

What does attachment have to do with out-of-control sexual behaviour?

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Out-of-control sexual behaviour (OCSB) involves a continuum of sexual behaviour that results in distress or functional impairment. Several factors have been considered relevant to the etiology of OCSB, including attachment style, or the experience of intimacy-related anxiety and/or avoidance (Bowlby, 1969/1982, 1973, 1980). The present study explored OCSB and adult attachment amongst 621 New Zealanders using an online questionnaire. Using the SAST-R (Carnes, Green, & Carnes, 2010) to form groups, the OCSB group ($n = 407$) reported lower secure and higher insecure adult attachment than the non-OCSB group ($n = 214$), and this finding was strongest for women. This supports the notion that OCSB is associated with intimacy-related anxiety or avoidance, but further research is needed to clarify the mechanisms of this relationship in terms of whether attachment problems are a cause, consequence, or complex mixture of both in the development and maintenance of OCSB. Such knowledge would contribute to the development of etiological understandings of OCSB and inform future intervention approaches.

Although out-of-control sexual behaviour (OCSB) is not a new phenomenon, Carnes (1983, 1989, 1991) introduced it as *sexual addiction* nearly 30 years ago. Since then, controversy and disagreement has characterised the field, and almost 30 terms with over 100 definitions have been proposed (O'Donoghue, 2001), including sexual impulsivity (Barth & Kinder, 1987), sexual compulsion (Coleman, 1992), and hyper-sexuality (Reid, Carpenter, & Lloyd, 2009). The various merits and drawbacks of these and other monolithic terms and definitions have been enthusiastically debated (Gold & Heffner, 1998; Goodman, 2001). In recognition of the current lack of empirical consensus over these terms and their meaning, the all-encompassing term *out-of-control sexual behaviour* (Bancroft & Vukadinovic, 2004) has gained favour as acknowledging diversity in the experiences of sexual

behaviour problems, rather than focusing on certain features such as addiction (Reid & Carpenter, 2009). This is important because research indicates that OCSB is comprised of diverse motivations, experiences, and behaviours (Levine, 2010; Reid & Carpenter, 2009). For example, Levine (2010) reported that 75% of a small sample of 30 men presenting with OCSB over five years did not meet criteria for sexual addiction. Instead, 25% were classified as having a paraphilia while a further 50% required an alternative conceptualisation to addiction as they displayed a wide spectrum of sexual behaviour (e.g., masturbating to pornography, visiting strip clubs), which caused distress for their partner, but did not include addictive features. Reid and Carpenter (2009, p.294) also found no evidence of addictive tendencies in 152 treatment-seeking men, concluding that models offering

a "homogenous conceptualisation" of those with sexual behaviour problems can potentially overlook vital nuances in their experiences.

These experiences can include partner sex, masturbation, or use of pornography; multiple relationships or affairs, anonymous online sexual relationships, and phone sex; exhibitionism, voyeurism, or other fetishes; and dangerous or illegal sexual practices, although this list is not exhaustive or mutually exclusive (Hall, 2006). Features of compulsivity or addiction might be absent (e.g., increased time spent engaging in or recovering from the behaviour) when there are infrequent infidelities. Yet the behaviour still risks physical health problems such as sexually transmittable infections, interpersonal problems such as relationship breakups, and distress for the partner and/or children (Black, Kehrberg, Flumerfelt, & Schlosser, 1997). Alternatively, impulsivity might be absent in the case where an individual premeditates or plans the act over a period of time (Levine, 2010). This particular example shows that even the term OCSB is limited in cases where there is good impulse control, yet distress and/or impairment to functioning still occurs.

One important limitation when attempting to define OCSB involves how the individual, generational, and cultural context shapes the perception of these experiences as problematic or not (Coleman, 2007). Typically, individuals whose sexual behaviour deviates from the norms of their society

are labelled or pathologised (Levine & Troiden, 1988). Furthermore, the type of sexual activity can moderate the effect of sexual frequency. For example, Långström & Hanson (2006) found that high frequency of sex with a stable partner was associated with improved psychological and psychosocial functioning, while high frequencies of solitary or impersonal sex were related to problematic psychological and psychosocial functioning. Therefore individual, cultural, and relational factors must be considered when determining OCSB.

Despite these unresolved issues with defining problematic sexual behaviour, there are two generally accepted factors for determining if sexual behaviour is a problem (Goodman, 2001). The first relates to whether the sexual behaviour directly or indirectly causes distress to the individual or others (e.g., their partner). Those with OCSB are often (but not always) distressed by their behaviour, and frequently their behaviour can cause distress to others (Black et al., 1997). As a result, they can jeopardise their relationship, family, and career (Seegers, 2003), and their finances and sexual health can be affected, making for a potentially extremely destructive problem. Therefore, the second factor relates to whether impairment is experienced in at least one area of functioning as a result of the behaviour (i.e., social, occupational, financial, or interpersonal; Goodman, 2001).

To date, the etiology of OCSB is unknown, although researchers and clinicians working in the field agree that OCSB involves multiple interacting factors, including genetics, physiology, environmental factors, family of origin experiences (including intentional abuse or unintentional trauma), and concepts such as impulsivity and compulsivity (Kaplan & Kruegar, 2010; Salisbury, 2008; Seegers, 2003; Shaffer et al., 2004). Bancroft and Vukadinovic (2004) also propose that different etiological factors can be relevant for different types of OCSB including affect regulation, inhibition responses, neurobiological factors, impaired self-regulation (i.e., self-soothing through sex), and an impaired motivational-reward system (i.e., orgasm and sexual

pleasure reinforce OCSB).

