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The role of negative mood states and consequences of hypersexual behaviours in predicting hypersexuality among university students

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Background and Aims: The issue of whether hypersexual behaviours exist among university students is controversial because many of these individuals engage in sexual exploration during their time at university. To date, little is known about the correlates of hypersexual behaviours among university students in the UK. Therefore, the aims of this exploratory study were two-fold. Firstly, to explore and establish the correlates of hypersexual behaviours, and secondly, to investigate whether hypersexuality among university students can be predicted by variables relating to negative mood states (i.e., emotional dysregulation, loneliness, shame, and life satisfaction) and consequences of hypersexual behaviour. *Methods:* Survey data from 165 British university students was analysed using regression analyses. *Results:* The full regression model significantly predicted hypersexual behaviours. However, only a small number of predictor variables (i.e., gender, consequences of hypersexual behaviours, life satisfaction and emotional dysregulation) accounted for the significant unique influence on hypersexual behaviours among the sample. *Conclusions:* The study empirically supported the concept of hypersexual disorder. The implications of these findings are also discussed.

Keywords: hypersexuality, university students, hypersexual disorder, behavioural addictions

INTRODUCTION

Hypersexuality and sex addiction have become topics of increasing research interest (Griffiths & Dhuffar, 2014) although there are still many debates concerning the addictive and compulsive conceptualisations of hypersexuality. Kafka (2010) defined Hypersexual Disorder as "a sexual desire disorder characterized by an increased frequency and intensity of sexually motivated fantasies, arousal, urges, and enacted behavior in association with an impulsivity component – a maladaptive behavioral response with adverse consequences" (p. 385). He also noted that "any operational definition for hypersexuality should first be derived from large non-clinical community samples where a normative range of sexual behaviours can be ascertained for" (p. 379). Therefore, demographic variables, such as age, education, gender, relationship status, religious beliefs, and cultural context, must also be considered when examining sexual behaviour (Laumann, Gagnon, Michael & Michaels, 1994; Marmor, 1971).

Hypersexuality has been studied among a number of different populations including university students. The existence of hypersexual behaviours in the university population is controversial (Cohen, 2008). This is because many students – often living away from their parents for the first time – may engage in excessive sexual exploration during their academic studies. Such behaviour raises questions about how hypersexual behaviours can be assessed given the diversity of sexual behaviour and the stage at which it occurs in an individual's life. To date, there has been little research into hypersexual behaviour among university students although there have been a few studies.

Rinehart and McCabe (1997) found that among university students, negative mood states were no more common among those with high versus low sexual desire. However, hypersexuality like other forms of sexually compulsive behaviour can be distinguished from typical university students because, according to Cohen (2008), those who display compulsive sexual behaviours have lasting sexual dissatisfaction and guilt after sexual acting out. While this may be true, it must also be noted that university students now have access to an array online of sexual mediums that they can sexually interact with (such as laptops, smartphones and tablets). These media can potentially influence the onset and maintenance of such sexual behaviours (Weiss, 2013). However, the literature has also shown that hypersexual behaviours can be identified within the university population if distress relating to such behaviours is also assessed (Bancroft & Vukadinovic, 2004).

Seegers (2003) also discussed sexual addiction symptoms among a sample of 240 university students (170 females) aged 17–51 years. This study explored the definition, categories, and prevalence rates of sex addiction using Carnes' Sexual Addiction Screen Test (SAST) and the Woman Sexual Addiction Screening Test (W-SAST). The study reported that 17.4% had sexually addictive traits (but rates of compulsive sexual behaviour were not reported). Findings also showed that 32.2% of female participants fell in the category of needing to seek further evaluation and treatment and 9.6% were classified as at risk of sex addition. However, Seegers argued that further research should be conducted concerning the validity and reliability for the W-SAST. Although the measure may not be reliable (Opitz, Tsytsarev & Froh, 2009; Seegers, 2003), the study included a larger number of females than males and highlighted that female sexual addiction appears to exist and that female-specific interventions need to be implemented. A specific recommendation was that further research is needed into which types

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of addictive behaviours students on the university campus are struggling with the most.

