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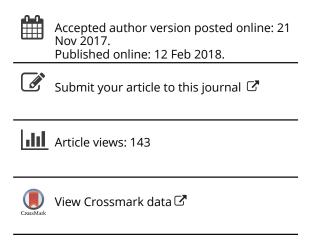
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Sexual Functioning in Experienced Meditators

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ABSTRACT

Given evidence of the benefits of mindfulness for women's sexual difficulties, we investigated the relationship between meditation experience and women's sexual function. Women (N=450) answered online survey questions about meditation experience, sexual function and desire, interoceptive awareness, health and mood. Women who meditated scored higher than nonmeditators on measures of sexual function and desire, however there was no significant correlation between frequency/length of meditation experience and either of these domains. Global mental health was a significant predictor of both increased sexual function and desire in women who meditate. These findings suggest that, compared to women with no meditation experience, women who meditate to any extent have, on average, improved sexual function associated with better overall mental health.

Introduction

Mindfulness—defined as nonjudgmental awareness of one's own thoughts, perceptions, and sensations in the present moment (Kabat-Zinn, Lipworth, & Burney, 1985)—has a very long history in Eastern culture and Buddhism, but has increasingly made its way into Western medicine and health care since the mid-1970s. There has been a surge of empirical research on the effects of mindfulness meditation on various indices of health, psychological function, and well-being, with exponential growth in the number of peer-reviewed publications in recent years.

Over the past decade, researchers have applied mindfulness meditation to the domain of sexual functioning in women (Adam, Géonet, Day, & De Sutter, 2015; Brotto & Goldmeier, 2015; Khaddouma, Gordon, & Bolden, 2014). This body of research has found that both eight-session (Paterson, Handy, & Brotto, 2017) and four-session (Brotto & Basson, 2014) group mindfulness significantly improves sexual desire, sex-related distress, and other domains of psychological functioning. Group mindfulness has also been shown to significantly improve concordance (i.e., agreement) between self-reported and physiological sexual arousal in women with sexual difficulties (Brotto, Chivers, Millman, & Albert, 2016). Although the mechanisms underlying these improvements are not totally known, it is speculated that mindfulness leads to improvements in "interoceptive awareness"—the ability to register internal bodily changes or sensations (Silverstein, Brown, Roth, & Britton, 2011).

The existing research on mindfulness and its relevance to women's sexual health has focused on the short-term effects of relatively brief mindfulness interventions on sexual functioning and satisfaction. In one study that used a cross-sectional design to assess mindfulness and sexuality in people with and without meditation experience, long-term meditators were found to have greater sexual motivation and sexual consciousness than nonmeditators (Lazaridou & Kalogianni, 2013). However, to the best of our

knowledge, there is no research to date examining the link between long-term meditation practice and sexual functioning or sexual satisfaction in women.

Based on previous findings that women who practice meditation and incorporate mindfulness into their sexual activity report greater sexual satisfaction (Mayland, 2005), as well as the positive correlation observed between meditation experience and mindfulness traits (Baer et al., 2008), we predicted that women with a regular and long-standing meditation practice would report better sexual functioning and satisfaction than women with less or no prior experience with meditation. We further hypothesized that sexual functioning and satisfaction would positively correlate with amount of meditation experience, based on the finding that meditation experience is a predictor of interoceptive awareness (Fox et al., 2012), which, in turn, is thought to predict sexual functioning (Silverstein et al., 2011). Although these relationships may also hold for men, we decided to restrict our study to women only, given that most of the research on mindfulness and sexuality has focused on women.

We also explored potential mechanisms explaining the relationship between meditation experience and sexual functioning. The third National Survey of Sexual Attitudes and Lifestyles (NATSAL-3) in Britain found health status to be a predictor of both sexual activity and sexual satisfaction (Field et al., 2013), and since mindfulness practice has been associated with better health (Manocha, Black, & Wilson, 2012), it may be that overall health is the explanatory mechanism. Mood was also explored as a mechanism given that meditation has been associated with reductions in dysphoric mood (Broderick, 2005), and mood is strongly associated with women's sexual functioning (Lykins, Janssen, & Graham, 2006).

