

# Problems of Self-Concept in a Patient Sample of Hypersexual Men With Attention-Deficit Disorder

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**Objectives:** Earlier evidence suggests comorbid attention-deficit disorder (ADHD) among those seeking treatment for hypersexual behavior. This article examines which facets of ADHD symptoms are most strongly associated with hypersexual behavior among a patient sample of men (N = 81).

**Methods:** ADHD diagnosis was made by 2 clinicians, and symptom characteristics were measured using the Conners' Adult ADHD Rating Scale and the Sexual Compulsivity Scale.

**Results:** Among ADHD symptoms, inattentive features were most prevalent. A stepwise regression analysis revealed that the Problems with Self-Concept subscale of the Conners' Adult ADHD Rating Scale was the strongest predictor of scores on the Sexual Compulsivity Scale. Surprisingly, subscales that measured traits of impulsivity, inattention, memory problems, and hyperactive restlessness did not contribute additional predictive variance in the statistical model.

**Conclusions:** The results of these findings suggest that clinicians should exercise caution in assuming that common characteristics of ADHD, such as impulsivity and hyperactivity, exert the strongest influence on hypersexual behavior. Rather, our results provide evidence that the associated features of ADHD, such as problems with low self-esteem, might be more salient factors in influencing hypersexuality severity among patients with comorbid hypersexual behavior and ADHD.

**Key Words:** ADHD, hypersexuality, sexual addiction

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Hypersexual behavior is a phenomenon characterized by repetitive and intense preoccupation with sexual thoughts, urges, and behaviors causing adverse consequences leading to clinically significant distress or impairment in

occupational, interpersonal, or social domains of functioning. Hypersexual individuals report numerous undesirable outcomes and multiple unsuccessful attempts at self-regulation (Coleman, 1991; Kafka, 2001; Kuzma and Black, 2008; Reid et al., 2009a). Studies seeking to understand this phenomenon have linked hypersexual behavior to anxiety, depression (Raviv, 1993; Raymond et al., 2003; Reid et al., 2008), social phobia, substance abuse (Kafka and Hennen, 2002), obsessive tendencies (Schwartz and Abramowitz, 2003; Reid and Carpenter, 2009a), sexual dysfunction (Butts, 1992), post-traumatic stress disorders (Howard, 2007), and executive dysfunction (Reid et al., 2010).

Attention-deficit disorders (ADHDs) have also been linked to hypersexuality, although with the exception of Blankenship and Laaser (2004), these reported associations have been simply recognition of comorbidity and have been peripheral to the purpose of the research (Kafka and Prentky, 1998; Kafka and Hennen, 2002; Reid, 2007). Blankenship and Laaser reported that 67% of their subjects met "some level of classic ADHD" (p. 14) using cutoffs proposed by the author of their ADHD checklist and that inattentive symptoms were more common than other symptoms. Unfortunately, they did not specify the criteria on which clinicians made judgments regarding hypersexuality, and they relied on unvalidated measures of both hypersexuality and ADHD. Furthermore, ADHD was assessed only through the self-report measure of symptoms.

In another study exploring readiness to change among hypersexual patients, Reid (2007) found moderately high rates of ADHD comorbidity and noted that subjects with ADHD were significantly more likely to have unresolved ambivalence about changing their sexual behavior, when compared with non-ADHD hypersexual patients. His study used a gold standard for diagnosing ADHD and found that approximately 28% of adult male patients seeking help for hypersexuality met the criteria for ADHD, with 95% of subjects diagnosed as predominantly Inattentive subtype (Reid, 2007).

Beyond these modest contributions to the literature, we know very little about what characteristics might predispose patients with ADHD to hypersexual behavior. Furthermore, although it is often assumed that the associated features of ADHD (eg, impulsivity) influence hypersexual behavior, this assertion has yet to be empirically tested. The present investigation attempts to replicate previous findings about comorbid prevalence with ADHD and hypersexuality using psychometrically validated measures and a more rigorous standard

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of ADHD diagnosis. Additionally, this study seeks to extend previous findings by exploring specific aspects of ADHD characteristics and their relationship with hypersexual behavior in a patient sample of adult men.

