Sexual Abuse: A Journal of Research and Treatment
2016, Vol. 28(2) 132–153

DOI: 10.1177/1079063214547585
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Anxious Attachment, Social Isolation, and Indicators of Sex Drive and Compulsivity: Predictors of Child Sexual Abuse Perpetration in Adolescent Males?

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Abstract

It has been suggested that child sexual abuse is related to poor attachment to parents, which is associated with an inability to form intimate relationships. Seto and Lalumière indicated that there were too few studies of adolescent males to determine whether poor attachment was associated with perpetration. This study was designed to follow up on a previous study and further explored the association between insecure attachment to parents, social isolation, and interpersonal adequacy to child sexual abuse perpetration in adolescents. We compared two samples of adolescent males who had committed sexual offenses, those who committed offenses against children (n = 140) and those who committed offenses against peer or adults (n = 92), with a sample of similarly aged males in treatment for mental health or substance use issues (n = 93). Data were collected using a semi-structured interview and computer-administered questionnaire. We found an indirect association between anxious attachment and sexual offenses against child victims, which was accounted for by measures of social involvement and social isolation. These involvement and isolation measures also did not have a direct association with sexual offenses against child victims, in that their contribution was accounted for by a measure of

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Masculine Adequacy. This Masculine Adequacy, combined with decreased levels of Sexual Preoccupation and Hypersexuality and increased Sexual Compulsivity, was associated with commission of child sexual abuse. The interpersonal variables did not enter a model predicting sexual offending against peers/adults, which seemed solely associated with the interaction between Sexual Compulsivity and Hypersexuality.

Keywords
child sexual abuse, adolescent sexual abusers, attachment, isolation, hypersexuality

Attachment theory has provided several possible ways to explain sexual offending and has fostered a growing body of research with adult sexual offenders (Baker, Beech, & Tyson, 2006; Beech & Mitchell, 2005; Marshall & Marshall, 2000; Rich, 2006). Bowlby (1973) proposed that the involvement with intimate relationships depends on the degree to which an individual believes, first, that other people are trustworthy (internal representational model of others), and, second, that he or she is worthy of support and intimacy (internal representational model of self). Bartholomew and Horowitz (1991) suggested that these two representational models lead to four attachment styles, or consistent behavioral manifestations of expectations for interpersonal relationships: secure–comfortable with intimacy and autonomy, preoccupied–preoccupied with relationships, dismissing–dismissing of intimacy, and fearful–fearful of intimacy and socially avoidant. The preliminary work of Ward, Hudson, Marshall, and Siegert (1995), which used the methods and categorization described by Bartholomew and Horowitz (1991), revealed that adult child sexual abusers were more likely to have either a fearful or preoccupied attachment style than were rapists, violent non-sex offenders, or non-violent non-sex offenders. Lyn and Burton (2004) found that the presence of a fearful attachment style distinguished sexual from non-sexual offenders. In addition, they found that offenders who target children were more likely than those who target adults to have insecure attachment. Bumby and Hansen (1997) found that child sexual abusers and rapists had greater overall intimacy deficits than other criminals or normal controls, and that child sexual abusers were particularly fearful of intimacy. There is also evidence that attachment style plays a role in the regulation of affect (Cooper, Shaver, & Collins, 1998; Hudson & Ward, 1997; Weems, Berman, Silverman, & Rodriguez, 2002), that sex offenders show more attachment anxiety than non-sex offenders (Lyn & Burton, 2004), and that sex offending behavior may differ depending on the type of insecure attachment style of the perpetrator (Marshall & Marshall, 2000; Smallbone & Dadds, 1998; Ward et al., 1995).

These findings provide preliminary support for using attachment theory as a basis for understanding the roots of child sexual abuse. In fact, Marshall and Marshall (2010) stated that in their view, "unsatisfactory attachments between parent and child poorly equip the child to develop the skills, self-confidence and confidence in others necessary for them to develop effective relationships" (p. 78). They further asserted that such individuals fail to develop intimate relationships and that the resultant

emotional loneliness sets the stage for aggression and sexually abusive behavior. Marshall (2010) described this process of poor attachment leading to isolation as one of the main vulnerability factors for sexual perpetration. Attachment style affects how and whether individuals engage in intimate relationships and the degree to which they experience loneliness as a result of their lack of intimate involvement. From this perspective, an individual who turns to young children to meet intimacy needs may desire interpersonal closeness, but fear rejection from peers. This fear may be the result of prior experience or the belief that one is not an attractive partner (Marshall, Hudson, & Hodkinson, 1993; Ward et al., 1995). A fearful attachment style could also supply the conditions that facilitate sexual abuse perpetration. These conditions might include loneliness and isolation, inaccurate and hostile representations of potential partners especially related to a lack of empathy, and impulsivity (Baker et al., 2006).

The research on adult populations of sexual offenders provides a speculative rationale for exploring adolescent populations. The characteristics found in adults are likely related to developmental processes that have their origins in childhood and adolescent experiences. In addition, the aforementioned differential intimacy and attachment style findings between child sexual abusers, rapists, and non-sex criminals would appear to indicate that these behaviors may have different adolescent and childhood developmental pathways. As will be described below, adult attachment style is probably influenced by childhood and adolescent attachment style or orientation, and the influence of experiences with peers and adults outside the individuals' parents. Thus, in combination with what is known about peer involvement, attachment can help us better understand the contributors to adolescent sexual offending patterns.

Attachment in Adolescence

Attachment in adolescence and adulthood is less stable than early theorists assumed and is affected by more immediate circumstances and interpersonal experiences (Pietromonaco & Barrett, 2000). Adolescent attachment style is likely the result of enduring self-concepts and a response to parental and peer behaviors experienced during childhood and adolescence (Allen & Land, 1999). Sometime between the ages of 8 and 14 years, a shift occurs in which individuals turn to peers rather than parents for emotional support and comfort (Hazan & Zeifman, 1999). If this shift is hindered, either by active parental resistance or lack of peer acceptance, the adolescent will be less likely to accomplish the major tasks of social development, such as establishing long-term romantic relationships (Allen & Land, 1999).