Cohen (2008) asserted that research into risky sexual behaviours among university students has been understudied and even more so among females, this was further supported by Dhuffar and Griffiths (2014). Cohen sought to expand the literature by investigating the role of sexual sensation seeking and sexual compulsivity on high-risk sexual behaviour among heterosexual female university students. His research found that the combination of sexual sensation seeking and sexual compulsivity was the strongest predictor of risky sexual behaviours (Cohen, 2008). While this study provides greater insight into risky sexual behaviours on the university campus, it was limited in a few ways in that it focused on: (i) heterosexual females, and (ii) risky sexual behaviours in regards to sexually transmitted diseases (STD) and human immunodeficiency virus (HIV), without accounting for other risks such as unwanted pregnancies and abortion.

This was supported in a recent study (i.e., Klein, Rettenberger & Briken, 2014) that examined which sexual behavioural patterns were associated with risky sexual behaviours and hypersexual behaviours using the Hypersexual Behaviour Inventory (HBI). Using a sample of 988 females, findings indicated that increased frequency of masturbation, number of sexual partners, and pornography consumption were associated with increased hypersexual behaviours. It was also reported that these findings did not support the typical characteristics of female hypersexuality (i.e., passive behaviours). Instead, hypersexuality in women was characterised by impersonal sexual activity.

A larger study by Odlaug et al. (2013) examined sexual behaviours and their consequences in 1,837 US university students. The authors reported that 2% of the sample (n = 36) were classified as having compulsive sexual behaviour (CSB) using the CSB screen of the Minnesota Impulsive Disorders Interview (Grant, 2008). Results also showed that university students with CSB reported more depressive and anxiety symptoms, higher levels of stress, poorer self-esteem, and higher rates of social anxiety disorder, attention-deficit/hyperactivity disorder, compulsive buying, pathological gambling, and kleptomania.

Empirical studies on hypersexual behaviours among university students in the UK are lacking. A better understanding of such behaviours can potentially provide insight about risky behaviours as behavioural addictions have become more acceptable in mainstream British society (Griffiths & Dhuffar, 2014). Therefore, the aim of this study was two-fold. The first aim was to explore and establish the correlates of hypersexual behaviours, while the second aim was to investigate whether hypersexual behaviours can be predicted by variables relating to negative mood states, consequences of hypersexual behaviours (i.e., shame and loneliness). These aims are in line with previous literature (e.g., Carnes, 1991; McBride, Reece & Sanders, 2008; Reid, Harper & Anderson, 2009) that found consequences of sexual behaviours (e.g., loss of relationship, legal issues, etc.) and psychiatric disorders (e.g., emotional dysregulation) can predict hypersexual behaviours.

A university sample was selected because previous studies have suggested that when compared to other non-clinical populations, university students (i) have higher numbers of sexual partners, (ii) have higher rates of unprotected sex, and (iii) engage in riskier sexual behaviours (Baldwin & Baldwin, 2000; Civic, 2000; Ehde, Holm & Robbins, 1995; Gurman & Borzekowski, 2004; Hein, Dell, Futterman, Rotheram-Borus & Shaffer, 1995; Pinkerton, Cecil, Bogart & Abramson, 2003). In line with the views of McBride et al. (2008), cultural norms sanction these behaviours in a university environment, as it is assumed to be a developmental period of sexual identity, exploration and freedom.

Additionally, in regards to conceptualising sexual behaviours as normative versus pathological, the university student population is worthy of exploration. If, at some point, sexual behaviour does become excessive and/or out-of-control, then illustrations of such behaviour should be observed within university populations, irrespective of the cultural norms. Similar to the general population, university students that experience hypersexuality should experience negative consequences as a result. A large university campus setting is an appropriate place for data collection on hypersexuality given that, statistically, university-age students engage in frequent sexual activity. The UK Census showed that 22–29-year-olds represent the largest group of university students, and data provided by the *Family Planning Association* (UK) state that those under the age of 25 years reported the highest number of sexual partners in the past five years (with 14.1% of men and 9.2% of females reporting 10 or more sexual partners (Copas et al., 2002).

