A Psychometric Analysis of the Compulsive Sexual Behavior Inventory

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Abstract

Because of the association that researchers have recently delineated between compulsive sexual behavior and the Human Immunodeficiency Virus, Sexually Transmitted Infections, and drug abuse, it is paramount that a psychometrically sound measure of compulsive sexual behavior is made available to all healthcare professionals working in disease prevention and other areas. This article reports the findings from a psychometric analysis of the Compulsive Sexual Behavior Inventory (CSBI) in a sample of 482 racially and ethnically diverse men and women. The current study provides further evidence for the score reliability and the score validity of the CSBI in this sample. Construct-related validity was assessed using the multi-trait multi-method approach. These analyses extend previous findings for the psychometric properties of the CSBI in a more diversified sample.

Compulsive sexual behavior, also referred to as *sexual compulsivity, hyper-sexual disorder*, or *sex addiction*, is a clinical phenomenon characterized by sexual fantasies and behaviors that increase in frequency and intensity enough to interfere with personal, interpersonal, or vocational pursuits (Kafka, 2010; Kingston & Firestone, 2008; Muench & Parsons, 2004). Compulsive sexual behavior has been associated with higher frequencies of sexual behaviors that increase risk for the transmission of the Human Immunodeficiency Virus (HIV) and other sexually transmitted infections (STI; Gullette & Lyons, 2005; Halkitis et al., 2005; Satinsky et al., 2008). A measure that has the ability to accurately assess compulsive sexual

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behavior has the potential to play a vital role in reducing incidence of both HIV and STI transmission. Several measures have been designed to assess compulsive sexual behavior. There has been some debate over which of these measures best ascertains a person's true level of sexual compulsivity (Kuzma & Black, 2008). The Compulsive Sexual Behavior Inventory (CSBI; Coleman, Miner, Ohlerking, & Raymond, 2001) has gained popularity in recent years. Unfortunately, there has not been adequate evidence for the score reliability and score validity of the CSBI. Although two preliminary studies have been conducted on the CSBI's psychometric properties (Coleman et al., 2001; Miner, Coleman, Center, Ross, & Rosser, 2007), these studies were limited either by their small sample size or non-representative populations. Currently, there is a need for further psychometric evaluation of the CSBI to extend previous findings to additional populations of interest.

Compulsive sexual behavior is often as detrimental as dependence on chemical substances (Schneider, 1991). Those who suffer often endanger themselves and their partners with the acquisition of pathogens from multiple sexual exposures. There are also social risks to their relationships with their spouse, family, and friends and their job performance may deteriorate, resulting in job loss, do to their sexual behavior (Schneider, 1991). Even though persons suffering from compulsive sexual behavior often recognize or experience the consequences of their behaviors, they generally report that they cannot control their urges without appropriate treatment (Schneider, 1991). Schneider states that for most people, sex enhances the quality of their lives; however, this is not the case for those currently suffering from compulsive sexual behavior. Persons who exhibit compulsive sexual behavior might injure themselves physically, experience psychological distress, lose their livelihood, and ruin meaningful relationships (Kuzma & Black, 2008). To make matters worse, sexual addiction often coexists with chemical dependency, and untreated compulsive sexual behavior can contribute to relapse to chemical use (Kafka & Hennen, 2002; Raymond, Coleman, & Miner, 2003).

Compulsive sexual behavior is not currently formally accepted as a psychiatric disorder. However, in his seminal paper, Kafka (2010) advocates for the inclusion of its synonym, "hypersexual disorder" in the DSM-5. Over the years there have been several attempts to design a measure to assess compulsive sexual behavior. Because of the various associations between compulsive sexual behavior and sexual risk taking, drug abuse, and other social and legal ramifications, a scale capable of accurately assessing this phenomenon could be an invaluable resource. Recently, the CSBI has gained in popularity among researchers and clinicians because of its focus on the detriments caused to the individual that disrupt daily functioning (Coleman et al., 2001).

Clinically, two different types of compulsive sexual behavior have been defined: paraphilic and non-paraphilic (Miner et al., 2007). Paraphilic compulsive sexual behavior involves sexual behaviors that not only are impulsive or compulsive, and repetitive, but are also unconventional and socially deviant (American Psychiatric Association, 2000; Money, 1986, 1988). In contrast, non-paraphilic compulsive sexual behavior involves conventional and normative sexual behavior that is engaged in excessively and with negative consequences (Coleman, Raymond, & McBean, 2003). The items on the CSBI measure difficulty in controlling the frequency with which respondents experience sexual urges and engage in

sexual behaviors, the emotional distress they experience in relation to their sexual behavior, and the frequency with which their sexual behavior interferes with their relationships, activities, and financial stability. In addition, aspects of sexual aggression including the frequency of physical violence against sexual partners, sexual pleasure related to inflicting or receiving physical pain, sex for money, and forced sex by a sexual partner are also captured by items on the CSBI (Miner et al., 2007).

