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The Psychological Context of Sexual Compulsivity among Men Who Have Sex With Men

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Abstract

Among men who have sex with men (MSM), sexual compulsivity is associated with overlapping psychosocial and behavioral health problems. Because difficulties with emotion regulation are thought to be one important feature, this study examined whether affective states and traumatic stress symptoms were independently associated with key dimensions of sexual compulsivity. Data were collected in San Francisco for the Urban Men's Health Study – 2002 from May 24, 2002 to January 19, 2003. In total, 711 MSM recruited via probability-based sampling completed a mail-in questionnaire that assessed psychological factors and substance use. Dissociation related to traumatic stress and any stimulant use in the past six months were independently associated with more frequent sexual thoughts or urges. Increased anger and HIV-positive serostatus were independently associated with a greater perception that sexual behavior is difficult to control. Clinical research is needed to examine if interventions targeting emotion regulation and traumatic stress can boost the effectiveness of HIV prevention efforts among MSM who experience difficulties related to managing sexual behaviors.

Keywords

Childhood sexual abuse; Emotion regulation; Sexual compulsivity; Trauma; Men who Have Sex with Men

Introduction

Sexual compulsivity is a psychological construct that indexes the extent to which individuals experience sexual fantasies, urges, and behaviors that are perceived to be difficult to control (1, 2). Emerging evidence also suggests that cognitive and behavioral processes indexed by measures of sexual compulsivity can identify individuals who experience clinically

significant distress or functional impairment related to their sexual behavior (3–5). Informed by addiction models, biological and behavioral processes are thought to contribute to the development and maintenance of sexual compulsivity (6, 7). Although genetic vulnerabilities that lead to dysregulated reward processing have been theorized to be one potential determinant of sexual compulsivity (8), research is needed to elucidate the role of genetic and neurobiological factors in compulsive sexual behaviors. To date, relatively few studies have examined psychological processes relevant to the development and maintenance of greater sexual compulsivity.

Syndemics is a framework which proposes that the co-occurrence of psychosocial risk factors among men who have sex with men (MSM) is an important driver of the HIV/AIDS epidemic (9, 10). Informed by syndemics, overlapping psychosocial problems such as a history of childhood sexual abuse, depression, intimate partner violence, and polysubstance use commonly coalesce among MSM and leave individuals more vulnerable to acquiring or transmitting HIV (11, 12). Recent data also suggest that sexual compulsivity appears to be another component of this syndemic among MSM because it is associated with sexual risk taking, stimulant use, and stimulant use during sexual intercourse (13–16). More research examining the psychological determinants of sexual compulsivity is needed to optimize HIV/AIDS prevention interventions.

Prior theoretical conceptualizations have noted that difficulties with emotion regulation may also be important determinants of sexual compulsivity (17–19). Bancroft and Vukadinovic (20) delineate three distinct pathways whereby sexual behavior(s) may be emitted in response to negative emotions: (1) as a means of seeking emotional support or validation; (2) as a distraction from negative affect; or (3) the co-occurrence of emotional and sexual arousal Bancroft and Vukadinovic (20). The relevance of emotion regulation is supported by prior research conducted with MSM which observed that greater sexual compulsivity is associated with depressed mood as well as experiences of childhood victimization, gay-related victimization, and intimate partner violence (13, 16, 21). The experiences of trauma and enacted stigma that MSM experience across the life course (1, 21) may result in difficulties with emotion regulation that, in turn, lead to greater frequency of sexual thoughts and urges as well as perceptions that one's sexual behaviors are difficult to control.

In the present study, two indicators of the construct of sexual compulsivity were selected as outcomes: 1) the frequency of sexual thoughts and urges (i.e., sexual preoccupation), and 2) the perception that sexual behavior is difficult to control (i.e., sexual impulsivity). We hypothesized that negative affect (i.e., depression and anger) and traumatic stress symptoms (i.e., dissociation and defensive avoidance) would be independently associated with these dimensions of sexual compulsivity among MSM who were recruited via probability-based sampling methods. Prior research has observed that HIV-positive MSM report greater sexual compulsivity (13), which may be partially attributable to the stress of living with a chronic, stigmatized illness or a greater prevalence of syndemic conditions that confer increased risk for acquiring HIV. Consequently, HIV status was examined as a moderator of the associations of negative affect and traumatic stress symptoms with these indices of sexual compulsivity.