Method

Participants

A total of 450 women, whose ages ranged from 19 to 70, with a mean age of 35.1, participated. As per the inclusion criteria, all participants were women aged 18 or older and spoke English fluently. There were no exclusion criteria. Women were recruited through the Vancouver Coastal Health Research Institute (VCHRI) mailing list, as well as through a Human Intelligence Task posting on Amazon Mechanical Turk. Participants recruited through Mechanical Turk were compensated \$1.00 USD, based on the finding that Mechanical Turk workers tend to complete Human Intelligence Tasks with a minimum pay of \$1.38 per hour (Mason & Suri, 2012). Women recruited through the mailing list were not remunerated.

Measures

Participants completed a general questionnaire that asked about sociodemographics (age, ethnicity, education, employment, relationship status and length, and number of children), age of first sexual intercourse, and meditation history. The latter included length of meditation history (numeric), frequency of meditation (fixed response), type of meditation (fixed response, with an open-ended "other" option), and duration of meditation sessions (numeric).

In order to assess sexual function, participants completed the Female Sexual Function Index (FSFI), a 19-item questionnaire that measures sexual function on six different domains: desire, arousal, lubrication, orgasm, satisfaction, and pain (Rosen et al., 2000). The FSFI has high test-retest reliability and internal consistency. Cronbach's alpha for the present sample was 0.964. Participants also completed the Sexual Interest and Desire Inventory-Female (SIDI-F), a 13-item scale that has been shown to be a valid and reliable measure of the severity of hypoactive sexual desire disorder (HSDD) symptoms in women (Clayton et al., 2006). Cronbach's alpha for this sample was 0.947.

We investigated health, mood, and interoceptive awareness as predictors of sexual function in women with and without meditation experience. In order to assess health, we administered the PROMIS Global Health Scale, an internally consistent and reliable 10-item measure with subscales for global mental



health and global physical health (Hays et al., 2009). Cronbach's alpha in our sample for the overall scale was 0.894, and it was 0.864 for the global mental health subscale and 0.719 for the global physical health subscale. We assessed mood using the nine-item Patient Health Questionnaire (PHQ-9), a measure commonly used to assess depression severity (Kroenke, Spitzer, & Williams, 2001). Reliability for our sample was 0.887.

To measure interoceptive awareness, participants completed the Multidimensional Assessment of Interoceptive Awareness (MAIA), a 32-item scale that measures body awareness on eight dimensions: noticing, not distracting, not worrying, attention regulation, emotional awareness, self-regulation, body listening, and trusting (Mehling et al., 2012). Cronbach's alpha was 0.926. Participants also completed the Five Facet Mindfulness Questionnaire (FFMQ), a five-subscale questionnaire that measures trait mindfulness (Baer et al., 2006) and that has been shown to be related strongly to meditation experience and psychological well-being (Baer et al., 2008). Reliability in the present sample was 0.852.

Data analyses

SPSS version 24.0 (IBM Corp., 2015) was used for data analysis. Descriptive statistics were used to compute demographics and meditation experience characteristics of the sample. Meditators and nonmeditators were compared using an Independent Samples t test on all demographic measures and continuous measures. Chi-square analysis was used to examine categorical variables, such as the relationship between meditation experience and ethnicity, highest education, current employment, and relationship status. Cohen's d was used as a measure of effect size for all between-group comparisons, and values of d = .20 were deemed as small effects, d = .50 as medium effects, and d = .80 as large effects (Cohen, 1992).

To examine the relationship between meditation experience and sexual function, interoceptive awareness, and mindfulness, we carried out a series of Pearson product-moment correlations between length of meditation history and FFMQ, MAIA, SIDI-F and FSFI domain scores, as well as Kendall's tau correlations between type of meditation practiced and sexual function measures. Finally, a linear regression analysis was carried out using age, length of current relationship, length of meditation history, frequency of meditation, PHQ-9 score, and PROMIS Global mental and physical scores to predict the FSFI total score and the SIDI total score (separately).

Results

Participant demographics

A total of 193 women (42.9%) reported a current meditation practice and 257 women (57.1%) did not. These two groups were used in all subsequent comparisons (Table 1).

On average, women who had meditated previously had 0.3 fewer children, t(446) = 2.082, p = .038, and 0.5 fewer pregnancies, t(446) = 2.652, p = .006, than those with no meditation experience (Table 1). Meditation experience was significantly associated with current employment status by chi-square analysis, p = .037 with meditators more likely to be employed outside the home. There were no significant differences between nonmeditators and those who have meditated on any other demographic measures.