METHOD

Participants

The sample in this study comprised 67 males and 98 females recruited from the campus of three London-based universities using purposive and snowball sampling. Data were collected over a three-month period. The participants' ages ranged between 18 to 51 years. (As with most UK universities, a small proportion of students are mature students comprising adults that have come back into the higher education sector after a period of employment and this explains why the oldest participant was aged 51 years.) As shown in Table 1, the mean age of males was 29.2 years (SD = 8.19) and 28 years for females (SD = 7.31). Around two-thirds of the sample (66.5%) were aged 18–29 years and 33.5% were 30–51 (mean age of total sample: 28 years, SD = 7.71). Ethnically, 26.1% were Caucasian, African-British (23.0%), Asian (10.3%), Indian (7.9%), or Other (30.3%). Participants indicated their relationship status; Single (54.5%), Married (25.5%), Cohabitating (5.5%), Divorced (4.8%), or Separated (4.2%). Highest level of education (achieved at time of data collection) among the sample included: Sixth-form college (21.1%); Undergraduate degree (33.3%); Postgraduate (45.6%). Most of the sample held an undergraduate degree (i.e., 73.3%). Most of the participants identified as heterosexual (80%). Religious affiliation was mainly 'Atheist' and 'Other' (51.5%). Although 48.5% identified with a religion, the extent to the depth of their religious belief was unknown.

Materials

A number of different instruments and scales were used in the survey.

Table 1. Demographic characteristics of the total sample (n = 165)

Variable	Levels	n	%
Gender	Male	75	45.5
	Female	90	54.5
Ethnicity	Caucasian	43	26.1
	Black	38	23.0
	Indian	13	7.9
	Asian	18	10.9
	Other	50	30.3
Education*	College	40	24.2
	Undergraduate	68	41.2
	Postgraduate	53	32.1
Sexual Orientation	Heterosexual	132	80.0
	Homosexual	18	10.9
	Bisexual	8	4.8
Religion	Religious	83	50.2
	Non-Religious	80	48.4
HD Status	Hypersexual	32	19.4
	Non-Hypersexual	130	78.8

Note: The education variables refer to what participants had achieved at the time of data collection and not the level of study they are currently enrolled on. Abbreviation: HD: hypersexual disorder.

Demographic information. Questions included those related to gender, age, relational status, work status, educational level, annual income, ethnicity, sexual orientation, religious affiliation and sexual behaviour history pertaining to sexual activities undertaken in the last 12 months.

Hypersexual Behaviour Consequences Scale (HBCS; Reid, Garos & Fong, 2012). The HBCS contains 22 items that concern various consequences encountered by hypersexual patients such as relationship problems, financial difficulties, job loss, sexual disease, diminished self-worth, and failure to keep important commitments. Each consequence is rated on a five-point scale (1 = Unlikely to happen, 2 = Might happen, 3 = Will very likely happen, 4 = Has happened once or twice, and 5 = Has happened several times), where higher scores reflect a greater presence and frequency of consequences. The scale has been used in college, community, and patient samples and has demonstrated high overall reliability (α = .95) and subscale reliability values of α = .91 on the control subscale, α = .91 on the coping subscale, and α = .89 on the consequences subscale. Test–retest reliability in a sample of university students (n = 81) over a 2-week period was high for the total HBI score (r = .85), the control subscale (r = .87), the coping subscale (r = .87), and the consequences subscale (r = .88). Confirmatory factor analysis has provided adequacy for the factor structure of this instrument (Reid et al., 2012).