There is little empirical support for these etiological theories except for the notion of affect regulation difficulties (Bancroft & Vukadinovic, 2004; Reid et al., 2009; Reid, Carpenter, Spackman, & Willes, 2008). Bancroft and Vukadinovic investigated the link between negative affect states, affect regulation difficulties, and sexual arousal. In their small sample of 29 men and 2 women self-defined as sex addicts, increased arousal occurred in states of depression or anxiety which was not apparent in a large age-matched control group ($n = 339$), suggesting that sexual addiction might occur as a method of self-soothing for negative affect states in the absence of healthy affect regulation skills. Reid et al. (2008) similarly found that 116 men and 4 women who were hypersexuality outpatients reported greater emotional instability, a vulnerability to stress, and alexithymia (difficulty identifying feelings) than a control group.

A recent hypothesis is that the quality of early attachment experiences might be relevant in terms of establishing the basis for impaired affect regulation, impaired self-regulation, and the interpersonal and intrapersonal difficulties that can contribute to OCSB (Cozolino, 2006; Creeden, 2004; Hudson-Allez, 2009; Katehakis, 2009). Attachment theory posits that skills and expectations about intimacy with and relating to others develop in early relationships with caregivers (Ainsworth & Wittig, 1969; Bowlby, 1969/1982, 1973, 1979, 1980). Emerging neuroscience and longitudinal research suggest that the quality of these early experiences can influence brain development, life-long relationship behaviours, and the extent to which the capacity for intimacy will develop (Cozolino, 2006; Katehakis, 2009; Hudson-Allez, 2009; Obegi & Berant, 2009; Perry, 2005; Schore, 2001; Siegel, 2001, 2006; Sroufe, 2005). Secure attachment, associated with having received attuned and consistent caregiving, is thought to contribute to the development of sufficient intimacy skills for healthy relationships and life-enhancing sexual behaviour (Obegi & Berant, 2009). In contrast, insecure attachment styles, associated with having received unattuned, inconsistent,

rejecting, abusive, or neglectful caregiving, are thought to lead to deficits in the capacity for intimacy with others, and consequently relationships lacking intimacy, destructive sexual behaviour, and related psychological difficulties can result (Creeden, 2004; Sroufe, 2005).

Several insecure attachment styles are discussed in the literature, including preoccupied, dismissing, and disorganised attachment. A preoccupied attachment system involves high-need behaviour, such as reassurance seeking, hypersensitivity, anxiety, attention seeking behaviour, and heightened arousal (Hudson-Allez, 2009). The self feels worthless, ineffective at sourcing comfort, and dependent; while others are perceived as neglecting, insensitive, unpredictable, and unreliable (Hudson-Allez, 2009). In contrast, a dismissing attachment system involves cognitive defences that minimise attachment needs (Hudson-Allez, 2009). The self feels unloved but self-reliant and perceives others as rejecting, intrusive, and unable to meet their needs (Hudson-Allez, 2009). Disorganised attachment involves a frequent experience of heightened arousal and dysregulated distress, and fluctuations between preoccupied and dismissing behaviour result (Main & Solomon, 1990; Obegi & Berant, 2009). The self feels unloved, others are viewed as rejecting, threatening, and unpredictable, and limited attachment to others is formed (Obegi & Berant, 2009).

Consequences of insecure attachment include problems with emotional regulation, attuning to others, emotional hyperarousal or disconnection, impulse control, empathy, self-awareness, and self-soothing (Cozolino, 2006; Hudson-Allez, 2009; Schore, 2001; Siegel, 2001, 2006). Creeden (2004) suggested that successfully mastering these skill domains is an important prerequisite for developing responsible sexual behaviour as an adult, and that disruption to such skill development can lead to problematic sexual behaviour.

While the separate literatures on both attachment theory and OCSB are vast, there are few studies investigating the association between the two, and the existing studies have used correlational

designs with non-representative samples. However, the findings to date indicate that those with OCSB report higher insecure attachment as adults (Bogaert & Sadava, 2002; Gentzler & Kerns, 2004; Leedes, 1999; Zapf, Greiner, & Carroll, 2008). Leedes (1999) found that 95% of a small sample with sexual addiction ($N = 22$), defined as a score of 13 or more on the Sexual Addiction Screening Test (SAST; Carnes, 1991), reported an insecure style of attachment, with 68% describing dismissing and 27% preoccupied attachment. Leedes also found that those with sexual addiction reported more discomfort with closeness than non-sex addicts. Similarly, of 71 men defined as having sexual addiction also using the SAST (Carnes, 1991), the majority reported high fearful-avoidant (disorganised) (44%), preoccupied (28%), or dismissing attachment (20%), and only 8% secure attachment (Zapf et al., 2008).

Other research has examined the relationship between attachment and specific aspects of sexual beliefs and behaviour. In a sample of 202 female and 126 male undergraduates, higher levels of secure attachment were associated with fewer sexual partners, a positive attitude towards committed monogamous relationships, and generally more positive affect towards sexual experiences (Gentzler & Kerns, 2004). Conversely, higher levels of dismissing attachment were associated with less restrictive sexual beliefs and more casual sex, while higher levels of preoccupied attachment were related to less acceptance of sex outside of a committed relationship and with difficulties maintaining a relationship (Gentzler & Kerns, 2004). In contrast, Bogaert and Sadava (2002) found amongst 792 young Canadian adults that preoccupied attachment was related to more frequent infidelity, earlier age of first intercourse, and more lifetime partners, although this finding was stronger in women than in men (Bogaert & Sadava, 2002).