### HYPERSEXUAL BEHAVIOR OR SEXUAL ADDICTION

The definition of hypersexual behavior, by focusing on behavior and consequences, intentionally avoids the overreaching of other labels, such as sexual addiction or sexual compulsivity that imply parallels and etiology not yet clearly demonstrated. Nonetheless, parallels to addiction are plentiful and have been important in shaping both theory and interventions. As this phenomenon is encountered in psychotherapy and among medical providers, patients report symptoms similar to those found among chemically dependent populations, such as failure to regulate behavior, pursuit of a “substance” despite negative consequences, volitional impairment in interpersonal, social, or occupational domains, and so forth. It is plausible that these observations may simply be an extension from previous research that notes the high comorbidity rate between addictive sexual disorders and chemical dependency—and thus, some similarities might be expected (Schneider and Irons, 2001). While researchers debate the most appropriate terminology, it is apparent that although the label of “addiction” might not be a perfect fit for hypersexual behavior, the associated features are similar to an addiction in many respects. This being said, it is important to note that an addiction model may oversimplify the complexities and associated characteristics of hypersexuality (Coleman, 1987, 1991). Given unresolved questions about addictive or compulsive notions associated with hypersexuality, we prefer defining the behavior in terms of its elements, consequences, and contexts, rather than in terms of its presumed connections to other conditions. This article uses the label *hypersexual behavior* in an attempt to find language that may be less encumbered by controversy while acknowledging that this classification also has its limitations. We have also attempted to use criteria in this study that align with the majority of perspectives published in the literature about these phenomena (Coleman, 1991; Reid, 2007; Kingston and Firestone, 2008; Schwartz, 2008; Stein, 2008).

### RATIONALE FOR THIS STUDY

Although ADHD was once assumed to be a disorder of childhood, research suggests that symptoms persist into adolescence and adulthood in ~70% of cases (Weiss and Hechtman, 1993; Gadow, 2001; Rucklidge et al., 2006). Additionally, deficits in executive control, including response inhibition and impulsivity, seem to continue into adulthood (Nigg et al., 2002). Adults diagnosed with ADHD also continue to remain susceptible to social rejection and increased isolation, which creates a vulnerability to loneliness, poor self-concept, and diminished identity formation (Paulson et al., 2005).

Some adults diagnosed with ADHD use substances as a way of coping with their challenges. Research has found that although the psychiatric comorbidity of mood disorders in-

creases the risk of psychoactive substance use in adults with ADHD, ADHD by itself also seems to be a significant risk factor for substance-related disorders (Biederman et al., 1995; Wilens et al., 1998). An investigation into substance use among subjects with ADHD also revealed that many individuals diagnosed with chemical dependency endorsed using drugs to “self-medicate” their symptom distress (Wilens et al., 2007). The findings from research on relationships between ADHD and addictive tendencies raise questions about whether these associations might also be generalized to other process addictions, such as hypersexual behavior.

There are several phenomena associated with adult ADHD that provide possible explanations for why such patients might be at increased risk for hypersexual behavior. Primarily, individuals with ADHD have difficulty controlling impulses and, therefore, may have difficulty inhibiting sexual cravings and desires. This finding of impulsivity has also been noted in hypersexuality research. Also, adults with ADHD may feel disproportionate levels of anxiety or stress and use sex as a tension-reduction activity. In clinical studies, many patients with ADHD (who are at increased risk for boredom susceptibility) report they engaged in sex at times when they felt bored or restless, and these reports are consistent with research linking boredom proneness to increased solitary sexual behaviors (Gana et al., 2001; Kass et al., 2003).

It is plausible to assume that sex, too, similar to alcohol and drugs, can be used as a way of self-medicating for a constellation of issues, and this may explain why several studies have linked ADHD to hypersexual behavior, as noted earlier. Furthermore, a relationship between decreased self-esteem and feelings of demoralization has been found in both hypersexual and ADHD populations (Reid and Carpenter, 2009b). However, given the complex picture of the current research, it is unclear at present what aspects of adult ADHD might exert the greatest influence on hypersexual behavior. Thus, the primary purpose of this study is to determine whether the core features of ADHD (eg, impulsivity) or the associated characteristics (eg, poor self-concept) exert the strongest predictive variance on a measure of hypersexual behavior.