Methods

Procedures

Data were collected in San Francisco for the Urban Men's Health Study – 2002 (UMHS-2002) from May 24, 2002 to January 19, 2003 using random digit dialing, a method for probability-based sampling of participants whereby telephone numbers within selected areas are called at random. Disproportionate and adaptive sampling techniques were employed to ensure that the sampled zip codes in San Francisco accounted for the majority of all MSM households (22). The Westat Corporation constructed the sampling frame and coordinated data collection.

In order to be eligible, participants were required to self-report as being a MSM. MSM were defined to include men reporting same gender sex since age 14 or those who identified as gay or bisexual. In total, 879 participants completed an initial telephone interview (cooperation rate = 74%). After completing the telephone interview, a self-administered questionnaire was mailed containing the psychological measures that were included in the present study. Of the 879 participants, 711 (81%) returned the mail-in questionnaire. Participants were provided informed consent with procedures approved by the University of California, San Francisco Committee on Human Research and the Westat IRB. Participants received \$25 for completing the telephone interview and \$25 for returning the mail-in questionnaire.

Adjusted Sampling Weights

Weights for the household probability sample of adult MSM living in San Francisco were adjusted to account for predictors of response to the mail-in questionnaire. In total, we examined the bivariate associations of 38 potential predictor variables from the telephone survey with response to the mail-in questionnaire. The potential predictors included: demographic characteristics, health-related variables (i.e., self-rated health, HIV serostatus, sexually transmitted infection history, and history of intravenous drug use), attendance at venues where MSM socialize, same-gender sexual behavior in the past 12 months, attitudes toward sex, sexual history (i.e., age at same-gender sexual debut and history of sexual abuse), psychological adjustment (i.e., depressed mood), and migration history. Where the bivariate p-value was $\leq .25$, variables were considered for inclusion in the multiple logistic regression model predicting response to the mail-in questionnaire. Using the unstandardized parameter estimates from the final predictive model, we calculated the predicted probability of response to the mail-in questionnaire. Adjusted sampling weights are the product of the sampling weight from the household probability sample and the reciprocal of the probability of response to the mail-in questionnaire. The resulting adjusted sampling weights were then scaled so that they sum to the number of men who responded to the mail-in questionnaire. Adjusting sampling weights for the probability of response substantially attenuates possible bias in the present study arising from attrition due to non-participation in the mail-in questionnaire (16).

Measures

Sociodemographics—Participants were asked to self-report their age, education level, income, ethnicity, and HIV status during the initial telephone interview.

Sexual compulsivity—The Sexual Preoccupation Scale (23) is a 6-item measure (e.g., “I hardly ever fantasize about having sex.”) that assesses the frequency of sexual thoughts and urges (Cronbach’s $\alpha = .77$; $M = 15.6$, $SD = 3.5$). The Sexual Impulsivity Scale (24) is a 4-item measure (e.g., “Sex is important to me but it doesn’t rule my life.”) that indexes perceptions that sexual behaviors are difficult to control (Cronbach’s $\alpha = .66$; $M = 6.2$, $SD = 2.3$). Items are rated from Agree a Lot (1) to Disagree a Lot (4). Prior research conducted with the UMHS-2002 observed that sexual preoccupation is independently associated with greater substance use coping and higher odds of reporting stimulant use (16) while sexual impulsivity is independently associated with greater odds of reporting serodiscordant unprotected anal intercourse (25). Findings provide support for the validity of these indices of sexual compulsivity.

Childhood sexual abuse (CSA)—Participants were classified as having had a history of CSA if they reported “...ever been forced or frightened by someone into doing something sexually that you did not want to do” before 18 years of age (26).

Stimulant use—Participants indicated the number of times they used powder cocaine, crack, methamphetamine, and other amphetamines during the past 6 months. Any stimulant use during the past 6 months (1) versus no self-reported stimulant use (0) was examined.

Depressed mood—During the telephone interview, participants completed eight items assessing depressed mood during the past six months (27). Participants rated items (e.g., “Thinking about the past six months how often have you...felt depressed?”) on a scale from Never (0) to Once a Day or More (4). This modified depressed mood sub-scale for the Centers for the Epidemiologic Study of Depression measure had adequate internal consistency (Cronbach’s $\alpha = .86$; $M = 11.6$, $SD = 6.6$). Prior studies conducted using these data observed that greater depressed mood is associated with engagement in avoidant-oriented coping and stimulant use (16, 26), providing some support for the validity of this measure.

