

Dysregulated Sexuality and High Sexual Desire: Distinct Constructs?

Jason Winters · Kalina Christoff · Boris B. Gorzalka

Received: 26 June 2008 / Revised: 4 November 2009 / Accepted: 4 November 2009 / Published online: 9 February 2010
© Springer Science+Business Media, LLC 2010

Abstract The literature on dysregulated sexuality, whether theoretical, clinical or empirical, has failed to differentiate the construct from high sexual desire. In this study, we tested three hypotheses which addressed this issue. A sample of 6458 men and 7938 women, some of whom had sought treatment for sexual compulsivity, addiction or impulsivity, completed an online survey comprised of various sexuality measures. Men and women who reported having sought treatment scored significantly higher on measures of dysregulated sexuality and sexual desire. For men, women, and those who had sought treatment, dysregulated sexuality was associated with increased sexual desire. Confirmatory factor analysis supported a one-factor model, indicating that, in both male and female participants, dysregulated sexuality and sexual desire variables loaded onto a single underlying factor. The results of this study suggest that dysregulated sexuality, as currently conceptualized, labelled, and measured, may simply be a marker of high sexual desire and the distress associated with managing a high degree of sexual thoughts, feelings, and needs.

Keywords Dysregulated sexuality · Sexual compulsivity · Hypersexuality · Sexual desire · Sexual addiction · Sexual behaviour · Sexual control

Introduction

Dysregulated sexuality (i.e., sexual thoughts, feelings, and behaviors that are experienced as distressingly out of control by the individual) is increasingly gaining attention in both popular and academic literature. Interest has risen substantially, as it has been implicated in sexual offending (Bradford, 2001; Kafka, 2003) and the spread of sexually transmitted infections (STI) (e.g., Dodge, Reece, Cole, & Sandfort, 2004; Kalichman & Cain, 2004; Semple, Zians, Grant, & Patterson, 2006). In addition, clinician reports indicate that a significant number of individuals are seeking treatment for the distress associated with the difficulty of managing their sexual thoughts, feelings, and behaviors (e.g., Carnes, 1983; Coleman, 1991; Goodman, 1992; Leedes, 2007). Although disorders of over-controlled sexuality are now well established and officially recognized in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association, 2000), the exact nature of undercontrolled sexuality is still not fully understood. At the center of an ongoing debate is the way the phenomenon should be conceptualized and labelled, if at all. Despite the lack of clarity in nosology, nomenclature, and etiology, there is some interest in seeing dysregulated sexuality recognized as a distinct disorder in the upcoming fifth edition of the DSM (Kafka, 2009).

Two fundamental issues regarding dysregulated sexuality have yet to be settled. First, clinicians and researchers have approached the phenomenon from different clinical traditions. This has resulted in three conceptualizations, with corresponding labels: *sexual compulsivity*, *sexual addiction*, and *sexual impulsivity*. These have often been used interchangeably to describe a single set of symptoms, without consideration of potentially disparate clinical implications. A concerted effort has been made to reconcile the three perspectives; however, empirical study has been lacking. It is

J. Winters · K. Christoff · B. B. Gorzalka
Department of Psychology, University of British Columbia,
Vancouver, BC, Canada

J. Winters (✉)
British Columbia Provincial Health Services Authority, Forensic
Psychiatric Services Commission, #300–307 West Broadway,
Vancouver, BC V5Y 1P9, Canada
e-mail: jasonwinters@telus.net

likely that dysregulated sexuality has multiple underlying etiologies (e.g., Bancroft, 2008; Schwartz, 2008) and, therefore, each clinical perspective may offer some explanatory value (Bancroft & Vukadinovic, 2004).

In the literature, the sexual addiction and impulsivity models of dysregulated sexuality have received mixed support. The primary criticism is that they fail to distinguish between patterns of sexual thoughts, feelings, and behaviors that may be characteristic of healthy individuals and those of individuals who are thought to be disordered (Gold & Heffner, 1998; Moser, 1992). For example, failure to resist sexual impulses, sexual preoccupation, tension preceding sexual activity, spending more time having sex than is intended, guilt and shame, reduction in social and recreational activities to make time for sex, and irritability and restlessness during periods of little sexual activity can all be characteristic of a sexually active individual. This is not to say that sexual addiction and sexual impulsivity, as conceptualizations of dysregulated sexuality, should be discarded entirely. The sexual addiction perspective, in particular, explains why sexual behavior can become problematic when the individual depends upon it to ameliorate negative affect (Carnes, 1983; Goodman, 1992).

Sexual compulsivity, alternatively, has garnered substantial support in both the clinical and empirical literature. Sexual compulsivity, also referred to as compulsive sexual behavior, is characterized by sexual thoughts, fantasies, and desires that are intense, recurrent, distressing, and interfere with daily functioning (Coleman, 1991, 2003; Tepper, Owens, Coleman, & Carnes, 2007). Related sexual behavior is experienced by the sexually compulsive individual to be excessive and out of control. Preoccupation with meeting one's sexual needs may culminate in repetitive or rigid behaviors, negatively affecting the individual's personal, social, and occupational life (Kalichman & Cain, 2004). Kalichman and Cain (2004) described sexual compulsivity as "a propensity to experience sexual disinhibition and under-controlled sexual impulses and behaviors as self-identified by the individuals" (p. 235). They were careful to avoid characterizing sexual compulsivity as a clinical disorder, despite the fact that sexual compulsivity was originally conceptualized to parallel DSM obsessive-compulsive disorders (e.g., Anthony & Hollander, 1993; Coleman, 1991; Travin, 1995). Research has shown that sexual compulsivity is associated with those sexual behaviors that are considered most risky (e.g., multiple partners and unprotected sex) (Dodge et al., 2004; Kalichman & Rompa, 1995, 2001; Kalichman et al., 1994).

The second fundamental issue surrounding dysregulated sexuality that needs to be addressed is the nature of the association between dysregulated sexuality and sexual desire. Sexual desire is best understood and defined within the framework of Levine's (2003) multidimensional model. According to Levine, sexual desire consists of three components: (1) biological-based

sexual drive; (2) motivation, or the psychological aspect; and (3) sexual wish, dictated by sociocultural context. Elevated sexual desire and resulting sexual thoughts, feelings, and behaviors, in the context of current social and cultural standards, have not been sufficiently differentiated from dysregulated sexuality. It may be that the concept of dysregulated sexuality merely captures the high end of the sexual desire spectrum (Dodge et al., 2004) and the socially proscribed negative judgement that often accompanies uncontrolled expression of that desire. Because of this, dysregulated sexuality, as a clinical disorder, has been met with substantial scepticism.

Based on previous evidence, it seems likely that substantially high sexual desire may be related to dysregulated sexuality. Kafka (2000) proposed that dysregulated sexuality manifests itself as paraphilias (PA) and paraphilia-related disorders (PRD). Kafka and Hennen (2003) defined PRD as "socially sanctioned sexual fantasies, urges, and activities that increase in frequency or intensity so as to cause clinically significant distress or impairment in social, occupational, or other important areas of functioning" (p. 308). They suggested that PRD may be synonymous with other conceptualizations of dysregulated sexuality, such as sexual addiction and sexual compulsivity. Citing the work of Kinsey, Pomeroy, and Martin (1948), Kafka (1997) operationally defined hypersexual desire, or *hypersexuality*, as a persistent total sexual outlet (TSO) of seven or more orgasms per week for at least six months, and after age 15. A TSO of seven was chosen based on evidence that, in the general population, sexually appetitive behaviors occur on a continuum and only three to eight percent of men report a TSO of seven or more (Kinsey et al., 1948). Empirical evidence reported by Kafka and Hennen (2003) indicates that the large majority of PA and PRD men can be characterized as hypersexual.