Hypersexual Disorder Questionnaire (HDQ; Reid, 2010). Diagnostic criteria for hypersexual disorder (HD) have been adapted to a 10-item, self-report measure. Rather than simply assessing presence or absence of particular behaviours, the HDQ adopts a 5-point Likert response scale ranging from "Never" (1) to "Almost Always" (5) that allow for quantification of each symptom (e.g., 'I have been *unsuccessful* in my efforts to reduce or control the frequency of sexual fantasies, urges, and behaviours in my life'; Reid, 2010). Responses were summed to yield a total score reflective of symptom intensity. The reliability coefficient for the measure shows high internal consistency (α = .95) among the items. A total HDQ score of 30 or above is considered as the cut-off for those that may be at-risk hypersexual behaviour. In the present study, 32 participants (out of 165) were classed as being at-risk for hypersexual disorder (19.5%).

Shame Inventory (SI; Rizvi, 2010). The Shame Inventory is a self-report measure designed to assess an individual's propensity to experience shame both globally and in response to specific life events. The version for this study includes a definition of shame and three general items about the experience of shame. These questions ask about the frequency, intensity, and negative effects of shame each on a 5-point Likert scale, and were based on a similar measure designed to measure combat related guilt (Kubany et al., 1997). These three items are followed by a list of 50 potential shame cues (i.e., events, behaviours, personal characteristics). An item pool for shame cues was generated by consulting with the literature on shame in addition to asking practicing clinicians to list a number of different situations that have elicited shame in their clients. The 50 final items were then selected on a rational basis. Participants were asked to rate each cue on a 0–4 scale to indicate the intensity of their current levels of shame about that event or characteristic, or to indicate if they have never experienced the event/behaviour/characteristic. The total score is the average rating on endorsed items and ranges from 0 to 4 with 4 indicating higher degrees of shame. The items show good internal consistency with an alpha coefficient of .80 and a test–retest reliability coefficient of .85 over a one-week time period. The SI inventory has also demonstrated convergent validity with two existing trait-based measures of shame and divergent validity with a measure of guilt. The SI has also successfully discriminated between clinical populations and healthy controls (Rizvi, 2010).

UCLA-Loneliness Scale (UCLA-LS; Russell, 1996). The UCLA Loneliness scale, consisting of 20 questions, was designed to identify feelings of loneliness among the sample. Respondents are asked to respond to each question on a 1–4 scale, from 'never' to 'always'. The scale's items are worded to suggest a general, present-day experience that relate to both social and emotional dimensions of loneliness (e.g., 'I feel a part of a group of friends', 'No one really knows me well'). While it has been argued that the UCLA Loneliness Scale may consist of two subscales specifically related to the positively and negatively coded items (Austin, 1983; Miller & Clearly, 1993; Russell, 1996), the scale is more typically used as a one-dimensional tool for measuring loneliness. The scale has a possible total score of 20 to 80 points, with no identified cut-off score that defines loneliness. Russell (1996) has reported that alpha coefficients for the UCLA Loneliness Scale have ranged from .89 to .94.

General Emotional Dysregulation Measure (GEDM; Newhill, Mulvey & Pilkonis, 2004). The two-factor, 13-item GEDM scale uses a 5-point Likert-type format with choices ranging from 1 *(strongly disagree)* to 5 *(strongly agree),* with higher scores reflecting greater levels of emo-

tional dysregulation. One factor captures levels of general emotional arousal and dysregulation, especially when coping with negative affective states. The second factor reflects positive emotions of happiness and joy. The GEDM showed stability over time with a high test–retest reliability coefficient ($r = .81$, $p < .01$) and high internal consistency ranging from .82 to .84 (Newhill, Mulvey & Pilkonis, 2004).

Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985). The SWLS is a brief five-item measure of global life satisfaction. The SWLS adopts a 1 *(strongly disagree)* to 7 *(strongly agree)* Likert-type format, whereby a higher score indicates greater satisfaction with life. The SWLS has shown reliability over a two-month period, test–rest correlation coefficient *(r* = .82). Table 2 shows all the descriptive statistics of the measures used, including means, standard deviations, range of total scores, and Cronbach's alphas.