## METHOD

### Procedure

The convenience sample used in this study consisted of male patients (N = 81) recruited from an outpatient clinic that specialized in the treatment of hypersexuality. Consecutive admissions of male patients seeking help for hypersexual behavior (N = 361) were evaluated for adult ADHD, and those who met both of these conditions were included in our analysis. We had a 96% rate of participation from those patients invited to allow their data to be used for research purposes. Patients received no incentives to participate, and all subjects in the study signed informed consent.

### Participants

In this study, patients were classified as hypersexual if they had exhibited the following symptoms for a minimum of

6 months: (1) repetitive and intense preoccupation with sexual thoughts, urges, and behaviors; (2) multiple unsuccessful attempts at controlling sexual thoughts, urges, and behaviors; and (3) adverse consequences causing clinically significant distress or impairment in occupational, interpersonal, or social areas of functioning related to the intensity or frequency of sexual thoughts, urges, or behaviors. The presenting symptoms could not occur exclusively within the context of another Axis I disorder (eg, manic phase of bipolar), be substance induced, or occur in relationship to neurologic pathology (Coleman, 1991; Kafka, 1997). Hypersexual behavior was also observed as a distinct and separate construct from the phenomenon of persistent sexual arousal syndrome, in which an individual experiences persistent sexual arousal in the absence of desire (Mahoney and Zarate, 2007; Leiblum and Seehuus, 2009). Symptoms associated with hypersexual behavior could include solo or relational sexual activities and could occur comorbidly with paraphilic tendencies (Kafka and Hennen, 2003). Participants received a clinical interview at intake that explored these criteria.

The diagnosis of ADHD, following the gold standard procedure of Reid (2007), was made by 2 separate trained clinicians who carefully followed Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV-TR*) criteria. Both clinicians had doctoral-level training, one in clinical neuropsychology and the other as a board-certified psychiatrist. Also considered were developmental histories and scores from the Wender Utah Rating Scale (Ward et al., 1993) to assess whether the adults would have met childhood criteria for ADHD, and collateral information was evaluated whenever possible (eg, information from spouses, roommates, or significant others). Although cognitive ability was not assessed as part of this study, generally, other data collected for many patients at the treating clinic showed that they had average to high-average full-scale IQ scores, and the majority of patients had at least some college-level education. All the patients were medication naive (for ADHD medication) at the time of their evaluations. Questionable medical etiology or histories were further explored to eliminate any possible alternative explanation for symptoms of ADHD. With the exception of 3 patients, all the patients in this study were diagnosed with predominantly Inattentive subtype of ADHD (we excluded the other 3 patients, who met criteria for Combined subtype, from our analysis). To avoid potential confounds, participants were eliminated if they had used psychoactive substances in the previous 60 days, had a lifetime or current diagnosis of a substance-related disorder, exhibited psychotic tendencies, or had a history of head injury.

Ethnic representation among the sample included Hispanic ( $n = 3$ ) and white ( $n = 78$ ), and participants ranged from 19 to 56 years of age ( $M = 31.8$ , standard deviation [ $SD$ ] = 8.7). Relationship status included never married ( $n = 28$ ), first marriage ( $n = 41$ ), remarried ( $n = 8$ ), separated ( $n = 4$ ), and divorced ( $n = 3$ ). Sexual preferences included bisexual ( $n = 1$ ) and heterosexual ( $n = 80$ ).

Self-reported presenting sexual behaviors among participants included compulsive masturbation (59%), pornog-

raphy dependence (67%), habitual solicitation of commercial sex workers (16%), extramarital affairs (17%), and excessive unprotected sex with multiple anonymous partners (21%).