Anger arousal—The Multidimensional Anger Inventory (28) assessed frequency and intensity of anger (Cronbach’s $\alpha = .80$; $M = 9.9$, $SD = 3.5$). Participants rated six items (e.g., “It is easy for me to get angry.”) on a scale from Agree a Lot (1) to Disagree a Lot (4). All items are reverse scored such that higher scores reflect greater anger arousal. Prior research supports the validity of the anger arousal subscale, which has been associated with insecure attachment, somatization, and greater severity of post-traumatic stress disorder (PTSD) symptoms (29, 30).

Traumatic stress symptoms—Two subscales of the Trauma Symptom Inventory assessed traumatic stress symptoms in the past six months (31). *Defensive Avoidance* is an 8-item subscale (e.g., “Trying to forget about a bad time in your life.”) that indexes cognitive

and affective avoidance of prior negative life events (Cronbach's $\alpha = .91$; $M = 17.1$, $SD = 5.6$). *Dissociation* is a 9-item subscale (e.g., "Feeling like you were outside of your body.") that measures experiences of disconnection or derealization in response to stressful life events (Cronbach's $\alpha = .86$; $M = 16.6$, $SD = 5.0$). Participants rated items on a scale from Never (1) to Often (4). Research conducted to date has observed that the experience of trauma (including childhood sexual abuse) is significantly associated with higher Trauma Symptom Inventory scores (31).

Statistical Analyses

The present investigation utilized multiple linear regression to examine correlates of: 1) sexual preoccupation; and 2) sexual impulsivity. Because previous investigations have observed that demographic characteristics (e.g., age) and syndemic factors (e.g., a history of childhood sexual abuse) may be important correlates of sexual compulsivity, these were included as model covariates. Maximum likelihood estimation procedures were employed using Mplus 6.0 to obtain parameter estimates that utilize all available data. HIV status was examined as a moderator of the associations of negative affect and traumatic stress symptoms with indices of sexual compulsivity. Where the interaction terms were non-significant, these were omitted from the final models.

Results

Participant Demographics

Participants were Caucasian (79.3%) and HIV-negative (69.9%). Most participants were 40 years of age or older (60.3%), currently employed (71.6%), had at least an undergraduate degree (67.2%), and made less than \$60,000 per year (62.0%). Table 1 provides complete demographic information for this sample.

Correlates of Sexual Compulsivity

As shown in Table 2, bivariate analyses indicated that greater frequency of sexual thoughts and urges (i.e., sexual preoccupation) was associated with any stimulant use in the past 6 months ($r = 0.15$, $p < .01$) as well as greater depressed mood ($r = 0.15$, $p < .01$), anger arousal ($r = 0.16$, $p < .01$), defensive avoidance ($r = 0.13$, $p < .01$), and dissociation ($r = 0.21$, $p < .01$). A greater perception that one's sexual behavior is difficult to control (i.e., sexual impulsivity) was associated with HIV-positive serostatus ($r = 0.09$, $p < .05$) and any stimulant use in the past 6 months ($r = 0.09$, $p < .05$) as well as greater depressed mood ($r = 0.13$, $p < .01$), anger arousal ($r = 0.24$, $p < .01$), defensive avoidance ($r = 0.11$, $p < .05$), and dissociation ($r = 0.15$, $p < .01$).

As shown in Table 3, any stimulant use in the past six months ($\beta = 0.15$, $p < .05$) and a tendency to dissociate in response to stressful life circumstances ($\beta = 0.20$, $p < .01$) were independently associated with greater sexual preoccupation. This model accounted for 8.7% of the variance in sexual preoccupation. On the other hand, HIV-positive serostatus ($\beta = 0.09$, $p < .05$) and increased anger arousal ($\beta = 0.22$, $p < .01$) were independently associated with a greater sexual impulsivity. This model accounted for 8.5% of the variance in sexual

impulsivity. Neither HIV status nor a history of CSA moderated the observed associations of psychological processes with these dimensions of sexual compulsivity.

