

Understanding the Roles of Shame and Neuroticism in a Patient Sample of Hypersexual Men

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Abstract: Although shame and facets of neuroticism have independently been linked to hypersexuality, the present study extends these findings by exploring pathways among these variables, using structural equation modeling in a patient sample of hypersexual adult men ($N = 95$). Results suggested that the domain of neuroticism, as represented by the NEO Personality Inventory—Revised, was a significant direct predictor of hypersexuality, with specific variance from the facet of impulsivity adding additional predictive power. Shame's bivariate association with hypersexuality was also significant, but in a predictive path model the effect of shame on hypersexuality was indirectly mediated through neuroticism and was not an independently significant predictor. Implications for treatment suggest that clinicians working with this population should evaluate precipitating risk factors to consider whether shame is activating neurotic coping or if other stressors might be influencing emotional instability that can trigger hypersexuality. Independent of the general distress associated with neuroticism, the literature on impulsivity might provide other valuable insights and direction for working with hypersexual men.

Key Words: Shame, neuroticism, hypersexual behavior.

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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 frequently report numerous undesirable outcomes and multiple unsuccessful attempts at self-regulation (Coleman, 1991; Kafka, 2001; Kuzma and Black, 2008; Reid et al., 2009a). Hypersexuality is receiving increased attention in the literature as researchers continue to explore the associated characteristics of this phenomenon to further elucidate its etiology and consequences, including health risks associated with sexually transmitted diseases (Codispoti, 2008; Coleman et al., 2009; Kafka, 2001; Parsons et al., 2008; Reid et al., 2010; Schwartz, 2008). Further validation for the legitimacy of this phenomenon has also emerged in classification criteria being proposed for diagnostic consideration of a hypersexual disorder in the DSM-V (Kafka, 2010). The current study explores the associations among shame, facets of neuroticism, and hypersexual behavior in a clinical sample of hypersexual men to understand which relationships may have the greatest explanatory power in exerting an effect on hypersexual behavior and to understand the mechanism by which shame and neuroticism impact hypersexual behavior.

SHAME COPING, NEUROTICISM, AND HYPERSEXUALITY

Evidence supporting the relationship between shame coping and hypersexual behavior has been observed in several studies. For example, hypersexual patients appear to defend against shame with higher levels of withdrawal and greater tendencies to attack the self and others when compared with controls (Reid et al., 2009b). In a study examining a constellation of emotions linked to hypersexuality, a regression analysis showed shaming self-hostility to be the most predictive of hypersexual behavior (Reid, 2010). Some have suggested that for this population of individuals, sex is used disproportionately to escape or dissociate from the painful effects of shame (Adams and Robinson, 2001; Reid, 2000; Wilson, 2000). Note that in these studies, the focus of this association is on coping, specifically how shame might lead to hypersexual behavior as a form of maladaptive coping, regardless of the expectation that at least for some the hypersexuality might be one source of the emotion of shame.

Facets of neuroticism such as anxiety and depression have also been linked to hypersexual behavior. For instance, using the Structured Clinical Interview for DSM Disorders (Spitzer et al., 1994), one study noted that the most common diagnoses among hypersexual individuals were mood and anxiety disorders (Raymond et al., 2003). Other facets of neuroticism, such as interpersonal sensitivity, loneliness, and stress proneness, have also been observed in association with hypersexual behavior (Guigliamo, 2006; Reid et al., 2008; Yoder et al., 2005). In assessing psychological patterns using the Symptom Checklist-90-R (Derogatis, 1994), a sample of hypersexual patients showed significant differences in levels of neurotic tendencies including obsessiveness, depression, and interpersonal sensitivity compared with controls (Reid et al., 2009a). Studies using the MMPI-2 revealed that hypersexual patients exhibit the most notable elevations on scales reflecting general neurotic distress, particularly depression, anxiety, difficulty managing thoughts, and social alienation (Reid and Carpenter, 2009a, b).