Certain types of insecure attachment—particularly those associated with poor internal representational models of self and anxious attachment (preoccupied and fearful styles)—appear to covary with the interpersonal behavior of adolescents, especially with a lack of interpersonal reciprocity (Priel, Mitrany, & Shahar, 1998) and with poorer relationship outcomes as adults (Collins, Cooper, Albino, & Allard, 2002). Consequently, attachment style, particularly anxious attachment (preoccupied and fearful styles), may lead to alienation and overt rejection from both same and opposite-gender peers because these styles covary with difficulties developing intimate

interpersonal bonds (Baker et al., 2006; Goossens, Marcoen, van Hees, & van de Woestijne, 1998; Priel et al., 1998). Overt rejection by peers has, in turn, been found to correlate with high levels of internalized problems, including emotional distress and loneliness (Crick & Bigbee, 1998). The result may be lowered self-concept, lack of efficacy in relationships, and immature emotional development in adulthood (Araji & Finkelhor, 1985; Baker et al., 2006). These resultant factors—when combined with the pleasure of masturbation, especially to fantasies involving children or violent behavior (Marshall et al., 1993), and the use of sex as a way to cope with negative emotions (Cortoni & Marshall, 2001)—are thought to lead to sexually abusive behavior.

Our previous findings suggested that, consistent with the literature and theoretic conceptualizations, child sexual abuse perpetration was associated with anxious attachment to parents along with childhood and adolescent experiences of isolation and concomitant peer interaction difficulties (Miner et al., 2010). We found that adolescent sexual offenders felt more isolated from family and peers than non-sex-offending adolescent delinquents or non-delinquent adolescent males (Miner & Munns, 2005). We also found that isolation from peers and anxiety interacting with opposite-gender peers mediated the relation between anxious attachment and child sexual abuse. Finally, we found that adolescent males who committed sexual offenses against children differed from adolescent males who committed non-sexual offenses in their attachment style, discomfort with peer-aged females, hypersexuality, and preoccupation with sex. The former were more preoccupied with sex and more interested in achieving interpersonal closeness, but lacked comfort interacting with females (Miner et al., 2010).

The present study continues the exploration of these factors associated with child sexual abuse perpetration in a new comparison group—adolescent males in treatment for mental health or substance use problems. We believe this provides a logical next step in understanding how sexual abuse perpetration may develop. Miner et al. (2010) found factors that distinguished child sexual abuse perpetration from non-sex delinquent behavior. These factors may not be uniquely related to sexual abuse perpetration. Crick and Bigbee (1998) found that a similar constellation of factors was associated in adolescents with internalizing problems. Thus, the present analyses compare our sex offending samples with other non-delinquent problem adolescents, many of whom have internalizing problems. This should help distinguish further the factors unique to sexual abuse perpetration.

This continues to explore a model of child sexual abuse perpetration that includes four predictors: (a) attachment style, (b) social involvement, (c) masculine adequacy, and (d) sexuality. These predictors were operationalized as (a) an attachment anxiety dimension; (b) social isolation and involvement with peers; (c) masculine inadequacy, including anxiety with women; and (d) three measures of sexuality: sexual preoccupation, hypersexuality, and sexual compulsivity, which assess intrusive sexual thoughts, sex drive, and perceived behavioral control (Daversa & Knight, 2007; Knight & Sims-Knight, 2003; Miner et al., 2010; Seto & Lalumière, 2010). We expect that these predictors will provide a better understanding of factors differentiating adolescent sexual offenders from other at-risk teenage males.

Method

Participants

A total of 325 adolescent males (156 who were also included in a previously published study, Miner et al., 2010), aged 13 to 18 years, participated in a cross-sectional study of adolescent sexual offending. Of these participants, 58.6% identified themselves as White or Caucasian, and 20.2% as Black or African American. The remaining 21.2% identified themselves as Hispanic, Native American, Asian, multiracial, or other. The average age of participants was 15.8 years.

Adolescent males were eligible to participate in the study if they had either been assigned to specific treatment programs for youth who had offended sexually or were in treatment for a mental health problem or substance use. They were recruited from outpatient and residential treatment programs for youth who had offended sexually, mental health treatment programs, substance abuse treatment programs, juvenile probation departments, and juvenile detention centers in urban, suburban, and rural communities in an Upper Midwest state. Juveniles who had sexually offended against child victims were significantly younger than juveniles in the mental health/substance use comparison group ($M = 15.2$ vs. 16.1 years). Verbal IQ was measured by any standardized test recorded in the participant's archival file, and an IQ of 80 was required for participation. To minimize treatment effects, all participants had no more than 3 months of treatment—either during his current placement or since his most recent sexual offense.

Participants were divided into groups based on their offense histories. Those with sexual offenses included (a) juveniles who offended against child victims ($n = 140$) and (b) juveniles who offended against peer victims ($n = 92$). Those without sexual offenses were juveniles who were in treatment for mental health or substance use concerns and had no history of sexual or non-sexual offenses by official record or self-report ($n = 93$; after excluding 7 participants with delinquent behavior); 51% had a primary diagnosis of alcohol or other substance abuse, and 32% had neither a primary nor secondary diagnosis of alcohol or other substance abuse. No participants in this study had a current or history of major thought disorder.

Juveniles who offended against child victims had abused victims who were less than 12 years old and at least 4 years younger than themselves. Juvenile sexual offenders with peer victims had abused victims who were at least 12 years of age, within 4 years of the offender's age or older than the offender. Seventy-two juvenile offenders had *both* peer and child victims and were grouped based on the majority of their victims (56 sex offenders with predominantly child victims, 16 sex offenders with predominantly peer/adult victims). We chose this strategy, rather than using a mixed group, because of the distribution of victims in our sample. That is, very few participants in our sample had a *balance* of child and peer/adult victims, and they were assigned to the child victim group ($n = 5$). In all cases where both types were present and the participant was assigned to the peer/adult group, one victim clearly diverged in age from the others and the youth's sexual preference was clearly for peers.