Meditator characteristics

Among those who had meditation experience (n=193), the most common meditation type practiced was yoga (63.2% of participants), followed by Vipassana (39.4%) (Table 2). The third most common meditation type reported was "other" (20.2%), which included prayer, mindfulness meditation, guided meditation, visualization, and "free style," as specified by participants. Participants most commonly reported practicing meditation at least once per week (47.7%), with 32.6% meditating at least once per day, 14.5%



Table 1. Participant characteristics according to meditation experience

		Meditation experience			
Participant characteristics	Total Sample $(n = 450)$	Never meditated Ever meditated $(n = 257)$ $(n = 193)$		р	
Mean age (SD)	35.1 (10.7)	34.6 (10.8)	35.7 (10.6)		0.291
Mean length of current relationship, in months (SD)	83.2 (194.2)	78.5 (96.5)	88.5 (275.9)		0.591
Mean length of longest relationship, in months (SD)	120.8 (271.0)	121.1 (262.9)	119.6 (282.5)		0.952
Mean number of children (SD)*	1.0 (1.4)	1.2 (1.4)	0.9 (1.4)		0.038
Mean number of pregnancies (SD)**	1.4 (1.8)	1.6 (1.9)	1.1 (1.5)		0.006
Mean age of first intercourse (SD)	17.6 (5.7)	17.7 (6.7)	17.6 (4.1)		0.809
Ethnicity % (n)					0.925
Euro-caucasian	74.9 (338)	73.9 (190)	76.7 (148)		
South-Asian	6.9 (31)	7.4 (19)	6.2 (12)		
East-Asian	5.1 (23)	5.5 (14)	4.7 (9)		
Black	4.0 (18)	4.3 (11)	3.6 (7)		
Middle Eastern	2.0 (9)	1.6 (4)	2.6 (5)		
First Nations	1.3 (6)	1.2 (3)	1.6 (3)		
Hispanic	1.3 (6)	2.0 (5)	0.5 (1)		
Multiracial	1.8 (8)	1.6 (4)	2.1 (4)		
Other	2.0 (9)	2.0 (5)	2.1 (4)		
Highest education % (n)		(0)	(.)		0.203
High school	15.3 (69)	17.1 (44)	13.0 (25)		0.200
College/technical/trade school	24.4 (110)	25.3 (65)	23.3 (45)		
Undergraduate degree	39.0 (176)	38.9 (100)	38.9 (75)		
Masters degree	18.0 (81)	14.4 (37)	22.8 (44)		
Doctoral degree	1.6 (7)	1.56 (4)	1.6 (3)		
Post doctoral training	0.7 (3)	1.2 (3)	0.0 (0)		
Other	0.9 (4)	1.2 (3)	0.5 (1)		
Current employment % (n)*	0.5 (1)	1.2 (3)	0.5 (1)		0.037
Employed full time	53.7 (242)	53.3 (137)	54.4 (105)		0.037
Employed part time	14.0 (63)	10.9 (28)	18.1 (35)		
Self employed	11.3 (51)	11.7 (30)	10.9 (21)		
Unemployed	3.5 (16)	5.1 (13)	1.0 (2)		
Retired	2.0 (9)	1.9 (5)	2.1 (4)		
Student	2.9 (13)	2.3 (6)	3.6 (7)		
Homemaker	10.9 (49)	13.2 (34)	7.8 (15)		
Other	0.9 (49)	0.4 (1)	1.6 (3)		
Relationship status % (n)	0.9 (4)	0.4 (1)	1.0 (3)		0.191
	15.2 (60)	14.0 (20)	16 1 /21\		0.191
Single	15.3 (69)	14.8 (38)	16.1 (31)		
Dating	18.2 (82)	15.2 (39)	22.3 (43)		
Married/cohabitating	60.3 (272)	63.4 (163)	56.0 (108)		
Divorced	5.1 (23)	4.7 (12)	5.7 (11)		
Widowed	0.7 (3)	1.2 (3)	0.0 (0)		
Other	0.2 (1)	0.4 (1)	0.0 (0)		

Note: Significant group differences at $^*p < .05$ and $^{**}p < .01$

 $\textbf{Table 2.} \ \ \textbf{Meditation history data for participants who indicated having a meditation practice} \ (\textbf{n} = \textbf{n})$ 193)