These few studies suggest that sexual beliefs and behaviour can be associated with attachment style, but more research exploring the relationship between attachment and OCSB is required given that the limited overseas

literature to date has involved samples of students, young adults, or men. The present study aimed to investigate the association between adult attachment and OCSB in a large sample. It was hypothesised that those reporting higher OCSB would report lower secure and higher insecure adult attachment than those reporting lower OCSB.

Method

Participants

English-speaking adults over the age of 18 who had access to a computer and the internet were invited to participate in an online survey about sexual behaviour. Of 885 responses, 264 were excluded because of missing data or giving data that excluded them from participation (e.g., under 18 years old, non-New Zealand resident, or missing data on the OCSB or attachment measures). The remaining 621 participants are described in the results section.

Measures

An online survey was compiled that involved 136 questions about 1) demographic information, 2) substance use, 3) OCSB (Sexual Addiction Screening Test-Revised; Carnes, Green & Carnes, 2010), 4) adult attachment (Relationship Scale Questionnaire, Griffin & Bartholomew, 1994; Experiences in Close Relationships-Revised; Fraley, Waller, & Brennan, 2000), and 5) anxiety and depression (Hospital Anxiety and Depression Scale; Zigmond & Snaith, 1983). This paper reports the results regarding OCSB and adult attachment.

OCSB. The SAST-R is a 45-item self-report screening tool for those with sexually compulsive behaviour (Carnes et al., 2010). The SAST-R comprises 20 core items and an additional 25 items that represent subscales and addictive dimensions. Respondents endorse either “yes” or “no” to reflect whether each item is true or false for them, with each “yes” response yielding a score of 1. For the core items, the first 20 items are summed. A score of 6 or more is considered to indicate the need for further assessment for sexual addiction (Carnes et al. 2010). This cutoff score is also typically used to signal OCSB and is associated with good sensitivity (82%) and specificity (78%; Carnes et

al., 2010), and for these reasons was also used in the present study. However, the SAST-R is a screening tool and therefore the OCSB and non-OCSB groups differentiated for the purposes of this study are not synonymous with a clear demarcation between those with and without OCSB.

The remaining 25 items represent subscales corresponding to the internet, men, women, homosexual men, and the dimensions of preoccupation, loss of control, relationship disturbance, affect disturbance, and associated features. Scores of 2 or more on each SAST-R subscale or dimension indicates a problem in that area, except for internet items and homosexual men’s items which instead require 3 or more (Carnes et al., 2010). The SAST-R core item subscale has good reliability with 86% of sex ‘addicts’ and non-addicts correctly classified (Carnes et al., 2010), although the various other subscales and dimensions have not been validated (Hook, Hook, David, Worthington, & Penberthy, 2010). There was good internal consistency for the SAST-R core items in the present study ($r = .85$).

In the present study, two items were omitted for ethical reasons. These were items 1 (“Were you sexually abused as a child or adolescent?”) and 29 (“I have been sexual with minors”). Item 2 (“Did your parents have trouble with sexual behaviour?”) was adapted to include an “I don’t know” option which was scored as “no” because some participants in the pilot trial of the survey did not know the answer to this question¹.

Adult attachment. The RSQ (Griffin & Bartholomew, 1994) is a 30-item self-report measure of adult attachment. Respondents rated the extent that each statement best “describes your relationship” on a five-point scale from 1 (“Not at all like me”) to 5 (“Very much like me”). The RSQ measures four attachment dimensions and therefore has four subscales: secure (e.g., “I am comfortable depending on others”), fearful (e.g., “I worry that I will be hurt if I allow myself to become too close to

¹ A pilot trial of the survey was conducted prior to the study in order to check that the questionnaire was clear and understandable. A panel of Sex Therapy New Zealand therapists and two post-graduate psychology research students reviewed the survey and provided feedback prior to data collection.

others”), dismissing (e.g., “I prefer not to depend on others”), and preoccupied (e.g., “I find that others are reluctant to get as close as I would like”). The RSQ was scored as a continuous measure of attachment in accordance with Griffin and Bartholomew’s recommendations. Higher scores on each scale indicate higher insecure and lower secure attachment except for the secure scale where the opposite applies (Griffin & Bartholomew, 1994). Alpha coefficients for the RSQ have been found to be moderately high, ranging from .75 to .79 (Scharfe & Bartholomew, 1994). In the present study, internal consistency

for the secure, fearful, dismissing, and preoccupied attachment subscales was .52, .55, .69, and .72, respectively.

The ECR-R (Fraley et al., 2000) involves 36 items that capture adult attachment anxiety (e.g., “I often worry that my partner will not want to stay with me”) and avoidance (e.g., “I prefer not to be too close to romantic partners”). Respondents rated statements about how they “generally experience intimate relationships” by selecting a response from 1 (“strongly disagree”) to 7 (“strongly agree”). Items 1 through 18 capture the anxiety

scale and items 19 through 36 measure avoidance. Scores are calculated by averaging each participant’s responses for each subscale, after accounting for reverse scoring. Higher scores on each scale indicates higher insecure and lower secure attachment (Fraley et al., 2000). The ECR-R has high short-term temporal stability for both avoidance ($\beta = .90, R^2 = .84$) and anxiety ($\beta = .92, R^2 = .85$) (Sibley, Fischer, & Liu, 2005). In the present study, internal consistency was high for anxiety (.94) and avoidance (.95).