The need for an assessment measure for compulsive sexual behavior that yields reliable and valid scores cannot be underestimated as it has the potential to ameliorate the overall distress experienced by those suffering and to advance efforts in the fight against HIV and other STIs. The CSBI shows promise of providing such a measure. However, further analysis on the psychometric properties of the CSBI must be conducted to establish the score reliability and score validity of this measure among additional populations of interest. The current investigation extends previous research by administering the CSBI to a large, diverse sample of participants with varying ethnicity, gender, and sexual orientation. By obtaining a large diverse sample, the researchers were able to establish further the internal consistency, construct-related validity, and criterion-related validity pertaining to CSBI scores.

In the past, researchers and clinicians have identified persons with compulsive sexual behavior either through clinical interviews or through self-report measures. Several measures for compulsive sexual behavior have been developed and have been shown to successfully discriminate both between those who self-report compulsive sexual behavior and controls, and between varying levels of compulsive sexual behavior and prevalence of sexual thoughts and behaviors (Parsons et al., 2008). The current study sought to determine whether the CSBI could accurately and effectively differentiate individuals with compulsive sexual behavior across several behavioral and health outcome variables. Specifically, the purposes of the current analyses were as follows: (a) to determine the score reliability of the CSBI through an assessment of internal consistency; and (b) to assess the score validity of the CSBI by considering the convergent and discriminant validity of this instrument in relation to six other established measures.

METHOD

Sample Description

Measures have been administered to participants through a convenient sampling scheme during one of three active programs at the Center for Behavioral Research and Services (CBRS): the Multiple Morbidities Testing Program (MMTP), Counseling and Food Bank Program, and Project Gay Respect. Participants were eligible for participation in MMTP if they could be classified into any of the following behavioral risk groups: injection drug users, men who have sex with men, men who have sex with men and women, or women who are at sexual risk. Participants were eligible for participation through the Counseling and Food Bank program if they had used illicit drugs during the past 30 days or if they drank alcohol during at least 15 of the past 30 days. Finally, all gay and bisexual men from the Gay Respect program were eligible for participation in the current study.

The current study's sample consists of 482 participants sampled from the Long Beach, California area. The demographics of the current study's sample are demonstrated in Table 1. Participants who identified themselves as women, heterosexual men, and homosexual/ bisexual men are considered in the table to illustrate salient differences among these subgroups. A substantial portion of those participants who were sampled via the Counseling and Food Bank Program at CBRS report limited reading and writing capabilities; to adjust for this limitation all measures were verbally administered when the participant's literacy was in question. Participants in the current study were either given $15 in non-cash incentives for their participation in the MMTP or food bank programs, or $20 in non-cash incentives for their participation in the Gay Respect program. In addition, all participants were offered food through the food bank upon completion of interview. The Institutional Review Board of California State University, Long Beach approved the protocol for this investigation.

Measures

Compulsive Sexual Behavior Inventory—The CSBI is a 22 item[1] Likert-type scale with a 5-point response format where participants rate how frequently they have engaged in each of the items, with responses ranging from 1 (*never*) to 5 (*very frequently*) with higher scores indicative of greater levels of compulsive sexual behavior. An exploratory factor analysis was conducted with retention defined by the scree criteria, and an orthogonal (i.e., varimax) rotation; items with factor loadings of .60 or greater were retained yielding two factors that were correspondingly labeled *control* (13-item) and *violence* (9-item; Coleman et al., 2001). Cronbach's a demonstrated high internal-consistency reliability at .96 and .88 for the control and violence subscales respectively (Coleman et al., 2001). Accordingly, the control subscale items were purported to capture difficulties controlling the frequency of sexual urges and behaviors, emotional distress related to sex, and the frequency with which sex interferes with relationships, activities, and financial stability. Concomitantly, the violence subscale items were purported to assess aspects of sexual aggression including the frequency of physical violence towards sexual partners, sexual pleasure related to inflicting or receiving physical pain, sex for money, and forced sex by a romantic partner.