Meditation type % (n)	
Yoga	63.2 (122)
Vipassana	39.4 (76)
Transcendental Meditation	16.6 (32)
Tai Chi	8.3 (16)
Other	20.2 (39)
Average length of meditation history in months (SD)	48.5 (91.64)
Frequency of meditation % (n)	
At least once per day	32.6 (63)
At least once per week	47.7 (92)
At least once per month	14.5 (28)
Other	5.2 (10)



Table 3. Mean participant scores on sexual function, desire, mood, health, interoceptive awareness, and mindfulness measures according to meditation experience

Measure	Non-meditators, mean score (SD)	Meditators, mean score (SD)	p
FSFI Total Score	23.34 (9.28)	25.86 (8.18)	0.005
Desire scale	3.42 (1.25)	3.65 (1.16)	0.046
Arousal scale	3.76 (1.84)	4.42 (1.66)	0.0001
Lubrication scale	4.22 (2.00)	4.77 (1.68)	0.002
Orgasm scale	3.86 (1.99)	4.53 (1.85)	0.0004
Satisfaction scale	4.09 (1.61)	4.24 (1.57)	0.355
Pain scale	4.08 (2.27)	3.93 (2.31)	0.487
SIDI-F	28.65 (12.31)	31.64 (11.12)	0.015
PHQ-9	6.55 (5.93)	6.36 (5.28)	0.721
PROMIS Global Mental scale	13.73 (3.64)	13.29 (3.65)	0.209
PROMIS Global Physical scale	15.40 (2.70)	15.38 (2.72)	0.918
MAIA			
Noticing scale	3.22 (1.10)	3.62 (1.01)	0.0001
Not Distracting scale	2.40 (1.07)	2.52 (1.12)	0.239
Not Worrying scale	2.64 (1.05)	2.75 (1.13)	0.284
Attention Regulation scale	2.74 (1.05)	3.13 (1.06)	0.0001
Emotional Awareness scale	3.14 (1.12)	3.70 (0.97)	< 0.0001
Self-Regulation scale	2.62 (1.20)	3.30 (1.04)	< 0.0001
Body Listening scale	2.42 (1.28)	3.02 (1.13)	< 0.0001
Trusting scale	3.19 (1.20)	3.43 (1.16)	0.042
FFMQ Total Score	128.45 (20.49)	133.77 (23.19)	0.022
Observe scale	26.59 (5.63)	28.60 (5.38)	0.0002
Describe scale	27.09 (6.05)	28.95 (5.89)	0.002
Act with Awareness scale	27.12 (6.58)	28.33 (7.17)	0.070
Non-Judge scale	26.69 (7.60)	27.69 (8.30)	0.197
Non-React scale	20.84 (5.43)	21.33 (5.71)	0.364

Note: FSFI = female sexual function index. SIDI-F = sexual interest and desire inventory-female. PHQ-9 = patient health question-naire. PROMIS = patient-reported outcomes measurement information system. MAIA = multidimensional assessment of interoceptive awareness. FFMQ = five facet mindfulness questionnaire.

meditating at least once per month, and the rest at some "other" frequency. On average, participants who meditated had been practicing for 48.5 months.

Association between meditation experience and sexual function

Mean data for both groups on the FSFI and SIDI-F scores are presented in Table 3. Women with meditation experience had higher scores (by 2.52 points, on average) on the FSFI total scale than women with no meditation experience, t(393) = -2.792, p = .005, d = .288. Women who meditated also scored higher than nonmeditators on several FSFI subscales, with meditators' average scores being greater by 0.23 points on the desire subscale, t(445) = -2.001, p = .046, d = .191; 0.66 points on the arousal scale, t(434) = -3.887, p < .0001, d = .379; 0.55 points on the lubrication scale, t(439) = -3.043, p = .002, d = .296; and 0.67 points on the orgasm scale, t(438) = -3.60, p < .0001, d = .347.

On our comprehensive measure of sexual desire, meditators scored an average of 2.99 points higher than nonmeditators on the SIDI-F measure, t(390) = -2.441, p = .015, d = .255. All between group effect sizes were small.