Others have also reported a possible link between dysregulated sexuality and high sexual desire. Bancroft and Vukadinovic (2004) found preliminary evidence of significantly increased sexual excitation and lowered sexual response inhibition in a small and heterogeneous sample of self-identified sex addicts. A small body of research on risky sexual behavior (RSB), or sexual behaviors that increase risk of exposure to STIs, has shown that sexual compulsivity is related to number of partners, number of single-occurrence partners (i.e., "one-night stands"), and frequency of unprotected sex (e.g., Dodge et al., 2004; Kalichman & Cain, 2004; Semple et al., 2006). Sexual compulsivity also correlates with frequency of non-risky partnered sexual behavior and frequency of solitary sexual activity. In other words, sexual compulsivity seems to be related to increased sexual activity of all types, not just those that are risky. Dodge et al. (2004) noted that sexual compulsivity may represent nothing more than the extreme end of the sexual desire spectrum. To the best of our knowledge, no attempt has been made to differentiate dysregulated sexuality, in any of its conceptualizations, from elevated sexual desire. Those who argue

that dysregulated sexuality represents a distinct disorder assert that lack of sexual self-control, likely in conjunction with high sexual desire, is fundamental to the disorder. If, therefore, dysregulated sexuality may be characterized by sexual dyscontrol, in combination with high sexual desire, then measures of dysregulated sexuality, when compared to measures of sexual desire, should provide novel information related to sexual self-control. It was the goal of our study to address this issue and, in so doing, elucidate the relationship between dysregulated sexuality and elevated sexual desire.

Based on previous evidence suggesting high sexual desire may not be distinguishable from dysregulated sexuality, and using the sexual compulsivity model of dysregulated sexuality, we formulated the following hypotheses:

1. Individuals who have sought treatment for sexual compulsivity, addiction, and impulsivity, compared to those who have not, will score significantly higher on a measure of sexual compulsivity. However, they will also score higher on measures of sexual desire.
2. Sexual compulsivity will positively correlate with measures of sexual desire. The pattern of correlations observed will be similar for men and women, and for individuals who have sought treatment for sexual compulsivity, addiction, and impulsivity.
3. Confirmatory factor analysis, including sexual compulsivity and drive variables, will support a one-factor solution, reflecting a single underlying construct.

To address our hypotheses, we designed a comprehensive internet-based survey comprised of a battery of sexuality measures. New internet-based survey technology makes it possible to collect data from large and geographically diverse samples at relatively low cost (Best, Krueger, Hubbard, & Smith, 2001; Reynolds, Woods, & Baker, 2007). Web based versions of traditional pencil-and-paper measures appear to perform equivalently and validity is maintained (Dixon & Turner, 2007; Meyerson & Tryon, 2003; Roberts, 2007).

Our goal during construction of the online survey was to include a sufficient set of appropriate self-report measures to address our hypotheses, while maintaining a feasible survey length. Among the measures, we included several questionnaires that either directly or indirectly assessed sexual desire. These covered all four domains in which sexual desire could manifest itself: sexual thoughts, feelings and behaviors, and physiological sexual response. We also included a measure of socially desirable responding. Not surprisingly, given the private nature of human sexuality, there is some evidence that social desirability may be related to reduced disclosure on sexuality self-report measures (Meston, Heiman, Trapnell, & Paulhus, 1998). Meston et al. found that impression management, in particular, negatively correlated with various aspects of self-reported sexuality for both men and women. With this finding in mind, we wanted to ensure that socially

desirable responding was neither elevated in our sample nor related to underreporting on the sexuality measures.

Method

Participants

Of the 14,396 participants, 7938 (55.1%) were female and 6458 (44.9%) were male. The majority of participants were from North America ($n = 13,154$; 91.7%); of those, 4334 (30.3%) lived in Canada and 8820 (61.5%) lived in the United States. The rest ($n = 1242$; 8.3%) were living in various other parts of the world. Most participants were Caucasian ($n = 12,268$; 85.2%) and were not currently undergraduate students ($n = 10,660$; 74.1%). The largest proportion of participants had received undergraduate degrees ($n = 5166$; 37.0%), another 4118 (29.5%) had completed high school only, while 3795 (27.2%) had completed some sort of post-graduate degree. The average age of participants was 28.9 years ($SD = 8.6$, range 18–94). When asked to report their sexual identity, 10,989 (76.3%) participants identified as heterosexual, 851 (5.9%) identified as homosexual, 1849 (12.8%) identified as bisexual, and 394 (2.7%) identified as queer. A small majority reported sexual experiences with only one sex ($n = 8218$; 57.1%); the rest reported sexual experiences with both sexes ($n = 6178$; 42.9%). The majority of participants were single ($n = 7845$; 54.5%); 5647 (39.2%) were married or cohabiting, and 866 (6.0%) were divorced. Most participants were not members of organized religion ($n = 10,789$; 77.3%). Religion was not at all important to 7125 (51.0%) participants; it was slightly important to 3125 (22.6%), somewhat important to 2167 (15.5%), quite important to 1119 (8.0%), and extremely important to 393 (2.8%).

Procedure

Various tactics were used to recruit participants. Locally, advertisements with pull tabs were posted around the University of British Columbia (UBC) campus and the Greater Vancouver Regional District. The study was also advertised on the UBC Department of Psychology Subject Pool Psychology Research Participation System. To capture a more geographically varied sample, web based communication and advertising were utilized. Study advertisements were distributed through email lists and via email snowballing. In addition, advertisements were posted on various web pages, forums, blogs, and social networking sites (e.g., www.craigslist.org, www.facebook.com, www.youtube.com, etc.). The study URL and a brief study description were also published in parts of Europe and Asia and across much of North America in the syndicated newspaper sex advice column *Savage Love*. All advertisements described the project as a general survey study of human sexuality.

The online survey, which was approved by the UBC Behavioral Research Ethics Board (BREB), took approximately 45 min to complete. To encourage participation, the advertisements and online consent form explained that participants would be provided with their scores once they completed the final survey questionnaire. Updated study averages and means from past research were also provided for comparison, as well as brief descriptions of the measures and the meaning of the scores. Eligible UBC psychology undergraduate students also received one course credit for participating.

The survey included: an online consent form, a demographics and general information questionnaire, six sexuality measures, a measure of socially desirable responding, and a results and debriefing page. Other than the Demographics and General Information Form (DGIF) which always appeared first, the order of the measures was randomized. Data were saved upon completion of each measure, which ensured that partial data were available for those participants who did not complete the entire survey. The survey was posted online in November 2006 and data collection continued until August 2007.

The online consent form “accept” button was clicked 21,000 times. A total of 16,462 unique subject numbers were assigned to participants who completed the DGIF. A team of research assistants scrutinized the survey data for repeat entries and invalid responses; 306 (1.8%) cases were removed. Identical DGIF responses helped identify duplicate participants. Responses were considered invalid if the software made errors when saving. Despite the inclusionary criteria outlined in the online consent form indicating that participants must be at least 18 years old, 162 (1.0%) underage individuals participated. Their data were excluded from analyses due to BREB policies. Also, data from 87 (0.5%) participants who indicated that their sex was “other” were also excluded as none of the survey questionnaires had been validated for that population. Another 963 (5.5%) cases were then removed for participants who did not proceed through any measures after completing the DGIF. Since most of the variables used in data analysis captured sexual thoughts, feelings, and behaviors related to partnered sexual activity, the data from 548 (3.3%) participants who reported no history of any partnered sexual activity, and whose data still remained, were removed. The final sample size was 14,396. Of those participants, 11,219 (77.9%) completed all survey questionnaires. This represented 53.4% of the original 21,000 people who clicked the “accept” button.

Measures

Demographics and General Information Form (DGIF)

The DGIF was adapted from measures used in online sexuality studies at Indiana University’s Kinsey Institute (<http://www.kinseyinstitute.org/research/surveylinks.html>). It consists of 22 items that cover general demographics (e.g., age, ethnicity,

language, location, birthplace, education, socioeconomic status, and religion) as well as some basic sexuality variables. Those variables include: sexual identity, target of sexual attraction, sexual experience with men and women, sexual preference, sex of current partner, sexual relationship type (exclusive, non-exclusive or no sexual relationship), marital status, length of current relationship, and treatment for sexual compulsivity, addiction or impulsivity (“Have you ever sought treatment for compulsive/impulsive sexual behavior or attended Sexual Addicts Anonymous?”).