Table 1. Distribution of Race/Ethnic Groups and Residential Placement.

Variables	Adolescent who offended against child victim (%)	Adolescent who offended against peer/adult victim (%)	Mental health/ substance abuse (%)
Race/ethnicity			
Caucasian	68.4	51.3	80
African American	11.7	15.7	3.2
Latino	2.3	6.6	3.2
Asian	0.6	2.6	1.1
Native American	8.2	5.3	2.1
Multiracial/Other	7.6	18.4	9.5
Residential facility	78.2	70.7	51.1
Outpatient facility	21.8	29.3	48.9

Participants were drawn from both outpatient and residential treatment programs. Although we tried to sample equal numbers of adolescents from inpatient and outpatient programs, adolescents from residential placements were over-represented in the groups that had offended sexually but not in the mental health/substance use comparison group. Table 1 presents the race/ethnicity and residential placement distribution across the three study groups. Parental consent and participant assent were obtained from all participants less than age 18 years, and consent was obtained from those 18 years old. Procedures were reviewed and approved by the Committee for the Protection of Human Subjects at the University of Minnesota.

Procedures

Each participant completed a face-to-face attachment interview (*Roots Adolescent Attachment Protocol* [*RAAP*]; Robinson et al., 2013) with research staff and a 228-item computerized inventory. The order of administration was determined randomly, with half of the participants completing the interview prior to the computerized inventory, and half completing the interview after completing the computer inventory. Research staff was available to answer questions during the computerized survey. To obtain offense-related information, research staff reviewed each participant's institutional or clinical record using the *File Review Coding Guide*, a protocol for coding clinical case records based on the *Sauk Centre Sex Offender Program File Review Guide* (Miner, Siekert, & Ackland, 1997), which was an adaptation of the *Massachusetts Treatment Center Coding Dictionary* (Knight, Cerce, Carter, & Martino, 1986).

Measures

Face-to-Face Interview. Two sets of variables were derived from the clinical interview.

Attachment style assessment. Using the results from the attachment interview, which was designed to assess attachment style in adolescent male samples (see Robinson

et al., 2013, for development of the RAAP), two raters coded attachment styles of each adolescent as secure, preoccupied, dismissive, and fearful on a 1 to 9 scale, where 1 indicated few characteristics of that attachment style, and 9 indicated many characteristics of that attachment style. The score for each of the four attachment styles was the average scale score for the two raters, yielding four attachment style scores per participant. The reliabilities for each scale were transformed by the Spearman–Brown prophecy formula to provide the estimated reliabilities for averaged ratings (Roff, 1981). Inter-rater reliabilities were good: Secure = .86; Preoccupied = .84; Dismissive = .86; and Fearful = .82.

Two attachment style dimensions were calculated: (a) attachment anxiety, in which positive scores indicated anxiety and negative scores indicated lack of anxiety (anxiety = [Preoccupied + Fearful] − [Secure + Dismissing]); and (b) attachment avoidance, in which positive scores indicated avoidance and negative scores indicated approach, with extremely negative approach scores indicating clinginess (avoidance = [Fearful + Dismissive] − [Secure + Preoccupied]; Bartholomew & Shaver, 1998; Griffin & Bartholomew, 1994).

Additional interview measures. In addition to the coding of attachment style, two additional measures were assessed from the interview.

Involvement with friends. This dimension was assessed by one item that asked adolescents to estimate the number of hours spent per week hanging around with friends when no adults were present.

Number of friends. This dimension was assessed by two items asking each adolescent whether he spent time with a particular group of friends in the past year and the number of friends in that group. The number of friends was equal to the number of friends reported. If no friends were reported, the number of friends was entered as zero.

Computerized inventory. The computerized inventory consisted of (a) a modified short version of the items of the Multidimensional Inventory of Development, Sex, and Aggression (the MIDSA; 2011) that included a subset of MIDSA scales; and (b) a scale from the Denver Youth Survey (Huizinga, Esbensen, & Weiher, 1994). Most adolescents were able to complete the computerized inventory within an hour. Validity checks, three lie scales, and a time feature that alerted staff should a participant move through the survey too quickly (all features of the MIDSA) helped ensure data validity and integrity.

The MIDSA. The present study used five scales selected from the MIDSA. The full MIDSA is a contingency-based inventory that has been administered to more than 4,500 juveniles and adults, and whose scales have shown adequate reliability and validity (cf. MIDSA, 2011 for a summary).

Masculine adequacy. This 8-item summative scale has items with values ranging from 0 to 4, where 0 = *definitely false* and 4 = *definitely true*. High scores indicated high levels of Masculine Adequacy (confidence in manliness). This scale measured participants' perceptions of their adequacy in stereotypical male role activities, including physical attributes, sports, and attractiveness to girls. It had adequate internal consistency in our sample (Cronbach's α = .75).

Anxiety with women. This 5-item summative scale comprises items that have two different response options: 0 to 4, where 0 = "definitely false" and 4 = "definitely true" for four items, and 0 = "never" and 4 = "very often (more than 50 times)" for one item. High scores indicated high levels of anxiety. This scale measured adolescents' expectations of rejection by females and difficulties interacting with females. It had an adequate internal consistency in this sample (Cronbach's α = .74).

Sexual compulsivity. This 9-item summative scale is composed of items with two metrics: *definitely true* to *definitely false*, measured on a 0-to-4-point scale and *never* to *very often*, measured on a 0-to-5 scale. This scale measures perceived lack of control over sexual behavior and the perception that sexual behavior is driven. High scores indicated self-reported inability to control sexual urges. It had good internal consistency in our sample (Cronbach's α = .79).