Procedure

Table 1. Demographic Variables for the Whole Sample in Comparison with the OCSB and Non-OCSB Groups

Variable	Whole sample (<i>n</i> = 621)		OCSB group (<i>n</i> = 407)		Non-OCSB group (<i>n</i> = 214)	
	%	(<i>n</i>)	%	(<i>n</i>)	%	(<i>n</i>)
Gender						
Men	62.20	(386)	71.10	(285)	45.90	(101)
Women	37.50	(233)	28.70	(115)	53.60	(118)
Transgender	0.30	(2)	0.20	(1)	0.50	(1)
Sexual Orientation						
Heterosexual	76.80	(477)	72.70	(296)	84.60	(181)
Bisexual	16.60	(103)	20.60	(84)	8.90	(19)
Homosexual	5.00	(31)	4.60	(19)	5.60	(12)
Ethnicity						
European	83.90	(522)	82.50	(331)	86.80	(191)
Maori	5.60	(35)	5.70	(23)	5.50	(12)
Other ^a	5.60	(34)	6.20	(25)	4.10	(9)
Relationship Status						
Single	20.90	(130)	22.40	(90)	18.20	(40)
Dating	18.70	(116)	17.50	(70)	20.90	(46)
Living with partner	27.40	(170)	26.70	(107)	28.60	(63)
Married	31.60	(196)	32.40	(130)	30.00	(66)
Separated	6.00	(37)	7.20	(29)	3.60	(8)
Divorced	3.70	(23)	4.00	(16)	3.20	(7)
Widowed	0.50	(3)	0.00	(0)	1.40	(3)
Relationship Length						
10 or more years	27.00	(230)	38.80	(158)	33.60	(72)
5-10 years	23.80	(148)	25.60	(104)	20.60	(44)
1-3 years	29.80	(185)	26.00	(106)	36.90	(39)
Less than 1 year	5.80	(36)	5.20	(21)	7.00	(15)
Less than 3 months	2.90	(180)	3.70	(15)	1.40	(3)
Mean Age in Years (<i>SD</i>)	35.68	(12.68)	37.10	(12.33)	32.97	(12.93)

Note. Where the *n* for each category does not sum to the total, it is either due to missing data or because participants could endorse more than one response for their ethnicity and relationship status.

^a “Other” ethnicity comprised New Zealanders (*n* = 16), Asian (*n* = 11), Pacific Island (*n* = 7), Indo-Fijian (*n* = 3), South African (*n* = 2), English (*n* = 2), Sri Lankan (*n* = 2) and one of each of the following ethnicities: American, Australian, Celtic, Chinese/Pakeha, Jewish, Italian/Maori, Hungarian, Indian, and Iranian.

The study was advertised in a national press release that was publicised amongst online news sites, newspapers, magazines, and radio stations. Interested participants were directed to a Massey University website which contained the information sheet regarding the study as well as a link to the survey for those who wished to take part. Survey responses were received by the Programmer/Analyst in the School of Psychology at Massey University. Data were analysed using the Statistical Package for the Social Sciences (SPSS Version 17, 2008). The study received ethical approval (HEC: Southern A, 10/09).

Results

Descriptive statistics were first calculated to identify the nature of the sample, and the hypotheses were tested using correlation, chi-square, *t*-test, and factorial ANOVA. Bonferroni adjustments for multiple tests were considered but not conducted in light of recent arguments about the value of such adjustment, especially with large samples, and calls to report effect sizes to avoid publication bias and false interpretations (Nakagawa, 2004; Perneger, 1998).

Demographic Variables

Table 1 displays the frequencies of demographic characteristics of the whole sample ($N = 621$), as well as the OCSB ($n = 407$) and non-OCSB groups² ($n = 214$; formed as a result of using a cut-off score of six or more

on the SAST-R core item scale; Carnes et al., 2010). The sample was mostly European, heterosexual men who were in a relationship that had lasted at least one year and had a mean age of 35.72 years ($SD = 12.68$).

A series of chi-square tests for independence examined the differences between the groups on demographic variables. There was a similar proportion of men and women in the non-OCSB group, whereas the OCSB group consisted mostly of men, $\chi^2(1, n = 619) = 38.05, p < .001, \phi = .25$. Participants in both groups were mostly European with no significant differences in ethnicity, $\chi^2(4, n = 607) = 1.83, p = .77, \phi = .06$. Participants in both groups were largely heterosexual, but the OCSB group had higher proportions of bisexual respondents, $\chi^2(2, n = 611) = 14.45, p < .001, \phi = .15$. There were similar proportions for relationship status although this was not able to be tested due to the fact that the categories were coded separately. There were similar proportions found for relationship length, $\chi^2(6, n = 617) = 12.02, p = .06, \phi = .14$. An independent samples *t*-test (two-tailed) also looked at age differences between the groups. A significant age difference was found, with the OCSB group being on average 4.16 years older than the non-OCSB group, $t(619) = 3.91, p < .001, d = .33$, despite this being a small effect.

OCSB and Attachment

The relationship between the groups' total SAST-R core item score and adult attachment scores were explored using Pearson product-moment correlation coefficients. For both groups, there were small positive correlations between the SAST-R core item score and fearful, preoccupied, anxious, and avoidant attachment, while dismissing attachment was not correlated and secure attachment had a small negative relationship with the SAST-R score (see Table 2). As the SAST-R core item score increased, secure attachment decreased and insecure attachment (except the dismissing style) increased, but this relationship was weak.

Independent-samples *t*-tests (two-tailed) compared the groups on the two adult attachment measures. As shown in Table 3, the OCSB group reported lower secure and higher insecure attachment in all domains than the non-OCSB group. All of these effects were of small to moderate magnitude (Cohen, 1988).