Although maladaptive shame coping and the associated features of neuroticism have been correlated with hypersexual behavior, it is unclear whether the inability to defend against shame exerts a direct effect on levels of hypersexuality or if it is indirectly linked through other variables such as facets of neuroticism. Specifically, might maladaptive shame coping be an expression of more general neurotic tendencies? If so, we could expect neuroticism to mediate the relationship between shame and hypersexuality. Mediation could be shown if (1) the background variable (independent variable of shame) affects the mediator (neuroticism), (2) the independent variable is significantly related to the outcome dependent variable (hypersexuality), (3) the mediator affects the dependent variable, and (4) there is a reduction in the effect of the independent variable on the dependent variable after controlling for the mediator (Baron and Kenny, 1986; MacKinnon and Fairchild, 2009; MacKinnon et al., 2007). Although the correlational nature of our study does not allow strong causal statements regarding maladaptive shame coping on hypersexuality, we argue that demonstration of mediation by neuroticism strengthens that view. Such a mediation effect would suggest that shame activates neurotic tendencies, much like anxiety-

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provoking situations would. In particular, if the relationship between neuroticism and hypersexuality is increased with stress in the model, the interplay of these variables becomes important.

Using structural equation modeling (SEM), the investigators in the present study tested 2 separate models to determine which pathways would have the greatest explanatory power in understanding the factors that exert the strongest influence on levels of hypersexual behavior. We hypothesized that the power of shame to exert an effect on levels of hypersexual behavior would be mediated by a latent variable representing the facets of neuroticism. We also hypothesized that some facets within the neuroticism domain might be more salient in the prediction of hypersexual behaviors, and we planned to assess whether this was the case in this sample.

METHODS

Definition of Hypersexual Behavior

Given the 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 classes of conditions. Although some controversy exists about what terminology may best explain hypersexuality (e.g., sexual addiction, sexual compulsivity), the criteria used in the present study align with the majority of perspectives published in the literature about these phenomena (Coleman, 1991; Kingston and Firestone, 2008; Reid, 2007; Schwartz, 2008; Stein, 2008). Additionally, our conceptualization of hypersexual behavior is reflected in the criteria proposed for classification of hypersexual Disorder under consideration for the DSM-V (Kafka, 2010). The definition employed in the present study required an individual to exhibit 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 (e.g., manic phase of bipolar), be substance-induced, or occur in relation to neurological 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 (Leiblum and Seehuus, 2009; Mahoney and Zarate, 2007). 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 which explored these criteria.

Participants

The data used in this study were derived from data collected as part of routine clinical practice at an outpatient clinic that specialized in the treatment of hypersexuality. The sample of adult men ($N = 95$) ranged in age from 19 to 54 ($M = 31.8$ years, standard deviation = 8.26). The sample was 99% White; one man was Hispanic. Five participants (5%) identified themselves as homosexual, 1 identified himself as bisexual, and 89 (94%) identified themselves as heterosexual. Marital status consisted of 32 men who had never married (34%), 49 who were in their first marriage (52%), 8 who were remarried (8%), and 6 who were separated or divorced (6%). Informed consent was obtained from each participant as part of his intake paperwork, and the study was conducted in compliance with the rules and regulations of the Institutional Review Boards at the respective universities of the authors.

For the patients in this study, a pattern of persistent preoccupation with sexual thoughts, urges, and activities interfered with various aspects of their lives, including academic or scholastic goals, employment, marriage relationships, or dyads, with significant others, parenting, friendships, family associations, personal interests, and hobbies. Further, patients reported various negative consequences for their sexual choices, including legal difficulties (e.g., arrests due to solicitation of sex from a commercial sex worker), financial losses, sexually transmitted diseases, and emotional disturbances including feelings of demoralization, loss of self-confidence, and diminished motivation.

Self-reported presenting sexual behaviors among the client sample included compulsive masturbation and pornography dependence (66%), habitual solicitation of commercial sex workers (17%), serial extramarital affairs (16%), and excessive unprotected sex with multiple anonymous partners (21%). Patients ($n = 4$) who met criteria for paraphilias or substance-related disorders, or who had psychotic tendencies or a history of head injury, were eliminated from the study.

Measures

The analytic method used in this study was SEM using latent variables. The latent variables described below were based on responses to well-established multi-item scales and represent constructs in the model.