Association between meditation experience, health, mindfulness, and mood

Scores on the PHQ-9, PROMIS, MAIA, and FFMQ measures were compared between meditators and nonmeditators (Table 3). Meditators had higher average scores than nonmeditators on many domains of interoceptive awareness. For example, meditators' scores were higher by an average of 0.4 points on the noticing scale, t(433) = -3.859, p < .001, d = .377; by 0.39 points on the attention regulation scale, t(431) = -3.857, p < .001, d = .374; by 0.56 points on the emotional awareness scale, t(428) = -5.489, p < .001, d = .539; by 0.68 points on the self-regulation scale, t(436) = -6.239, p < .001, d = .609; by



Table 4. Correlation analysis between length of meditation history/frequency of meditation and FSFI, SIDI-F, MAIA and FFMQ scores.

Scale	Length of meditation history		Frequency of meditation	
	Correlation coefficient	р	Correlation coefficient	р
FSFI Desire	- 0.140	0.052	0.020	0.740
FSFI Arousal	- 0.070	0.346	0.064	0.281
FSFI Lubrication	– 0.106	0.146	0.027	0.651
FSFI Orgasm	0.050	0.494	0.014	0.814
FSFI Satisfaction	- 0.032	0.676	- 0.041	0.504
FSFI Pain	– 0.123	0.094	0.067	0.265
FSFI Total	-0.084	0.286	0.031	0.608
SIDI-F	0.025	0.755	0.000	0.996
MAIA Noticing	0.029	0.693	- 0.044	0.458
MAIA Not Distracting	0.036	0.623	-0.034	0.560
MAIA Not Worrying	0.144	0.049	-0.090	0.123
MAIA Attention Regulation	0.099	0.179	— 0.137	0.017
MAIA Emotional Awareness	0.057	0.443	0.029	0.618
MAIA Self-Regulation	0.151	0.039	-0.084	0.150
MAIA Body Listening	0.120	0.104	-0.078	0.187
MAIA Trusting	0.116	0.112	— 0.101	0.085
FFMQ Observe	0.149	0.042	-0.030	0.603
FFMQ Describe	0.162	0.028	– 0.105	0.071
FFMQ Act with Awareness	0.215	0.003	− 0.163	0.004
FFMQ Non-Judge	0.200	0.006	-0.064	0.271
FFMQ Non-React	0.160	0.031	-0.068	0.243
FFMQ Total	0.270	0.0001	– 0.116	0.053

Note: FSFI = female sexual function index. SIDI-F = sexual interest and desire inventory-female. MAIA = multidimensional assessment of interoceptive awareness. FFMQ = five facet mindfulness questionnaire.

0.6 points on the body listening scale, t(438) = -5.164, p < .001, d = .503; and by 0.42 points on the trusting scale, t(439) = -2.035, p = .042, d = .196. All effect sizes were small to medium.

On the measure of mindfulness, the FFMQ total score was significantly higher among the meditators by an average of 5.32 points, t(356) = -2.304, p = .022, d = .243. Meditators also scored higher than women with no meditation experience on three FFMQ subscales: the observing scale, t(426) = -3.728, p < .001, d = .365; the describing scale, t(417) = -3.153, p = .002, d = .312; and mean scores showed a trend toward significant group differences on the acting with awareness scale, t(425) = -1.817, p = .07, d = .176. Between group effects were small.

Association of meditation length and sexual function among meditators

Linear and nonparametric correlation analyses were conducted in order to examine the effects of length of meditation history and frequency of meditation practice on FSFI, SIDI-F, MAIA, and FFMQ scores among the meditators only (Table 4). Length of meditation history was found to correlate significantly with MAIA not worrying, r(188) = 0.144, p = .049, and self-regulation, r(186) = 0.151, p = .039, subscale scores, as well as with FFMQ total score, r(165) = 0.270, p < .001. Length of meditation history was also significantly correlated with all of the FFMQ subscales: observing, r(186) = 0.149, p = 0.042; describing, r(183) = 0.162, p = .028; acting with awareness, r(187) = 0.215, p = .003; nonjudging, r(184) = 0.200, p = .006; and nonreacting, r(182) = 0.160, p = .031.

Significant nonparametric correlations were also found between frequency of meditation (once per day vs. once per week vs. once per month) and scores on the MAIA attention regulation subscale, r(187) = -0.137, p = .017, and the FFMQ acting with awareness subscale, r(188) = -0.163, p = .004. Neither meditation history length or frequency correlated with any measures of sexual function, p < .05.

Predictors of sexual function and desire in meditators

Age, length of current relationship, length of meditation history, frequency of meditation, PHQ-9 scores, and PROMIS Global mental and physical health scores were examined as potential predictors of total

Table 5. Regression analysis predicting total FSFI and SIDI-F scores in meditators.