Sexual Compulsivity Scale (SCS)

The SCS (Kalichman & Rompa, 1995, 2001; Kalichman et al., 1994) is a measure of sexual preoccupation and difficulty managing sexual thoughts and behaviors. It was adapted from a self-help guide used by self-identified sex addicts (CompCare, 1987). At the time this research was conducted, the SCS was the only measure of sexual compulsivity that had been both validated and used in multiple independent studies. Responses for each of the 10 SCS items (e.g., “My desires to have sex have disrupted my daily life” and “I have to struggle to control my sexual thoughts and behavior”) range from 1 (*not at all like me*) to 4 (*very much like me*). To score the SCS, responses for the 10 item were summed and then divided by 10. The SCS has good internal consistency with alpha coefficients ranging from .82–.95 (Dodge et al., 2004; Kalichman & Rompa, 1995, 2001; Kalichman et al., 1994). The SCS also appears to have good concurrent and discriminant validity. For example, scores on the SCS correlate with high risk sexual behaviour, low self-esteem, sensation seeking and perceived lack of sexual control (Kalichman & Rompa, 1995, 2001; Kalichman et al., 1994). Also, the SCS successfully discriminates between gay men who exhibit risky sexual behaviour from those who do not (Kalichman et al., 1994).

Sexual Inhibition/Sexual Excitation Scales (SIS/SES)

The SIS/SES (Janssen, Vorst, Finn, & Bancroft, 2002a, b) is a 45-item measure that assesses the strength of the sexual excitation and inhibition systems. Janssen et al. created items describing situations that would increase sexual arousal and penile response (e.g., “When I think someone sexually attractive wants to have sex with me, I quickly become sexually aroused”) or that were sexually threatening (e.g., “If I realize there is a risk of catching a sexually transmitted disease, I am unlikely to stay sexually aroused”), and tested them on a sample of 408 male undergraduate students. Principal axis factor extraction and varimax rotation revealed a 45-item 10 factor solution with three higher level factors. For the purposes of this study, we were interested in two of those three factors: (1) propensity for sexual excitation (SES; range 20–80); and (2) propensity for sexual inhibition due to threat

of performance consequences (SIS2; range 11–44). Internal consistency for the two subscales was good (Cronbach's alphas = .88 and .66). Responses for each item range from 1 (*strongly agree*) to 4 (*strongly disagree*). During analysis, all items are reversed such that 1 becomes *strongly disagree* and 4 becomes *strongly agree*. Scores on the SIS/SES appear to be normally distributed in men (Bancroft & Vukadinovic, 2004) and test–retest reliability coefficients for the scales indicate that scores were stable over time (Janssen et al., 2002a).

Recently, a female version of the SIS/SES was validated with a sample of 1067 undergraduate women (Carpenter, Janssen, Graham, Vorst, & Wicherts, 2008). The measure was based heavily on the male version, with items reworded to reflect female physiology and sexual response. Although men and women score differently on their respective SIS/SES scales, the overall factor structure appears to be similar. The female version has similar convergent and discriminant validity, and test–retest reliability to the male version.

Sexual Desire Inventory-2 (SDI-2)

The SDI-2 (Spector, Carey, & Steinberg, 1996) is a 14-item test of interest in partnered sexual activity (e.g., “How strong is your desire to engage in sexual activity with a partner?”) and solitary sexual activity (e.g., “How important is it for you to fulfill your desires to behave sexually by yourself?”). The measure was tested on a sample of 249 female and 131 male undergraduates. Factor analysis revealed a two-factor structure: dyadic sexual desire (SDI2-DSD) and solitary sexual desire (SDI2-SSD). Cronbach's alphas for the two factors were .86 and .96, respectively.

Total Sexual Outlet (TSO)

The two TSO items, taken from the Sexual Outlet Inventory (SOI; Kafka, 1994, 1997; Kafka & Prentky, 1992), measured average number of orgasms experienced per week during the 6 months preceding testing and lifetime maximum orgasms per week since the age of 15. Kafka (1997) suggested that a TSO of ≥ 7 is indicative of hypersexuality.

Survey of Sexual Behaviors (SSB)

The SSB was adapted from the sexual behaviors survey used by Dodge et al. (2004). The survey consisted of 5 items which addressed solitary sexual activity and partnered sexual activity over the preceding three months. Three items measured total frequency of oral, vaginal, and anal intercourse. Hours spent viewing or reading pornography per week, on average, and weekly average frequency of masturbation made up the two solitary sexual activity items.

Derogatis Sexual Functioning Inventory (DSFI)

The DSFI (Derogatis & Melisaratos, 1979) is a multidimensional self-report measure of current sexual functioning. The DSFI was originally created and validated as a tool for clinicians, although it has also been widely used in research. Detailed reliability and validity information is provided in Derogatis and Melisaratos (1979). To address our hypotheses, we used four of the DSFI sub-tests: drive, psychological symptoms, affect and satisfaction. Internal consistency for each of the chosen four scales was good, with Cronbach's alphas ranging from .60 to .90.

The DSFI sexual drive subtest consisted of seven items. The first four items addressed frequency of intercourse, masturbation, fantasies, and kissing and petting. They can be summed to produce a rudimentary index of sexual drive. The other three items assessed ideal frequency of intercourse, age of first sexual interest, and age of first sexual intercourse. Because other survey measures and items either capture sexual drive better or measure current level of sexual activity, the first four items of the sexual drive subtest were not included in analyses. Two of the last three items (ideal frequency of sexual intercourse and age of first sexual interest) contributed unique information about sexual desire and were therefore included.

General psychopathology was captured by the DSFI psychological symptoms subtest. Because the DSFI was intended for clinical use with clients reporting sexual dysfunction, Derogatis and Melisaratos (1979) felt it was necessary that the DSFI measure general psychological functioning. As such, they included an abridged version of the Symptom Checklist-90-Revised (Derogatis, 1977) called the Brief Symptom Inventory. Respondents indicate how much they were bothered by each symptom during the previous two weeks on a scale from 0 (*not at all*) to 4 (*extremely*). Scores from the 53 items were summed and divided by 53 to create a General Severity Index (GSI), otherwise referred to as the psychological symptoms subtest. In the initial validation study, elevated scores on the GSI, which are indicative of increased psychological distress, were related to a variety of sexual dysfunctions in both men and women (e.g., erectile dysfunction, anorgasmia, and premature ejaculation).

The sixth section of the DSFI measures affect. According to Derogatis and Melisaratos (1979), a wide range of negative emotions typically accompany sexual dysfunction. The DSFI affect sub-test provides a list of 40 positive and negative affective states. The individual must indicate to what extent he or she has experienced each state (e.g., ashamed, excited, angry, etc.), from 0 (*never*) to 4 (*always*), over the preceding 2 weeks. Positive and negative affect total scores were summed separately, and the difference between the two is reported. Higher scores on the affect subtest indicate more positive affect.

The DSFI sexual satisfaction sub-test is comprised of two components. The first 10 items, endorsed as either true or false, ask about specific elements of satisfaction (e.g., “Usually, I am satisfied with sexual partner,” “I feel I do not have sex frequently enough,” “Often, I worry about my sexual performance,” etc.). After negative items are reverse keyed, the number of items endorsed as true are summed to produce a score ranging from 0 to 10, with higher scores indication greater satisfaction. The second component of the sexual satisfaction sub-test was the Global Sexual Satisfaction Index, which is derived from a single item. The item requires the individual being assessed to rate his or her overall sexual satisfaction on a scale from 0 (could not be worse) to 8 (could not be better).

The Balanced Inventory of Desirable Responding (BIDR)

The BIDR (Paulhus, 1988, 1991) is a 40-item self-report questionnaire that measures two constructs: “self-deceptive positivity” (honest but positively biased responses; Paulhus, 1991) and impression management (intentional self-presentation to assessor or audience; Paulhus, 1991). The responses to BIDR items vary along a 7-point Likert scale from 1 (*not true*) to 7 (*very true*). The BIDR yields two subscales: impression management (IM; items 1–20) and self-deception enhancement (SDE; items 21–40). Only individuals who consistently give exaggerated responses will get high scores. Both the IM and SDE subscales have good internal consistency with alphas ranging from .75 to .86, and .68 to .80, respectively.