In the original scale development, discriminant function analysis correctly classified 92% of a combined sample of pedophiles ($N = 35$), non-paraphilic sexually compulsive individuals ($N = 15$), and a sample of control ($N = 42$) subjects (Coleman et al., 2001). Miner and colleagues (2007) sought to replicate the factor structure among a sample of Latino men who have sex with men (MSM) ($N = 1026$). Confirmatory factor analysis provided additional evidence supporting the original two-factor model with an acceptable goodness of fit (RMSEA = .045, CFI = .99, GFI = .95) among this population. Although these two factors appear to be measuring different dimensions of compulsive sexual behavior, it has been suggested that both dimensions of the CSBI make independent and significant contributions to the associations with compulsive sexual behavior and unsafe sex practices (Coleman et al., 2001). Therefore, the current analysis continues to assess compulsive sexual

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[1] The original 28-item version was developed with a small sample and included an additional factor related to sexual abuse (Coleman et al., 2001). Miner and colleagues (2007) eliminated this third factor and validated the remaining two factor structure using confirmatory factor analysis in a large sample of Latino men.

behavior according to the composite of all items. Test-retest reliability of the CSBI items conducted on a subset ($n = 29$) of the Latino MSM across a 7–10 day period provided further support for the reliability of the CSBI items across the test-retest measure point ($r = .86$, p .001).

The construct-related validity of the CSBI was explored using a variety of self-report items that tap the salient theoretical features of compulsive sexual behavior (Coleman et al., 2003). These items included lifetime number of male sexual partners, number of male sexual partners during the last 3 months, number of unprotected anal intercourse (UAI) partners in the last 3 months, being drunk or high during recent sexual encounters, feeling lonely or depressed during recent sex, and feeling that "I needed sex so badly that nothing else mattered" (Miner et al., 2007, p. 582). As predicted, Latino MSM who scored high on the CSBI also had statistically significantly more lifetime sexual partners, more sexual partners in the last three months, and statistically significantly more UAI in the last three months than did those Latino MSM who scored low on the CSBI (Miner et al., 2007). Being high, drunk, depressed, or feeling the uncontrollable urge to engage in sex the last time one had sex were all statistically significantly higher among those Latino MSM who scored higher on the CSBI, providing further evidence of convergent validity. The CSBI items were also reported to demonstrate concurrent and discriminant validity when compared to items on measures of theoretically related and dissimilar constructs (Miner et al., 2007). However, because the Miner et al. (2007) psychometric study solely sampled Latino MSM, it was inherently limited in its generalizability to the greater population of individuals suffering from compulsive sexual behavior. Storholm et al. (2011) offer additional validity evidence that is outside the scope of the current article.

Sexual Addiction Screening Test—The Sexual Addiction Screening Test (SAST; Carnes, 1989), is a 25-item self-administered dichotomous-item questionnaire used to address preoccupation, ritualization, compulsivity, or despair associated with sexual behaviors. Initial internal consistency reliability analysis indicates a Cronbach's a of .92 for "sexual addicts" subscale scores and a Cronbach's a of .85 for "non-addicts" subscale scores (Carnes, 1989). Carnes has since adapted the SAST to measure both women (W-SAST) and gay men (G-SAST; Carnes & Weiss, 2002) and therefore all three versions will be utilized in the current analysis. In a study of 101 MSM, the G-SAST yielded a Cronbach's a of .82, providing additional evidence of the internal-consistency reliability of this measure among MSM (Latimore, 2007).

Sexual Compulsivity Scale—In 1994, Kalichman et al. created the Sexual Compulsivity (SC) scale. A 10-item, Likert-type measure that asks respondents to endorse the extent to which they agree with a series of statements related to compulsive sexual behavior, sexually intrusive thoughts, and sexual preoccupation. Initially, through a series of studies targeting men at risk for HIV, but not yet infected, the SC scores demonstrated internal consistency reliability with a coefficients between .84 and .89 and acceptable 3-month test-retest reliability, with correlations between .64 and .95 (Kalichman & Rompa, 1995, 2001). The SC has been shown to be predictive of greater rates of unprotected sex, greater number of sex partners, and more use of cocaine among HIV-positive men (Benotsch,

Kalichman, & Kelly, 1999). Studies have also shown the SC to yield valid scores among those men at high risk for HIV (Grov, Parsons, & Bimbi, 2009; Kalichman et al., 1994; Kalichman & Rompa, 1995).

Sensation-Seeking Scales—Sensation seeking is "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience" (Zuckerman, 1983, p. 202). The Sexual Sensation-Seeking scale (SSS) and the Nonsexual Experience-Seeking scale (NES) are 11- and 10-item self-administered measures, respectively, that ask respondents to rate statements about sensation-related thoughts and feelings on a 4-point Likert-type scale. The internal consistencies of the SSS and NES scale scores were demonstrated to be almost identical for both gay (a = .79 and .81) and heterosexual (a = .75 and .79) populations (Kalichman et al., 1994; Kalichman & Rompa, 1995). The 3-month test-retest reliability coefficients were .78 and .89, respectively (Kalichman et al., 1994) demonstrating overall good test-retest reliability. Evidence was provided as to the convergent external validity and construct-related validity of the two SSS and the NES scales.