Discussion

Findings from this cross-sectional investigation indicate that more frequent sexual thoughts and urges were independently associated with experiences of dissociation in response to stressful life circumstances. Because sexual thoughts and urges shift one's attention to immediate sensations and proximal goals, this may facilitate escape or avoidance of stressful life circumstances (32). More specifically, those who experience dissociation in response to stress may utilize sexual thoughts and urges as a method of avoidant-oriented coping, which is positively reinforced because it increases the likelihood of having sexual experiences that serve as source of physical pleasure or emotional validation. This cognitive response style may also represent an attempt to achieve a sense of psychological cohesion in the face of painful fragmentation of the self (33, 34).

On the other hand, a greater perception that sexual behavior is difficult to control was independently associated with increased anger arousal. Prior research has demonstrated that anger is associated with activation of the left prefrontal cortex (35), which is theorized to increase appetitive motivation (36, 37). These anger-related increases in appetitive motivation may lead individuals to seek out sexual partners via processes that require little conscious, effortful self-regulation. It is also plausible that individuals interpret the physiologic arousal of anger as sexual arousal, which has been linked to sexual risk taking behavior among MSM (38). Consequently, perceptions that sexual behavior is difficult to control may reflect an underlying, dual vulnerability to experiencing hyperarousal in response to negative emotions coupled with decreased awareness of negative affective states. This should be examined in future longitudinal and clinical research.

Results gathered here suggest that cognitive dimensions associated with sexual compulsivity may serve as a vehicle for facilitating dissociation, yet engaging in sexual behaviors themselves may be governed by a more complicated set of psychological and neurobiological processes (8). Specifically, guilt and shame engendered by sexual compulsive acts may lead to more stress, anxiety, or depressed mood and thus inhibit sexual behavior for some MSM. However, some MSM may then employ stimulants or other substances in order to temporarily escape this negative affect, contributing to engagement in sexually compulsive behaviors (32). Further research is needed to elucidate the potentially bidirectional associations among emotion regulation, substance use, and sexually compulsive behaviors among MSM.

Limitations

Although findings provide important information regarding the psychological correlates of sexual compulsivity, one cannot conclude from this cross-sectional study that anger arousal and dissociation are causally related to sexual compulsivity. Longitudinal research that includes multi-method assessment of psychological adjustment, stress reactivity, sexual compulsivity, and sexual behavior is needed to determine whether and how psychological factors predict changes in sexual compulsivity and sexual risk taking among MSM.

Identifying the specific difficulties with emotion regulation (e.g., decreased emotional awareness or difficulties with negative emotion regulation) that may serve as key antecedents to sexually compulsive responses could further inform the development of innovative interventions for this population.

In an effort to examine psychological and behavioral antecedents of sexual behaviors among MSM, the Urban Men's Health Study focused on "sexual preoccupation" (23) and produced valuable findings on broad emotional and cognitive factors influencing sexual compulsivity. In the 12 years since this research was conducted, researchers have reexamined psychological correlates of sexual risk and in the process have created refined measures for examining sexual risk among MSM, adding the construct of maladaptive cognitions (3) and a comprehensive screening measure for disordered patterns of sexual behavior (39) to the research literature. Future clinical research on sexual risk would benefit from further investigation of the psychological vulnerabilities for these cognitive and behavioral responses.

Since data were collected in San Francisco for the Urban Men's Health Study from 2002–2003, important changes in socio-cultural, economic, legal, medical, and technological conditions have occurred in the lives of many MSM. Changes include access to pre-exposure prophylaxis (PrEP), legalization of gay marriage, advent of mobile dating applications and internet sites (ex., Grindr, Scruff, Jack'd, Manhunt, Adam4Adam, etc.), diffusion of concentrated gay communities/enclaves in urban areas, and increased incidence of HIV among MSM of color, to name a few. These changes may have important effects on cognitive and emotional processes involved in sexual decision making among MSM. As such, much more research is needed to understand the synergistic effects of recent changes socio-cultural conditions on cognitive and emotional antecedents of sexual compulsivity.

Because the present study utilized a probability-based sampling methodology, it did not recruit large numbers of ethnic minority MSM. Further studies which include larger samples of ethnic minority MSM are needed to develop a more nuanced understanding of the social and psychological correlates of sexual compulsivity in more diverse samples of MSM. Another potential limitation is that data for this study were collected approximately 12 years ago and more well validated measures of sexual compulsivity are currently available (4). It is highly unlikely, however, that the psychological processes relevant to sexual compulsivity among MSM have changed in the past decade. Finally, it is noteworthy that psychological processes accounted for a relatively small proportion of variance in the indicators of sexual compulsivity in this study. Further research is needed to examine the ways in which social, cultural, and contextual factors affect both emotion regulation and sexual compulsivity among MSM (40).

