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Anxiety, Dispositional Mindfulness, and Sexual Desire in Men Consulting in Clinical Sexology: A Mediation Model

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ABSTRACT

This study aimed to examine dispositional mindfulness as a mediator of the relationship between anxiety and sexual desire in men consulting in clinical sexology. A sample of 105 adult men seeking sex therapy completed measures of dispositional mindfulness, anxiety, and sexual desire. Close to a third (28.7%) of participants reported lack or absence of sexual desire as their main reason to consult in sex therapy. Path analysis confirmed a mediation model and revealed that the association between anxiety and lower sexual desire was fully mediated by dispositional mindfulness. These findings suggest that mindfulness-based interventions may be a relevant component to integrate in the treatment of men who present anxiety symptoms and low sexual desire.

According to an epidemiologic literature review from committee members of the Fourth International Consultation on Sexual Medicine 2015 (McCabe et al., 2016), impaired sexual desire is quite common in men from the general population, with a prevalence ranging from 15% to 25% in men aged between 18 and approximately 60, followed by an important increase (up to 40%) in prevalence after the age of 60. Despite these substantial rates, men are unlikely to seek clinical treatment with sexual desire concerns as their primary reason, with 2% to 19% of men consulting specifically for low desire or lack of sexual interest (McCabe, 2001; Meana & Steiner, 2014; Nobre, Pinto-Gouveia, & Allen Gomes, 2006). Empirical studies follow this trend with one study on sexual desire in men for 30 on erectile dysfunction (Meana & Steiner, 2014). Meanwhile, impairment of desire in men remains an existing condition posing complex challenges for clinicians who are confronted with a lack of empirical studies to guide their intervention. The current study offers a conceptual model integrating anxiety and mindfulness to guide clinical interventions aimed at preventing and treating lack of sexual desire in men.

The association between anxiety proneness and lower male sexual desire has been demonstrated in past studies (Trudel & Goldfarb, 2010; Trudel, Landry, & Larose, 1997). In fact, anxiety is among the most frequent psychological factors associated with decreased sexual desire in men (Bodenmann, Ledermann, Blattner, & Galluzzo, 2006; Corona et al., 2005; McCabe & Connaughton, 2013), and problems with sexual desire are especially common in men with anxiety disorders (Johnson, Phelps, & Cottler, 2004; Kotler et al., 2000). Previous research indicates that anxiety leads to cognitive changes in reaction to a feeling of apprehension, especially on attentional control and cognitive distractions (Berggren, & Derakshan, 2013; Eysenck, Derakshan, Santos, & Calvo, 2007; McKee, Zvolensky, Solomon, Bernstein, & Feldner, 2007), which may interfere with sexual desire (Barlow, 1986; Carvalho,

& Nobre, 2011), suggesting a potential role of mindfulness in the link between anxiety and sexual desire.

In recent years, a growing body of evidence has indicated that enhancing dispositional mindfulness (i.e., tendency to be mindful in daily life; Brown & Ryan, 2003) can lead to holistic changes, promoting adaptive coping with various sexual and relational difficulties by interrupting anxious thoughts and feelings (Brotto, Chivers, Millman, & Albert, 2016). The effects of mindfulness on female sexual desire have thereby recently emerged as a field of study (Géonet, Zech, & De Sutter, 2011). However, empirical studies of mindfulness and male sexual desire remain almost nonexistent (Mize, 2015). Practitioners such as Goldmeier (2013), McCarthy and Wald (2013), and Sommers (2013) theoretically proposed that acceptance of aversive inner experiences and present-moment awareness could benefit male sexual desire. Specifically, a sensual space can be accessed through these two mechanisms, which diminish the effects of distractive cognitions and feelings, and may help to better solve sexual and relational problems. In their population-based study, Dosch, Rochat, Ghisletta, Favez, and Van der Linden (2015) reported a significant association between dispositional mindfulness and sexual desire in a sample of 300 men from Switzerland. Additionally, in explaining impaired sexual desire, many authors refer to elements that may be improved through mindfulness training, such as negative mood, low level of attentional control, cognitive distractions, and lack of ability to recognize bodily sensations (e.g., Bancroft et al., 2003; Barlow, 1986; Kaplan, 1977; Nobre, 2010).