## Measures

### Sexual Compulsivity Scale

The Sexual Compulsivity Scale (SCS) (Kalichman et al., 1994; Kalichman and Rompa, 1995, 2001) was developed to assist in research of high-risk sexual behaviors predominantly among homosexual male subjects, although it has since been used in several studies of both heterosexual and homosexual populations (Kalichman and Rompa, 1995, 2001; Cooper et al., 2000; Reece et al., 2001; Dodge et al., 2004; Reece and Dodge, 2004). The SCS is a 10-item Likert-type measure that assesses preoccupation with sexual thoughts, feelings, and behaviors. Respondents endorse items on a 4-point scale ranging from 1 (not at all like me) to 4 (very much like me). The scale demonstrated high reliability (Cronbach's  $\alpha = 0.89$ ) in a pilot convenience sample of homosexual men (Kalichman et al., 1994), and internal consistency for the scale has been shown from  $\alpha = 0.86$  to  $\alpha = 0.87$  with a sample of homosexual men and a sample of innercity men and women, respectively (Kalichman and Rompa, 1995). Extending the SCS to a nonhomosexual population, Dodge et al. (2004) obtained an  $\alpha = 0.82$  and found construct validity in the form of significant associations with indices of solo, partner, public, and risky sexual behaviors. For these data, our  $\alpha = 0.86$ .

### Conners' Adult ADHD Rating Scale

The Conners' Adult ADHD Rating Scale (CAARS) Self-Report Long Version (Conners et al., 1999a) is a 66-item measure used to assess the 3 main features of ADHD and a fourth feature commonly viewed as a secondary consequence of ADHD. These 4 features are Inattention/Executive Functioning, Hyperactivity/Restlessness, Impulsivity/Emotional Lability, and Problems with Self-Concept (Erhardt et al., 1999). The measure also includes 3 additional subscales that organize symptoms around the *DSM-IV*: *DSM-IV* Inattention Symptoms, *DSM-IV* Hyperactivity/Impulsivity Symptoms, and Total *DSM-IV* ADHD Symptoms. Finally, it includes a global ADHD Index created to most clearly distinguish clinical from nonclinical respondents. Responses are scored on a 4-point scale ranging from 0 (not at all, never) to 3 (very much, very frequently), summed to create the 8 subscale scores and then converted to *T* scores based on the published norms. In separate validation studies, the 4 scales contained within the CAARS have demonstrated high internal consistency (Cronbach's  $\alpha$  ranging from 0.86 to 0.92) and strong test-retest reliability with correlations ranging from 0.80 to 0.91 (Erhardt et al., 1999). Confirmatory factor analysis showed the model had a good fit to the norming data (CFI = 0.943, AGFI = 0.936, and RMS = 0.071) demonstrating construct validity for the instrument which produced an overall correct classification rate of 85% (Conners et al., 1999b). In general, these reliabilities meet or surpass the standards set for assessment tests (Newcomer and Hammill, 1982; Weiner and Stewart, 1984). For the sample in this

**TABLE 1.** Descriptive Statistics and Correlations of Study Variables

Variables	Mean	SD	Cohen's <i>d</i> *	Percentage With <i>T</i> ≥ 65	<i>r</i> With SCS
Inattention/memory problems	62.95	10.21	1.30	39	0.26†
Hyperactivity/restlessness	53.54	10.25	0.35	15	0.10
Impulsivity/emotional lability	53.17	10.06	0.32	15	0.28†
Problems with self-concept	61.89	10.14	1.19	39	0.43‡
DSM-IV: inattentive symptoms	73.09	11.62	2.31	73	0.24†
DSM-IV: hyperactive-impulsive symptoms	58.74	11.81	0.87	25	0.10
DSM-IV: symptoms total	69.51	10.87	1.95	67	0.19
ADHD index	59.25	10.82	0.93	20	0.35‡

\*Cohen's *d*, as an index of effect size, is based on comparison with the norming population with *M* = 50, *SD* = 10.

†*P* < 0.05.

‡*P* < 0.01.

ADHD, attention-deficit disorder; *SD*, standard deviation.

study, the  $\alpha$  values range from 0.83 to 0.90 for the 7 subscales and 0.87 for the global ADHD Index.

## RESULTS

As noted earlier, 81 of 84 consecutive admissions receiving an ADHD diagnosis were diagnosed with the Inattentive subtype (96%), with the remaining 3 being diagnosed with Combined subtype. This sample was drawn from a larger consecutive sample of male hypersexual patients (*N* = 361) suggesting a 23% prevalence rate of adult ADHD among hypersexual men who are seeking treatment. Because such a vast majority of the study participants were of the same ADHD subtype, we knew that the study results might not generalize to other types. Therefore, we limited our analyses to the 81 Inattentive subtype participants even though including the Combined subtype subjects did not meaningfully change the results.

