data are not examined in the current study). All questionnaires were available in English and French. For daily surveys, the value of compensation was proportional to the number of surveys completed for a maximum of \$70 per person. Participants were compensated \$70 for completing at least 30 surveys, \$58 for 26 to 29 surveys, \$50 for 23 to 25 surveys, \$44 for 18 to 22 surveys and \$36 for less than 18 surveys. This study was approved by the institutional review boards at the University of British Columbia and the Université du Québec à Trois-Rivières.

#### Measures

**Sociodemographic Information** Full demographics are reported in Table 1. Participants at baseline (Time 1) reported their age, gender, ethnicity, sexual orientation, education level, employment status, household income, relationship status and duration.

Daily Sexual Mindfulness The Sexual Five-Facet Mindfulness Questionnaire (FFMQ-S; Adam et al., 2015b) is a validated 19-item measure used to assess sexual mindfulness.

For the current study, the FFMQ-S was adapted for daily use by taking the single item with the highest factor loading on four of the five subscales (observing, describing, acting with awareness, nonjudging). The fifth item was from the nonreactivity subscale but was selected based on its adaptability for daily use rather than being the highest factor loading for this subscale. This process resulted in a 5-item daily version of sexual mindfulness. The FFMQ-S was only administered if participants reported sexual activity with their partner that day. Respondents selected the extent to which they agreed with items assessing their mindfulness during sex on a 5-point scale from Strongly Disagree (1) to Strongly Agree (5). Items 1 and 4 are reverse scored. All items are averaged for a total score (range 1 to 5), with higher scores reflecting greater sexual mindfulness that day. Internal consistency reliability was acceptable in the present study ( $\omega = 0.71$ ).

**Daily Sexual Satisfaction** The Dyadic Sexual Satisfaction scale (DSS; Birnbaum et al., 2006; Rubin & Campbell, 2012) is a 4-item measure used to assess the quality and enjoyment of the sexual experience in the context of partnered sex. The DSS was only administered if participants reported sexual activity with their partner that day. The current study adapted the DSS by replacing the item "Did you reach a satisfying orgasm?" with "Did you have sexual pleasure during sexual activity with your partner." Respondents answered questions using a 7-point scale, with options ranging from *Not at all* (1) to *Extremely* (7). All items are summed for a total score (range 4 to 28), with higher scores reflecting greater dyadic sexual satisfaction. Internal consistency reliability was good in the present study ( $\omega = 0.85$ ).

**Daily Sexual Desire** The Sexual Desire Inventory (SDI-2; Spector et al., 1996) is a well validated 14-item measure used to assess partner-focused, other-focused, and solitary sexual desire. For the current study, we adapted the wording of each item of the SDI-2 to assess participants' level of sexual desire of the current day. Eight of the 14 items from the SDI-2 were used to calculate a single composite measure of daily partner-focused and solitary-focused sexual desire. Respondents indicated the extent to which they felt sexual thoughts and feelings of desire for their partner or for solitary sexual activity that day on a 9-point scale from *Not at all/No desire* (0) to *Very much/Strong desire* (8). Items are summed (range 0 to 64), with higher scores indicating greater sexual desire. Internal consistency reliability was excellent in the present study ( $\omega = 0.98$ ).

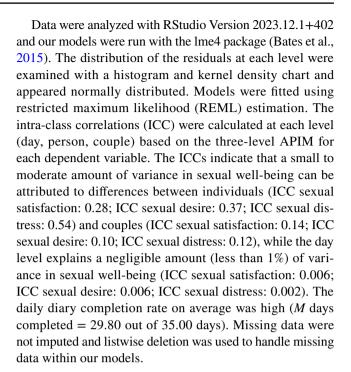
**Daily Sexual Distress** The Sexual Distress Scale - Short Form (SDS-SF; Santos-Iglesias et al., 2020) is a validated 5-item measure of sexual distress that was developed for brevity based on the original 12-item Female Sexual Distress Scale (FSDS; DeRogatis et al., 2008; DeRogatis et al.,



2002). The SDS-SF has been validated among men and women. For the current study, we adapted the SDS-SF for daily diary use to assess participants' sexually related personal distress that day, as has been done in previous research (Muise et al., 2018). Respondents indicated to what extent they felt various forms of negative affect (e.g., inadequate, distressed) related to their sexuality that day, with options ranging from *Not at all* (0) to *Extremely* (4). Items are summed (range 0 to 20), with higher scores reflecting greater sexual distress. Internal consistency reliability was excellent in the present study ( $\omega = 0.95$ ).