Results

Socially Desirable Responding

Before undertaking the main analyses, we investigated the extent to which our sample responded in a socially desirable manner. Men’s mean score on the BIDR IM subscale ($M = 5.3$, $SD = 2.5$) was significantly greater than that reported for the undergraduate male normative sample, $M = 4.3$, $SD = 3.2$; $t(5133) = 5.33$, $p < .001$. To ensure that elevated male IM scores were not related to underreporting on the sexuality measures, men’s scores for the IM subscale were correlated with scores on the sexuality variables. All correlations were small ($r < .1$; Cohen, 1992), positive, and significant, implying that, if anything, increased impression management was related to greater disclosure on sexuality measures. Women’s mean score on the IM subscale ($M = 5.2$, $SD = 2.5$) was not significantly different from that of the undergraduate female normative sample, $M = 4.9$, $SD = 3.2$; $t(6707) = 1.60$, $p = .055$. Mean SDE scores for men ($M = 4.1$, $SD = 2.7$) and women ($M = 4.0$, $SD = 2.6$) were significantly lower than those reported for the normative samples, $M = 7.5$, $SD = 3.2$;

$t(5135) = 16.59$, $p < .001$; $M = 6.8$, $SD = 3.1$; $t(6411) = 16.67$, $p < .001$. The overall pattern of BIDR subscale scores suggests that the sample was not responding in a more socially desirable manner than the normative samples.

Participant Characteristics

Although more women than men participated, $\chi^2(1) = 152.2$, $p < .001$, more men ($n = 107$) than women ($n = 69$) reported having sought treatment for sexual compulsivity, addiction or impulsivity, $\chi^2(1) = 18.3$, $p < .001$. When compared, men and women’s scores on all sexuality measures of primary interest were significantly different (see Table 1). Therefore, men and women were treated as distinct groups. Men and women who had sought treatment for sexual compulsivity, addiction or impulsivity were also treated as distinct groups.

Women who had sought treatment reported a mean relationship length of 31.7 months ($SD = 42.9$) while women who had not sought treatment reported a mean relationship length of 34.6 months ($SD = 52.0$). There was no statistically significant difference between the two groups, $t(7931) < 1$. On the other hand, men who had sought treatment reported being in longer relationships ($M = 76.9$ months, $SD = 106.5$) than men who had not sought treatment ($M = 51.8$ months, $SD = 76.9$), $t(108) = 2.43$, $p = .017$.

We calculated chi-squares to evaluate differences in categorical demographic variable distributions for treatment versus non-treatment groups. This was done to determine

Table 1 Female and male descriptive statistics for sexuality measures

	<i>n</i>	Min–Max	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	Cohen’s <i>d</i>
SDI2-DSD							
Women	7078	0–62	39.59	9.85	27.18*	12731	0.48
Men	5755	0–62	44.06	8.75			
SDI2-SSD							
Women	7079	0–23	12.25	6.12	21.58*	12829	0.38
Men	5757	0–23	14.38	5.07			
SCS							
Women	7251	1–4	1.43	0.42	28.25*	11287	0.51
Men	5834	1–4	1.66	0.51			
SES							
Women	6846	20–80	55.78	8.14	18.82*	12395	0.34
Men	5695	20–80	58.42	7.54			
SIS2							
Women	6709	11–44	31.06	4.88	40.28*	12254	0.73
Men	5547	11–43	27.52	4.79			

SDI2-DSD dyadic sexual desire; SDI2-SSD solitary sexual desire; SCS sexual compulsivity; SES sexual excitation; SIS2 sexual inhibition due to fear of performance consequences

* $p < .001$

which variables should be entered into a logistic regression model for men and women, with having sought treatment as the outcome. Based on the chi-square analysis, marital status, sexual experience with either one or both sexes, and importance of religion appeared to differentiate participants who reported seeking treatment from those who had not. These variables were entered as predictors in the regression model. The model fit for both men, $\chi^2(9) = 46.3, p < .001$, and women, $\chi^2(9) = 18.3, p = .032$. For men, being married, $\chi^2(4) = 12.6, p = .013$, sexual experience with both sexes, $\chi^2(1) = 11.2, p = .001$, and importance of religion, $\chi^2(4) = 17.3, p = .002$, all predicted treatment seeking behavior. For women, only sexual experiences with both sexes, $\chi^2(1) = 13.8, p < .001$, predicted treatment seeking behavior.

Non-Treatment Versus Treatment Group Comparisons

To address the first hypothesis, a series of independent samples *t*-tests were calculated to compare non-treatment and treatment groups on the various sexuality measures. Descriptive statistics for men and women, along with the *t*-test results, can be found in Table 2. For each comparison, Levene's test for equality of variances was first executed (Tabachnick & Fidell, 1996). If the assumption of homogeneity of variance was violated, the *t* value for unequal variances is reported along with the alternate degrees of freedom. Since the sample sizes for non-treatment groups were large, and therefore statistical power potentially produced significance for differences that had little meaning, effect sizes (Cohen's *d*) were calculated to quantify the true magnitude of group differences. We used Cohen's (1992) suggested cutoffs of 0.2, 0.5, and 0.8 to be indicative of *t* value effect sizes that were small, medium and large, respectively.

Compared to non-treatment seeking women, those who had sought treatment scored greater on dyadic sexual desire, solitary sexual desire, sexual compulsivity, and sexual excitation, and lower on sexual inhibition due to fear of performance consequences. They also reported being younger at age of first sexual interest, having more psychological symptoms, lower affect, and less sexual satisfaction. Effect sizes ranged from small to large; the effect size for sexual compulsivity ($d = 1.05$) was the only one to exceed 0.8. There were no significant differences between the groups in average frequency of masturbation, hours spent viewing pornography, partnered sexual activity, total sexual outlet, sexual experiences, and ideal frequency of intercourse.

Treatment seeking men, compared to non-treatment seeking men, also scored greater on dyadic sexual desire, solitary sexual desire, sexual compulsivity, and sexual excitation, and lower on sexual inhibition due to fear of performance consequences. They reported spending more time viewing pornography, a greater ideal weekly frequency of intercourse,

younger age at first sexual interest, and less sexual satisfaction. Effect sizes for the male group differences also ranged from small to large with the effect for sexual compulsivity ($d = 1.18$) being the only to exceed the 0.8 cutoff. There were no significant group differences for frequency of masturbation, total partnered sexual activity, total sexual outlet, psychological symptoms, and affects.

Correlations Among Sexual Desire, Sexual Inhibition, and Sexual Compulsivity

To test our second hypothesis, we quantified the relationships among sexual compulsivity, sexual desire, and sexual inhibition variables with Pearson correlation coefficients. As markers of sexual desire, we included sexual excitation (SES), dyadic sexual desire (SDI2-DSD), solitary sexual desire (SDI2-SSD), and average weekly total sexual outlet (TSO). Before correlations were calculated, the skew for each variable was examined as skew can attenuate correlation coefficients (Calkins, 1974; Dunlap, Burke, & Greer, 1995). The distribution of sexual compulsivity scores was the only one to be substantially skewed ($S = 1.62, SE = 0.021$). Because sexual compulsivity is purportedly uncommon in the general population, we had predicted that the vast majority of participants would score low on the measure, thus creating a positively skewed distribution. An inverse transformation reduced skew to an acceptable level ($S = 0.26, SE = 0.021$). The transformed sexual compulsivity scores were used for subsequent analyses. The scatterplots for each correlation were examined to ensure that relationships were linear. To identify the effect size of correlations, we adhered to Cohen's (1992) recommendation that coefficients of 0.1, 0.3, and 0.5 indicate the lower bounds of small, medium, and large effect sizes. Correlation results are presented in Tables 3 and 4.

The pattern of correlations was the same for non-treatment men and women. Sexual compulsivity was positively and significantly related to all markers of sexual desire (i.e., dyadic sexual desire, solitary sexual desire, average weekly total sexual outlet, and sexual excitation). Effect sizes ranged from small to medium. Sexual inhibition was negatively and significantly correlated with all markers of sexual desire, as well as sexual compulsivity. The weakest correlations were those between weekly total sexual outlet and the other variables; all correlation effect sizes were small. The markers of sexual desire all correlated significantly with each other. The correlation between dyadic sexual desire and sexual excitation was the only to exceed 0.5, indicating a large effect size. In the male and female treatment groups, the pattern of correlations was similar to that for the non-treatment participants; however, nearly half the correlations did not reach significance, particularly those for sexual inhibition and solitary sexual desire.