Additional independent samples *t*-tests (two-tailed) investigated whether there were differences within the OCSB group when comparing those with particularly high SAST-R scores as opposed to lower SAST-R scores. The high-SAST-R group was determined by taking those with scores of 14-19 ($n = 81$), while the low-SAST-R group comprised those with scores of 6-13 ($n = 326$). The high-SAST-R group reported lower secure attachment ($M = 2.95, SD$

Table 2. Correlations of the RSQ and ECR-R Subscales with Total SAST-R Core-Item Score for the OCSB and Non-OCSB groups

Subscale	Whole sample ($N = 621$)	OCSB group ($n = 414$)	Non-OCSB group ($n = 207$)
RSQ			
Secure	-.33**	-.18***	-.22**
Fearful	.25**	.12*	.25***
Preoccupied	.18**	.14**	.21**
Dismissing	.09**	.00	.06
ECR-R			
Avoidance	.32**	.17**	.19**
Anxiety	.39**	.26***	.31***

* $p < .05$. ** $p < .01$. *** $p < .001$.

²While the present study uses the terms OCSB group and non-OCSB group, this differentiation distinguishes those who reported lower and higher OCSB and is not synonymous with a clear demarcation between those with and without OCSB.

= .81) than the low-SAST-R group ($M = 3.22, SD = .74, t(405) = 2.93, p < .001, d = .44$). Fearful attachment was no different for the high-SAST-R ($M = 2.77, SD = 1.05$) and low-SAST-R groups ($M = 2.49, SD = .93, t(405) = 2.36, p = .02, d = .34$), and there were no differences for preoccupied [($M = 3.33, SD = .93$), ($M = 3.06, SD = .90$), respectively, $t(120.28) = 2.30, p = .02, d = .36$] or dismissing attachment [($M = 3.20, SD = .88$), ($M = 3.17, SD = .86$), respectively, $t(406) = 0.40, p = .76, d = .04$]. The high-SAST-R group had higher anxious attachment ($M = 4.42, SD = 1.49$) than the low-SAST-R group ($M = 3.67, SD = 1.30, t(405) = 4.52, p < .001, d = .64$), as well as higher avoidant attachment ($M = 3.83, SD = 1.57$) than the low-SAST-R group ($M = 3.41, SD = 1.26, t(405) = 2.79, p < .001, d = .34$).

Gender and Age Differences

Because the OCSB and non-OCSB groups were proportionately different in gender and age, further analyses explored whether attachment scores for the groups were different depending on these two variables. For analysis of gender differences, multivariate and multiple univariate tests were both considered. MANOVA revealed mostly significant differences which necessitated additional tests, so a series of factorial ANOVAs were used to compare attachment scores according to both OCSB group and gender (Huberty & Morris, 1989). The means and standard deviations are shown in Table 4.

For secure attachment, the main effect of OCSB group was significant, $F(1, 615) = 68.75, p < .001, \eta^2 = .10$. The main effect of gender was not significant, $F(2, 615) = 5.28, p = .02, \eta^2 = .01$. However, there was an interaction effect, $F(1, 615) = 13.34, p < .001, \eta^2 = .02$, although this effect was small (see Figure 1). The OCSB group reported lower secure attachment than the non-OCSB group but this interacted with gender, in that women in the OCSB group reported lower secure attachment than men in that group. The same pattern was apparent for anxious attachment, where there was a main effect for OCSB group, $F(1, 615) = 89.13, p < .001, \eta^2 = .13$, but not for gender, $F(1, 615) = 7.19, p = .008, \eta^2 = .01$. There was an interaction effect, $F(1,615) = 19.95,$

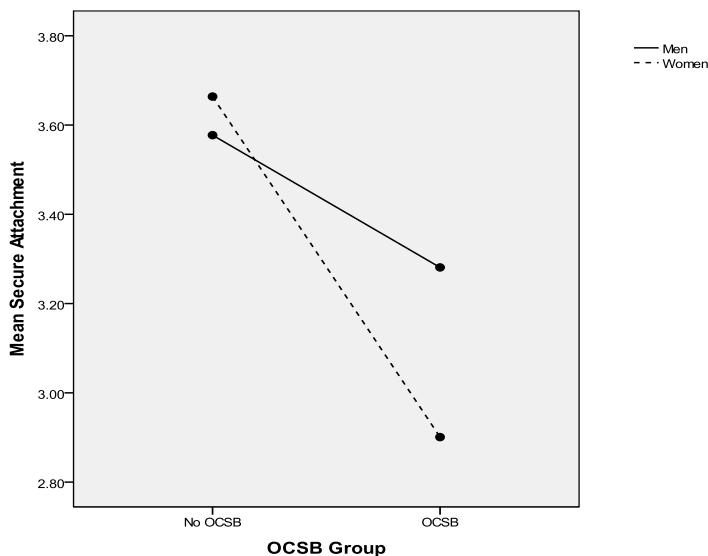


Figure 1. The interaction of OCSB group and gender for secure attachment.