# **Data Analyses**

To test the hypothesis that on days when individuals had sex with their partner and were more sexually mindful (compared to their average across all sex days), they and their partners would report higher sexual satisfaction, higher sexual desire, and lower sexual distress, we used multi-level modeling (MLM) informed by the Actor-Partner Interdependence Model (APIM) (Cook & Kenny, 2005). The APIM allows the examination of associations between a person's own sexual mindfulness scores and their own sexual outcomes (actor effects), controlling for partner effects, and the associations between a person's own sexual mindfulness scores and their partner's sexual outcomes (partner effects), controlling for actor effects. As the sample included both mixed gender/sex and gender/sex diverse couples, dyads were considered indistinguishable. Thus, each partner was assigned to either "partner 1" or "partner 2." We used threelevel cross-classified MLMs, where days are nested within persons, and persons are nested within couples (Cook & Kenny, 2005). Random intercepts for all models were included. To avoid conflating within- and between-person effects, we created within- and between-person versions of sexual mindfulness scores. That is, daily-level sexual mindfulness scores were person-mean centered, meaning that regression coefficients represent associations between deviations from individuals' own mean level of sexual mindfulness across all days and each of the sexual outcome variables. Mean sexual mindfulness scores were included as predictors in each model to test between-person effects of average sexual mindfulness on sexual well-being. We conducted three separate MLMs based on an APIM framework, one for each dependent variable (sexual satisfaction, sexual desire and sexual distress). The coefficients are unstandardized betas (B) and are interpreted as the change in sexual outcome variable for every one-unit increase in the sexual mindfulness predictor variable. Standardized betas  $(\beta)$  are interpreted as one standard deviation unit change in the sexual outcome variable for every one standard deviation increase in sexual mindfulness predictor variable.



# **Results**

On days when individuals had sex and were more sexually mindful relative to their own average across all sex days, both they and their partners reported higher sexual satisfaction (B actor = 1.74, p < 0.001; B partner = 0.45, p < 0.001), higher sexual desire (B actor = 4.73, p < 0.001; B partner = 0.82, p = 0.01), and lower sexual distress (B actor = -0.56, p < 0.001; B partner = -0.14, p = 0.006). Full results are presented in Table 2, including standardized betas, standard errors, degrees of freedom and t-values. In addition to the within-person effects, between-person analyses revealed that individuals who were more sexually mindful on average across all sex days also reported higher sexual satisfaction (B = 2.48, p < 0.001), higher sexual desire (B = 7.01, p)<0.001), and lower sexual distress (B = -1.84, p < 0.001). In contrast, an individual's greater average sexual mindfulness was not significantly associated with their partner's sexual satisfaction (B = 0.30, p = 0.10), sexual desire (B = -0.06, p = 0.93), or sexual distress (B = 0.20, p = 0.21). Full results are presented in Table 3. Random effects at the level of day, person, and couple are presented in Table 4, including variance and standard deviation values.

We examined whether gender/sex (man, woman) moderated any of the observed associations. Only those identifying as a man or woman were included for these analyses due to the small sample of gender-diverse participants. We used the "lme4" package (Bates et al., 2015) and the "emmeans" package (Lenth, 2018) to test interaction effects and their associated simple slopes. Thus, we present interaction



**Table 2** Within-person associations between daily sexual mindfulness and sexual well-being

	β	В	SE	df	t	p
Sexual satisfaction	on					
Actor effect	0.24	1.74	0.08	3340.47	21.48	< 0.001
Partner effect	0.06	0.45	0.08	3340.60	5.53	< 0.001
Sexual desire						
Actor effect	0.13	4.73	0.32	3337.48	14.68	< 0.001
Partner effect	0.02	0.82	0.32	3335.72	2.55	0.01
Sexual distress						
Actor effect	-0.09	-0.56	0.05	3319.88	-11.35	< 0.001
Partner effect	-0.02	-0.14	0.05	3319.88	-2.75	0.006