Impulsivity Scales—The Eysenck Impulsiveness Subscale (EIS) is a 19-item self-administered dichotomous response (i.e., yes or no) that assesses a participant's level of impulsivity. The EIS measures an individual's propensity to engage in behavior without thinking first, and it was found to yield score Cronbach's a above .80 for both men and women (Eysenck, Pearson, Eastings, & Allsopp, 1985) providing evidence of internal reliability.

The Barratt Impulsiveness Scale (BIS) version 11 includes 30 self-administered items that purport to address the participant's level of impulsiveness on a 4-point Likert-type scale. In a sample of 412 undergraduate students, the BIS scores were assessed as yielding a Cronbach's a of .82. Among 348 psychiatric inpatients, the BIS scores yielded a Cronbach's a of .81. Finally, among 73 prison inmates, the BIS scores yielded a Cronbach's a of .80. Scores between the EIS and the BIS were found to be highly correlated (r = .45, p < .001), offering evidence of convergent validity (Latimore, 2007).

Alcohol Dependence Scale—The Alcohol Dependence Scale (ADS) is a 25-item self-report instrument designed to measure elements of alcohol dependence and includes items on impaired control over alcohol use, salience of drink-seeking behavior, tolerance, withdrawal symptoms, and a compulsive drinking style (Ross, Gavin, & Skinner, 1990). The scores of 501 participants on the ADS correlated highly (r = .73) with their respective scores on the ADS 1 month later (Ross, et al., 1990), providing evidence of good test-retest reliability. The ADS also correlated highly (r = .79) with the Michigan Alcoholism Screening Test (Selzer, 1971; Selzer, Vinokur, & van Rooijen, 1975) providing evidence of convergent construct validity. Finally, the ADS was found to be correlated with the presence of current alcohol disorders (r = .58) and participants' report of alcohol as the drug causing them the most problems (r =.54) presenting evidence of the criterion-related validity of the ADS (Ross et al., 1990).

Risk Behavior Assessment—The Risk Behavior Assessment (RBA) was designed by grantees of the National Institute on Drug Abuse. The RBA is a 30-min structured interview administered for the assessment of participants' demographic background, drug and alcohol use, as well as their sexual risk-taking behavior. The score reliability and the score validity of the RBA has previously been demonstrated extensively in numerous psychometric studies (Dowling-Guyer et al., 1994; Edwards, Fisher, Johnson, Reynolds, & Redpath, 2007; Fisher et al., 1993; Fisher, Reynolds, Creekmur, Johnson, & DeAugustine, 2007; Johnson, Fisher, & Reynolds, 1999; Needle et al., 1995; Weatherby et al., 1992).

RESULTS

The study sample was racially and ethnically diverse with a mean age of 41.53 years (SD = 11.43; *Median* = 43). Of the 482 participants, 115 (24%) identified as female, 147 (30%) identified as a heterosexual male, and the remaining 220 (46%) identified as either a homosexual or bisexual male. The mean score for the current sample on the CSBI was 39.81 (SD 14.24) and the median score was 38. When separated by subgroup, females=had a mean score of 38.74 (SD = 15.18), heterosexual males had a mean score of 38.67 (SD = 13.36), and homosexual or bisexual males had a mean score of 41.04 (SD = 13.73) Additional information on the sample stratified by these three groups is shown in Table 1.

Sixty-five percent of the participants used alcohol for a mean of 11.20 days out of the last 30 prior to the interview. Illicit drug use was also evident in the sample as follows: crack-cocaine (24%); methamphetamine (19%); and powder cocaine (9%). Additional drug use patterns are shown in Table 1.

Sixty-six percent reported having sex in the past 30 days prior to interview. Of those who reported having sex, the mean number of days that participants engaged in sex was 8.12, and 32% reported having more than one sex partner over the last 30 days. Gonorrhea (20%), chlamydia (12%), and syphilis (9%) were the most frequently reported STIs. In addition, 7.3% of the participants reported an HIV positive status. Further information is shown in Table 1.

Reliability

To ascertain whether each of the individual items on the CSBI is tapping into the same construct of compulsive sexual behavior, the Cronbach's a statistic is reported (Cronbach, 1951). In the current study, the raw coefficient a for the control factor scores was .93 (*95% C.I.* = .92, .93), and .83 (*95% CI.* = .81, .85) for the violence factor scores, which is slightly lower, but yet comparable to, the respective .96, and .88 a found previously (Coleman et al., 2001). When each of the three sub-groups was assessed separately, the raw coefficient a factor scores were .93 and .81 for the female group, .93 and .84 for the heterosexual male group, and .92 and .83 for the homosexual or bisexual male group for the control and violence factors respectively. Item-total correlations were also evaluated to determine whether a greater internal reliability could be reached by deleting any of the questions on the CSBI. The analysis demonstrated that if any item were to be deleted, then the overall a would only decrease, thereby providing evidence of the internal-consistency score reliability of all items on the CSBI.