Sexual preoccupation. This is a 7-item summative scale, ranging from 0 to 5 where 0 = *never* and 5 = *very often (almost every day)*. This scale measures frequency of sexual thoughts, daydreams, or dreams. High scores indicated that participants thought, daydreamed, and dreamed about sex frequently. This scale had excellent internal consistency in this sample (Cronbach's α = .89).

Hypersexuality. This 5-item summative scale included items with 2 different response options: 0 to 4 for four items, where 0 = *definitely false* and 4 = *definitely true*; and 0 to 7 for one item, where 0 = *never* and 7 = *more than twice a day*. This scale measures the level of sex drive. High scores indicated that participants reported frequent sexual activity, and/or the need to have sex frequently. It demonstrated marginal internal consistency in this sample (Cronbach's α = .66).

Denver youth survey: Perceived isolation. Only one scale from the Denver Youth Survey was used: Perceived Isolation, a 16-item summative scale with items ranging from 1 to 5 (where 1 = *definitely false* and 5 = *definitely true*). High scores on this scale indicated feelings of isolation in multiple contexts, including school and with peers. It had good internal consistency in the present sample (Cronbach's α = .86).

Data Analyses

Juveniles who offended against child victims were compared with adolescents with mental health/substance use problems using binary logistic regression. Race and age

were controlled, and independent variables were entered as blocks in the order most closely representing their hypothesized developmental order. Thus, the following order is followed: (1) attachment style (2) social isolation, (3) Masculine Adequacy, (4) Hypersexuality, Sexual Compulsivity, and Sexual Preoccupation. Attachment style consists of attachment anxiety and attachment avoidance. The other constructs are similarly measured by a set of complementary scales. This hierarchical analysis allowed us to test developmental hypotheses drawn from previous research on adolescent sexual offenders (Seto & Lalumière, 2010) and our previous research (Miner et al., 2010). Hierarchical analysis allowed us to control for confounding variables and to test the hypothesized direct and indirect associations among our variables. This theoretically driven statistical strategy is more appropriate for testing the specified model than using exploratory and atheoretical analyses such as forward or backward stepwise regression. We then conducted two additional analyses contrasting (a) juveniles who offended against child victims versus juveniles who offended against peer/adult victims and (b) juveniles who offended against peer/adult victims versus adolescents being treated for mental health/substance use problems.

Results

Table 2 presents the mean differences across groups for each of the independent variables explored in this study. Significant differences were found for anxious attachment, perceived isolation, masculine adequacy, and anxiety with women. None of the three sexuality measures, Sexual Preoccupation, Sexual Compulsivity, or Hypersexuality, showed significant group differences. Duncan's post hoc range test, which is a liberal criterion, indicated that juveniles who offended against child victims differed from mental health/substance use participants in all cases where significant differences were found. Juveniles who offended against child victims differed significantly from juveniles who offended against peer/adult victims only on *masculine adequacy.* Juveniles who offended against peer/adult victims did not differ from mental health/substance use group on any of the variables.

Table 3 presents the results of a logistic regression predicting child sexual abuse perpetration when comparing juveniles who offended against child victims to adolescents with mental health and substance use problems. *Anxious attachment* was significantly associated with sexual abuse perpetration, $\chi^2(1, n = 233) = 6.54$, $p = .011$, after controlling for race, which was distributed such that mental health/substance use participants were more frequently Caucasian than either group that had offended sexually. Adding *involvement with friends* and *peer isolation* to the model improved the prediction of sexual abuse perpetration, $\chi^2(1, n = 233) = 9.30$, $p = .010$, and when these variables were entered, the coefficient associated with *anxious attachment* was no longer significant ($p = .151$). The next step, adding *Masculine Adequacy* to the model, was also significant, $\chi^2(1, n = 233) = 9.49$, $p = .002$, but *involvement with friends* ($p = .148$) and *peer isolation* ($p = .094$) were no longer significantly associated with sexual abuse perpetration. Finally, the addition of Block 5, which included the sexuality variables (i.e., *Hypersexuality, Sexual Preoccupation, and Sexual Compulsivity*), added

Table 2. Mean Differences Across Groups for Independent Variables.

	Juvenile offender against child		Juvenile offender against peer/adult		Mental health/ substance abuse		
Variables[a]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*p*
Attachment style							
Anxiety dimension	1.29_a	3.55	0.54_b	3.69	0.01_b	3.74	.027
Avoidance dimension	0.40	3.63	0.94	3.66	0.77	3.57	ns
Number of friends	12.75	34.06	20.59	76.85	26.00	43.29	ns
Involvement with friends	18.67	25.95	18.74	24.10	24.44	23.57	ns
Peer isolation	1.62_a	0.47	$1.51_{a,b}$	0.56	1.44_b	0.49	.018
Masculine adequacy	2.25_b	0.69	2.72_a	0.76	2.83_a	0.70	.003
Anxiety with women	1.61_a	1.00	$1.36_{a,b}$	1.03	1.19_b	1.00	.005
Sexual preoccupation	2.12	1.23	2.32	1.03	2.37	1.19	ns
Sexual compulsivity	0.98	0.95	1.00	0.87	0.91	0.87	ns
Hypersexuality	1.42	0.96	1.36	0.89	1.45	0.95	ns

[a]All scales are scored so that higher scores indicate more of the attribute.
Means with different subscripts are significantly different from each other with a > b.

Table 3. Hierarchical Regression Model for Classification of Adolescents Who Offend Against Child Victims Versus Adolescents With Mental Health/Substance Use Problems.