Actor effects indicate the effects of one's own daily sexual mindfulness deviation on their own outcome variables (e.g., sexual satisfaction). Partner effects indicate the effects of one's own daily sexual mindfulness deviation on their partners outcome variables

**Table 3** Between-person associations between average sexual mindfulness and sexual well-being

	β	В	SE	df	t	p
Sexual satisfaction	on					
Actor effect	0.40	2.48	0.18	602.40	13.74	< 0.001
Partner effect	0.05	0.30	0.18	602.40	1.67	0.10
Sexual desire						
Actor effect	0.23	7.01	0.78	627.37	8.95	< 0.001
Partner effect	-0.002	-0.06	0.78	628.40	-0.08	0.93
Sexual distress						
Actor effect	-0.35	-1.84	0.16	606.40	-11.69	< 0.001
Partner effect	0.04	0.20	0.16	606.40	1.25	0.21

Actor effects indicate the effects of one's own average sexual mindfulness on their own outcome variables (e.g., sexual satisfaction). Partner effects indicate the effects of one's own average sexual mindfulness on their partners outcome variables

Table 4 Random effects for each three-level APIM MLM

	Variance	SD
Sexual satisfaction		
Day	0.06	0.24
Person	2.67	1.63
Couple	1.29	1.13
Residual	5.43	2.33
Sexual desire		
Day	1.08	1.04
Person	59.74	7.73
Couple	18.06	4.25
Residual	85.71	9.26
Sexual distress		
Day	0.01	0.09
Person	2.74	1.65
Couple	0.87	0.09
Residual	2.05	1.43

effects and associated simple slopes for each gender group (women, men). Gender significantly moderated associations between individuals' own sexual mindfulness and their own sexual well-being. The strength of these associations was significantly stronger among women for sexual satisfaction  $(\beta = -0.17; B = -1.19, p < 0.001, t(3165.47) = -7.14;$ simple slopes;  $\beta$  women = 0.31; B women = 2.26, SE = 0.11;  $\beta$  men = 0.15; B men = 1.06, SE = 0.13), sexual desire  $(\beta = -0.10; B = -3.44, p < 0.001, t(3168.07) = -5.15;$ simple slopes;  $\beta$  women = 0.17; B women = 6.16, SE = 0.44;  $\beta$  men = 0.08; B men = 2.72, SE = 0.51), and sexual distress ( $\beta = 0.07$ ; B = 0.42, p < 0.001, t(3138.70) = 4.57; simple slopes;  $\beta$  women = -0.12; B women = -0.68, SE = 0.06;  $\beta$  men = -0.04; B men = -0.25, SE = 0.07). Gender did not significantly moderate the associations between an individual's own sexual mindfulness and their partner's sexual desire ( $\beta = 0.02$ ; B = 0.58, p = 0.38, t(3168.73) =0.88) or sexual distress ( $\beta = -0.003$ ; B = 0.02, p = 0.86,



t(3141.08) = -0.18). Gender did, however, moderate the association between an individual's own sexual mindfulness and their partner's sexual satisfaction ( $\beta = 0.08$ ; B = 0.55, p = 0.001, t(3168.27) = 3.30; simple slopes;  $\beta$  women = 0.03; B women = 0.22, SE = 0.12;  $\beta$  men = 0.11; B men = 0.77, SE = 0.11), such that the association was stronger for men compared to women.

### **Discussion**

The current study examined daily associations between sexual mindfulness and sexual well-being in couples in established romantic relationships. As predicted, we found that on days when individuals were more sexually mindful during sex relative to their own average, both they and their partners reported greater sexual satisfaction, sexual desire, and lower sexual distress. Across individuals, average sexual mindfulness was associated with greater own sexual wellbeing but not with partners' greater sexual well-being. In general, we found that associations between sexual mindfulness and one's own sexual well-being were stronger among women than men. Associations between sexual mindfulness and partner sexual outcomes were not moderated by gender, with the exception of the association between an individual's own sexual mindfulness and their partner's sexual satisfaction, which was stronger among men than women. Taken together, these findings support sexual mindfulness as having intra- and interpersonal benefits for sexual well-being.