Table 2 Means and *SD* for the sexuality measures as a function of sex and treatment status

	Women						Men					
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	Cohen's <i>d</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	Cohen's <i>d</i>
	Average frequency of masturbating per week											
NT	2.80	3.40	1.11	7069	ns		5.33	4.54	1.63	89	ns	
T	3.29	4.91					6.71	7.97				
Average hours spent per week viewing pornography												
NT	1.17	5.00	0.79	7068	ns		3.69	4.87	2.37*	88	.041	0.29
T	1.69	3.12					6.83	7.58				
Total partnered sexual activity in the preceding 3 months												
NT	49.20	476.00	0.16	7040	ns		44.44	100.90	0.85	5590	ns	
T	59.10	102.59					35.27	34.67				
Average weekly TSO												
NT	5.56	8.92	1.56	60	ns		7.68	8.90	0.65	5819	ns	
T	9.21	18.17					8.31	10.95				
SDI2-DSD												
NT	39.57	9.86	2.28*	7072	.022	0.31	44.02	8.74	2.94***	5750	.003	0.32
T	42.46	8.60					46.85	9.16				
SDI2-SSD												
NT	12.24	6.12	2.05*	7073	.040	0.27	14.36	5.08	2.84**	5752	.005	0.33
T	13.85	5.80					15.94	4.59				
SCS												
NT	1.42	0.42	6.77***	61	<.001	1.05	1.65	0.49	9.33***	91	<.001	1.18
T	2.04	0.72					2.43	0.80				
SES												
NT	55.74	8.14	4.13***	6840	<.001	0.54	58.38	7.53	3.29***	5690	.001	0.35
T	60.14	8.18					61.03	7.81				
SIS2												
NT	31.07	4.87	2.85***	6703	.004	0.35	27.54	4.80	2.23*	5542	.024	0.26
T	29.26	5.54					26.37	4.31				
DSFI—ideal weekly frequency of intercourse												
NT	4.73	5.00	1.06	65	ns		5.56	4.62	2.01*	5825	.044	0.21
T	5.66	7.07					6.54	4.59				

Table 2 continued

	Women					Men						
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	Cohen's <i>d</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	Cohen's <i>d</i>
DSFI—age of first sexual interest												
NT	12.50	3.63	4.04***	65	<.001	0.53	11.75	2.69	4.46***	5833	<.001	0.45
T	10.47	4.03					10.49	2.88				
DSFI—psychological symptoms												
NT	0.58	0.49	3.20***	60	.002	0.49	0.52	0.46	0.15	5563	ns	
T	0.91	0.80					0.52	0.42				
DSFI—affects												
NT	1.27	1.02	4.49***	6923	<.001	0.55	1.31	1.00	1.14	5443	ns	
T	0.68	1.15					1.20	1.10				
DSFI—sexual satisfaction												
NT	7.45	2.01	3.34***	6199	.001	0.45	7.42	1.99	2.41*	4923	.016	0.27
T	6.51	2.11					6.91	1.83				
DSFI—global sexual satisfaction index												
NT	5.67	1.64	2.37*	43	.022	0.40	5.36	1.81	2.21*	4078	.027	0.26
T	4.93	2.05					4.87	1.97				

NT subjects who have not sought treatment for sexual compulsivity, addiction or impulsivity (no treatment); T subjects who have sought treatment for sexual compulsivity, addiction or impulsivity (treatment); *SDI2-DSD* dyadic sexual desire; *SDI2-SSD* solitary sexual desire; *SCS* sexual compulsivity; *SES* sexual excitation; *SIS2* sexual inhibition due to fear of performance consequences; *DSFI* Derogatis Sexual Functioning Inventory

* $p < .05$; ** $p < .01$; *** $p < .005$

Table 3 Correlations among measures of sexual excitation, desire, inhibition and compulsivity non-treatment and treatment seeking women

	SCSTrans	SDI2-DSD	SDI2-SSD	Average weekly TSO	SES
SDI2-DSD					
NT	.44***				
T	.30*				
SDI2-SSD					
NT	.31***	.34***			
T	.16	.25			
Average weekly TSO					
NT	.13***	.17***	.15***		
T	.28*	.24	.30*		
SES					
NT	.45***	.59***	.42***	.12***	
T	.41**	.42**	.13	.27*	
SIS2					
NT	-.25***	-.22***	-.17***	-.10***	-.24***
T	-.30*	-.14	-.14	-.04	-.31*

NT subjects who have not sought treatment for sexual compulsivity, addiction or impulsivity (no treatment); T subjects who have sought treatment for sexual compulsivity, addiction or impulsivity (treatment); SDI2-DSD dyadic sexual desire; SDI2-SSD solitary sexual desire; SCSTrans sexual compulsivity transformed; SES sexual excitation; SIS2 sexual inhibition due to fear of performance consequences

* $p < .05$; ** $p < .01$; *** $p < .005$

Factor Analysis

To assess our third hypothesis, we used principal axis confirmatory factor analysis (CFA; Russell, 2002) to determine whether one or two underlying latent variables could best account for the scores on and relationships among the markers of sexual desire and sexual compulsivity for both men and women. Based on the size of the intercorrelations, the variables that seemed to be the best indicators of sexual desire were dyadic sexual desire (SDI2-DSD), solitary sexual desire (SDI2-SSD), and sexual excitation (SES). They also appeared to best discriminate the treatment from non-treatment groups in the group comparisons. Therefore, they were entered in the CFA along with the transformed sexual compulsivity variable. Average weekly total sexual outlet (TSO), which we had expected to be at least moderately related to other markers of sexual desire, only correlated weakly with these. For that reason, TSO was not included in the CFA. The transformed scores for sexual compulsivity were selected rather than the untransformed scores, as CFA is based on correlations among input variables and skew can attenuate those correlations (Tabachnick & Fidell, 1996). Previous analyses had already indicated that sexual compulsivity and sexual desire variables were positively related. Because of this, we allowed for oblique rotation when testing the two-factor model.

Table 4 Correlations among measures of sexual excitation, desire, inhibition and compulsivity non-treatment and treatment seeking men

	SCSTrans	SDI2-DSD	SDI2-SSD	Average weekly TSO	SES
SDI2-DSD					
NT	.38***				
T	.39***				
SDI2-SSD					
NT	.22***	.28***			
T	.27*	.14			
Average weekly TSO					
NT	.10***	.14***	.16***		
T	.07	.22*	-.04		
SES					
NT	.35***	.52***	.34***	.07***	
T	.38***	.48***	.35**	.10	
SIS2					
NT	-.14***	-.22***	-.09***	-.10***	-.18***
T	-.14	-.25*	-.20	-.13	-.15

NT subjects who have not sought treatment for sexual compulsivity, addiction or impulsivity (no treatment); T subjects who have sought treatment for sexual compulsivity, addiction or impulsivity (treatment); SDI2-DSD dyadic sexual desire; SDI2-SSD solitary sexual desire; SCSTrans sexual compulsivity transformed; SES sexual excitation; SIS2 sexual inhibition due to fear of performance consequences

* $p < .05$; ** $p < .01$; *** $p < .005$

The one-factor model accounted for 57.4 and 51.6% of the variance for women and men, respectively. Eigenvalues can be found in Table 5 and factor loadings are shown in Table 6. The residual coefficients for all reproduced correlations were less than .03, suggesting good model fit (Russell, 2002). Of the four variables included in the single factor CFA, solitary sexual desire contributed the least to the model. Fit improved marginally when the two-factor model was tested. However, the two-factor solution was not interpretable. Partnered sexual desire, sexual excitation, and sexual compulsivity loaded onto one factor while solitary sexual desire loaded onto the other factor. The CFA results, therefore, indicate that a one-factor model was most appropriate for this set of data.

Discussion

To the best of our knowledge, this is the first time that scores on the Sexual Compulsivity Scale have been reported for individuals who have sought treatment for sexual compulsivity, addiction or impulsivity. We hypothesized that those men and women who had sought treatment, compared to those who had not, would score higher on the SCS and other sexuality measures. The data confirmed our prediction. The largest difference between treatment and non-treatment groups was on the SCS. This is not surprising, as the

Table 5 Confirmatory factor analysis eigenvalues for the one-factor model

Component	Women (<i>N</i> = 6586)	Men (<i>N</i> = 5386)
1	2.29	2.06
2	.72	.79
3	.59	.66
4	.39	.47

Note: Extraction method: Principal axis

Table 6 Confirmatory factor analysis factor loadings for the one-factor model

	Women (<i>N</i> = 6586)	Men (<i>N</i> = 5386)
SCSTrans	.58	.50
SDI2-DSD	.73	.70
SDI2-SSD	.49	.43
SES	.80	.73

Note: Extraction method: Principal axis

SCSTrans sexual compulsivity transformed; SDI2-DSD dyadic sexual desire; SDI2-SSD solitary sexual desire; SES sexual excitation

fundamental difference between the treatment and non-treatment groups, regardless of scores on the various measures, is treatment seeking behavior. Certain elements of the SCS capture distress and problems associated with managing sexual thoughts, feelings, and behaviors. If that distress becomes unmanageable, treatment seeking behavior would be expected. As Kalichman and Cain (2004) cautioned, though, high scores on the SCS are not indicative of a clinical disorder.