Conclusions

Taken together, these results lend support to theoretical conceptualizations that difficulties with emotion regulation may be important psychological antecedents to sexual compulsivity (18, 20). Findings suggest that sexual compulsivity may be associated with both hyperarousal and dissociation, both of which may reflect an underlying traumatic response.

This has important implications for clinicians and researchers wishing to develop culturally appropriate interventions for MSM experiencing difficulties with managing their sexual behaviors and psychological comorbidities such as PTSD. Further clinical research is clearly needed to develop and test innovative psychological interventions for MSM who experience sexual thoughts, feelings, and behaviors that lead to distress or interference with daily functioning.

Currently no evidence-based approaches exist for treating MSM experiencing difficulty controlling sexual behaviors that lead to significant distress or impairment in various life domains. As such, more clinical research is needed to develop and test interventions that target traumatic stress and emotion regulation as a means of optimizing HIV prevention among MSM. Relevant approaches that may be adapted for this population include acceptance-based interventions aimed at enhancing both cognitive flexibility and meta-cognitive awareness (41), cognitive processing therapy (42), and dialectical-behavioral treatment modalities (43). Research suggests that dialectical-behavioral therapy may be especially useful for individuals who experience co-occurring PTSD and difficulties with emotion regulation (44, 45). Finally, it is plausible that anger arousal may reflect an underlying tendency towards hyperarousal, an important symptom of PTSD. Bearing in mind that anger arousal and dissociation were each associated with distinct facets of sexual compulsivity, individuals may benefit from trauma-focused treatments such as Seeking Safety, which assists individuals with managing posttraumatic stress symptoms and co-morbid substance use (46). More recently, the authors and developers of Seeking Safety have partnered with clinicians and behavioral researchers within the city of New York, to develop supplemental Seeking Safety modules aimed at reducing sexual and drug-using behaviors among MSM populations (46). HIV prevention strategies with MSM could be substantially enhanced by developing interventions to target traumatic stress as a potential driver of sexually compulsive behaviors.

References

1. Parsons JT, Kelly BC, Bimbi DS, DiMaria L, Wainberg ML, Morgenstern J. Explanations for the origins of sexual compulsivity among gay and bisexual men. *Archives of Sexual Behavior*. 2008; 37:817–26. [PubMed: 17882541]
2. Kalichman SC, Rompa D. Sexual sensation seeking and Sexual Compulsivity Scales: reliability, validity, and predicting HIV risk behavior. *Journal of personality assessment*. 1995 Dec; 65(3):586–601. [PubMed: 8609589]
3. Pachankis JE, Rendina HJ, Ventuneac A, Grov C, Parsons JT. The role of maladaptive cognitions in hypersexuality among highly sexual active gay and bisexual men. *Archives of Sexual Behavior*. 2014; 43:669–83. [PubMed: 24558123]
4. Parsons JT, Rendina HJ, Ventuneac A, Cook KF, Grov C, Mustanski B. A psychometric investigation of the hypersexual disorder screening inventory among highly sexually active gay and bisexual men: an item response theory analysis. *The journal of sexual medicine*. 2013 Dec; 10(12): 3088–101. [PubMed: 23534845]
5. Reid RC, Carpenter BN, Hook JN, Garos S, Manning JC, Gilliland R, et al. Report of findings in a DSM-5 field trial for hypersexual disorder. *The journal of sexual medicine*. 2012 Nov; 9(11):2868–77. [PubMed: 23035810]
6. Carnes, P. *Out of the Shadows: Understanding Sexual Addiction*. Center City, MN: Hazelden; 2001.
7. Goodman A. What's in a name? Terminology for designating a syndrome driven by sexual behavior. *Sexual Addiction and Compulsivity: The Journal of Treatment and Prevention*. 2001; 8:191–213.