Table 2. Descriptive statistics including means (M), standard deviations (SD), range of total scores, and Cronbach's alpha *(α)* ($n = 140$)

Instrument	M	SD	Range of Total Scores	α
HDQ	16.39	13.05	0–49	.97
HBCS	40.24	20.88	21–102	.97
GEDM	33.69	10.59	12–56	.96
SWLS	20.16	6.36	5–34	.95
Shame Inventory	3.36	3.11	0–10	.95
UCLA-LA	25.87	5.08	12–34	.77

Abbreviations: HDQ: Hypersexual Disorder Questionnaire; HBCS: Hypersexual Behaviour Consequences Scale; GEDM: General Emotional Dysregulation Measure; SWLS: Satisfaction with Life Scale; UCLA-LA: UCLA-Loneliness Scale.

Procedure

University tutors were contacted via telephone and e-mail to request permission to announce the study in their lectures. In the classrooms, the study's aims and parameters were verbally given by the first author, and information was provided to students about the time it would take to complete self-report measures, remuneration for participants' time (i.e., module tokens provided by lecturers), confidentiality and anonymity of the research, and institutional contact information. A few minutes was also allocated for any questions asked by the students. The lecturers also reiterated the importance of participating in research, as students would require participation for their own dissertations at some point in time.

Packs containing the study's questionnaires were numbered and left with participants. They had the option of taking packs home and completing them in isolation (within a week) or to complete them during their break and then return it back to the research team when finished. A completed pack included: an informed consent sheet which highlighted the nature of the study, confidentiality, contact information of the principal investigator (first author) and another member of the research team (third author); a demographic sheet, measures pertaining to personality characteristics, negative mood states and addictions (both substance and behavioural); and a debrief form that provided a short statement about the study. In addition to this method, a few participants were recruited via snowball sampling that relied on word-of-mouth (i.e., by participants, interested parties in the research, and the principal researcher).

Statistical analysis

An initial screening of the data was carried out before the data analysis, and this resulted in the exclusion of twenty-five participants with severe cases of missing values. The first stage of statistical analysis consisted of exploring the relationship patterns of the main variables of the study by examining their bootstrapped Pearson product-moment correlation coefficients with 10,000 bootstrap samples and 95% bias-corrected and accelerated (BCa) confidence intervals, yielding the basis for the exploratory approach for the present study. The bootstrap approach was adopted to mitigate the possible biases stemming from the relatively small sample size.

For the second stage of the data analysis, a hierarchical multiple regression with 10,000 bootstrap samples and 95% BCa confidence intervals was performed to investigate whether hypersexual behaviours could be predicted by the main variables of the study. Prior to conducting the regression analysis, data were checked for: (i) independence of residuals, (ii) homoscedasticity, (iii) normality of error distribution, (iv) multicollineraity, and (v) multivariate outliers. As a result, the data met the assumption of independence of errors (Durbin-Watson = 1.59), as well as the assumptions of homogeneity of variance and normality of residuals. Further to inspection, no problems were identified as the variance inflation factor (VIF) was below 5 and the tolerance was above .25 (Menard, 1995). Finally, the data were also screened for multivariate outliers using Mahalanobis distances and the critical value of $\chi^2_{0,99(8)} = 20.09$, which resulted in no further exclusion of cases as no one exceeded the critical value. Thus, the final sample size for all subsequent analyses comprised 140 participants. All the analyses were performed on SPSS Statistics (IBM Corp, 2011).

Ethics

Ethical principles were carried out in accordance with the Declaration of Helsinki. The Nottingham Trent University Ethics Committee approved the study. All participants provided informed consent before participating in the study procedures.