The association between anxiety and lower dispositional mindfulness is well established (e.g., Grégoire, Lachance, & Richer, 2016; Walsh, Balint, Fredericksen, & Madsen, 2009), and these two traits are documented as correlates of various aspects of sexuality (Dosch et al., 2015; Reid, Bramen, Anderson, & Cohen, 2014). Thus, mindfulness may be part of the psychological processes through which anxiety is associated with men's sexual desire. The mediating role of dispositional mindfulness could be a crucial mechanism in explaining this relationship, but this role has yet to be delineated.

The aim of the current study was to examine dispositional mindfulness as a mediator of the relationship between anxiety and sexual desire in a sample of men consulting for sexual problems. Based on theoretical position and the available empirical data, we hypothesized that anxiety will be related to lower level of sexual desire in men, and that dispositional mindfulness will act as a mediator of the relationship between anxiety and sexual desire.

Method

Participants and procedure

Participants were 105 men seeking treatment for sexual problems in different clinical settings. Clinical settings were reflecting the services offered by sex therapists in the region of Montreal (hospitals/medical clinics: $n = 26$; organizations offering health services to the community: $n = 23$; private practice: $n = 17$; sex therapy clinics: $n = 17$; other clinical settings: $n = 9$). The mean age of participants was 42 years ($SD = 13.59$, range = 18 to 77). More than half the participants (55%) were currently involved in a romantic relationship (dating, cohabiting, or married). Most participants reported a heterosexual sexual orientation (86%). A small proportion of men completed a high-school-level education (25%), and the majority (75%) had a vocational college degree. The majority (66%) reported a low- to middle-class personal income (below CND \$40,000). In terms of ethnicity, most participants self-identified as Canadians (83%) and reported French as their first language. The project was approved by the institutional ethic committee of the university. During the initial evaluation phase before treatment, the interns of the clinical sexology program were invited to explain the project to their clients, and interested clients completed the consent form. Assigning a numerical code to each participant ensured confidentiality. Approximately one hour was required to complete the self-reported questionnaire, which was available in both paper and online versions. If the clients provided consent, a clinical profile of the results was provided to the intern and his or her supervisor.

Measures

All measures were administered as self-report questionnaires. Participants completed a sociodemographic questionnaire assessing their gender, age, marital status, sexual orientation, education, income, and annual income, followed by questionnaires assessing reasons for consultation, and psychological and sexual functioning.

A subscale of the shortened version of the French Psychiatric Symptoms Index-14 (PSI-14; Ilfeld, 1976; translated and validated in French; Prévaille, 1995; Prévaille, Boyer, Potvin, Perreault, & Leégareé, 1992; Prévaille, Potvin, & Boyer, 1995;) was used to measure the severity of anxiety symptoms. The scale has a well established construct validity and criterion validity (Prévaille, 1995; Prévaille et al., 1992, 1995), and a good internal consistency (Cronbach's alpha = .87) (Godbout, Sabourin, & Lussier, 2007). On a 4-point Likert scale ranging from 0 (*never*) to 3 (*very often*) participants indicated how they have been feeling in the last week. Items are "Have tightness or tension in your neck, back, or other muscles," "Feel fearful or afraid," and "Feel nervous or shaky inside." In the current sample, Cronbach's alpha was high ($\alpha = .85$).