Factor	Initial OR [95% CI][a]	Initial *p* value	Final OR [95% CI][b]	Final *p* value
Block 1				
Race	0.52 [0.28, 0.96]	.038	0.43 [0.21, 0.84]	.014
Block 2		**.011**		
Anxious attachment	1.10 [1.02, 1.19]	.012	—	ns
Block 3		**.010**		
Involvement with friends	0.87 [0.76, 0.99]	.036	—	ns
Peer isolation	1.92 [1.02, 3.60]	.043	—	ns
Block 4		**.002**		
Masculine adequacy	0.51 [0.38, 0.80]	.003	0.51 [0.38, 0.80]	.003
Block 5		**.036**		
Hypersexuality	0.63 [0.38, 1.05]	.078	0.63 [0.38, 1.05]	.078
Sexual preoccupation	0.71 [0.49, 1.03]	.069	0.71 [0.49, 1.03]	.069
Sexual compulsivity	1.98 [1.12, 3.49]	.018	1.98 [1.12, 3.49]	.018

Note. OR = odds ratio; CI = confidence interval.
[a]Indicates the relative odds of being classified as a sex offender with child victim at first entry into the model.
[b]Indicates the relative odds of being classified as a sex offender with child victim in the final model.

significantly to the model, $\chi^2(1, n = 233) = 8.56$, $p = .036$, and did not change the association between *Masculine Adequacy* and sexual abuse perpetration. In Block 5,

only the coefficient related to *Sexual Compulsivity* reached conventional levels of significance ($p = .018$). We did several post hoc analyses to explore the role of the sexualization scales to group differentiation. When we entered *Sexual Compulsivity* alone in Block 5, it did not significantly add to the model, as was the case for *Hypersexuality* and *Sexual Preoccupation*. In addition, when these three variables were entered into the model first, after controlling for race/ethnicity, they were not significantly associated with sexual abuse perpetration either as a block or individually. The final model indicated that low *Masculine Adequacy*, in conjunction with a lack of sexual control (high *Sexual Compulsivity*), less *Sexual Preoccupation*, and lower sex drive (*Hypersexuality*) predicted child sexual abuse perpetration in adolescent males as compared with mental health/substance use problems.

Although we attempted to recruit equal numbers of adolescents from outpatient and residential sites, we were not completely successful in doing so. Our sexual offending samples consisted of a higher percentage of residential participants (75%) than the mental health/substance use samples, which had an equal percentage of residential and outpatient participants. Many of our variables could be affected by type of placement, and we found that *peer isolation,* $F(1,329) = 4.65$, $p = .032$, *Hypersexuality,* $F(1,329) = 6.37$, $p = .012$, and *Sexual Preoccupation,* $F(1,329) = 7.67$, $p = .006$, did differ significantly between those in residential placement and those in outpatient treatment. We, therefore, replicated our hierarchical logistic regression using only those participants in residential placement (Table 4).

As was the case with our entire sample, this analysis (Table 2) indicated a significant first-order association between sexual offending against children and *anxious attachment*, $\chi^2(1, n = 153) = 9.47$, $p = .002$, and a significant effect for *involvement with friends* and *peer isolation*, $\chi^2(1, n = 153) = 9.40$, $p = .009$. The addition of Block 3, social involvement and isolation, accounted for much of the association between *anxious attachment* and sexual offending against children, leaving the coefficient nonsignificant ($p = .088$). Unlike the previous analysis, the addition of *masculine adequacy* was not significant ($p = .138$), and the addition of Block 5, the sexuality variables, approached, but did not reach conventional levels of statistical significance, $\chi^2(3, n = 153) = 6.56, p = .087$. Because the coefficients related to *Sexual Preoccupation* and *Sexual Compulsivity* approached significance ($p < .10$), we entered *Sexual Preoccupation* and *Sexual Compulsivity* after controlling for *anxious attachment* and social involvement variables (Block 3). This analysis indicated that *Sexual Preoccupation* was associated with sexual offending against child victims, $\beta = -0.58$, $df = 1$, $p = .004$, whereas *Sexual Compulsivity* was not ($p = .168$). The final model indicated independent contributions from *anxious attachment, peer isolation, and Sexual Preoccupation*, $\chi^2(3, n = 153) = 21.62$, $p < .001$. Higher *anxious attachment* and *peer isolation* and lower levels of *Sexual Preoccupation* were associated with sexual offending against child victims.

Next, we replicated our hierarchical logistic regression model, this time comparing sexual offenders with child victims to sexual offenders with peer/adult victims. This analysis is not shown. Although none of the blocks were significant, the regression coefficient related to the variable, *Sexual Preoccupation* was significant, $\beta = -0.42$,

Table 4. Residential Participants Only: Hierarchical Regression Model for Classification of Adolescents Who Sexually Offended Against Child Victims Versus Adolescents With Mental Health/Substance Use Problems.

Factor	Initial OR [95% CI][a]	Initial *p* value	Final OR [95% CI][b]	Final *p* value
Block 1				
Race	0.68 [0.31, 1.50]	.340	—	ns
Block 2		**.002**		
Anxious attachment	1.17 [1.06, 1.30]	.003	1.13 [1.01, 1.27]	.033
Block 3		**.009**		
Involvement with friends	0.90 [0.75, 1.09]	.279	—	ns
Peer isolation	3.33 [1.36, 8.17]	.009	3.69 [1.51, 8.99]	.004
Block 4		**.138**		
Masculine adequacy	0.64 [0.36, 1.16]	.145	—	ns
Block 5		**.087**		
Hypersexuality	0.66 [0.34, 1.30]	.228	—	Ns
Sexual preoccupation	0.66 [0.40, 1.08]	.097	0.72 [0.54, 0.99]	.040
Sexual compulsivity	1.80 [0.90, 3.59]	.094	—	Ns

Note. OR = odds ratio; CI = confidence interval.
[a]Indicates the relative odds of being classified as a sex offender with child victim at first entry into the model.
[b]Indicates the relative odds of being classified as a sex offender with child victim in the final model.