Validity Evidence: Multi-trait Multi-method Matrix

Convergent Evidence—Pearson product-moment correlations were calculated to determine the association between the CSBI and each of the subscales (i.e., Control, Violence) as well as to determine the associations among all other measures used in the current study. To assess the magnitude of the correlations, Cohen's (1988) guidelines were employed. Table 2 illustrates that when correlated with measures that are purported to assess the same trait, or compulsive sexual behavior, the CSBI exhibits good convergent validity. This was demonstrated by its high Pearson product-moment correlation coefficients with the convergent measures of compulsive sexual behavior, sexual addiction (SAST: all three versions), sexual sensation-seeking (SSS), and sexual compulsivity (SC). More specifically, as hypothesized, the highest correlations existed between the CSBI, the two CSBI subscales ($r = .95$, $p < .0001$ and $r .68$, $p < .0001$, respectively), the GSAST, which was only administered to gay=men ($r = .742$, $p < .0001$), the WSAST, which was only administered to women ($r = .72$, $p < .0001$), and the SC scale ($r = .59$, $p < .0001$). The SAST, which was only administered to heterosexual men, and the SSS, provided additional evidence of convergent validity, though the correlations were only statistically significant at the moderate level ($r = .42$, $p < .0001$ and $r = .46$, $p < .0001$, respectively).

Discriminant Evidence—Discriminant validity was demonstrated by comparatively lower correlations with the divergent measures of non-sexual experience-Seeking (NES), impulsivity (BIS, EIS), and alcohol dependence (ADS). As predicted, with some exceptions, the correlations between the CSBI and the discriminant measures of non-sexual experience-seeking, impulsivity, and alcohol dependence were generally lower than were the correlations between the convergent measures. The CSBI demonstrated a moderate–to-small correlation with the NES ($r = .31$, $p < .0001$) and a moderate correlation with both the EIS and the BIS ($r = .41$, $p < .0001$ and $r = .45$, $p < .0001$, respectively). The correlation between the CSBI and the ADS ($r = .12$) was not statistically significant.

Integration of Convergent and Discriminant Construct Evidence—Fisher's Z transformations were then computed to compare the convergent measures' correlations with the CSBI to the discriminant measures' correlations with the CSBI. Accordingly, it was hypothesized that the correlation coefficients between the CSBI and the SAST, GSAST, WSAST, SSS, and SC should be significantly larger than should the correlation coefficients between the CSBI and the NES, EIS, BIS, and ADS. As illustrated in Table 3, in total, 15 out of the 20 correlation comparisons produced statistically significant results with the convergent measures having statistically significantly larger correlations with the CSBI than the discriminant measures.

Validity Evidence: Criterion Measures

Participants' scores on the CSBI were correlated with their self-report of other continuous behavioral and health outcome variables. For variables that were of a dichotomous nature, t tests were utilized to assess differences in CSBI scores. The statistically significant t tests and correlations that resulted are illustrated in Table 4 and Table 5 respectively. It should be noted that since multiple comparisons were undertaken, a more stringent critical value was established for the comparison setting $p = .01$ as the criterion point. Those who traded

sex for drugs, traded sex for money, and/or had previously been diagnosed with gonorrhea or syphilis had statistically significantly higher scores on the CSBI. The number of times that the participant was diagnosed with gonorrhea and the number of sex partners the participant had in the past 30 days were also moderately positively correlated with CSBI scores. However, it is interesting to note that no specific sexual acts (i.e., insertive anal, receptive oral, etc.) were statistically significantly correlated with participants' scores on the CSBI.

DISCUSSION

The current analysis provides additional support for the overall score reliability and score validity of the CSBI in a diverse sample of men and women at high sexual risk. In terms of the overall reliability, results suggest that the CSBI scores yielded a high level of internal consistency with a Cronbach's a of .93 for the control subscale and .83 for the violence subscale. The current results are similar to the reliability coefficients reported previously (Coleman et al., 2001). The overall a coefficients did not improve for either scale upon deletion of any items; therefore, all items on both subscales of the CSBI were retained in the current study.