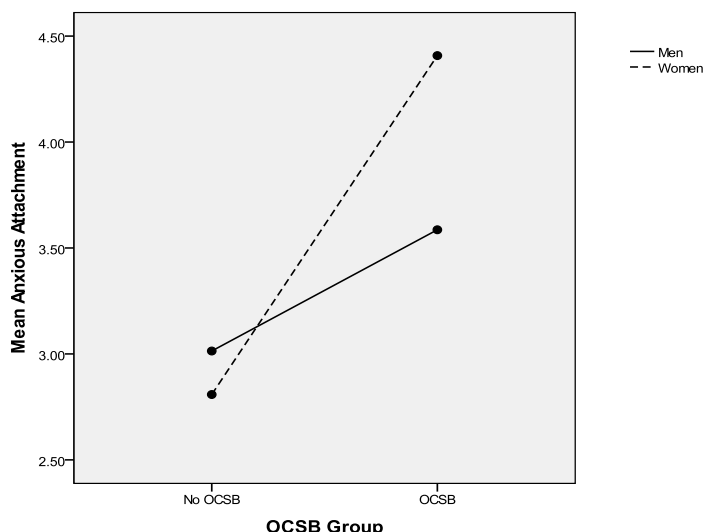


Figure 2. The interaction of OCSB group and gender for anxious attachment.

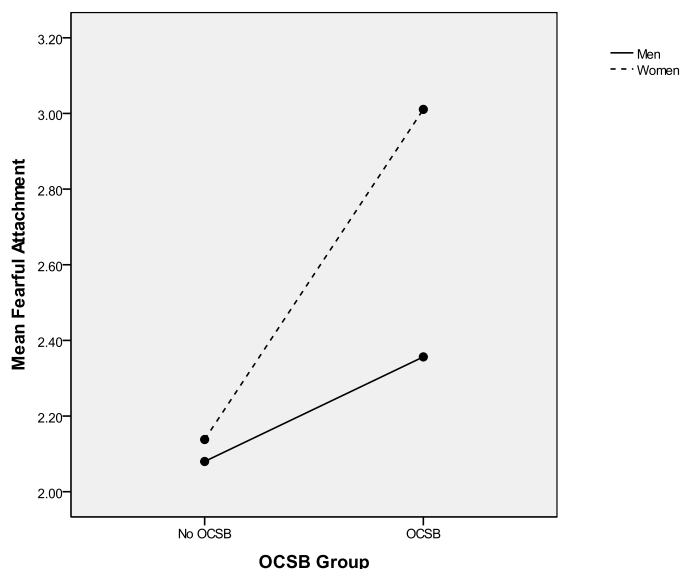


Figure 3. The interaction of OCSB group and gender for fearful attachment.

Table 3. Mean Adult Attachment Scores According to OCSB Group

Subscale	Whole sample (<i>N</i> = 621)		OCSB group (<i>n</i> = 407)		Non-OCSB group (<i>n</i> = 214)		<i>t</i>
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	
RSQ							
Secure	3.32	(0.77)	3.17	(0.76)	3.62	(0.70)	<i>t</i> (619) = 7.14, <i>p</i> < .001, <i>d</i> = .62
Fearful	2.40	(0.95)	2.54	(0.96)	2.12	(0.85)	<i>t</i> (483) = 5.60, <i>p</i> < .001, <i>d</i> = .45
Preoccupied	3.04	(0.87)	3.12	(0.91)	2.90	(0.76)	<i>t</i> (506) = 3.10, <i>p</i> < .001, <i>d</i> = .26
Dismissing	3.11	(0.85)	3.17	(0.86)	3.00	(0.82)	<i>t</i> (619) = 2.34, <i>p</i> = .02, <i>d</i> = .20
ECR-R							
Anxiety	3.50	(1.41)	3.81	(1.37)	2.91	(1.29)	<i>t</i> (619) = 7.37, <i>p</i> < .001, <i>d</i> = .62
Avoidance	3.23	(1.30)	3.49	(1.25)	2.72	(1.22)	<i>t</i> (619) = 8.03, <i>p</i> < .001, <i>d</i> = .67

Note. ECR-R score range: 1-7. RSQ score range: 1-5.

$p < .001$, $\eta^2 = .03$, with a small effect size (see Figure 2). The OCSB group reported higher anxious attachment than the non-OCSB group and this interacted with gender in that women with OCSB reported higher anxious attachment than men in that group.

For fearful attachment, there were main effects for OCSB group, $F(1, 615) = 53.80$, $p < .001$, and gender, $F(1, 615) = 20.67$, $p < .001$, but the effect sizes were small ($\eta^2 = .08$ and $.03$, respectively). There was a small interaction effect, $F(1, 615) = 14.48$, $p < .001$, $\eta^2 = .02$ (see Figure 3). The OCSB group scored higher on fearful attachment than the non-OCSB group but this interacted with gender with women in the OCSB group reporting higher fearful attachment than men in that group.

For preoccupied attachment, there was no main effect for gender, $F(1, 615) = 6.50$, $p = .01$, $\eta^2 = .01$. However, the main effect for OCSB group was small but significant, $F(1, 615) = 12.73$, $p < .001$, $\eta^2 = .02$. There was no interaction effect, $F(1, 615) = 0.53$, $p = .47$, $\eta^2 = .00$. The OCSB group, scored higher on preoccupied attachment than the non-OCSB group irrespective of gender. A similar pattern was apparent for both dismissing and avoidant attachment. There was no main effect for gender on dismissing attachment, $F(1, 615) = 2.66$, $p = .10$, $\eta^2 = .00$. The main effect for OCSB group was however significant,

$F(1, 615) = 10.37$, $p < .001$, $\eta^2 = .02$, despite a small effect size, and there was also no interaction, $F(1, 615) = 4.03$, $p = .05$, $\eta^2 = .01$. The OCSB group, scored higher on dismissing attachment than the non-OCSB group irrespective of gender. For avoidant attachment, there was no main effect for gender, $F(1, 615) = 0.20$, $p = .67$, $\eta^2 = .00$. However the main effect for OCSB group was significant, $F(1, 615) = 3.42$, $p = .001$, $\eta^2 = .09$, with a large effect size. There was no interaction effect, $F(1, 615) = 3.42$, $p = .07$, $\eta^2 = .01$. The OCSB group, reported higher avoidant attachment than the non-OCSB group irrespective of gender.