Shame. The construct of maladaptive shame coping was measured with the 48-item Compass of Shame Scale (Elison et al., 2006). This measure captures coping strategies used to defend against shame, and higher scores reflect greater use of maladaptive coping with shaming experiences. Only 3 of the 4 subscales—Withdrawal, Attack Self, and Attack Others—were used in the analysis because the fourth subscale (Avoidance) had failed to produce any significant differences among hypersexual patients in previous studies (Reid et al., 2009b). Participants responded on a scale ranging from 0 (never) to 4 (almost always). Reliabilities in this type of population for these scales have been reported elsewhere (Reid et al., 2009b) and range from 0.85 to 0.91. Summed scores from the subscales were converted to T-scores for this study.

Neuroticism. Facet scores on the domain of neuroticism were derived using the NEO Personality Inventory—Revised (NEO-PI-R; Costa and McCrae, 1992). The NEO-PI-R consists of 240 items answered on a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*. The NEO-PI-R assesses 30 facets, 6 for each dimension based on the Five Factor Model of personality. Raw scores are standardized as T-scores ($M = 50$, standard deviation = 10), using respective sex norms reported in the NEO manual. The facets of the neuroticism domain used in this study included Anxiety, Angry Hostility, Depression, Self-Consciousness, Impulsiveness, and Vulnerability. The NEO-PI-R is a widely used measure of personality traits with established psychometric properties and has been used in numerous studies (Costa and McCrae, 1992).

Hypersexuality. Hypersexual behavior was measured with the Hypersexual Behavior Inventory (Reid et al., 2011), a 19-item self-report measure that has 3 factors: Control, Coping, and Consequences. These 3 domains of hypersexual behavior relate to (1) control over sexual thoughts, urges, and behavior; (2) consequences associated with hypersexual behavior; and (3) the extent to which an individual uses sex to cope with uncomfortable or unpleasant affective experiences. Items are endorsed on a 5-point Likert scale ranging from 1 (never) to 5 (very often), with possible scores ranging from 19 to 95. Higher scores reflect greater hypersexuality, with 53 regarded as the cut-off for those experiencing difficulties with Hypersexuality. Reliabilities have been high in varied clinical populations (Control, $\alpha = 0.91$; Coping, $\alpha = 0.91$; Consequences, $\alpha = 0.89$), and the measure discriminates well between controls and

hypersexual patient samples (Reid et al., 2009a; Reid et al., 2009b). Summed scores from each subscale were used as the 3 indicators of the factor of hypersexuality.

Analysis

The latent variable analyses were performed using the EQS structural equations program (Bentler, 2006). SEM compares a proposed hypothetical model with a set of actual data. The closeness of the variance-covariance matrix implied by the hypothetical model to the empirical variance-covariance matrix is evaluated with goodness of fit indices. Fit was assessed with the comparative fit index (CFI), the maximum likelihood χ^2 (ML χ^2), and the standardized root mean square residual (SRMR). The CFI indicates the proportion of improvement in the overall fit of the hypothesized model relative to a null model in which all covariances between variables are zero. The CFI ranges from 0 to 1; values of 0.95 or greater are desirable (Bentler, 2006; Hu and Bentler, 1999). The SRMR is a measure representing the size of residuals. It is based on the average differences between the sample variances and covariances and the estimated population variances and covariances. Values less than 0.08 are desirable and indicate a close fitting model (Hu and Bentler, 1999). Multivariate kurtosis was minimal in this model, and supplementary robust methods did not need to be used (Mardia's normalized coefficient = 0.67).

An initial confirmatory factor analysis (CFA) assessed the adequacy of the hypothesized measurement model and provided the associations among the 3 latent variables. We then tested a predictive path model that positioned shame as a predictor of neuroticism, which in turn predicted hypersexuality. We also included and removed a direct path from shame to hypersexuality to test with a χ^2 difference test whether mediation was occurring. Suggestions from the LaGrange Multiplier (LM) test, which reports supplementary modifications to the original model that will improve the fit, were evaluated and were only allowed if they made sense theoretically in the CFA model (LM test; Chou and Bentler, 1990). In evaluating the path model, we also used the LM test to assess whether there were any significant special effects of any of the separate facets of neuroticism on hypersexuality. Indirect effects were calculated using the method developed by Sobel (1987).