Overall the CSBI was highly related to the other scales that are purported to measure compulsive sexual behavior. These measures included the Sexual Sensation Seeking scale (SSS), the Sexual Compulsivity scale (SC), and all three versions of the Sexual Addiction Screening Test (SAST, GSAST, and WSAST). The lowest of all convergent correlations with the CSBI was the SAST, which was designed to be administered exclusively to heterosexual males. Incidentally, the SAST had very low correlations with all of the measures utilized in the current study. One possible explanation for this occurrence may be the fact that the inclusion criteria for the current study were somewhat different for heterosexual males than for MSM. Everyone was eligible for inclusion in the current study if they reported excessive drug and/or alcohol use or reported having had injected drugs. However, MSM were automatically considered to be at sexual risk merely by indicating having had sex with another male and thus they were automatically recruited into the study via the Gay Respect Program or the Multiple Morbidities Testing Program (MMTP). Similarly, women were also considered to be at sexual risk if they had had multiple sex partners, engaged in anal sex, had sex with drug injectors, exchanged sex for money or drugs, or engaged in sex with a MSM and thus they were also considered to be eligible. Therefore, unless heterosexual males identified as having had sex with a man in the last 3 years, they were not eligible for inclusion on the basis of sexual risk. This left excessive drug and/or alcohol using behavior as the only criteria that signified eligibility for heterosexual men in the current study.

Correlations between the CSBI and measures of discriminant constructs such as the Non-sexual Experience Seeking scale (NES), the Eysenck Impulsiveness Scale (EIS), the Barratt Impulsiveness Scale (BIS), and the Alcohol Dependence Scale (ADS) were moderate to low as expected. The largest correlation between the CSBI and a discriminant measure was found between the BIS and the CSBI ($r = .45$). This suggests that compulsive sexual behavior and impulsivity are related constructs.

As hypothesized, the SSS, SC, and NES scales were all highly correlated with one another even though the SSS and the SC are considered to be measures of compulsive sexual behavior whereas the NES is considered to be measuring a theoretically dissimilar construct. This might be merely the result of common method variance based on the random presentation of items from all three measures within the same instrument. Although all three measures (SSS, SC, NES) were highly correlated with one another in the matrix, it is important to note that the correlation between the SSS and the SC was higher than that between the NES and either of the other two compulsive sexual behavior scales. It is also important to note the high correlation between the EIS and the BIS, suggesting that the two scales are measuring the same construct—impulsivity. Overall, the MTMM matrix does lend much credence to the overall construct validity of the CSBI.

Consistent with the previous literature on compulsive sexual behavior, overall scores on the CSBI were found to be associated with behavioral health risks (Cooper, Scherer, Boies, & Gordon, 1999). The current analysis replicates these findings providing additional evidence for the criterion related validity of this measure. The highest scores on the CSBI were found among participants who indicated that they had previously traded drugs for sex, sex for drugs, sex for money, money for sex, or those who indicated that they had previously made income from prostitution. It may be that persons who engaged in these behaviors because of economic necessity or possible substance addiction may experience distress resulting from their behavior and subsequently score higher on the CSBI.

In the current analysis, the CSBI was correlated with several negative health outcomes such as the number of times individuals tested positive for gonorrhea and/or syphilis. Previous research has posited that these negative health outcomes have a high likelihood of being the byproduct of compulsive sexual behavior and therefore provide additional validation for the CSBI (Bancroft & Vukadinovic, 2004; Gullette & Lyons, 2005; Kalichman & Cain, 2004). Scores on the CSBI were also shown to be associated with drug use and experience in a drug treatment program. Much of the literature on compulsive sexual behavior supports the frequency of concurrent disorders. Co-occurring disorders often lead to a severe impact on an individual's ability to function in society and the correlation between the CSBI and the experience of homelessness might be evidence of the downward spiral of compulsive behaviors in general. Similarly, the higher the CSBI score, the less likely the participant was to have a paid job or salary.

Limitations

The most salient limitation of the current analysis was due to the differences in inclusion criterion for heterosexual males, bisexual/homosexual males, and females. Because the three programs at CBRS from which participants were recruited all had different requirements for eligibility, random sampling was not possible. Further, because not all measures used in the current analysis were administered in all programs at all times, sample sizes vary among the various instruments. Finally, this analysis sought to assess the psychometric properties of the CSBI among particularly high-risk segments of the population. That is to say that, while highly diverse, the sample selected for the current study remains inherently limited in its generalizability to the greater population of Los Angeles County. Therefore, future analyses

of the CSBI should seek to randomly sample participants from a more generalizable sample based on one set of criteria to validate the measure further.

A recent examination of the CSBI also indicated that the measure might be assessing somewhat different aspects of compulsive sexual behavior than those that have previously been thought to be indicative of this construct. Specifically, it was found that sexual monitoring, sexual anxiety, depression, fear of sexual relationships, and lower levels of self esteem were highly associated with participant scores on the CSBI (Lee, Ritchey, Forbey, & Gaither, 2009). This suggests that higher scores on the CSBI could be indicative of distress associated with both hypo- as well as hyper-sexual states. Future research needs to examine the possible associations between the above mentioned constructs and the CSBI. Such an assessment was outside the scope of the current analysis.