Finally, Pearson product-moment correlation coefficients were used to examine the relationship between age and SAST-R core item scores. There was a significant small positive relationship for the whole sample ($r = .16$, $n = 621$, $p < .001$), with SAST-R score increasing with increased age. However, there was no relationship between age and SAST-R score for the OCSB ($r = .06$, $n = 621$, $p = .21$) or non-OCSB groups ($r = -.03$, $n = 621$, $p = .62$).

Discussion

The aim of the present study was to investigate the association between adult attachment and OCSB. As hypothesised, the OCSB group reported higher fearful, dismissing, preoccupied, anxious, and avoidant attachment, and lower secure

attachment than the non-OCSB group. These effects were moderate in size except dismissing and preoccupied attachment which had small effects (Cohen, 1988). These findings are consistent with previous studies which have reported higher insecure and lower secure adult attachment in those with OCSB (Leedes, 1999; Zapf et al., 2008). Zapf et al. (2008) found that only 8% of those accessing online self-help for OCSB reported secure attachment, with 20% reporting dismissing, 28% preoccupied, and 44% disorganised attachment. Leedes (1999) found that a high rate of treatment-seeking sex addicts (68%) had avoidant (dismissing) and 27% had preoccupied styles of attachment with only 5% reporting secure attachment, although this study did not describe the method for gauging attachment.

In the present study, correlational analyses further supported the relationship between OCSB and adult attachment. Scores on the SAST-R were positively correlated with all types of insecure attachment measured and negatively correlated with secure attachment, although these relationships were weak. Those with higher SAST-R scores reported lower secure attachment and higher attachment anxiety and avoidance than the lower-SAST-R group, although these were relatively small effects. There were no differences in preoccupied, fearful, or dismissing

Table 4. Mean Adult Attachment Scores According to OCSB Group and Gender

Subscale	Gender	OCSB group (n = 407)		Non-OCSB group (n = 214)	
		M	(SD)	M	(SD)
RSQ					
Secure	Men	3.28	(0.74)	3.58	(0.65)
	Women	2.90	(0.73)	3.65	(0.76)
Fearful	Men	2.36	(0.89)	2.09	(0.79)
	Women	3.01	(0.98)	2.15	(0.88)
Preoccupied	Men	3.05	(0.91)	2.84	(0.79)
	Women	3.30	(0.91)	2.97	(0.70)
Dismissing	Men	3.10	(0.84)	3.02	(0.89)
	Women	3.37	(0.89)	2.99	(0.75)
ECR-R					
Avoidance	Men	3.42	(1.23)	2.80	(1.16)
	Women	3.66	(1.30)	2.66	(1.26)
Anxiety	Men	3.59	(1.32)	3.02	(1.27)
	Women	4.42	(1.33)	2.83	(1.31)

Note. ECR-R score range: 1-7. RSQ score range: 1-5.

attachment between the high- and low-SAST-R groups, suggesting that the degree of OCSB is less important than the presence of OCSB when it comes to insecure attachment.

The present study found variability in the reported types of insecure attachment style in those with OCSB. The highest reported insecure style on the RSQ was dismissing followed by preoccupied attachment, while attachment anxiety was higher than avoidance in those with OCSB on the ECR-R. Type of attachment style is important in OCSB because some research has found that different attachment styles correlate differently with certain sexual beliefs and behaviours (Bogaert & Sadava, 2002; Gentzler and Kerns, 2004). Avoidant attachment has been positively related with less restrictive sexual beliefs and more casual sex, while anxious (preoccupied) attachment has been positively related to beliefs about monogamy but difficulties in maintaining a relationship (Gentzler & Kerns, 2004). Bogaert and Sadava (2002) found the opposite when they compiled an attachment measure based on Hazan & Shaver's (1987) original attachment measure. In their study, preoccupied attachment was related to infidelity, more lifetime partners, and more condom usage (Bogaert & Sadava, 2002). Differences in the samples

studied (i.e., young Canadian adults in comparison to undergraduate students) may explain the variability in how these insecure attachment styles were found to manifest in sexual behaviour, and further research is needed to explore this relationship in greater depth.

In the present study, the association between OCSB and certain types of adult attachment was stronger for women than men. Women in the OCSB group reported lower secure and higher fearful, dismissing, and anxious adult attachment, and higher attachment anxiety and avoidance than men. Bogaert and Sadava (2002) found similar gender differences and concluded that this might be because women are more vulnerable to their attachment style being activated during sexual circumstances, and that this affects their sexual behaviour more than men. However, an alternative interpretation is that women with OCSB might be more self-aware and open to self-disclosure about relationship insecurities or distress compared to men. Clinical observations find that men with insecure attachment frequently appear less aware of their attachment anxiety than women (R. Salisbury, personal communication, November 10, 2010). These cases often require therapy approaches that draw attention to the recognition of insecurity, vulnerability,

or distress before further therapy can progress. Further research should explore this observation as there may be important treatment variations between men and women.