RESULTS

The correlation matrix between the main variables of interest of the present study is presented in Table 3. The strength of the association between the variables varied from weakly to strong associations. Nevertheless, the hypersexual behaviours were strongly and positively associated with hypersexual behaviours consequences ($r_{(138)} = .70$, $p < .01$), followed by a relatively strong negative association with life satisfaction ($r_{(138)} = –.54$, $p < .01$). Additionally, shame

Table 3. Bootstrapped[†] correlation matrix between the main variables of the study

Variables	1	2	3	4	5	6	7	8	9
Gender (1)	–								
Sexual Orientation (2)	.13[a]	–							
Religion (3)	.13[a]	.04[a]	–						
Hypersexual Behaviours (4)	.28[bc]	.10[a]	.27[bc]	–					
Hypersexual Behaviours Consequences (5)	.14[a]	.11[a]	.23[bc]	.70[bc]	–				
Emotional Dysregulation (6)	–.18[bd]	–.10[a]	.11[a]	.42[bc]	.25[bc]	–			
Life Satisfaction (7)	.01[a]	.04[a]	–.27[bc]	–.54[bc]	–.54[bc]	–.46[bc]	–		
Shame (8)	–.06[a]	.05[a]	.24[bc]	.47[bc]	.47[bc]	.54[bc]	–.63[bc]	–	
Loneliness (9)	.02[a]	.06[a]	.20[bc]	.34[bc]	.31[bc]	.42[bc]	–.35[bc]	.50[bc]	–

Note: Bias-corrected and accelerated (BCa) 95% confidence intervals were computed but omitted from the table for the sake of parsimony; [†] = Bootstrap results are based on 10,000 bootstrap samples; [a] = BCa 95% Confidence Interval contained 0; [b] = BCa 95% Confidence Interval did not contain 0; [c] = $p < .01$; [d] = $p < .05$.

Table 4. Summary of the hierarchical multiple regression analysis for variables predicting hypersexual behaviours ($N = 140$)

Step 1	B	SE B	β	95% Confidence Interval[a]	t
Intercept	11.82[d]	1.45	–	9.39–14.27	8.11
Gender	6.27	2.15	.24[c]	1.67–11.00	2.91
Sexual Orientation	2.13	2.87	.06[e]	–4.29–8.17	0.74
Religion	7.28	2.47	.24[c]	1.88–12.62	2.95
$R^2 = .135$					
$R_a^2 = .116$					
$F_{(df)} = 7.09_{(3,136)}$ [d]					
Step 2					
Intercept	–6.22[e]	6.25	–	–18.67–6.53	–0.99
Gender	6.42	1.50	.24[c]	3.35–9.49	4.27
Sexual Orientation	1.51	1.97	.04[b]	–2.10–5.01	0.76
Religion	1.80	1.74	.06[e]	–1.35–4.91	1.03
Consequences of Hypersexual Behaviours	0.32	0.04	.51[d]	0.22–0.41	7.54
Emotional Dysregulation	0.34	.08	.28[c]	0.16–0.55	4.06
Life Satisfaction	–0.25	0.16	–.12[d]	–0.55–0.08	–1.58
Shame	–0.01	0.34	–.003[e]	–0.68–0.63	–0.04
Loneliness	0.004	0.17	.002[d]	–0.38–0.36	0.02
$R^2 = .621$					
$R_a^2 = .598$					
$F_{(df)} = 26.86_{(8,131)}$ [d]					
F change$_{(df)} = 33.61_{(5,131)}$ [d]					
$\Delta R^2 = .46$					

Note: The following variables were dummy coded: gender, sexual orientation, and religion.
[a] = Bootstrap bias-corrected and accelerated based on 10,000 bootstrap samples.
[b] = $p < .05$; [c] = $p < 0.01$; [d] = $p < .001$; [e] = non-significant.

($r_{(138)}$ = .47, p < .01) followed by emotional dysregulation ($r_{(138)}$ = .42, p < .01), and loneliness ($r_{(138)}$ = .34, p < .01) were also positively associated with hypersexual behaviours at different degrees.