As we had predicted in our first hypothesis, male and female treatment groups scored higher on sexual excitation, dyadic sexual desire, and solitary sexual desire. These results concur with previous research showing that those who seek treatment for dysregulated sexuality exhibit high sexual desire (Bancroft & Vukadinovic, 2004; Kafka, 1997; Kafka & Hennen, 1999, 2003). In addition, some demographic data from the treatment and non-treatment groups implies that treatment seekers may be more sexualized. They were more likely to have been younger at first sexual interest and to have had sexual experience with both men and women, regardless of sexual orientation. There was also a greater proportion of men in the treatment group than in the non-treatment group. Based on our sex comparisons and findings from past research, men, in general, scored higher on sexual desire (e.g., Giargiari, Mahaffey, Craighead, & Hutchison, 2005; Regan & Atkins, 2006). Theoretically, individuals with strong sexual desire should be more attuned to sexual stimuli, and more likely to become sexually aroused and pursue sexual activity.

Results from the group comparisons imply that participants who sought treatment may be characterized as having high sexual desire in conjunction with insufficient sexual outlet. Treatment group participants reported less sexual

satisfaction and tended to be in longer relationships; sexual activity in relationships typically decreases with increasing relationship length (Call, Sprecher, & Schwarz, 1995). In addition, the treatment groups, compared to the non-treatment groups, did not differ in average weekly TSO or frequency of partnered and solitary sexual activity. Since high sexual desire is conceptually equivalent to increased appetite for sexual activity, and participants who had sought treatment scored higher on measures of sexual desire, it would be assumed that they would also report higher levels of sexual activity. Although an individual may desire a high frequency of partnered sexual activity, a partner must be available and cooperative. In terms of solitary sexual activity, some individuals' attitudes towards masturbation may still remain negative despite increased social acceptance of masturbation as a sexual outlet (Das, 2007; Laumann, Gagnon, Michael, & Michaels, 1994). For those participants who had sought treatment, it is possible that increased sexual needs, as a result of high sexual desire, were not being met either with or without a partner.

Treatment seekers in our sample scored lower on sexual inhibition due to threat of performance consequences. This indicates that when in situations where risk for unwanted pregnancy, STIs or legal repercussions is present, treatment seekers are more likely to remain sexually aroused. One of the factors that may differentiate those who seek treatment from those who do not but also score high on sexual desire is an inability to regulate sexual arousal. Descriptions of dysregulated sexuality found in the literature substantiate this idea. However, in a recent laboratory study of male sexual arousal regulation, we found that dysregulated sexuality was unrelated to sexual arousal regulation success (Winters, Christoff, & Gorzalka, 2009).

Interestingly, male treatment seekers in our sample were more likely to be members of organized religion and feel that religion was important to them. Since sexual behavior is typically proscribed by organized religion and negative attitudes towards sexuality have been linked with increased religiosity (De Visser, Smith, Richters, & Rissel, 2007; Le Gall, Mullet, & Shafiqhi, 2002; Lefkowitz, Gillen, Shearer, & Boone, 2004), it may be that substantially high sexual desire, especially in conjunction with any same sex sexual preference or behavior, is particularly distressing for those who subscribe to religious doctrine. Although our data did not address the issue, it is possible that a proportion of people who seek treatment for dysregulated sexuality experience increased distress due to socioethical and religious constraints on sexuality (Bancroft & Vukadinovic, 2004; Coleman, 1986).

In this sample, participants who had sought treatment for sexual compulsivity, impulsivity or addiction seemed to experience high sexual desire and lower sexual inhibition in conjunction with unmet sexual needs or increased social constraint. For individuals at the high end of the sexual desire

continuum, sexual thoughts and feelings may become powerful enough that they become intrusive. If regulation of those sexual thoughts and feelings is unsuccessful, preoccupation, compulsions, obsessions and a loss of control may be experienced. Also, the mere act of trying to suppress those thoughts and feelings may increase arousal, leading to an ongoing cycle of attempted suppression followed by ever increasing arousal. This pattern has been described in work on general emotion suppression (Wegner, Shortt, Blake, & Page, 1990) and is characteristic of individuals prone to obsessional thinking (Wegner & Zanakos, 1994). For someone struggling with sexual preoccupations, compulsions, and obsessions, distress may become unmanageable and treatment seeking behavior could be expected. Given the salience of sexual desire, especially for those at the high end of the spectrum, unmet needs or social constraint upon sexuality may exacerbate the pattern of thoughts and feelings that could also potentially drive someone to seek therapeutic intervention. This does not preclude other reasons why sexual behavior can appear to become compulsive, impulsive or addictive. For example, Bancroft and Vukadinovic (2004) suggested that sexual behaviors can take on an addictive-like quality when they become a means by which to ameliorate negative affective states.

Two significant sex differences were found among the group comparisons. Men who had sought treatment reported spending more time viewing pornography and a greater ideal weekly frequency of intercourse whereas those differences were not apparent for the women. Although our data did not clarify the source of these sex differences, they support the general impression of increased expression of sexuality in the treatment groups, possibly manifested differently in men and women.

Treatment seeking women scored higher on psychological symptoms and negative affects while their male counterparts did not. Given that previous studies have linked dysregulated sexuality with increased depression, anxiety and other negative psychological sequelae (Bancroft & Vukadinovic, 2004; Black, Kehrberg, Flumerfelt, & Schlosser, 1997; Raymond, Coleman, & Miner, 2003), we expected that the both treatment groups would report more psychological symptoms and greater negative affect. This inconsistency between the sexes cannot be explained by abnormal scores on either subscale for any of the four groups. Average scores on the DSFI psychological symptoms and affects subscales from previous studies range from 0.44 to 0.82, and 0.72 to 1.72, respectively (Derogatis & Melisaratos, 1979; Meana & Nunnink, 2006). The scores for our two non-treatment groups, as well as the men who had sought treatment, fall within those ranges. Only the scores for the treatment seeking women fall outside the ranges of scores reported previously. We propose that disparity in sexual permissiveness between the sexes can explain why only female treatment seekers reported increased psychological symptoms and negative affects. It has been established

that women, on average, are less sexually permissive than men (Hendrick, Hendrick, & Reich, 2005; Le Gall et al., 2002; Oliver & Hyde, 1993). Higher scores on psychological symptoms and increased negative affects for female treatment seekers in our sample may be a consequence of dissonance caused by the juxtaposition of high sexual desire and decreased sexual permissiveness characteristic of women in general.

The second and third hypotheses directly addressed the relationship between dysregulated sexuality and sexual desire in men, women, and male and female treatment groups. Sexual compulsivity, sexual excitation, and dyadic sexual desire were all significantly intercorrelated, confirming our prediction that dysregulated sexuality would be associated with high sexual desire in treatment and non-treatment groups. Confirmatory factor analysis supported a one-factor solution for both men and women, indicating that a single underlying latent variable or factor best accounts for the scores on, and the relationships among, the sexual desire and sexual compulsivity variables. In other words, these data suggest that dysregulated sexuality, as it has been conceptualized and is measured by the SCS, is indistinguishable from measures of sexual desire.