While the present study provides the first investigation of adult attachment and OCSB in New Zealand, there are several limitations, especially in relation to the measurement of OCSB. The SAST-R (Carnes et al., 2010) is a screening tool rather than an assessment tool for OCSB. While it has been shown to reliably differentiate those with and without OCSB, it remains only a screening tool that should be followed by further assessment to clarify the presence and individual phenomenology of OCSB. Previous studies using the SAST have used the original 25-item measure with a cut-off of 14 (Leedes, 1999; Zapf et al., 2004), but the present study used the revised 45-item measure with a cut-off of six, thereby affecting comparisons between the studies. Furthermore, in the present study, items 1 and 29 of the SAST-R were removed for ethical reasons, which may have further affected across-study comparisons as well as the validity and reliability of the core item score and the men's items subscale, to which these omitted items contribute.

Self-report research on attachment can be affected by self-report bias and is dependent on the current functioning of the respondent's romantic relationship (Bartholomew, 1990). However, self-report methods are moderately correlated with interview methods of assessment (Bartholomew & Moretti, 2002; Griffin & Bartholomew, 1994). The present study followed Hazan and Shaver's (1994) instructions and utilised two validated attachment measures. When used this way, self-reports of attachment are considered a good surface indicator of a range of behavioural and physiological processes related to attachment behaviour, as predicted by attachment theory (Bartholomew & Moretti, 2002; Bifulco, 2002).

The present study did not set out to recruit a representative sample, and the nature of the present sample makes it difficult to know to whom the results relate. Online respondents are usually younger, of higher socio-economic and education status, and more often

male (Binek, Mah, & Kiesler, 1999), and volunteers for sex research are often more sexually experienced, sensation-seeking, and unconventional (Fenton, Johnson, McManus, & Erans, 2001). This is likely to apply to the present study and is indicated by the high number of bisexual respondents ($n = 144$) in the sample and the large proportion of respondents being classified in the OCSB group ($n = 407$). While these limitations are important to note, the present study did not intend to provide generalisable findings but rather to investigate the link between insecure attachment and OCSB. Further research using a representative sample with a demographically-matched control group will be able to draw generalisable conclusions in terms of the epidemiology of OCSB in New Zealand.

The present study supports further exploration of the role of attachment in OCSB. Empirical evidence is needed to establish whether insecure attachment contributes to the etiology of OCSB. It could be that higher secure attachment leads to healthy sexual behaviour, OCSB itself might lead to higher insecure attachment, or there might be a bidirectional link between the two. The present study and the few other studies investigating this link (Bogaert & Sadava, 2002; Gentzler & Kerns, 2004; Leedes, 1999; Zapf et al., 2008) have been unable to draw any conclusion regarding the direction of this link due to the use of correlational designs. Future longitudinal research following infants through to adulthood is necessary to establish causation, although such research would need to consider moderating factors (e.g., sexual abuse, mental health, medical conditions) and could also examine protective factors that prevent OCSB from occurring in those who are insecurely attached.

Future research also needs to examine differences for men and women in relation to OCSB and attachment. The present study found an interaction between gender and OCSB for some types of attachment, with women in the OCSB group reporting lower secure and higher fearful and anxious attachment than men. Women who are insecurely attached may be more vulnerable to OCSB than insecurely attached men, although some men without insecure

attachment develop OCSB. However, clinical observations note that men with insecure attachment appear to be less self-aware and able to express vulnerability than women (R. Salisbury, personal communication, November 10, 2010). One function of secure attachment is the ability for insight, self-awareness, and self-understanding (Cozolino, 2006; Hudson-Allez, 2009; Siegel, 2001, 2006). Perhaps more women with insecure attachment receive protective factors that enable this capacity for insight to develop (such as friendships or peer interactions), while more men with insecure attachment have reduced insight or expression of vulnerability.

This might be a function of the different attachment outcomes resulting from maternal in comparison to paternal caregiving (Hudson-Allez, 2009). Maternal attachment problems have been linked with inappropriate social behaviour, poor impulse control, self-indulgence, explosiveness, increased motor activity, and sexual disinhibition (Hudson-Allez, 2009). In contrast, paternal attachment problems have been linked with reduced overt emotion, depression, impaired socialisation, and reduced spontaneity (Hudson-Allez, 2009). Therefore, men may be more vulnerable to the effects of paternal caregiving outcomes, such as the ability to recognise and express vulnerability or distress. There may also be other differences between the nature of deficits depending on attachment experiences between men and women. These deficits in OCSB should be researched using clinical assessment and neuropsychological tests, such as in Reid, Karim, McCrory, and Carpenters study (2010), in conjunction with brain-imaging techniques. Such research would be beneficial to etiological understandings of OCSB that could inform the development of specific intervention approaches.

One glaring gap in OCSB research involves exploration of cultural differences. The existing research has involved mostly Caucasian or American samples, and epidemiological data on cultural differences in OCSB is non-existent (Ragan & Martin, 2000; Skegg, Nada-Raja, Dickson & Paul, 2010). Similarly, the present study

included a sample that was mainly European, heterosexual, and male. Future research needs to address this limitation, as the expression of sex and how OCSB is defined and measured in different cultures may vary from what research has found using predominantly Caucasian samples, and should consider cultural factors relating to attachment and sexual behaviour.

Finally, effective treatments for OCSB need to be investigated because individuals are presenting with distress or harm resulting from their sexual behaviour, with potentially dire effects for themselves, their families, and their communities. Current treatment approaches for OCSB focus on pharmacological, cognitive and behavioural, twelve-step, and group approaches but these have not yet been empirically tested. The present study found that higher insecure attachment is part of the presentation for many people with OCSB, and thus approaches that are attachment-based should also be evaluated as an intervention for OCSB. Future research is needed regarding the effectiveness of OCSB treatments in order to establish evidence-based practice in this field.

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