The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003; translated and validated in French by Jermann et al., 2009) was used to assess the participants' dispositions toward mindfulness in daily life. This scale consists of 15 items. Higher scores reflect higher levels of dispositional mindfulness. Participants were asked to indicate how frequently they experienced a variety of items such as "I find it difficult to stay focused on what's happening in the present" and "I find myself doing things without paying attention" on a 6-point Likert scale ranging from 1 (*almost always*) to 6 (*almost never*). The scale showed good construct validity and reliability (Brown & Ryan, 2003). Internal consistency was tested in different populations by Brown and Ryan (2003), who reported Cronbach's alpha coefficients ranging from .80 to .87. In the current sample, Cronbach's alpha was high ($\alpha = .90$). Using the same scale, Dosch et al. (2015) reported that the mean score in a sample of 300 men from general population was $M = 64.63$, $SD = 9.47$.

A subscale of the International Index of Erectile Function (IIEF; Rosen et al., 1997, translated and validated in French by Dargis et al., 2013) was used to assess sexual desire. Participants were asked to rate the frequency and the intensity of their sexual desire over the past four weeks on a 5-point Likert scale ranging from 1 to 5. Higher scores reflect higher desire. The IIEF has shown good psychometric properties regarding the assessment of sexual desire (Rosen et al., 1997). The IIEF is a scale translated into many languages and widely used to assess sexual function, including sexual desire. In the current sample, Cronbach's alpha was .86. Rosen et al. (1997) reported that the mean was 7.0 ($SD = 1.8$) in a population-based sample of 109 men aged 29 to 76 years without any history of erectile dysfunction.

Analytic strategy

First, descriptive analyses using SPSS 22 were performed to examine the frequency of reported sexual desire disorder and demographic data. Then, using *Mplus*, version 7 (Muthén & Muthén, 1998–2012), we used path analyses to test the hypothesized mediation model. *Mplus* accounts for the missing data using the full information maximum likelihood (FIML) estimation procedure, and a total of four participants were excluded from the analysis because the missing data were too numerous. Path analysis is a widely used statistical technique that allows testing both direct and indirect relationships of an independent variable on a dependent variable through a mediator variable (see Hayes, 2013). Anxiety was tested as the predictor, dispositional mindfulness as the mediator, and sexual desire as the outcome variable, with participants' age as the control variable. Model fit was tested using root mean square error of approximation (RMSEA), the comparative fit index (CFI), the standardized root mean square residual (SRMR), and a chi-square test of model fit. According to Hu and Bentler (1999), RMSEA values below .06 and SRMR values below .08 indicate a good fit to the data. CFI values above .90 indicate a good fit to the data (Bentler, 1990). A nonsignificant chi-square value indicates a good fit to the data. As recommended by Hayes, Preacher, and Myers (2011), a 95% bootstrap confidence interval was generated to test the indirect effect of anxiety on sexual desire, passing through dispositional mindfulness. When

Table 1. Means, standard deviations, and correlations among anxiety, mindfulness, sexual desire, and age ($n = 101$).

Variable	<i>M</i>	<i>SD</i>	1.	2.	3.	4.
1. Anxiety	3.43	2.50	—	-.69***	-.24*	-.11
2. Mindfulness	63.73	13.43	—	—	.33***	-.07
3. Sexual Desire	6.96	2.27	—	—	—	-.26**
4. Age	42.39	12.87	—	—	—	—

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

the confidence interval (CI) does not include 0, the indirect effect is considered statistically significant (Shrout & Bolger, 2002).

Results

We first employed descriptive statistics to provide background information such as the prevalence of low or diminished sexual desire as a main motive of consultation. Next, we conducted path analysis with the manifest variables to test our hypothesis. Descriptive analysis revealed that 28.7% ($n = 29$) of the men consulting for sexual problems reported lack or absence of sexual desire among their main reasons for consulting in clinical sexology. The t test for independent samples revealed a significant difference between the two groups according to mean age, $t(59) = 3.21$, $p < .05$, with men presenting lack of sexual desire as complaint being older ($M = 47.8$ years) as compared to men not reporting sexual desire concerns ($M = 37.0$ years).

Table 1 presents means, standard deviations, and correlations among sexual desire, dispositional mindfulness, age, and anxiety. Correlations indicated that all the variables were significantly correlated. Because age was associated with lower sexual desire, this variable was controlled in the next analyses.