### ADHD Attributes of Hypersexual Clients

For these data, the SCS yielded *M* = 27.30, *SD* = 6.10. Most participants (73%) met or exceeded a cutoff of 24 recommended by Kalichman and Rompa (1995).

The mean CAARS profile revealed that the elements of ADHD were elevated among this sample of hypersexual clients. As presented in Table 1, all CAARS subscales were significantly elevated (*P* < 0.05), when compared with the norming sample of normal adults (with *T* scores set to *M* = 50, *SD* = 10). Because the sample size yielded sufficient power to detect even small differences, the effect size is a better indication of whether differences are meaningfully large. Using Cohen's (1992) rules of thumb, all but 2 subscales/indices can be considered large effects. The remaining 2, Hyperactivity/Restlessness and Impulsivity/Emotional Lability, should probably be considered small effects. Of particular note is the *DSM-IV* Inattentive Symptoms index, for which the mean score of the hypersexual patients (*M* = 73.09) was >2 *SD*s greater than that of the norming population.

An alternative approach to understanding the presence of ADHD symptomatology in hypersexual clients is to examine the likelihood of "clinically significant" elevations. Conners et al. (1999a, b) selected a threshold matching that of

many other clinical measures, *T* ≥ 65. The percentage of clients meeting this threshold is also presented in Table 1. These values vary from one another in approximately the same way the effect sizes do. On the 4 factor scales, 39% of patients had clinically elevated scores for Inattention/Memory Problems and 39% had them for Problems with Self-Concept, whereas only 15% had them for Hyperactivity/Restlessness and 15% had them for Impulsivity/Emotional Lability. Among the CAARS indices, *DSM-IV* Inattentive Symptoms is most notable with 73% of clients showing clinically significant elevations.

### Association of ADHD Symptoms With Hypersexuality Severity

To test whether ADHD symptoms, as measured by CAARS scores, are associated with degree of hypersexuality, as measured by SCS scores, correlation and regression analyses were performed. Note that because this sample only included hypersexual clients, SCS scores, as one index of hypersexuality, had some restriction in variance. The same could be said for restriction of CAARS scores because only clients diagnosed with ADHD were included. Even so, SCS scores still ranged from 13 to 40, *M* = 27.32, *SD* = 6.10. Zero-order correlations of the SCS with CAARS subscales/indices are also found in Table 1. In the absence of any previous comparison on comorbid hypersexual/ADHD clients, no clear prediction could be made of which ADHD components might be most influential. A stepwise procedure was thus used to determine whether any additional variance could be accounted for beyond that provided by the zero-order correlations. Regressing the 4 CAARS factor subscales onto the SCS yielded a significant regression equation (*R* = 0.43, *R*<sup>2</sup> = 0.19, *F*(1,79) = 17.89, *P* < 0.001), with only the Problems with Self-Concept subscale entering the equation. Of note is the finding that the predictive variance of Problems with Self-Concept subsumes all the meaningful predictive variance of the remaining variables (which had nonsignificant partial correlations of 0.03, 0.06, and 0.14, respectively). Including any or all the remaining 3 CAARS subscales did not meaningfully change the regression results. Furthermore, each of the 4 subscales shared less than one third of its

**TABLE 2.** Efficiency of Clinical Elevations on Select CAARS Subscales for Predicting High vs Low Hypersexuality

Classification Efficiency Index	CAARS Subscale		
	Problems With Self-Concept	DSM-IV: Inattentive Symptoms	DSM-IV: Hyperactive-Impulsive Symptoms
Sensitivity	0.57	0.77	0.30
Selectivity	0.75	0.32	0.78
Positive predictive power	0.66	0.58	0.62
Negative predictive power	0.67	0.54	0.48
Positive likelihood ratio	2.28	1.13	1.36
Negative likelihood ratio	0.57	0.72	0.90
Odds-ratio	3.94	1.63	1.52

High vs low hypersexuality groups based on median split ( $Md = 27$ ) on SCS.

variance with any of the others; similarly, collinearity indices were within acceptable ranges.