CONCLUSIONS

The current study provides the much-needed evidence of the score reliability and score validity of the CSBI as a measure for assessing compulsive sexual behavior. The current study suggests that the CSBI is simultaneously a good indicator of risk for acquiring HIV and/or another STI based on the association between compulsive sexual behavior and sexual risk.

Acknowledgments

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TABLE 1

Sample Characteristics (*N* = 482)

	Female (*n* = 115)		Heterosexual Male (*n* = 147)		Bi/Homosexual Male (*n* = 220)	
Variable	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Race/Ethnicity						
African American	42	(36.5)	58	(39.4)	48	(21.8)
White	37	(32.2)	43	(29.3)	95	(43.2)
Latina(o)	17	(14.8)	35	(23.8)	53	(24.1)
Asian/Pacific Islander	7	(6.1)	2	(1.4)	16	(7.3)
Other	12	(10.4)	9	(6.1)	8	(3.6)
Income (Last 30 days)						
Less Than $500	53	(46.1)	85	(57.8)	59	(26.8)
$500-$999	31	(27.0)	35	(23.8)	43	(19.5)
$1,000-$1,999	17	(14.8)	14	(9.5)	44	(20.1)
$2,000 or More	14	(12.1)	13	(8.9)	74	(33.6)
Sexual Orientation						
Heterosexual	74	(64.4)	147	(100.0)	—	—
Bisexual	25	(21.7)	—	—	61	(27.7)
Homosexual	16	(13.9)	—	—	159	(72.3)
Educational Attainment						
Less Than High School	32	(27.8)	41	(27.9)	21	(9.5)
High School/GED Graduate	30	(26.1)	55	(37.4)	48	(21.8)
Some College	31	(27.0)	33	(22.4)	61	(27.8)
College Graduate	22	(19.1)	18	(12.3)	90	(40.9)
Self-reported HIV Status						
Positive	1	(0.9)	4	(2.7)	30	(13.6)
Negative	83	(72.2)	119	(81.0)	177	(80.5)
Status Unknown	31	(26.9)	24	(16.3)	13	(5.9)
Self-reported History of STIs						
Chlamydia	22	(19.1)	10	(6.8)	26	(11.8)
Gonorrhea	19	(16.5)	27	(18.4)	52	(23.6)
Hepatitis B	11	(9.6)	7	(4.8)	24	(10.9)
Syphilis	7	(6.1)	9	(6.1)	28	(12.7)
	M	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**
Age (Years)	39.5	(11.2)	45.1	(10.5)	40.2	(11.8)
Sexual Behavior (last 30 days)						
Days had Sex	6.1	(9.1)	4.9	(7.2)	5.3	(11.8)
Sex Partners	1.4	(2.9)	1.4	(2.5)	2.4	(4.1)
Drug and Alcohol Use (times used in the last 30 days)						
Alcohol	7.6	(13.6)	6.8	(10.0)	7.4	(9.1)
Crack-cocaine	3.9	(8.6)	3.5	(7.1)	1.8	(5.6)

Methamphetamine	2.2	(6.6)	1.5	(4.8)	1.9	(5.9)
Cocaine	0.9	(4.3)	0.4	(2.2)	0.3	(1.2
Heroin	0.7	(3.8)	0.8	(4.1)	0.1	(1.4)

TABLE 2

Zero-order Correlations: Multi-Trait Multi-Method Matrix

	CSBI	CSBI-C	CSBI-V	SAST	GSAST	WSAST	SSS	SC	NES	EIS	BIS
CSBI											
CSBI-C	.954 ***										
CSBI-V	.680 ***	.428 ***									
SAST	.416 ***	.426 ***	.191 *								
GSAST	.742 ***	.731 ***	.497 ***	—							
WSAST	.719 ***	.572 ***	.680 ***	—	—						
SSS	.464 ***	.419 ***	.383 ***	.207 *	.574 ***	.526 *					
SC	.587 ***	.578 ***	.370 ***	.241 *	.664 ***	.454 *	.730 ***				
NES	.305 ***	.240 ***	.340 ***	−.032	.392 ***	.282	.658 ***	.555 ***			
EIS	.405 ***	.368 ***	.300 ***	.233 *	.453 ***	.258 *	.395 ***	.414 ***	.318 ***		
BIS	.449 ***	.417 ***	.322 ***	.194 *	.499 ***	.347 **	.388 ***	.463 ***	.226 ***	.723 ***	
ADS	.122	.057	.220 **	.113	.110	.281	.080	.097	.140	.134	.149 *