Regarding the mediation model, the direct link between anxiety and sexual desire was first examined. Results indicated a negative significant relationship when controlling for age ($\beta = -.27$, $p = .004$). Next, the mediation model per se was tested. The hypothesized mediation model provided a satisfactory adjustment to the observed data: $\chi^2(1, n = 101) = .12$, $p = .73$; RMSEA = .00, CI 90% [0.0, 0.19]; CFI = 1.00; SRMR = .00. Results indicated that anxiety was related to a lower level of dispositional mindfulness, which in turn was related to a higher level of sexual desire. The standardized coefficients are reported in Figure 1. The test of indirect effect between anxiety and sexual desire through dispositional mindfulness was significant; the product of the path coefficients was: $b = -.22$ ($p < .05$; CI 95% [-0.39, -0.04]). The CI does not include 0, which indicates a significant indirect effect of anxiety on sexual desire through dispositional mindfulness, supporting the meditational role of dispositional mindfulness. As presented in Figure 1, the direct link between anxiety and sexual desire was no longer significant following the introduction of dispositional mindfulness in the model, suggesting full mediation. Age was also included as a control variable of sexual desire, and results confirm that the mediation model held independently of the effect of participants' age on sexual desire. The overall model explains 16% of the variance of sexual desire.

Because the sample was found to be heterogeneous with regard to marital status, we examined if the model holds when controlling for marital status. Adding this variable to the model did not change

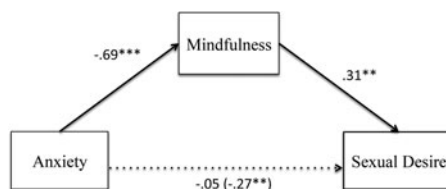


Figure 1. Model of dispositional mindfulness as a mediator of the relation between anxiety and sexual desire. Nonsignificant path is shown as dotted line. Results reported after controlling for age. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

substantially the strength and significance of the associations between variables, confirming that the mediational model held independently of the marital status.

Discussion

This study aimed to examine dispositional mindfulness as a mediator of the relationship between anxiety and sexual desire in a sample of men consulting for a sexual or conjugal difficulty. Results suggest that hypoactive sexual desire is relatively frequent in men consulting therapists for couple or sexual difficulties, with close to one third of the participants reporting hypoactive sexual desire as one of their main concerns. This finding represents interesting data, given that the prevalence of hypoactive sexual desire as a reason for consulting in sexology is rarely assessed in men (McCabe et al., 2016; Meana & Steiner, 2014) and appears as an important motivation to consult in clinical sexology.

The results of the present study confirmed a full mediation model, suggesting an indirect link between anxiety and sexual desire through dispositional mindfulness. Our findings are consistent with prior observations that general symptoms of anxiety are associated with lower sexual desire in men (Beck, Bozeman, & Qualtrough, 1991; Lykins, Janssen, & Graham, 2006), and with lower dispositional mindfulness in men (Grégoire & Lachance, 2015). Our findings are also consistent with prior research suggesting that dispositional mindfulness is associated with a higher level of sexual desire in men (Dosch et al., 2015). Our study, however, adds empirical supports to theoretical standpoints. Indeed, authors such as Goldmeier (2013), McCarthy and Wald (2013), and Sommers (2013) proposed that dispositional mindfulness promotes sexual desire in men with anxiety symptoms. Furthermore, our findings provide support for authors who have argued that dispositional mindfulness may enhance sexual desire by counteracting the effects of anxiety proneness or symptoms (e.g., muscular tension, persistent fear, or anxious thoughts) on men's sexual desire. Concretely, a disposition of nonjudgmental present-moment mindfulness, which may be altered by anxiety, may promote attentional functions and capacities to access internal sexual stimuli (e.g., physical sensations, erotic thoughts) and external sexual stimuli (e.g., visual erotic stimuli) (Brotto & Goldmeier, 2015; Goldmeier, 2013; Kimmes, Mallory, Cameron, & Köse, 2015; McCarthy & Wald, 2013). It has also been argued that accepting thoughts, emotions, and being receptive to experiences — rather than avoiding anxiety — may promote sexual mind/body connection, pleasure, and autonomy (Rosenbaum, 2013; Silverstein, Brown, Roth, & Britton, 2011).