Consistent with research and theory (Adam et al., 2015a; Barlow, 1986; Lafortune et al., 2022; Leavitt et al., 2019, 2020, 2021, 2022; Smedley et al., 2021), we found that daily sexual mindfulness was associated with greater same-day sexual well-being. On days when individuals had sex and were more sexually mindful than usual, that is, when they were more present, could better tune into their physical sensations, and were more easily able to let negative thoughts and emotions pass, they also reported higher sexual satisfaction, higher sexual desire, and lower sexual distress that same day. Individuals who were on average more sexually mindful over the course of the 35 days also reported higher sexual well-being. Our findings expand upon previous crosssectional research (Adam et al., 2015a; Lafortune et al., 2022; Leavitt et al., 2019, 2020, 2021, 2022; Smedley et al., 2021) by establishing associations at the daily level; this is important given evidence from our own data that sexual mindfulness fluctuates across days and sexual encounters rather than remaining stable over time. The non-judgmental awareness of sensations and non-reactivity towards negative distracting thoughts fostered through sexual mindfulness might contribute to better sexual well-being because it may help individuals to redirect their focus towards the pleasurable aspects of a sexual encounter and away from negative internal thoughts (Dunkley et al., 2015) or distressing feelings (Pepping et al., 2018). For example, individuals who are more sexually mindful may respond to distracting thoughts (e.g., "My partner is probably looking at my loose skin") by redirecting their attention to the present moment (e.g., "That feels really good") (Poovey et al., 2022; Silva et al., 2016; Vigil et al., 2021). By redirecting attention to physical sensations and pleasure and away from self-critical thoughts and negative feelings, individuals may find sex more enjoyable and rewarding, contributing to greater satisfaction and desire, as well as feeling less worried or concerned about their sex life.

Consistent with previous research (Leavitt et al., 2019), we found that associations between an individual's daily sexual mindfulness and their own sexual well-being were stronger among women compared to men. Conversely, most partner effects were similar in strength across genders, with the exception of the association for sexual satisfaction which was stronger among men. There is mixed evidence for gender differences in cognitive distractions during sex, with women reporting higher overall cognitive distractions and appearance-based distractions, but similar levels of performance-based cognitive distractions (Meana & Nunnink, 2006). It is possible that greater cognitive distraction among women may make sexual mindfulness particularly beneficial as an antidote to these distractions. Another explanation for the gender differences observed may be due to the robust gender difference in the strength of mind-body connection that favors men (see meta-analysis Chivers et al., 2010). In the context of sexual arousal, mind-body connection or concordance is the degree to which the subjective experience of sexual arousal corresponds with genital measures of sexual arousal. Meta-analytic evidence supports that women on average tend to have a weaker mind-body connection compared to men, meaning there is less concordance between their subjective and observed genital arousal (Chivers et al., 2010). This weaker mind-body connection is also more common among people with sexual difficulties (Sarin et al., 2016), and research supports mindfulness as one way to strengthen this mind-body connection (Brotto et al., 2016; Chivers et al., 2024). Indeed, strengthening the mind-body connection might also increase physical responsiveness, consistent with research finding sexual mindfulness is associated with greater orgasm consistency (Leavitt et al., 2021). Thus, while sexual mindfulness was linked with greater sexual well-being for both women and men, it is possible that we see stronger effects among women because of these broader gender differences in cognitive distraction and sexual concordance.

A novel contribution of the present study is the examination of intrapersonal in addition to interpersonal associations between sexual mindfulness and sexual well-being particularly for outcomes such as sexual desire and sexual



distress that have not previously been examined. We found that sexual well-being was greater for individuals on days when their partner was more sexually mindful than their own usual. The interpersonal associations between sexual mindfulness and sexual well-being are consistent with prior research finding sexual mindfulness is associated with partners orgasm frequency (Leavitt et al., 2021), sexual harmony (Leavitt et al., 2021, 2024), and sexual satisfaction (Leavitt et al., 2023; Leonhardt et al., 2023), and extends this work by suggesting unique associations with sexual desire and sexual distress. Since distressing problems with low desire and desire discrepancies are among the most common sexual concerns couples face (Ellison, 2002; Impett et al., 2014; Sutherland et al., 2020), the finding that sexual mindfulness is associated with partner's greater sexual desire and distress, may reveal one way to attenuate distressing desire discrepancies (Déziel et al., 2018; Dosch et al., 2016; Mize, 2015). Indeed, higher trait mindfulness is associated with higher sexual desire (Déziel et al., 2018; Dosch et al., 2016) and lower sexual distress (Adam et al., 2015a; Sood et al., 2022; Stephenson & Welch, 2020) and mindfulness-based interventions are effective for treating concerns related to distressing low sexual desire and arousal (Mize, 2015). Thus, cultivating sexual mindfulness within the dyadic context may be one way to bolster couples' sexual relationships.