Furthermore, a regression analysis was carried out with the enter method in two steps in order to examine the effects of consequences of hypersexual behaviours, emotional dysregulation, life satisfaction, shame, and loneliness on hypersexual behaviours (i.e., outcome) when controlling for gender, sexual orientation, and religion. The first step included the three dummy coded control variables: gender (1 = male, 0 = female), sexual orientation (1 = non-heterosexual, 0 = heterosexual), and religion (1 = non-religious, 0 = religious), whereas the second step included the remaining predictors (i.e., consequences of hypersexual behaviours, emotional dysregulation, life satisfaction, shame, and loneliness). As shown in Table 4, the variables in the first step (F(3,136) = 7.09; p < .001; R^2 = .135) were statistically significant and explained 13.5% of the variance in hypersexual behaviours. Furthermore, the predictors entered in the second step were statistically significant (F (5,131) = 26.86; p < .001; R^2 = .621) and accounted for 62.1% of the variance in hypersexual behaviours. Moreover, in the first step, gender (β = .24, p < .01) and religion (β = .24, p < .01) equally predicted hypersexual behaviours while sexual orientation (β = .06, p = .46) was not significant. After adding consequences of hypersexual behaviours, emotional dysregulation, life satisfaction, shame, and loneliness as predictors of the outcome to the regression model, religion was no longer significant. Gender (β = .24, p < .001), sexual orientation (β = .04, p < .05), consequences of hypersexual behaviours (β = .51, p < .001), and emotional dysregulation (β = .28, p < .001) were found to predict hypersexual behaviours when controlling for gender, sexual orientation, and religion.

DISCUSSION

To the best authors' knowledge, the present study is the first empirical study that has examined hypersexual behaviours in a sample of British university students. The purpose of the present study was two-fold and was to determine whether negative mood states and consequences of sexual behaviours would account for a significant proportion of variance in hypersexual behaviours over and above gender, sexual orientation, and religion among university students. The results of the study indicated that negative mood states were able to predict a small percentage of the variability in hypersexuality once the three demographic variables were controlled for. While the full regression model significantly predicted hypersexual behaviours, only a small number of predictor variables in Step 2 (i.e., gender, consequences of HD, life satisfaction and emotional dysregulation) accounted for the significant unique influence on hypersexual behaviours among the university student sample of males and females.

The findings showed that 19.4% of the sample met the criteria for HD, thus suggesting that hypersexual behaviours have the potential of becoming problematic for some university students. These figures are much higher than in the study conducted by Odlaug et al. (2013), who found that only 2% met the criteria for compulsive sexual behaviours. There are a number of reasons that may explain the difference. Firstly, the present study's sample may be biased because of the use of purposive and snowball sampling. Secondly, the proportion of gay and bisexual respondents in the present study was approximately 15%. This population typically reports a broader repertoire of sexual behaviour and practices, and usually present with more hypersexual symptoms. Thirdly, the data were collected in London, and the country's capital city is often viewed as a 'cosmopolitan city' that has more sexually liberal attitudes than other parts of the UK. Finally, the instruments used in the present study to measure hypersexual behaviours differed from that of Odlaug et al. (2013) and may also account for some of the differences in prevalence estimates.

The present study also found that emotional (affect) dysregulation significantly predicted hypersexual behaviours. Previous studies (e.g., Bradley, 2000; Goodman, 1998; Magai, 1999) have examined this relationship. For example, Magai (1999) found that the association between addictive and pre-addictive behaviours helps to regulate affect. The use of sex allows for the distraction or the contraction of negative emotions. This observation may be applicable to participants that met the criteria for HD in the present study.

The findings of this study arguably set a foundation for further UK-based studies to be built upon. They also support the notion that the consequences of sexual behaviour can potentially lead to the onset of HD. The current study holds a modernised view and investigates a disorder that remains tentative in the literature and where robust diagnostic criteria are yet to be determined. The present study also highlights that awareness of out-of-control sexual behaviours and the physical and psychological risks associated with such behaviour warrant further attention by clinicians who work within a university campus.