RESULTS

Confirmatory Factor Analysis

The fit of the initial CFA was not adequate, but, after the addition of 3 reasonable correlated error residuals suggested by the LM test, the fit improved: ML $\chi^2 = 71.65$, 48df; CFI = 0.95, SRMR = 0.077. All hypothesized factor loadings were significant ($p < 0.001$). Table 1 presents the factor loadings, means, and standard deviations of the measured variables. The correlations among the 3 latent variables in the CFA were substantial, and all were significant ($p < 0.001$). The correlation between shame and neuroticism was 0.75, the correlation between shame and hypersexuality was 0.31, and the correlation between neuroticism and hypersexuality was 0.52. Supplementary modifications included the addition of covariances between the error residuals of Angry Hostility and Anxiety (standardized $r = 0.32$), Attack Others and Angry Hostility (0.53), and Withdrawal and Self-Consciousness (0.35).

Path Analysis

The initial path analysis model included pathways from both shame and neuroticism to hypersexuality in addition to the pathway from shame to neuroticism. As expected, the fit index was exactly the same as that of the CFA (ML $\chi^2 = 71.65$, 48df; CFI = 0.95, SRMR = 0.077). However, although shame was significantly correlated with hypersexuality in the CFA, it was not a significant

TABLE 1. Summary Statistics and Factor Loadings in CFA

Variables	Mean	SD	Factor Loading ^a
Shame ^b			
Withdrawal	60.98	10.37	0.88
Attack self	56.94	10.02	0.87
Attack others	53.89	11.39	0.61
Neuroticism ^b			
Anxiety	55.87	11.72	0.63
Angry hostility	53.04	12.40	0.48
Depression	65.35	11.28	0.88
Self-consciousness	60.54	11.04	0.59
Impulsivity	65.06	10.22	0.46
Vulnerability	60.80	13.99	0.78
Hypersexuality (score range)			
Control (23–40)	33.31	5.17	0.83
Coping (10–35)	25.28	5.61	0.53
Consequences (6–20)	13.52	3.45	0.90

^aAll factor loadings significant, $p \leq 0.001$.

^bScaled as T-scores that can range from 0 to 100.

predictor of hypersexuality, so the direct path from shame to hypersexuality was dropped from the path model. This resulting model explained 27% of the variance in hypersexuality; the χ^2 difference between the original model and this model was only 0.96 with 1 df. We then examined whether any of the separate facets of neuroticism were particularly and significantly associated with hypersexuality. Adding a specific path, suggested by the LM test, from the error residual of Impulsivity to hypersexuality improved the fit considerably (ML $\chi^2 = 59.29$, 48 df; CFI = 0.98, SRMR = 0.065). This was the only supplementary path suggested by the LM test. The final path model explained 37% of the variance in hypersexuality, and the χ^2 difference between the trimmed model without the specific path and this one was substantial: $\chi^2_{diff} = 13.32$, 1 df, $p \leq 0.001$. Thus, this model represents a substantial improvement over the initial path model. Figure 1 presents the final path model.

To ascertain whether mediation was occurring, we also examined the indirect effect of shame on hypersexuality as mediated through neuroticism. As reported above, shame was not a significant direct predictor of hypersexuality although their bivariate correlation was significant in the CFA (0.31), a necessary condition for demonstrating mediation. However, the indirect effect of shame on hypersexuality was significant; the standardized regression coefficient = 0.36, $p < 0.001$. Thus, in the predictive model, the impact of shame on hypersexuality is indirect. The mechanism through which it operated was neuroticism, which in turn predicted hypersexual behaviors. Furthermore, impulsivity may be a particularly salient facet of neuroticism in hypersexuality.