Note. CSBI = Compulsive Sexual Behavior Inventory (all items); CSBI-C = Compulsive Sexual Behavior Inventory (control subscale only); CSBI-V = Compulsive Sexual Behavior Inventory (violence subscale only); SAST = Sexual Addiction Screening Test (heterosexual men only); GSAST = Sexual Addiction Screening Test (gay men only); WSAST = Sexual Addiction Screening Test (women only); SSS = Sexual Sensation Seeking Scale; SC = Sexual Compulsivity Scale; NES = Non-Sexual Experience Seeking Scale; EIS = Eysenck Impulsiveness Scale; BIS = Barratt Impulsiveness Scale; ADS = Alcohol Dependence Scale.

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.

TABLE 3

Fisher's Z Transformations Comparing the Differences in Correlations between the Convergent and the Discriminant Measures

		CSBI w/SAST	CSBI w/GSAST	CSBI w/WSAST	CSBI w/SSS	CSBI w/SC
	Z_r (SE_r)	.443 (.089)	.955 (.065)	.906 (.114)	.502 (.067)	.673 (.067)
CSBI w/NES	.315 (.067)	Z = 1.15	Z = 6.85 ***	Z = 4.45 ***	Z = 1.98 *	Z = 3.79 **
CSBI w/EIS	.430 (.056)	Z = .13	Z = 6.10 ***	Z = 3.75 **	Z = .83	Z = 2.80 *
CSBI w/BIS	.483 (.051)	Z = .40	Z = 5.70 ***	Z = 3.38 **	Z = .23	Z = 2.30 *
CSBI w/ADS	.123 (.068)	Z = 2.86 *	Z = 8.82 ***	Z = 5.90 ***	Z = 3.98 **	Z = 5.77 ***

Note. Values in the above table are the *Z* test statistic using the Fisher's *Z* transformation. CSBI = Compulsive Sexual Behavior Inventory; SAST = Sexual Addiction Screening Test (heterosexual men only); GSAST = Sexual Addiction Screening Test (gay men only); WSAST = Sexual Addiction Screening Test (women only); SSS = Sexual Sensation Seeking Scale; SC = Sexual Compulsivity Scale; NES = Non-Sexual Experience Seeking Scale; EIS = Eysenck Impulsiveness Scale; BIS = Barratt Impulsiveness Scale; ADS = Alcohol Dependence Scale

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.

TABLE 4

Behavioral and Health Outcomes vs. Total CSBI Score

Variable	No/Never			Yes/Ever			t	Cohen's d
	n	*M*	*SD*	*n*	*M*	*SD*		
Traded Drugs for Sex	387	37.1	12.3	95	48.0	16.2	6.61**	.76
Traded Sex for Drugs	386	37.1	12.1	96	48.5	16.7	6.54**	.78
Traded Sex for Money	417	37.3	12.5	65	47.2	16.1	5.54**	.69
Previously had Gonorrhea	384	38.1	12.9	98	45.5	16.4	5.41**	.50
Previously had Syphilis	438	38.6	13.2	44	49.7	18.1	5.12**	.70
Paid for Sex	395	37.8	13.0	87	45.6	15.4	4.81**	.55
Been in Drug Treatment	378	37.0	12.2	104	42.0	15.1	3.69**	.36
Income from Paid Job/Salary	272	41.0	14.3	210	37.2	13.1	3.21*	.28
Currently Homeless	323	38.0	12.9	159	43.0	15.6	2.91*	.35
Previously had Chlamydia	424	39.0	13.6	58	43.7	15.7	2.64*	.32
HIV Positive	447	39.7	13.7	35	45.2	16.5	2.23	.36
Received Income from Welfare	386	38.7	13.4	96	42.1	15.4	2.11	.24

**
$p < .001$.

TABLE 5

Correlations Between CSBI and Risk Perceptions and Behaviors

	n	*r*	*r* ^{2}
Perceived Chance of Getting HIV/AIDS (no-, some-, half-, sure-chance)	468	.251[**]	.06
Number of Sex Partners in Last 30 Days	482	.192[**]	.04
Number of Sex Partners Likely to be Drug Injectors	320	.146[*]	.02
Age of First Alcohol Use	478	−.105	.01
Days Used Crack-cocaine in the Last 30	482	.132[*]	.02
Days had Sex in the Last 30	482	.118[*]	.01
Days used Alcohol in the Last 30	482	.116[*]	.01
Days used Marijuana in the Last 30	482	.115[*]	.01
Days used Speedball in the Last 30	482	.108	.01
Days used Methamphetamine in the Last 30	482	.103	.01

[*] $p < .01$,

[**] $p < .001$.