Wald = 4.49, *df* = 1, *p* = .034. This indicated that sexual offending against children was associated with fewer intrusive sexual thoughts and fantasies than sexual offending against peers/adults. When, however, the first-order association was tested, *Sexual Preoccupation* was not significantly related, $\chi^2(1, n = 219) = 1.69$, $p = .193$, and the regression coefficient associated with *Sexual Preoccupation* was much smaller, $\beta = -0.15$. This analysis indicated that the two groups with sexual offenses, those with child and those with peer/adult victims, were similar in their attachment, social involvement, and *Masculine Adequacy*.

Last, we replicated our hierarchical logistic regression model, this time comparing sexual offenders with peer/adult victims to adolescents with mental health/substance use problems. This analysis is also not shown. After controlling for race and age, we did not find significant effects for attachment, social involvement, or *Masculine Adequacy*. Block 5, consisting of three sexuality scales, *Sexual Preoccupation, Sexual Compulsivity, and Hypersexuality*, was significant, $\chi^2(2, n = 172) = 6.33$, $p = .042$, as was the overall model, $\chi^2(10, n = 172) = 22.89$, $p = .011$. *Sexual Preoccupation* did not add significantly to predicting sexual offending against peer/adults. The regression coefficient for *Sexual Compulsivity*, however, approached statistical significance, $\beta = 0.67$, *Wald* = 3.78, *df* = 1, *p* = .052, and *Hypersexuality*, $\beta = -0.79$, *Wald* = 6.01, *df* = 1, *p* = .014, yielded a significant regression coefficients.

Table 5. Hierarchical Regression Model for Classification of Adolescents Who Sexually Offended Against Peer/Adult Victims Versus Adolescents With Mental Health/Substance Use Problems.

Factor	β	Initial OR [95% CI][a]	Initial *p* value	β	Final OR [95% CI][b]	Final *p* value
Block 1						
Race	−1.19	0.30 [0.16, 0.58]	<.001	−1.32	0.27 [0.14, 0.53]	<.001
Block 2			**.392**			
Hypersexuality	−0.14	0.87 [0.62, 1.20]	.393	−0.71	0.49 [0.28, 0.88]	.016
Block 3			**.015**			
Sexual compulsivity	0.74	2.09 [1.14, 3.85]	.018	0.74	2.09 [1.14, 3.85]	.018

Note. OR = odds ratio; CI = confidence interval.
[a]Indicates the relative odds of being classified as a sex offender with peer/adult victim at first entry into the model.
[b]Indicates the relative odds of being classified as a sex offender with peer/adult victim in the final model.

Table 5 shows post hoc analyses to explore further the relation between *Hypersexuality* and *Sexual Compulsivity. Hypersexuality* does not add significantly to the predictive equation when entered alone but does become significant after the addition of *Sexual Compulsivity*. If the variables are reversed, the same holds, that is *Sexual Compulsivity* does not add significantly to the model when entered first, but the coefficient becomes significant with the addition of *Hypersexuality*. Although these two scales are significantly correlated ($r = .78$), it appears that the independent variance related to each, as well as the shared variance, contributed to their association with sexual aggression.

To further understand the relation between *Hypersexuality* and *Sexual Compulsivity*, two additional exploratory logistic regressions were conducted, which are not shown. First, *Hypersexuality* was entered into the model after controlling for race/ethnicity and did not add significantly to the model, $\chi^2(1, n = 172) = 0.73$, $p = .392$, with a small, $\beta = -0.14$ regression coefficient. When *Sexual Compulsivity* was entered in the next step, the step was significant, $\chi^2(1, n = 172) = 5.93$, $p = .015$, and the regression coefficient associated with *Hypersexuality* increased dramatically, becoming significant. When the steps were reversed, with *Sexual Compulsivity* entered first, the same pattern occurred; the first step was non-significant. When *Hypersexuality* was added in the second step, the regression coefficient associated with *Sexual Compulsivity* increased considerably, becoming significant. In the last analysis, a median split was made on the *Sexual Compulsivity Scale* to divide the sample into those with relatively high and low *Sexual Compulsivity*. Logistic regression analysis controlling for race/ethnicity found that when *Sexual Compulsivity* was low, *Hypersexuality* was significantly and negatively associated with having committed a sexual offense against a peer/adult, $\beta = -1.06$, *Wald* = 4.45, $df = 1$, $p = .035$. When *Sexual Compulsivity* was high, however, there was no significant effect for *Hypersexuality* ($p = .121$) after controlling for race/

ethnicity. Similarly, after a median split of the *Hypersexuality* scale, logistic regression analysis indicated that *Sexual Compulsivity* was significantly associated with sexual offending against peers/adults when *Hypersexuality* was low, $\beta = 1.08$, *Wald* = 3.86, *df* = 1, $p = .049$, but not significantly associated when *Hypersexuality* was high ($p = .307$).

Discussion

This study was designed to explore further the relation between attachment and the perpetration of child sexual abuse by adolescent males. Our previous research indicated that anxious attachment had an indirect effect on child sexual abuse perpetration through social isolation and interpersonal inadequacy (Miner et al., 2010). The research discussed here replicated these findings. Our previously published regression analyses compared adolescent males who committed sexual crimes against children with adolescent males who committed non-sexual crimes (Miner et al., 2010). The present regression analyses compared adolescent males who committed sexual crimes against children with adolescent males in treatment for mental health/substance use problems. Findings from both studies indicated that anxious attachment had a significant first-order association with sexual abuse perpetration such that adolescents highest in anxious attachment were most likely to commit acts of child sexual abuse. As with our previous research, social involvement, measured by the amount of time spent with friends and perceived isolation from peers, accounted for the association between anxious attachment and sexual abuse perpetration, and Masculine Adequacy accounted for the social involvement variables. When compared with non-sexual delinquent males, juveniles who offended against child victims showed greater levels of anxiety with females, but Masculine Adequacy was not related to their likelihood of committing a sexual offense. This is consistent with the view that adolescent males who have committed sexual offenses against children are individuals whose poor attachment in early childhood may have contributed to difficulty with peers and subsequent feelings of inadequacy.