DISCUSSION

The hypothesized mediated model provided a plausible explanation of the mechanism by which shame and neuroticism act jointly to affect and increase hypersexual behavior. All were associated significantly in the bivariate confirmatory model, but in the path model shame exerted its influence indirectly through its strong association with neuroticism. Mediation was demonstrated by the lack of a significant direct association between shame and hypersexuality once neuroticism was included in the path model. Given that this was a selected clinical sample, the proportion of hypersexuality variance (37%) predicted in the analysis was substantial, especially given the

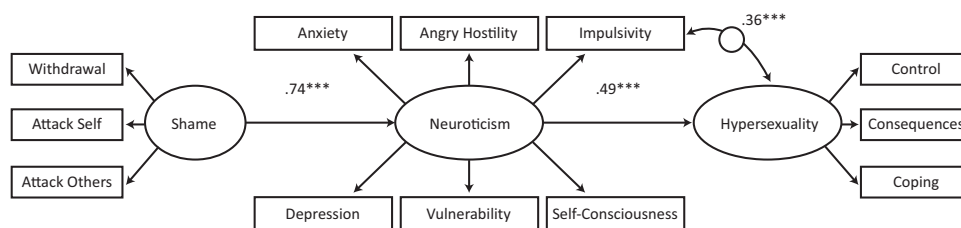


FIGURE 1. Final structural path model. All regression coefficients are standardized. Ovals designate latent variables; rectangles represent measured variables. Small circle represents error residual. Other residuals not depicted for readability. One-headed arrows represent regression paths. *** $p < 0.001$.

difficulty in accounting for complex behavioral phenomena with parsimonious models such as the one tested in this study.

Consistent with earlier research (e.g., Reid et al., 2008), neuroticism as an overarching latent construct was a significant predictor of hypersexuality. Interestingly, unique variance from the Impulsivity subscale independently added to the predictive power of the model and helped explain further variance in hypersexuality. This finding suggests that the features of the Impulsivity subscale beyond general neuroticism are particularly relevant to hypersexuality. To be distressed and functionally compromised by anxiety-avoidance and other features of general neuroticism certainly contributes to hypersexual patterns, but it also appears that to be impulsive is relevant to hypersexual acting out, with such impulsivity being at least partly independent of other neurotic features. This finding supports the observations of others regarding the impulsive component that is a critical feature of hypersexuality (Barth and Kinder, 1987; Kingston and Firestone, 2008; Kuzma and Black, 2008; Stein, 2008).

Interestingly, even though shame has been shown to be associated with hypersexuality (Reid, 2010; Reid et al., 2009b), when assessed as an additional direct contributor to predictive variance beyond that of neuroticism, shame fails to improve the prediction. However, maladaptive shame coping does make a meaningful contribution to the prediction of hypersexuality when its variance is mediated through neuroticism. This finding suggests that the inability to defend against shame activates facets of neuroticism, which in turn contribute to hypersexual behavior. More specifically, we suspect that shame leads to (a) greater blunting of affective awareness (as reflected in alexithymia); (b) impulsive pleasure-seeking as a defense against the negative affect arising from shame among those neurotically inclined; and (c) increased depression/anxiety from self-devaluation, which weakens the resolve to withstand the allure of immediate pleasure-seeking through habituated patterns of sexual acting out. Within clinical settings, this suggests that clinicians should examine the triggering potential of shameful events, with additional recognition that the client may well experience failures to avoid sexual acting out as a recurring source of shame. Individuals with high levels of neuroticism appear vulnerable especially to hypersexual acting out when experiencing shame, and might find themselves caught in a cycle if their failures to control their hypersexuality is shameful to them. It may be possible that these triggering events can lead to highly individualized maladaptive coping around hypersexual behaviors, but we propose the 3 aforementioned mechanisms as particularly likely.

It is also worth noting that whereas shame appears to be a good candidate for the triggering of neurotic coping as one feature of hypersexuality, shame is not a necessary condition. No doubt neurotic forms of coping are ongoing for many of these individuals, and other triggers that evoke neurotic reactions, such as failure experiences, childhood trauma, or external threats, might also escalate neurotic coping. The impact of other potential triggers on this

model may be a valuable line of future research, especially with larger and more diverse samples.

Implications for treatment suggest that clinicians working with this population should evaluate precipitating risk factors to consider whether shame is activating neurotic coping or if other sources of stressors might be influencing emotional instability that can trigger hypersexuality. Independent of the general distress associated with neuroticism, the literature on impulsivity might provide valuable insights and direction for working with hypersexual men.