8. Ostrow, DG. Psychobiology of risk behavior. In: Gendelman, HE, Grant, I, Everall, IP, Fox, HS, Gelbard, HA, Lipton, SA., et al., editors. *The Neurology of AIDS*. New York, NY: Oxford University Press; 2012.
9. Stall R, Mills TC, Williamson J, Hart T, Greenwood G, Paul J, et al. Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *American journal of public health*. 2003 Jun; 93(6):939–42. [PubMed: 12773359]
10. Mustanski B, Garofalo R, Herrick A, Donenberg G. Psychosocial health problems increase risk for HIV among urban young men who have sex with men: preliminary evidence of a syndemic in need of attention. *Annals of behavioral medicine : a publication of the Society of Behavioral Medicine*. 2007 Aug; 34(1):37–45. [PubMed: 17688395]
11. Safren SA, Reisner SL, Herrick A, Mimiaga MJ, Stall R. Mental health and HIV risk in men who have sex with men. *Journal of Acquired Immune Deficiency Syndrome*. 2010; 55(Suppl 2):S74–S7.
12. Stall R, Purcell DW. Intertwining epidemics: A review of research on substance use among men who have sex with men and its connection to the AIDS epidemic. *AIDS and Behavior*. 2000; 4(2): 181–92.
13. Parsons JT, Grov C, Golub SA. Sexual compulsivity, co-occurring psychosocial health problems, and HIV risk among gay and bisexual men: Further evidence of a syndemic. *Research and Practice*. 2012; 102(1):156–62.
14. Semple SJ, Zians J, Grant I, Patterson TL. Sexual compulsivity in a sample of HIV-positive methamphetamine-using gay and bisexual men. *AIDS Behavior*. 2006; 10:587–98. [PubMed: 16755406]
15. Grov C, Parsons JT, Bimbi DS. Sexual compulsivity and sexual risk in gay and bisexual men. *Archives of Sexual Behavior*. 2010; 39:340–9.
16. Carrico AW, Pollack LM, Stall RD, Shade SB, Neilands TB, Rice TM, et al. Psychological processes and stimulant use among men who have sex with men. *Drug and alcohol dependence*. 2012 Jun 1; 123(1–3):79–83. [PubMed: 22088656]
17. Bancroft J, Janssen E, Strong D, Vukadinovic Z. The relation between mood and sexuality in gay men. *Archives of Sexual Behavior*. 2003; 32(3):231–42. [PubMed: 12807295]
18. Bancroft J. Sexual behavior that is “out of control”: a theoretical conceptual approach. *Psychiatr Clin North Am*. 2008 Dec; 31(4):593–601. [PubMed: 18996300]
19. Bancroft J, Janssen E, Strong D, Vukadinovic Z. The relation between mood and sexuality in gay men. *Arch Sex Behav*. 2003 Jun; 32(3):231–42. [PubMed: 12807295]
20. Bancroft J, Vukadinovic Z. Sexual addiction, sexual compulsivity, sexual impulsivity, or what? Toward a theoretical model. *Journal of sex research*. 2004 Aug; 41(3):225–34. [PubMed: 15497051]
21. Herrick AL, Lim SH, Plankey MW, Chmiel JS, Guadamuz TE, Kao U, et al. Adversity and syndemic production among men participating in the multicenter AIDS cohort study: a life-course approach. *American journal of public health*. 2013 Jan; 103(1):79–85. [PubMed: 23153154]
22. Catania JA, Osmond D, Stall RD, Pollack L, Paul JP, Blower S, et al. The continuing HIV epidemic among men who have sex with men. *Am J Public Health*. 2001 Jun; 91(6):907–14. [PubMed: 11392933]
23. Snell WE, Papini DR. The Sexuality Scale: An instrument to measure sexual-esteem, sexual-depression, and sexual-preoccupation. *The Journal of Sex Research*. 1989; 26(2):256–63.
24. Exner TM, Meyer-Bahlberg HFL, Erhardt AA. Sexual self control as a mediator of high risk sexual behavior in a New York City cohort of HIV+ and HIV- gay men. *The Journal of Sex Research*. 1992; 29(3):389–406.
25. Woolf-King SE, Rice TM, Truong HH, Woods WJ, Jerome RC, Carrico AW. Substance use and HIV risk behavior among men who have sex with men: the role of sexual compulsivity. *Journal of urban health : bulletin of the New York Academy of Medicine*. 2013 Oct; 90(5):948–52. [PubMed: 23974946]
26. Catania JA, Paul J, Osmond D, Folkman S, Pollack L, Canchola J, et al. Mediators of childhood sexual abuse and high-risk sex among men-who-have-sex-with-men. *Child abuse & neglect*. 2008 Oct; 32(10):925–40. [PubMed: 18995903]

27. Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *J Appl Psychol Meas.* 1977; 1:385–401.
28. Siegel JM. The Multidimensional Anger Inventory. *Journal of Personality and Social Psychology.* 1986; 51(1):191–200. [PubMed: 3735067]
29. McFall ME, Wright PW, Donovan DM, Raskind M. Multidimensional assessment of anger in Vietnam veterans with posttraumatic stress disorder. *Comprehensive psychiatry.* 1999 May-Jun; 40(3):216–20. [PubMed: 10360617]
30. Liu L, Cohen S, Schulz MS, Waldinger RJ. Sources of somatization: exploring the roles of insecurity in relationships and styles of anger experience and expression. *Social science & medicine.* 2011 Nov; 73(9):1436–43. [PubMed: 21907475]
31. Briere J, Elliott DM, Harris K, Cotman A. Trauma Symptom Inventory: Psychometrics and association with childhood and adult victimization in clinical samples. *Journal of Interpersonal Violence.* 1995; 10(4):387–401.
32. McKirnan DJ, Ostrow DG, Hope B. Sex, drugs and escape: a psychological model of HIV-risk sexual behaviours. *AIDS care.* 1996 Dec; 8(6):655–69. [PubMed: 8993716]
33. Baumeister RF. Suicide as escape from self. *Psychological Review.* 1990; 97(1):90–113. [PubMed: 2408091]
34. Kohut, H. *The restoration of the self.* Madison, CT: International University Press; 1977.
35. Harmon-Jones E, Siegelman J. State anger and prefrontal brain activity: Evidence that insult-related relative left prefrontal activity is associated with experienced anger and aggression. *Journal of Personality and Social Psychology.* 2001; 80:797–903. [PubMed: 11374750]
36. Carver CS, White TL. Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales. *Journal of Personality and Social Psychology.* 1994; 67(2):319–33.
37. Harmon-Jones E. Anger and the behavioral approach system. *Personality and Individual Differences.* 2003; 35:995–1005.
38. Mustanski B. The influence of state and trait affect on HIV risk behaviors: a daily diary study of MSM. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association.* 2007 Sep; 26(5):618–26.
39. Parsons JT, Rendina HJ, Ventuneac A, Cook KF, Grov C, Mustanski B. A psychometric investigation of the hypersexual disorder screening inventory among highly sexually active gay and bisexual men: An item response theory analysis. *Journal of Sexual Medicine.* 2013; 10:3088–101. [PubMed: 23534845]
40. Parsons JT, Kelly BC, Bimbi DS, DiMaria L, Wainberg ML, Morgenstern J. Explanations for the origins of sexual compulsivity among gay and bisexual men. *Arch Sex Behav.* 2008 Oct; 37(5): 817–26. [PubMed: 17882541]
41. Hayes, SC., Strosah, KD., Wilson, KG. *Acceptance and commitment therapy: An experiential approach to behavior change.* New York, NY: Guilford Press; 1999.
42. Resick, PA., Schnicke, M. *Cognitive processing therapy for rape victims: A treatment manual (interpersonal violence: The practice series).* Newbury Park, CA: Sage Publications; 1993.
43. Linehan MM, Schmidt HS III, Ddimeff LA, Craft C, Kanter J, Comtois KA. Dialectical behavior therapy for patients with borderline personality disorder and drug-dependence. *The American Journal on Addictions.* 1999; 8(4):279–92. [PubMed: 10598211]
44. Becker CB, Zayfert C. Integrating DBT-based techniques and concepts to facilitate treatment for PTSD. *Cognitive and Behavioral Practice.* 2001; 8:107–22.
45. Harned MS, Jackson SC, Comtois KA, Linehan MM. Dialectical Behavior Therapy as a precursor to PTSD treatment for suicidal and/or self-injuring women with borderline personality disorder. *Journal of Traumatic Stress.* 2010; 23:421–9. [PubMed: 20648564]
46. Najavits, LM. Seeking Safety: A new psychotherapy for posttraumatic stress disorder and substance use disorder. In: Ouimett, P., Brown, P., editors. *Trauma and Substance Abuse: Causes, Consequences, and Treatment of Comorbid Disorders.* Washington, DC: American Psychological Association Press; 2002.