This study has limitations that should be acknowledged. First, although the ecological validity is increased by the inclusion of participants recruited in a variety of clinical settings offering services from sex therapists in the region of Montreal, this approach contributes to the heterogeneity of the sample. The sample of this study was composed of men consulting in sex therapy for various sexual problems, which also adds heterogeneity. Second, the small number of items used to measure the constructs of sexual desire and anxiety did not allow for a fully comprehensive assessment of these constructs. Thus the present study should be replicated with an assessment battery relying on a multi-informant approach. As underlined by Sharifzadeh (2009), rigorously defining anxiety needs to be emphasized in studies assessing the relationship between anxiety and sexual desire, as different forms of anxiety are studied in sexology (e.g., performance anxiety, anxiety disorders). Concerning the concept of sexual desire, distress directly associated with low sexual desire was not assessed in this study. Future research should measure the distress related to lack of desire or how the participant experiences this problem. Third, we relied on self-report questionnaires, which may lead to recall errors. Fourth, we did not evaluate attention deficit/hyperactivity disorder, and whether participants were taking psychoactive medication, which could impact dispositional mindfulness, sexuality, and sexual function. Finally, as our study design is correlational, further studies based on a longitudinal design are needed to clarify the causality of the links, and confirm the sequencing of variables in our model.

Some clinical implications can be drawn from the present study. First, enhancing dispositional openness, acceptance, and curiosity toward one's erotic experience may lead to positive changes on subjective sexual desire. The integration of mindfulness interventions in clinical sexology builds on the original Masters and Johnson's medically based models of sexual response and treatments for sexual dysfunctions, constructing the sex-positive and integrative paradigms toward which modern practice is moving. In

their models, these authors referred to anxiety and a state of anxious self-observing that they called *spectatoring* as interrupting sexual desire (Masters & Johnson, 1966, 1970). They developed Sensate Focus, a founding technique in clinical sexology, which consists in stabilizing attention on the present moments' erotic experiences rather than on expectations about sexual responsiveness. For Sensate Focus, partners are first asked to focus on their own feelings and sensations while exploration and a nonjudgmental attitude are encouraged. As such, these instructions closely parallel what is currently referred to as a mindfulness-based intervention (Weiner & Avery-Clark, 2014). Yet, cultivating mindfulness differs from Sensate Focus in the fact that mindfulness also refers to a disposition that can be trained on a daily basis that infuses all spheres of life and that does not require the participation of a partner (Brotto & Heiman, 2007). Next, theories at the foundation of mindfulness-based therapies offer promising avenues in the treatment of men's low or decreased sexual desire difficulties associated with anxiety proneness. The two main dimensions of mindfulness defined by Bishop et al. (2004) (i.e., control of attention and acceptance) may promote sexual desire when anxiety is associated with decreased sexual desire. Specifically, enhancing the acceptance of negative psychological states through interventions may be used for promoting sexual desire by embracing one's internal erotic experiences and through self-regulation of attention, which could help in achieving psychological distance from anxious thoughts and in increasing contact with moment-to-moment experiences (Brotto & Goldmeier, 2015). Thus, mindfulness-based-interventions may be of particular benefit for men consulting in sex therapy who show anxiety symptoms along with a problem with sexual desire. Such interventions were demonstrated effective in women seeking treatment for sexual interest/arousal disorder (Brotto & Basson, 2014; Brotto, Basson, & Luria, 2008), and further studies should investigate the parallel with male clients in order to develop precisely targeted interventions and hopefully establish guidelines and efficient treatments for men presenting lack of or low sexual desire complaints.

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