This study is one of few that tie together multiple correlates of hypersexuality and actually seek to test explanatory models. A trend toward model-testing is strongly needed to advance research in this area, perhaps starting with replication and extension of the current findings. For example, the homogeneity of the current sample in terms of ethnicity and geographical location raises questions about the generalizability of the findings, and a larger sample could add confidence to the parameter estimates. Another limitation is that this is a self-selected clinical sample of men who have presented themselves for treatment. Yet, we were able to capitalize on the considerable variability even within this select sample and demonstrate strong and significant findings. As another limitation, the data are cross-sectional. Thus, other directions of influence within the path model are possible (MacCallum et al., 1993). As a result of this study, even so, we hope the applicability of such findings to understanding these phenomena and to moving toward empirically supported interventions is clearer.

REFERENCES

- Adams KM, Robinson DW (2001) Shame reduction, affect regulation and sexual boundary development: Essential building blocks of sexual addiction treatment. *J Sex Addict Compulsivity*. 8:23–44.
- Baron RM, Kenny DA (1986) The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *J Pers Soc Psychol*. 51:1173–1182.
- Barth RJ, Kinder BN (1987) The mislabeling of sexual impulsivity. *J Sex Marital Ther*. 13:15–23.
- Bentler PM. (2006) . EQS 6 Structural Equations Program Manual. Encino, CA: Multivariate Software, Inc.
- Chou CP, Bentler PM (1990) Model modification in covariance structure modeling: A comparison among likelihood ratio, Lagrange Multiplier and Wald tests. *Multivariate Behav Res*. 25:115–136.
- Codispoti VL (2008) Pharmacology of sexually compulsive behavior. *Psychiatr Clin N Am*. 31:671–679.
- Coleman E (1991) Compulsive sexual behavior: New concepts and treatments. *J Psychol Hum Sexual*. 4:37–52.
- Coleman E, Horvath KJ, Miner M, Ross MW, Oakes M, Rosser BR (2010) Compulsive sexual behavior and risk for unsafe sex among internet using men who have sex with men. *Arch Sex Behav*. 39:1045–1053.
- Costa PT, McCrae RR (1992) . Revised NEO Personality Inventory (NEO-PIR) and NEO Five-Factor Inventory Professional Manual. Odessa, FL: Psychological Assessment Resources.
- Derogatis LR (1994) . SCL-90-R: Administration, Scoring and Procedures Manual. Minneapolis, MN: National Computer Systems.