Given that mindfulness centers on present-moment attention and awareness, it may be that when one partner is sexually mindful, they are more attentive, present, and responsive to their partner's sexual needs, in turn contributing to their own and their partner's greater sexual wellbeing (Muise et al., 2023). A mindful partner may notice a shift in their partner's demeanour (e.g., that their partner looks disengaged during sex) and respond by changing their own behaviors. For example, they might use verbal cues to bring their partner back to the present moment or physical sensations to change the intensity of the sexual stimulation. A responsive partner may also be communicating enjoyment of the sexual encounter (Reyes & Clark, 2024), which in turn may benefit one's own sexual satisfaction. Previous research has established that having and perceiving one's partner to be responsive to one's needs is associated with higher sexual desire (Birnbaum et al., 2016) and satisfaction (Bergeron et al., 2021, 2024; Muise et al., 2023). There is also some preliminary research linking mindfulness and responsiveness within the context of romantic relationships. Individuals who are higher in trait mindfulness were perceived by their partners as more responsive during conversations which in turn, contributed to their higher relationship satisfaction (Adair et al., 2018). Thus, applied to the sexual context, at times when individuals are especially mindful during sex compared to their own usual, partners may perceive this awareness as a form of responsiveness and, in turn, experience greater sexual well-being.

Our correlational finding that individuals' daily sexual mindfulness is associated with their partners' sexual wellbeing suggests that mindfulness-based interventions to address sexual difficulties could have positive spillover effects for partners even if they themselves are not engaged in the intervention. This is particularly relevant given that partners of people with sexual difficulties often experience consequences to their own sexualities too (Rosen et al., 2017, 2019). Evidence to support this spillover hypothesis comes from studies of mindfulness-based interventions delivered to individuals in relationships finding benefits of individuals' higher mindfulness for their partners' lower negative affect (May et al., 2020) and greater relationship satisfaction (Khaddouma et al., 2017). The present finding that an individuals' daily sexual mindfulness is associated with their partner's higher sexual well-being points to the possibility that that the known benefits of mindfulness-based interventions for individuals' sexuality might have spillover effects for partners.

While evidence from meta-analyses and systematic reviews supports the benefits of general mindfulness-based interventions for individuals' sexual outcomes (Banbury et al., 2021; Stephenson & Kerth, 2017), the present findings suggest that sexual mindfulness interventions-mindfulness-based interventions tailored specifically to the sexual context—might be particularly useful for bolstering sexual well-being. General mindfulness interventions focus primarily on mindfulness outside of the sexual context, for example, instructing a mindful eating or a body scan exercise, and then examine benefits for sexual outcomes. Sexual mindfulness is associated with sexual well-being over and above trait mindfulness (Leavitt et al., 2019, 2020), suggesting that there might be unique benefits to mindfulnessbased interventions focused on the sexual context. Teaching mindfulness skills specific to the sexual context is important because there are unique challenges and vulnerabilities inherent to sexual interactions. As such, someone who is generally mindful in everyday activities might struggle to practice mindfulness in the context of sex. Indeed, Leavitt et al. (2022) compared a mindfulness-only intervention to a sexual mindfulness intervention for couples and found that while both interventions led to improvements in sexual satisfaction, the sexual mindfulness intervention had unique benefits, including greater sexual awareness. Moreover, while general mindfulness interventions typically span multiple hours and several sessions; there is recent evidence that sexual mindfulness interventions delivered online in as little as 3.5 min produce benefits for sexual satisfaction, desire, and distress (Dawson et al., 2022). Research on optimal sexual experiences (Kleinplatz & Ménard, 2007; Kleinplatz et al., 2009) also underscores the importance of presence and awareness, which are integral aspects of sexual mindfulness, for sexual well-being in couples (Kleinplatz