Traditionally, having sexual intercourse with multiple partners and engaging in sex outside the context of a stable relationship are behaviours that characterise those at a high-risk for contracting sexually transmitted infections (STI) without accounting for sexual addiction and/or hypersexuality as an antecedent for levels of risk that an individual may encounter. However, if university professionals (health and mental health) can understand more about the women that engage in these relationships, and identify which students are more susceptible to these behaviours, hypersexual-related interventions can be tailored as an extension to sexual health awareness to reduce consequences associated with these types of activities. Knowledge gained from the findings in the present study can also be employed to help inform cost-effective interventions that encompass an innovative and an eclectic approach to sex addiction awareness with the inclusion of other acting-out behaviours that fall under the term.

Limitations

The present study clearly has a number of limitations. First, the study is correlational, and therefore a causal direction among variables could not be established. The assumption was that negative mood states and consequences of sexual behaviour would lead to hypersexuality based on the premise that hypersexuality was a result of the inability to cope with negative emotions. However, it is insufficient to surmise that negative mood states lead to only one type of behaviour that

is potentially addictive. Secondly, the sample size was small, self-selected and used self-report measures and is therefore subject to well-known biases (representativeness bias, recall bias, social desirability bias, etc.). Thirdly, the measures of negative mood states and consequences of sexual behaviour were highly inter-correlated. Multicollinearity is indeed a possible source of bias in regression analysis, however, we controlled for it by checking the VIFs of each variable that was used in the regression model.

While there was high internal consistency between items on the HDQ, it must also be noted that the self-report measure was designed based on the diagnostic criteria for hypersexual disorder during the Diagnostic and statistical manual of mental disorders, 5th edition (DSM-5) (American Psychiatric Association, 2013) field trial. Therefore, the Hypersexual Behaviour Inventory-19 (Reid, Garos & Carpenter, 2011) may have been a better alternative among a university sample as it purports to capture the (i) extent to which individuals engage sexual activities to cope with emotional discomfort, (ii) degree to which they feel unable to control their sexual thoughts, feelings and behaviour, and (iii) extent to which they experience negative consequences as a result of their sexual activities. Furthermore, during university years, students not only explore sexually but they are also more inclined to experiment with psychoactive substances. Therefore, another reason as to why the HD measure may not be deemed appropriate among this population is that the occurrence of hypersexuality may potentially be due to the engagement in another potentially addictive activity for which information was yielded but not included within the current study.

Even with the environmental pressures to stay single and be sexually active, young women still often face a double standard regarding their decisions related to sexual activity. Female respondents in this sample may also possess sexually liberal attitudes that may not be a representation of all university students. Therefore, the use of self-report questionnaires may create a source of bias in that participants may exaggerate the frequency of sexual activities, underreport the frequency of sexual activities, misunderstand a question due to lack of knowledge and respond inaccurately, or answer questions in ways that they feel are socially desirable. However, previous work also suggests that survey measures of self-report can be valid and reliable in sexuality research (Turner, Miller & Rogers, 1997).

Although there is substantial overlap between the proposed criteria for HD and other labels that characterise excessive and problematic sexual behaviour, it appears that research among university students is assessed and studied as a distinct concept in relation to risky sexual behaviour. These previous studies have adopted different terminology (i.e., primarily sexual compulsivity and compulsive sexual behaviour) without knowing the true underlying mechanism (Miner & Coleman, 2013). Therefore, the diagnostic labels have implications for how the phenomenon is viewed and conceptualised.

CONCLUSIONS

The present study is the first to examine the presence of HD among a British sample of university students. It demonstrates that the concept of hypersexuality is an area that warrants more clinical and empirical research attention. It also provides some empirical evidence for the disorder to be considered in future editions of the DSM and other psychiatric manuals. The study also provided further insight into an area of research that has been minimally explored and overlooked within the literature of HD. In particular, it not only empirically supports the concept of HD but also explores such behaviours in a population where further hypersexuality related research is yet to be conducted to validate the concept. This study is also one of the few to observe hypersexual behaviours among female university students and among a non-clinical sample whereby comparisons among clinical samples can be made.

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