In the present comparison between adolescent males who committed sexual offenses with adolescent males with mental health/substance use problems, poor Masculine Adequacy and not anxiety with females was associated with sexual abuse perpetration. In addition, although the sexuality factors of Hypersexuality, Sexual Preoccupation, and Sexual Compulsivity entered the equation, these factors behaved differently than in our original study (Miner et al., 2010). When compared with adolescent males who committed non-sexual offenses, adolescent males who committed sexual offenses against children showed increased Hypersexuality and Sexual Preoccupation (Miner et al., 2010). In contrast, when compared with adolescent males who had mental health/substance use issues, the adolescent males who committed sexual offenses against children did not differ in their zero-order levels of Hypersexuality, Sexual Preoccupation, and Sexual Compulsivity. Entered together, however, these three sexual variables significantly increased the strength of the association found in the logistic regression model, but only when they were entered last, after controlling for the effects of anxious attachment, social involvement, and

Masculine Adequacy. Given the large and significant associations between these three sexuality variables, the above may be related to a suppressor effect, indicating that these variables measure a single underlying factor. Thus, it appears that issues with sexuality are associated with sexual offending against children only when other interpersonal and masculine adequacy issues were present.

Our results are consistent with Marshall and Marshall's (2010) finding that adolescent male offenders with child victims showed anxious attachment—characterized by a poor internal working model of self and poor personal agency. They suggested that this anxious attachment was associated with adolescent males with child victims who were more isolated and alienated from peers than other troubled adolescents. Their peer isolation and alienation were likely related to their low sense of masculine adequacy and accounted for the association between isolation and alienation in our analyses. This lack of masculine adequacy appeared to interact with a constellation of sexuality factors—lower sexual drive and thoughts and increased difficulty controlling sexual behavior and urges.

The present data indicated that sexual offending against peers/adults was unrelated to attachment, social involvement, or Masculine Adequacy, but was related to problems with controlling sexual behavior (*Sexual Compulsivity*). At low levels of sexual drive (*Hypersexuality*), greater *Sexual Compulsivity* was associated with sexual offending against peers/adults. At low levels of *Sexual Compulsivity*, greater *Hypersexuality* was associated with mental health/substance use issues. This suggests that sexual offending against peers/adults in adolescents may be more related to poor sexual behavioral control than to sex drive per se.

Tolles and Knight (2011) found that there was a moderate correlation between substance abuse/use and Hypersexuality both in college students and in adult sex offenders. This might help explain the inconsistency between the present findings and those of Miner et al. (2010). Consistent with Tolles and Knight (2011), the mental health/substance use controls had higher scores on hypersexuality than did the delinquent controls in Miner et al. (2010). The pattern of differences between the juveniles who had offended sexually and mental health/substance use controls seems to have depended on the specific contribution of Sexual Compulsivity. That is, without the inclusion of Sexual Compulsivity, the block of sexualization variables did not contribute significantly to predicting membership in the sex offender with child victim group. In addition, Hypersexuality was a significant predictor of membership in the mental health/substance use control group, when Sexual Compulsivity was low, but it was unrelated to either sexual offending against peers/adults or mental health/substance use issues when Hypersexuality was high. When Hypersexuality was partialed out, the residual variance captured by Sexual Compulsivity (feelings of being impelled to do certain sexual behaviors) predicted the difference between groups. Thus, although prior research (Miner et al., 2010) found sexualization (i.e., higher Hypersexuality and higher Sexual Preoccupation) was the distinguishing factor between youth who committed sexual crimes and those who committed other crimes, it appears that because youth with substance use and mental health problems showed more Hypersexuality than did the juvenile delinquent sample in Miner et al. (2010), the factor most important for

distinguishing sexual offending youth from these youth with other problems, especially substance abuse problems, was Sexual Compulsivity or perceived lack of control over sexual behavior, which seems to be related to both sexual offending against children and sexual offending against peers/adults.

Seto and Lalumière (2010) noted that there was a paucity of studies comparing adolescents who sexually offended against child victims with those who targeted peers/adults. We compared these two types of offenders and found that although there were few differences between sexual offenders against children and sexual offenders against peers/adults victims, they were distinguished differently from adolescent males in treatment for mental health or substance use problems. Specifically, adolescents who sexually offended against child victims demonstrated (a) an indirect effect for anxious attachment and social involvement and (b) a direct effect for Masculine Adequacy and a constellation made up of Hypersexuality, Sexual Preoccupation, and Sexual Compulsivity. The behavior of adolescents with peer/adult victims appeared related to sexual behavioral control, not interpersonal functioning.

In their meta-analysis, Seto and Lalumière (2010) indicated that there were too few studies of parental attachment to draw any meaningful conclusions about its association with sexual offending in adolescent sexual offenders. The present research helped address this paucity, indicating that anxious attachment to parents was not directly related to sexual offending. Although the cross-sectional nature of this study prevents drawing developmental/causal conclusions, the results were consistent with the hypothesis that when an adolescent experiences isolation from peers, this anxious attachment could contribute to feelings of further isolation and alienation, and is related to feelings of inadequacy, especially in the masculine role. Sexual offending may be an attempt to compensate for this inadequacy, as Marshall and Barbaree (1990) hypothesize. Alternatively, as Marshall (2010) and Marshall and Marshall (2010) believe, it may be that sexual abuse perpetration relates to poor interpersonal relationship skills. This latter hypothesis is supported by the present study, which demonstrated that adolescents who had sexually offended had poor social involvement and anxiety interacting with adolescent girls (Miner et al., 2010). For adolescents who have a sexual preference for children, it is also possible that recognition of this proclivity contributes to feelings of inadequacy and subsequent isolation.