- Elison J, Lennon R, Pulos S (2006) Investigating the compass of shame: The development of the Compass of Shame Scale. *Soc Behav Pers.* 34:221–238.
- Guigliamo J (2006) Out of control sexual behavior: A qualitative investigation. *Sex Addict Compulsivity.* 13:361–375.
- Hu L, Bentler PM (1999) Cutoff criteria for fit indexes in covariance structural analysis: Conventional criteria versus new alternatives. *Struct Equ Model.* 6:1–55.
- Kafka MP (2010) Hypersexual disorder: A proposed diagnosis for DSM-V. *Arch Sex Behav.* 39:377–400.
- Kafka MP (1997) Hypersexual desire in males: An operational definition and clinical implications for males with paraphilias and paraphilia-related disorders. *Arch Sex Behav.* 26:505–526.
- Kafka MP (2001) The paraphilia-related disorders: A proposal for a unified classification of nonparaphilic Hypersexuality disorders. *Sex Addict Compulsivity.* 8:227–239.
- Kafka MP, Hennen J (2003) Hypersexual desire in males: Are males with paraphilias different from males with paraphilia-related disorders? *Sex Abuse: J Res Treatment.* 15:307–319.
- Kingston DA, Firestone P (2008) Problematic Hypersexuality: A review of conceptualization and diagnosis. *Sex Addict Compulsivity.* 15:284–310.
- Kuzma JM, Black DW (2008) Epidemiology, prevalence and natural history of compulsive sexual behavior. *Psychiatr Clin N Am.* 31:603–611.
- Leiblum SR, Seehuus M (2009) FSFI scores of women with persistent genital arousal disorder compared with published scores of women with female sexual arousal disorder and healthy controls. *J Sex Med.* 6:469–473.
- MacCallum RC, Wegener DT, Uchino BN, Fabrigar LR (1993) The problem of equivalent models in applications of covariance structure analysis. *Psychol Bull.* 114:185–199.
- MacKinnon DP, Fairchild AJ (2009) Current directions in mediation analysis. *Curr Dir Psychol Sci.* 18:16–20.
- MacKinnon DP, Fairchild AJ, Fritz MS (2007) Mediation analysis. *Annu Rev Psychol.* 58:17.1–17.22.
- Mahoney S, Zarate C Jr (2007) Persistent sexual arousal syndrome: A case report and review of the literature. *J Sex Marital Ther.* 33:65–71.
- Parsons JT, Kelly BC, Bimbi DS, DiMaria L, Wainberg ML, Morgenstern J (2008) Explanations for the origins of sexual compulsivity among gay and bisexual men. *Arch Sex Behav.* 37:817–826.
- Raymond NC, Coleman E, Miner MH (2003) Psychiatric comorbidity and compulsive/impulsive traits in compulsive sexual behavior. *Compr Psychiatry.* 44:370–380.
- Reid SJ (2000) Shame and hope in sexual addiction. *J Ministry Addict Recov.* 7:9–17.
- Reid RC (2007) Assessing readiness to change among clients seeking help for hypersexual behavior. *J Sex Addict Compulsivity.* 14:167–186.
- Reid R. C. (2010) Differentiating emotions in a patient sample of hypersexual men. *J Soc Work Pract Addict.* 10:197–213.
- Reid RC, Carpenter BN (2009a) Demoralization, hypomanic activation and disinhibition scores on MMPI-2 scales as significant predictors of hypersexual behavior. *J Sex Addict Compulsivity.* 16:173–189.
- Reid RC, Carpenter BN (2009b) Exploring relationships of psychopathology in hypersexual patients using the MMPI-2. *J Sex Marital Ther.* 35:294–310.
- Reid RC, Carpenter BN, Lloyd TQ (2009a) Assessing psychological symptom patterns of patients seeking help for hypersexual behavior. *Sex Relat Ther.* 24:47–63.
- Reid RC, Carpenter BN, Spackman M, Willes DL (2008) Alexithymia, emotional instability and vulnerability to stress proneness in patients seeking help for hypersexual behavior. *J Sex Marital Ther.* 34:133–149.
- Reid RC, Garos S, Carpenter BN (2011) Reliability, validity and psychometric development of the Hypersexual Behavior Inventory in an outpatient sample of men. *J Sex Addict Compulsivity.* 18:30–51.
- Reid RC, Harper JM, Anderson EH (2009b) Coping strategies used by hypersexual patients to defend against the painful effects of shame. *Clin Psychol Psychother.* 16:125–138.
- Reid RC, Karim R, McCrory E, Carpenter BN (2010) Self-reported differences on measures of executive function and hypersexual behavior in a patient and community sample of men. *Int J Neurosci.* 120:120–127.
- Schwartz MF (2008) Developmental psychopathological perspectives on sexually compulsive behavior. *Psychiatr Clin N Am.* 31:567–586.
- Sobel ME (1987) Direct and indirect effects in linear structural equation models. *Sociol Methods Res.* 16:155–176.
- Spitzer RL, Williams JW, Gibbon M, First MB (1994) . Instruction manual for the Structured Clinical Interview for DSM-IV. New York (NY): New York State Psychiatric Institute, Biometrics Research Department.
- Stein DJ (2008) Classifying hypersexual disorders: Compulsive, impulsive and addictive models. *Psychiatr Clin N Am.* 31:587–591.
- Wilson M (2000) Creativity and shame reduction in sex addiction treatment. *Sex Addict Compulsivity.* 7:229–248.
- Yoder VC, Virden TB, Amin K (2005) Internet pornography and loneliness: An association? *Sex Addict Compulsivity.* 12:19–44.