These ADHD correlates of hypersexuality intensity may yield insights into the dynamics of hypersexuality for clients with comorbid ADHD. To further examine this association, we calculated diagnostic accuracy indices to compare the ability of clinical elevations ( $T \geq 65$ , which reflects 1.5 SDs above a  $T$  score and is the recommended cut point for clinical significance) to predict high versus low hypersexuality, as measured by a median split on SCS ( $Md = 27$ ). These indices are listed in Table 2. As can be seen, neither *DSM* symptom scale does a good job of predicting hypersexuality category, whereas Problems with Self-Concept predicts level of hypersexuality with modest accuracy.

## DISCUSSION

The findings from this study are quite interesting, in part because they are counter intuitive to what clinical judgment might suggest. Intuitively, clinicians might assume that inner restlessness or impulsive traits associated with ADHD influence patients to engage in hypersexual behavior. However, the results of this study support the notion that among patients diagnosed with ADHD, most will be of the Inattentive subtype, and a diminished sense of self-worth is most strongly associated with hypersexual behavior, with impulsivity playing a rather small role. Such findings are consistent with the general literature on hypersexual behavior suggesting that demoralization, shame, and a diminished sense of self-worth play strong roles among this population (Reid, 2010; Reid and Carpenter, 2009b; Reid et al., 2009b). However, unlike the associations with maladaptive internalized shame—which is a more generalized chronic negative evaluation in which the self is perceived as worthless, flawed, and defective—the associated features of problems with self-concept reflect a lack of self-confidence, being unsure of oneself, or a belief that one has diminished abilities interfering with goal attainment.

Surprisingly, subscales that measured ADHD traits of impulsivity, inattention, memory problems, and hyperactive restlessness did not contribute additional predictive variance

beyond problems in self-concept in the statistical model. Although the pattern of associations might be different in non-ADHD hypersexual individuals, these findings suggest that clinicians should exercise caution in assuming that common characteristics of ADHD such as impulsivity and hyperactivity are strongly associated with hypersexual behavior. Similarly, these results suggest models focusing on affect regulation may offer a more parsimonious explanation for hypersexual behavior than models of executive control given that our results provide evidence that the associated feature of problems with self concept and low self-esteem are more salient factors in contributing to hypersexuality severity in patients with comorbid ADHD. Finally, we note that our use of only hypersexual clients restrains the variance on the SCS, our measure of hypersexuality; again, the relative influence of ADHD components may be somewhat different for different populations.

The current data suggest that clinicians should pay particular attention, apart from the typical core features of ADHD, to the associated features of this disorder as patients with ADHD are often at increased risk of peer rejection, have difficulty completing tasks, and have poor work and college performance, all of which can adversely affect self-concept (Montano, 2004; Solanto et al., 2008). In this study, the consequence of problems with self-concept associated with ADHD seems, in turn, to be associated with hypersexuality. These findings extend the results noted among other addiction populations, such as patients with chemical dependency, and provide evidence that patients diagnosed with ADHD may turn to various sources (eg, drugs, sex, or gambling) to self-medicate the negative effects associated with their disorder. This finding is especially interesting in this sample because the sample was void of patients with concurrent substance-related disorders, which are sometimes found among hypersexual populations (Kafka and Hennen, 2002). Longitudinal studies will be helpful to extend these correlational findings to data which can better examine causal patterns.

The high prevalence rate of Inattentive subtype that emerged in this convenience sample is not particularly surprising and not unique to hypersexual patients and has been noted in other studies of adults with ADHD (Wilens et al., 1997) and hypersexuality (Reid, 2007). Some researchers have suggested that hyperactive symptoms become less prevalent in adults (as opposed to children or adolescents) or that, alternatively, adults become more sophisticated in the ways they compensate for their symptoms and no longer exhibit behavioral tendencies associated with hyperactivity (Weiss et al., 1985). Additionally, this study adds clarity to some uncertainty about the prevalence rate of adult ADHD among treatment-seeking hypersexual men and suggests approximately 23% of this population will meet diagnostic criteria for adult ADHD with most (96%) being symptomatic of the Inattentive subtype.