Table 1

Sociodemographic characteristics (N = 711)

	<u>N (%)</u>
Sexual Orientation	
Self-identify as gay/bisexual	657 (92.4)
Does not identify as gay/bisexual	12 (1.6)
Does not like to use labels	10 (1.5)
Don't know	28 (4.0)
Declined to answer	4 (0.5)
Ethnicity	
Non-Hispanic Caucasian	564 (79.3)
Non-Hispanic African American	28 (3.9)
Hispanic/Latino	56 (7.9)
Non-Hispanic Asian/Pacific Islander	33 (4.6)
Non-Hispanic Native American	4 (0.6)
Multicultural	26 (3.7)
Education	
High school diploma or less ^I	84 (11.8)
Some college/AA degree	149 (20.9)
4-year college degree	299 (42.0)
Advanced degree	179 (25.2)
Employment Status	
Full-Time	426 (59.9)
Part-Time	83 (11.7)
Unemployed	50 (7.0)
Retired/disabled	127 (17.8)
Other	26 (3.6)
Personal Annual Income	
\$20,000 or less	133 (18.7)
\$20,001 – \$40,000	152 (21.3)
\$40,001 – \$60,000	156 (22.0)
\$60,001 – \$80,000	104 (14.6)
\$80,001 – \$100,000	61 (8.5)
\$100,001 – \$250,000	87 (12.2)
Over \$250,000	12 (1.7)
Missing data	6 (0.9)
Self-reported HIV serostatus	
HIV-positive	188 (26.4)
HIV-negative	497 (69.9)
HIV-unknown	26 (3.7)

	<u>N (%)</u>
Age²	
18–29	58 (8.1)
30–39	224 (31.5)
40–49	211 (29.7)
50+	218 (30.6)

¹Includes vocational/technical/trade school training

²Mean=43.86, SD=13.36

Table 2
Associations among syndemic factors, psychological processes, and dimensions of sexual compulsivity.

	1	2	3	4	5	6	7	8	9
HIV-Positive	–								
History of Childhood Sexual Abuse	–.03	–							
Any Stimulant Use (Past 6 Months)	.11**	.02	–						
Depressed Mood	.06	–.01	.12**	–					
Anger Arousal	–.04	–.01	.06	.43**	–				
Defensive Avoidance	.05	–.02	.03	.55**	.34**	–			
Dissociation	.04	–.08*	.07	.54**	.38**	.58**	–		
Sexual Preoccupation	–.05	.01	.15**	.15**	.16**	.13**	.21**	–	
Sexual Impulsivity	.09	–.04	.09	.13	.24**	.11*	.15	.46**	–

* p < .05;

** p < .01

Table 3

Correlates of key dimensions of sexual compulsivity.

	Sexual Preoccupation	Sexual Impulsivity
	β (95% CI)	β (95% CI)
Age	0.01 (−0.09 – 0.11)	0.04 (−0.03 – 0.12)
High School or Less	Reference	Reference
Some College	0.06 (−0.10 – 0.22)	−0.10 (−0.22 – 0.03)
College Graduate	0.01 (−0.17 – 0.18)	−0.10 (−0.24 – 0.04)
Graduate Degree	0.08 (−0.08 – 0.23)	−0.06 (−0.20 – 0.07)
Income	−0.01 (−0.10 – 0.07)	0.02 (−0.07 – 0.10)
Ethnic Minority	Reference	Reference
Caucasian	0.06 (−0.03 – 0.15)	−0.06 (−0.15 – 0.03)
HIV-Negative or Unknown	Reference	Reference
HIV-Positive	−0.08 (−0.16 – 0.01)	0.09 (0.01 – 0.17) *
History of Childhood Sexual Abuse	0.04 (−0.04 – 0.12)	−0.02 (−0.10 – 0.05)
Any Stimulant Use (Past 6 Mo.)	0.15 (0.07 – 0.23) *	0.08 (−0.01 – 0.16)
Depressed Mood	−0.01 (−0.11 – 0.10)	−0.01 (−0.12 – 0.10)
Anger Arousal	0.07 (−0.03 – 0.17)	0.22 (0.12 – 0.32) **
Defensive Avoidance	−0.01 (−0.11 – 0.10)	−0.02 (−0.12 – 0.08)
Dissociation	0.20 (0.09 – 0.29) **	0.08 (−0.04 – 0.19)

*
p < .05;**
p < .01