We found differences in race/ethnicity distributions across our three study groups. It may be that our variables were affected by cultural factors found in different race/ethnic groups. Unfortunately, race/ethnicity and group membership were confounded in our sample, and non-White race/ethnic identity was sufficiently infrequent within each group to prohibit individual analyses. Thus, we chose to control for the differences across groups and leave exploration of these differences to future research. Generalization of the findings of the present study to non-Whites requires additional data.

The present study had a number of limitations. Cross-sectional study of male adolescents enabled us to identify correlates of sexual offending—not etiological or causal factors. The findings about attachment anxiety and indications of social involvement are, however, consistent with those in adult samples (Jamieson & Marshall, 2000;

Marsa et al., 2004; Smallbone & Dadds, 1998; Ward, Hudson, & Marshall, 1996). This consistency of findings, especially in light of research suggesting important distinctions between adolescent offending and adult offending (Långström, 2002; Parks & Bard, 2006; Reitzel & Carbonell, 2006; Waite et al., 2005; Zimring, Piquero, & Jennings, 2007) in turn suggests that we have identified variables that either are associated with the early onset of sexual abuse behaviors or variables that influence the onset of sexual abuse behaviors regardless of age (Ward & Siegert, 2002). It is also possible, however, that our findings related to inadequacy and isolation are not potential causal factors, but result from either the stigma of having been detected for a sexual crime, or knowing that one is sexually interested in children.

Second, we recruited a convenience sample of adolescent offenders from multiple settings and collected data from those who agreed to participate. On the one hand, this created potential bias that we cannot measure or control, but on the other hand, because our adolescent samples were recruited similarly from inpatient and outpatient treatment programs and juvenile probation and detention centers, it is unlikely that the differences we found among groups were related simply to a generic volunteer bias.

There was a different distribution of residential and outpatient participants in our two groups of adolescent males. When we analyzed the residential participants alone, we obtained a slightly different model, which may be related to the decreased statistical power of these analyses or may also be related to the characteristics of those adolescents receiving residential treatment. Previous research has shown that among adolescents who have offended sexually, those in residential treatment have more unstable family environments and higher levels of sexualization and impulsivity than those in outpatient treatment (Zakireh, Ronis, & Knight, 2008). Our data indicated that across all groups, residential participants reported more peer isolation and greater Hypersexuality and Sexual Preoccupation than those in outpatient treatment. Despite this, our findings cannot be fully explained by differences in residential placement across groups. The magnitude of the regression coefficients associated with the variables when entered into the regression equation are substantially the same (see Tables 3 and 4), except for peer isolation, where the residential-only analysis results in a higher odds ratio (3.33) than the total sample (1.92). Given that peer isolation was higher in residential participants than in outpatient participants, the fact that the magnitude of the relationship between sexually abusing a child and peer isolation increases further supports the association between this factor and sexual abuse perpetration.

A final limitation of this study is that the comparison group included youth with mental health problems, such as anxiety or mood disorders, and substance use disorders. The use of more homogeneous control groups in future studies will help clarify further the relations found here and to specify the traits that uniquely identify youth who sexually offend.

In spite of these limitations, this study provided information that fills an important gap in our knowledge of factors related to adolescent sexual offending and child sexual abuse perpetration. Seto and Lalumière (2010) indicated that although adolescents who have offended sexually did not differ from non-sex delinquents in their social skills, they tended to be more socially isolated. The present data identified a deficit in

the skills necessary to interact with potential romantic and intimate partners, particularly a poor internal working model of self, expectations of rejection, and isolation from peers. These factors characterized the commission of sexual offending against children whether compared with commission of non-sexual crimes (Miner et al., 2010) or with the more internalizing problems of substance use, anxiety, and depression.

The present results showed that sexual abuse perpetration was associated with low sex drive and sexual preoccupation relative to a substance abuse control, coupled with a lack of control over one's sexual behavior. This contradicts our previous findings that indicated, relative to a non-sexual offending delinquent control, high sex drive and sexual preoccupation were associated with the sexual abuse of children (Miner et al., 2010). These contradictory findings may be explained by the difference between non-sexual offending delinquent youth and youth with mental health and substance use problems on the measures of hypersexuality and sexual preoccupation. That is, like the sexual offender sample in Miner et al. (2010), the mental health/substance use sample in this study had higher scores on Hypersexuality and Sexual Preoccupation than the non-sexual offender sample assessed in Miner et al. (2010). Thus, it appears that the influence of sexuality variables on sexual offending is complex, but related to lack of sexual behavior control, rather than to sexual appetite or drive per se. This relation requires additional investigation.

Although we recognize that our findings are correlational and not causal, we speculate that Marshall's attachment hypothesis (Marshall, 2010; Marshall & Marshall, 2010) has explanatory merit. Sexual abuse perpetration in adolescent males, especially that perpetrated against child victims, is likely characterized by anxious attachment to parents, a poor representational model of self, perceptions of a threatening social environment, and little personal agency, that is, limited interactions with peers and feelings of isolation from them, and both poor masculine adequacy and discomfort relating to others, particularly opposite-gender peers.

Acknowledgments

The authors thank Dr. Rae Hoesing, project coordinator for the first two years of NCIPC funding, without whose guidance and skill this research would not have been possible, and James Heacock, who was the project coordinator for the first two years of this research. We also thank Angela Lewis-Dmello, Charles Helm, Jason Netland, and Morgan Paldron, for their long hours and extensive travel conducting interviews, administering the computer survey, and abstracting files. We further thank Yoonhee Sung for data management and aiding in data analysis and our attachment coders, Antonia Henderson, PhD, and Doug Oram. We further thank Heidi Fall for her aid in preparation of this manuscript.

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by grants from the U.S. Office of Juvenile Justice and Delinquency Prevention (2001-JR-BX-0003) and the National Center for Injury Prevention and Control (R49 CE000265-02 and 5R01 CE001210-03).

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