There are two possible explanations for the CFA results. First, the SCS may be a poor measure of dysregulated sexuality. Many of the SCS items tap into thoughts, feelings, and behaviors that would be expected of someone who exhibits very high sex desire rather than dysregulated sexuality (e.g., “My sexual appetite has gotten in the way of my relationships,” “I find myself thinking of sex while at work,” “It has been difficult for me to find sex partners who desire having sex as much as I want to”). In other words, measure specificity may be a problem despite face validity of most SCS items. However, the measure was based on self-reports from sex addicts and touches upon all the hallmarks of sexual compulsivity as it is currently conceptualized, and as such it should at least partially capture dysregulated sexuality when present. The recent validation of another sexual compulsivity measure substantiates this conclusion (Miner, Coleman, Center, Ross, & Rosser, 2007). The Compulsive Sexual Behavior Inventory, especially its control subscale, shares many themes with the SCS. Given that the only two validated measures of dysregulated sexuality highly overlap and both demonstrate good face validity, the SCS should be a valid measure of the construct.

The second explanation for the CFA results is that dysregulated sexuality overlaps with elevated sexual desire to such an extent that the two constructs are practically equivalent. Proponents of dysregulated sexuality as a disorder posit that sexual dyscontrol, which likely presents in combination with high sexual desire, is central to the disorder. If true, a one-factor model should have been rejected during the CFA analyses as the SCS would have been expected to provide novel information about poor sexual control, information not shared with the measures of sexual desire. Given the current

results and the findings from Winters et al. (2009), the problem does not appear to be the inadequacy of the SCS, but instead the way that dysregulated sexuality has been conceptualized. For dysregulated sexuality to be established as a disorder, it must first be empirically demonstrated that the construct does not simply capture sexual desire. Further, it may be that behaviors considered sexually compulsive, such as protracted promiscuity, compulsive masturbation, pornography addiction, and telephone sex dependence, are merely a means of satisfying a very strong sexual appetite. Because those types of behavior are considered inappropriate by social standards and can potentially interfere with daily functioning, there is a temptation to regard them as pathological. A more detailed examination of the relationships among sexual desire and various types of prosocial and problematic sexual behaviors, and any corresponding distress, could potentially address this premise.

We acknowledge that our study design had some weaknesses, and therefore the findings should be interpreted with caution. The sample was not representative of the general population, despite its size. The large majority of participants were recruited through websites and print columns, in particular sex advice columns, that would appeal to people who are likely younger, urban, and more sexually liberal. This might explain the high rates of homosexuality, bisexuality, and sexual experiences reported by the sample. There were two other sampling concerns. First, the sample was entirely internet-based. While it appears that data collected through internet surveys can be generalized to the population (Best et al., 2001; Reynolds et al., 2007), we had no way of insuring this for our sample. Also, no research has directly assessed the validity of internet-based sexuality questionnaires compared to paper versions. Second, the overall response rate was low relative to the number of people who consented to the study. It is not clear if attrition was related to technical problems, boredom or discomfort with the questions. Another potential criticism of the study design is that the question used to identify participants who had sought treatment for sexual compulsivity, impulsivity or addiction did not differentiate among those who had successfully completed treatment, those who did not, and those currently undergoing therapy. These three groups may have scored differently on the various measures, which could have affected the results of the comparisons with the non-treatment groups and correlations within the group. Determining the specific treatment status will be important in future work on the nature of sexual dysregulation.

The overall goal of our study was to determine if dysregulated sexuality, as it is currently conceptualized and measured, and high sexual desire are distinct constructs. We formulated three hypotheses which, if confirmed, would provide converging evidence that the two constructs may not be distinguishable. The results supported the hypotheses and, when taken together, they suggest that dysregulated

sexuality, as it is currently conceptualized and measured, may simply be an indicator of elevated sexual desire and the distress associated with managing increased sexual thoughts, feelings and needs. This has implications for understanding the clinical presentation of dysregulated sexuality and may contribute to the debate on the merits of recognizing dysregulated sexuality as a clinical disorder. Finally, our findings may also influence future research on dysregulated sexuality and RSB. It may be that high sexual desire can account for the relationship between dysregulated sexuality and RSB previously established in the literature.

Acknowledgements We are indebted to Dan Savage for his assistance with data collection, and Dr. Bruno Zumbo for sharing his statistical expertise.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.
- Anthony, D. T., & Hollander, E. (1993). Sexual compulsions. In E. Hollander (Ed.), *Obsessive compulsive-related disorders* (pp. 139–150). Washington, DC: American Psychiatric Press.
- Bancroft, J. (2008). Sexual behavior that is “out of control”: A theoretical conceptual approach. *Psychiatric Clinics of North America*, *31*, 593–601.
- Bancroft, J., & Vukadinovic, Z. (2004). Sexual addiction, sexual compulsivity, sexual impulsivity, or what? Toward a theoretical model. *Journal of Sex Research*, *41*, 225–234.
- Best, S. J., Krueger, B., Hubbard, C., & Smith, A. (2001). An assessment of the generalizability of internet surveys. *Social Science Computer Review*, *19*, 131–145.
- Black, D. W., Kehrberg, L. L. D., Flumerfelt, D. L., & Schlosser, S. S. (1997). Characteristics of 36 subjects reporting compulsive sexual behavior. *American Journal of Psychiatry*, *154*, 243–249.
- Bradford, J. M. W. (2001). The neurobiology, neuropharmacology and pharmacological treatment of the paraphilias and compulsive sexual behavior. *Canadian Journal of Psychiatry*, *46*, 26–34.
- Calkins, D. S. (1974). Some effects of non-normal distribution shape on the magnitude of the Pearson product moment correlation coefficient. *Interamerican Journal of Psychology*, *8*, 261–288.
- Call, V., Sprecher, S., & Schwarz, P. (1995). The incidence and frequency of marital sex in a national sample. *Journal of Marriage and the Family*, *57*, 639–652.
- Carnes, P. J. (1983). *Out of the shadows: Understanding sexual addiction*. Minneapolis, MN: CompCare.
- Carpenter, D., Janssen, E., Graham, C., Vorst, H., & Wicherts, J. (2008). Women’s scores on the sexual inhibition/sexual excitation scales (SIS/SES): Gender similarities and differences. *Journal of Sex Research*, *45*, 36–48.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155–159.
- Coleman, E. (1986). Sexual compulsion vs. sexual addiction: The debate continues. *SIECUS Report*, *14*(6), 7–11.
- Coleman, E. (1991). Compulsive sexual behavior: New concepts and treatment. *Journal of Psychology and Human Sexuality*, *4*, 37–52.
- Coleman, E. (2003). Compulsive sexual behavior: What to call it, how to treat it? *SIECUS Report*, *31*(5), 12–16.
- CompCare. (1987). *Hope and recovery: A twelve step guide for healing from compulsive sexual behavior*. Minneapolis, MN: Author.