The results of this study may have clinical relevance in managing ADHD in comorbid hypersexuality. Just as ADHD is frequently comorbid with other disorders, specifically affecting between 11% and 35% of “substance abusing” adults

(Kalbag and Levin, 2005), treatment options for both disorders and the relationship between the disorders needs to be carefully addressed. Given the connections, interventions for ADHD have the potential to indirectly mediate hypersexual behavior. Because of their most clearly demonstrated efficacy, pharmacological interventions may hold the greatest promise. For example, because inattentive symptoms of ADHD become more prominent with time and may be perceived as incompetence by the patient (eg, neglect; poor time management; motivational deficits; difficulty initiating, completing, or changing tasks; and poor concentration), it would make sense that the improvement of these overall symptoms would enhance one's self-concept and overall self-esteem (Montano, 2004). The ability to complete tasks, control impulses, and improve social skills and relationships can have profound effects on mood, disposition, and the possible diminution of negative coping mechanisms including hypersexual behavior. Even if stimulant treatment did not directly impact self-esteem, it might reduce some negative symptoms sufficiently that psychotherapy designed to raise self-esteem might be more impactful.

Given some literature noting executive dysfunction among patients with ADHD, there may be additional benefits to psychostimulants for hypersexual patients with ADHD. As a reminder to the reader, symptoms of ADHD are thought to be mediated by underlying dysregulation of frontostriatal circuitry and catecholamine neurotransmission, in particular implicating noradrenaline and dopamine. Psychostimulants act to increase extracellular levels of noradrenaline and dopamine by preventing reuptake by transporter blockade and triggering release (Chamberlain and Del Campo, 2007). Additionally, the selective noradrenaline reuptake inhibitor, atomoxetine, has shown efficacy in the treatment of ADHD by increasing the extracellular levels of norepinephrine and dopamine in the prefrontal cortex (Bymaster and Katner, 2002). Given the potential risk of stimulant abuse, amotoxetine could be a preferred treatment in hypersexual patients, particularly if they present with comorbid substance-related disorders. Collectively, the impact of medication for the treatment of ADHD also increases levels of executive functioning, which has the potential to mediate hypersexual behavior.

## CONCLUSIONS

These data point to 3 major conclusions: (a) among hypersexual patients presenting for treatment, ADHD is a common comorbid condition; (b) among hypersexual patients with comorbid ADHD, the Inattentive subtype is vastly more commonplace than other subtypes; and (c) whereas admission of inattentive symptoms is common in these patients, as would be expected from the dominant subtype, associated symptoms reflecting difficulties with self-concept form the most common class of symptoms. Although these data are correlational, plausible explanations are available as to how these ADHD symptoms might play a causal role in the development and maintenance of hypersexual behavior. It is reasonable to expect that understanding these connections will enhance treatment of hypersexual patients with comorbid

ADHD. Because the participants in this study were all men, were relatively homogeneous with respect to race and sexual orientation, and had somewhat above-average education, extension of these findings to a different or more diverse sample would be desirable for generalizability. Of particular interest would be community-based samples.

Despite a number of interesting findings, this study was limited in several ways. First, this study is correlational and, therefore, does not address whether the problems with self-concept exert a causal or interactive effect on hypersexual behavior. This study also possesses the limitations commonly associated with and found in studies in which self-report measures are used. Inferences about our findings beyond those listed in this study should be made with caution, in part because our sample consisted of male subjects who were mostly heterosexual with limited ethnic representation. This sample was also void of patients with comorbid substance-related disorders (a common comorbidity noted in other studies, eg, Kafka and Prentky, 1994), although we believe the lack of such subjects in the present sample afforded the opportunity to investigate hypersexuality while minimizing substance-abuse confounds.

Future research might examine how problems with self-concept emerge among those with ADHD and how these problems specifically impact hypersexual behavior. It would be interesting to see what the prevalence rate of hypersexual behavior is among patients who are seeking help specifically for symptoms of ADHD. Outcome studies are also needed to determine what empirically supported treatments might be most effective when working with ADHD and hypersexuality. These might include various combinations of medication trials, psychotherapy, and interventions that are emerging in the field of neurofeedback for symptom reduction among patients with ADHD.

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