	FSFI		SIDI-F	
Predictor	Standardized coefficient	р	Standardized coefficient	р
Age	– 0.115	0.215	– 0.112	0.253
Length of current relationship	-0.024	0.766	-0.072	0.398
Length of meditation history	-0.045	0.598	0.047	0.610
Frequency of meditation	0.039	0.511	-0.032	0.699
Total PHQ-9 score	-0.040	0.734	-0.020	0.865
PROMIS Global Mental score	0.448	0.0001	0.300	0.010
PROMIS Global Physical score	- 0.056	0.590	0.064	0.545

Note: FSFI = female sexual function index. SIDI-F = sexual interest and desire inventory-female.

sexual function (FSFI total score) in meditators, using a linear regression analysis (Table 5). The overall regression was significant, F(7,146) = 4.741, p < .001, adjusted $R^2 = 0.152$. The only significant predictor was the PROMIS global mental health score, p < .001.

A similar linear regression was run predicting sexual desire, using the SIDI-F total score. The overall regression was significant, F(7,138) = 2.914, p = .007, adjusted $R^2 = 0.89$. The only significant predictor was, again, the PROMIS global mental health score, p = .01.

Discussion

The purpose of this study was to examine the effect of meditation experience on women's sexual outcomes. Within our sample of 451 women, 42.9% of women practiced meditation and the other 57.1% reported not having any meditation experience. Consistent with our hypotheses, we found that, on average, women who practiced meditation scored higher than women with no meditation experience on measures of sexual function (FSFI), sexual desire (SIDI-F), interoceptive awareness (MAIA), and trait mindfulness (FFMQ). Contrary to our hypothesis, there was no significant correlation between length/frequency of meditation experience and sexual function or sexual desire. Furthermore, mood/mental health (as scored by the PROMIS Global mental health scale) was found to be a significant predictor of both improved sexual function and sexual desire in women who meditate.

Our findings suggest that meditation practice is linked to better sexual function as well as higher sexual interest and desire in women; however, this association is not dependent on amount of meditation experience, frequency of mediation, or type of meditation practice of note, however, our sample of meditators practiced often, between once/week to once/day for an average of four years. In particular, our findings show that women with meditation experience have higher scores related to arousal, lubrication, orgasm, and desire than women with no meditation experience, however, these outcomes are not correlated with the amount of meditation experience or frequency of practice. While a causal relationship cannot be determined from this cross-sectional study, these findings are consistent with a growing body of evidence showing that participation in a meditation or mindfulness practice can directly and significantly improve aspects of sexual functioning in women (Adam et al., 2015; Brotto & Goldmeier, 2015; Khaddouma et al., 2014).

This study had several limitations that must be taken into consideration. The first is that women were able to leave survey answers blank if they were uncomfortable answering, and consequently our sample size varied across endpoints. Furthermore, while our study explored associations between meditation and various aspects of sexual function, due to the cross-sectional nature of the study design it is not possible to determine the direction of causation. Additionally, while our study did collect detailed information on participants' physical activity practices, this information was qualitative and therefore not incorporated into our analyses. Given that certain physical activities such as dance (Jola, Davis, & Haggard, 2011) and martial arts (Ribera d'Alcala, Webster, & Esteves, 2015) have been linked to increased body awareness, it is possible that some individuals in the "no meditation history" group may have engaged regularly in other types of practices or sports known to improve body awareness. However, there is evidence that those with formal meditation training have significantly more body awareness than professional dancers,

who in turn have more body awareness than individuals with no meditation or dance experience, suggesting a linear relationship between activities that directly cultivate body awareness and that outcome itself (Sze, Gyurak, Yuan, & Levenson, 2010).

In conclusion, this cross-sectional study adds to the growing literature showing a link between meditation and sexuality in women. An implication of the findings is that women experiencing sexual difficulties could potentially stand to benefit from any form of meditation, regardless of how frequently they are able to practice. Given the cross-sectional and correlational nature of our study, we were not able to determine mechanisms of action underlying these effects, however, it may be that meditation leads to changes in overall mental health, which then directly contribute to improvements in sexual function. This study also raises the possibility that women with a preexisting meditation practice may be less vulnerable to developing sexual difficulties. This remains an open and untested hypothesis that should guide future research.

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