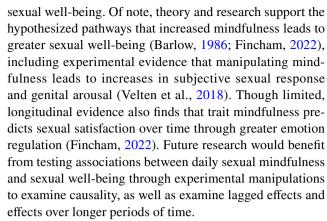


et al., 2018). In the context of sex therapy, interventions that share principles with sexual mindfulness techniques, like Sensate Focus—a therapeutic method involving touch-based couple exercises—contribute to better sexual well-being by teaching individuals to focus on pleasurable touch sensations and attending to the present moment with their partner (Avery-Clark et al., 2019; Weiner & Avery-Clark, 2014). Taken together, these findings contribute to a growing body of research finding positive associations between sexual mindfulness and sexual well-being (Lafortune et al., 2022; Leavitt et al., 2019, 2020, 2021, 2022; Smedley et al., 2021) and support the development of interventions targeting mindfulness specifically within the context of sex.

#### **Limitations and Future Directions**

Though we sought to recruit a diverse sample in terms of ethnicity and sexual orientation, our sample was predominantly White and heterosexual, and as such, these findings may not generalize to all couples in established romantic relationships. Though there is no direct evidence to suggest that sexual orientation would alter the strength or direction of associations between sexual mindfulness and sexual wellbeing, future research could explore this further in a more diverse sample. There is, however, evidence for variation in mindfulness and sexual well-being across sociocultural contexts (Laumann et al., 2006; Wellings et al., 2006). Though mindfulness originates in the East through Buddhist traditions (Cook & Cassaniti, 2022; Schmidt, 2011), it has also spread widely across the West where it has been transformed from its religious, collectivist, and Eastern origins into a secularized, individualist, and Western practice (Schmidt, 2011). One possibility is that individuals living in regions where mindfulness practices are integrated into culture, for example through their spiritual or religious practices, might be better equipped to integrate mindfulness into their sexual lives as well. In cultures or religious groups where sex is taboo or stigmatized, or where sexual expression is culturally constrained (e.g., sexually conservative cultures; Hudson et al., 1983), we might see weaker associations with sexual mindfulness. Indeed, when sexual expression is culturally restricted or constrained, it is possible that feelings of sexual guilt or sexual shame that are influenced by culture (Woo et al., 2011) might make it more difficult to be present, aware, and non-judgmental during sex regardless of general levels of mindfulness. Thus, future research should explore associations between sexual mindfulness and sexual wellbeing in more diverse couples across different ethnic and cultural groups.

While our intensive daily diary and dyadic research design overcomes many limitations of cross-sectional work (Graham et al., 2003), our findings cannot inform whether sexual mindfulness is a correlate, cause, or consequence of



The present study revealed that sexual mindfulness is associated with greater sexual satisfaction, greater sexual desire, and lower sexual distress for both members of the couple. Our data reveal both intra- and interpersonal links between sexual mindfulness and sexual well-being, underscoring the inherently interpersonal nature of couples' sexualities. Our findings have important clinical implications, such that clinicians and sex therapists may help individuals and couples to incorporate strategies to be present, aware, non-judgmental and non-reactive during sex. Doing so might bolster sexual well-being and protect individuals' and their partners from common problems related to sexual satisfaction, desire, and distress in established romantic relationships.

Author Contribution Simone Y. Goldberg: conceptualization, data curation, formal analysis, writing—original draft. Marie-Pier Vaillancourt-Morel: conceptualization, methodology, investigation, writing—reviewing and editing. Marta Kolbuszewska: data curation, formal analysis, writing—reviewing and editing. Sophie Bergeron: conceptualization, methodology, investigation, writing—reviewing and editing. Samantha J. Dawson: conceptualization, methodology, investigation, supervision, writing—original draft, writing—reviewing and editing.

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Data Availability Data is available upon request.

## **Declarations**

Ethics Approval All procedures were approved by the Behavioural Research Ethics Board at the University of British Columbia and the Université du Ouébec à Trois-Rivières.

**Informed Consent** All participants gave informed consent prior to participation in the study.



Conflict of Interest The authors declare that they have no competing interests.

**Artificial Intelligence Statement** Artificial intelligence was not used.

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