- Das, A. (2007). Masturbation in the United States. *Journal of Sex and Marital Therapy*, 33, 301–317.
- De Visser, R. O., Smith, A. M. A., Richters, J., & Rissel, C. E. (2007). Associations between religiosity and sexuality in a representative sample of Australian adults. *Archives of Sexual Behavior*, 36, 33–46.
- Derogatis, L. R. (1977). *The SCL-90-R manual I: Scoring, administration, and procedures for the SCL-90-R*. Baltimore, MD: Clinical Psychometrics.
- Derogatis, L. R., & Melisaratos, N. (1979). The DSFI: A multidimensional measure of sexual functioning. *Journal of Sex and Marital Therapy*, 5, 244–281.
- Dixon, R., & Turner, R. (2007). Electronic vs. conventional surveys. In R. A. Reynolds, R. Woods, & J. D. Baker (Eds.), *Handbook of research on electronic surveys and measurements* (pp. 105–111). Hershey, PA: Idea Group Inc.
- Dodge, B., Reece, M., Cole, S. L., & Sandfort, T. G. M. (2004). Sexual compulsivity among heterosexual college students. *Journal of Sex Research*, 41, 343–350.
- Dunlap, W. P., Burke, M. J., & Greer, T. (1995). The effect of skew on magnitude of product-moment correlations. *Journal of General Psychology*, 122, 365–377.
- Giargiari, T. D., Mahaffey, A. L., Craighead, W. E., & Hutchison, K. E. (2005). Appetitive responses to sexual stimuli are attenuated in individuals with low levels of sexual desire. *Archives of Sexual Behavior*, 34, 547–556.
- Gold, S. N., & Heffner, C. L. (1998). Sexual addiction: Many conceptions, minimal data. *Clinical Psychology Review*, 18, 367–381.
- Goodman, A. (1992). Sexual addiction: Designation and treatment. *Journal of Sex and Marital Therapy*, 18, 303–314.
- Hendrick, C., Hendrick, S. S., & Reich, D. A. (2005). The brief sexual attitudes scale. *Journal of Sex Research*, 43, 76–86.
- Janssen, E., Vorst, H., Finn, P., & Bancroft, J. (2002a). The Sexual Inhibition (SIS) and Sexual Excitation (SES) scales: I. Measuring sexual inhibition and excitation proneness in men. *Journal of Sex Research*, 39, 114–126.
- Janssen, E., Vorst, H., Finn, P., & Bancroft, J. (2002b). The Sexual Inhibition (SIS) and Sexual Excitation (SES) scales: II. Predicting psychophysiological response patterns. *Journal of Sex Research*, 39, 127–132.
- Kafka, M. P. (1994). Sertraline pharmacotherapy for paraphilias and paraphilia-related disorders: An open trial. *Annals of Clinical Psychiatry*, 6, 189–195.
- Kafka, M. P. (1997). Hypersexual desire in males: An operational definition and clinical implications for males with paraphilias and paraphilia-related disorders. *Archives of Sexual Behavior*, 26, 505–526.
- Kafka, M. P. (2000). The paraphilia-related disorders: Nonparaphilic hypersexuality and sexual compulsivity/addiction. In S. R. Leiblum & R. C. Rosen (Eds.), *Principles and practice of sex therapy* (3rd ed., pp. 471–503). New York: Guilford.
- Kafka, M. P. (2003). Sex offending and sexual appetite: The clinical and theoretical relevance of hypersexual desire. *Journal of Offender Therapy and Comparative Criminology*, 47, 439–451.
- Kafka, M. P. (2009). Hypersexual disorder: A proposed diagnosis for DSM-V. *Archives of Sexual Behavior*. doi:10.1007/s10508-009-9574-7.
- Kafka, M. P., & Hennen, J. (1999). The paraphilia-related disorders: An empirical investigation of nonparaphilic hypersexuality disorders in outpatient males. *Journal of Sex and Marital Therapy*, 25, 305–319.
- Kafka, M. P., & Hennen, J. (2003). Hypersexual desire in males: Are males with paraphilias different from males with paraphilia-related disorders? *Sexual Abuse: A Journal of Research and Treatment*, 15, 307–321.
- Kafka, M. P., & Prentky, R. (1992). A comparative study of nonparaphilic sexual addictions and paraphilias in men. *Journal of Clinical Psychiatry*, 53, 345–350.
- Kalichman, S. C., & Cain, D. (2004). The relationship between indicators of sexual compulsivity and high risk sexual practices among men and women receiving services from a sexually transmitted infection clinic. *Journal of Sex Research*, 41, 235–241.
- Kalichman, S. C., Johnson, J. R., Adair, V., Rompa, D., Multhauf, K., & Kelly, J. A. (1994). Sexual sensation seeking: Scale development and predicting AIDS-risk behavior among homosexually active men. *Journal of Personality Assessment*, 62, 385–397.
- Kalichman, S. C., & Rompa, D. (1995). Sexual sensation seeking and sexual compulsivity scales: Reliability, validity, and predicting HIV risk behavior. *Journal of Personality Assessment*, 65, 586–601.
- Kalichman, S. C., & Rompa, D. (2001). The Sexual Compulsivity Scale: Further development and use with HIV-positive persons. *Journal of Personality Assessment*, 76, 379–395.
- Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. (1948). *Sexual behavior in the human male*. Philadelphia: Saunders.
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.
- Le Gall, A., Mullet, E., & Shafiqhi, S. R. (2002). Age, religious beliefs, and sexual attitudes. *Journal of Sex Research*, 39, 207–216.
- Leedes, R. (2007). Compulsive or other problematic sexual behavior. In A. F. Owens & M. S. Tepper (Eds.), *Sexual health: State-of-the-art treatments and research* (Vol. 4, pp. 365–381). Westport, CT: Praeger.
- Lefkowitz, E. S., Gillen, M. M., Shearer, C. L., & Boone, T. L. (2004). Religiosity, sexual behaviors, and sexual attitudes during emerging adulthood. *Journal of Sex Research*, 41, 150–159.
- Levine, S. B. (2003). The nature of sexual desire: A clinician's perspective. *Archives of Sexual Behavior*, 32, 279–285.
- Meana, M., & Nunnink, S. E. (2006). Gender differences in the content of cognitive distraction during sex. *Journal of Sex Research*, 43, 59–67.
- Meston, C. M., Heiman, J. R., Trapnell, P. D., & Paulhus, D. L. (1998). Socially desirable responding and sexuality self-reports. *Journal of Sex Research*, 35, 148–157.
- Meyerson, P., & Tryon, W. W. (2003). Validating internet research: A test of psychometric equivalence of internet and in-person samples. *Behavior Research Methods, Instruments and Computers*, 35, 614–620.
- Miner, M. H., Coleman, E., Center, B. A., Ross, M., & Rosser, B. R. S. (2007). The Compulsive Sexual Behavior Inventory: Psychometric properties. *Archives of Sexual Behavior*, 36, 579–587.
- Moser, C. (1992). A response to Aviel Goodman's 'Sexual addiction: Designation and treatment'. *Journal of Sex and Marital Therapy*, 19, 220–224.
- Oliver, M. B., & Hyde, J. S. (1993). Gender differences in sexuality: A meta-analysis. *Psychological Bulletin*, 114, 29–51.
- Paulhus, D. (1988). *Assessing self-deception and impression management in self-reports: The Balanced Inventory of Desirable Responding*. Vancouver, BC: University of British Columbia.
- Paulhus, D. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 17–59). San Diego, CA: Academic Press.
- Raymond, N. C., Coleman, E., & Miner, M. H. (2003). Psychiatric comorbidity and compulsive/impulsive traits in compulsive sexual behavior. *Comprehensive Psychiatry*, 44, 370–380.
- Regan, P. C., & Atkins, L. (2006). Sex differences and similarities in frequency and intensity of sexual desire. *Social Behavior and Personality*, 34, 95–102.

- Reynolds, R. A., Woods, R., & Baker, J. D. (Eds.). (2007). *Handbook of research on electronic surveys and measurements*. Hershey, PA: Idea Group Reference.
- Roberts, L. D. (2007). Equivalence of electronic and off-line measures. In R. A. Reynolds, R. Woods, & J. D. Baker (Eds.), *Handbook of research on electronic surveys and measurements* (pp. 97–103). Hershey, PA: Idea Group Inc.
- Russell, D. W. (2002). In search of underlying dimensions: The use (and abuse) of factor analysis in *Personality and Social Psychology Bulletin*. *Personality and Social Psychology Bulletin*, 28, 1629–1646.
- Schwartz, M. F. (2008). Developmental psychopathological perspectives on sexually compulsive behaviour. *Psychiatric Clinics of North America*, 31, 567–586.
- Semple, S. J., Zians, J., Grant, I., & Patterson, T. L. (2006). Sexual compulsivity in a sample of HIV-positive methamphetamine-using gay and bisexual men. *AIDS and Behavior*, 10, 587–598.
- Spector, I. P., Carey, M. P., & Steinberg, L. (1996). The Sexual Desire Inventory: Development, factor structure, and evidence of reliability. *Journal of Sex and Marital Therapy*, 22, 175–190.
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics*. New York: HarperCollins.
- Tepper, M. S., Owens, A. F., Coleman, E., & Carnes, P. (2007). Current controversies in sexual health: Sexual addiction and compulsion. In A. F. Owens & M. S. Tepper (Eds.), *Sexual health: State-of-the-art treatments and research* (Vol. 4, pp. 349–363). Westport, CT: Praeger/Greenwood.
- Travin, S. (1995). Compulsive sexual behaviors. *Psychiatric Clinics of North America*, 18, 155–169.
- Wegner, D. M., Shortt, J. W., Blake, A. W., & Page, M. S. (1990). The suppression of exciting thoughts. *Journal of Personality and Social Psychology*, 58, 409–418.
- Wegner, D. M., & Zanakos, S. (1994). Chronic thought suppression. *Journal of Personality*, 62, 615–640.
- Winters, J., Christoff, K., & Gorzalka, B. B. (2009). Conscious regulation of sexual arousal in men. *Journal of Sex Research*, 46, 330–343.