

A TEST OF WHETHER DIFFICULTIES IN EMOTION REGULATION
EXPLAIN THE RELATION OF ATTACHMENT WITH
RISKY SEXUAL BEHAVIORS, ATTITUDES, AND SELF-EFFICACY

A Thesis

Presented to

The Faculty of the Department

of Psychology

University of Houston

In Partial Fulfillment

of the Requirements for the Degree of

Master of Arts

By

Charles Jardin

May, 2015

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ABSTRACT

The incidence of human immunodeficiency virus (HIV) and other sexually transmitted infections (STI) has increased among adolescents and young adults due to the prevalence of risky sexual behaviors. Adolescents with severe psychopathology may be particularly at risk. Interventions based on decision-making models of risky sexual behaviors have shown inconsistent results. Recent research emphasis on attachment processes and difficulties in emotion regulation suggests these factors may influence risky sexual behaviors, yet the underlying mechanism connecting these variables has not been explored. The primary aim of the present study was to examine whether lower levels of difficulties in emotion regulation would explain the relation of greater attachment security to mother, father, and peers, independently, with fewer risky sexual behaviors among inpatient adolescents. A secondary aim was to examine whether difficulties in emotion regulation explained the relation of attachment with sexual attitudes and self-efficacy.

Results showed that attachment to mother and to peers, but not attachment to father, exerted an indirect effect, via difficulties in emotion regulation, on number of sexual partners and alcohol/substance use concurrent with sex. However, the observed indirect effect showed that greater attachment security associated with more sexual partners and alcohol/substance use concurrent with sex. Greater attachment security to mother indirectly associated with greater self-efficacy to negotiate condom use via lower levels of difficulties in emotion regulation. However, no indirect effect was observed upon sexual attitudes or self-efficacy to refuse sex. Findings reflect the development of normative sexual behavior among adolescents, with greater attachment security facilitating fewer difficulties in emotion regulation and more sexual exploration. More research is needed to clarify the functions of attachment and emotion regulation in normative sexual development.

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Background and Significance

The problem of risky sexual behavior

Sexual risk behaviors are those that put an individual at greater risk for contracting human immunodeficiency virus (HIV) and other sexually transmitted infections (STI). Risky sexual behaviors have been operationalized as having had sexual intercourse, younger age at first intercourse, a greater number of sexual partners, not using a condom during intercourse, and the use of alcohol or drugs preceding sexual intercourse (Karen Basen-Engquist, 1992). Of these behaviors, not using condoms and having a greater number of sexual partners have been shown to be most predictive of the majority of STI, including HIV (for review: Gewirtzman, Bobrick, Conner, & Tyring, 2011), and have been the focus of research. Increases in condom use have been shown to be associated with increases in number of sexual partners, which has shown offsetting effects in relation to increasing rates of STIs (A. M. Johnson et al., 2001). In addition to condom use and number of partners, age at first intercourse has also been shown to be predictive of STI, specifically among adolescents (Upchurch, Mason, Kusunoki, & Kriechbaum, 2004). Notably, a variety of contextual factors have been shown to modify the relation between specific sexual risk behaviors and incidence of STI (Aral & Gorbach, 2002).

The prevalence of HIV-risk sexual behavior among adolescents. Risky sexual behavior is an important target for intervention for the reduction of HIV and STI transmission. Currently, adolescents have the highest incidence of any age group for STIs and HIV infection is spreading most quickly among young adults (CDC, 2014a; Satterwhite et al., 2013). With the substantial economic burden caused by HIV and STIs (Hutchinson et al., 2006; Owusu-Edusei et al., 2013), and especially among adolescents (Chesson,

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Blandford, Gift, Tao, & Irwin, 2004), a higher incidence of HIV and STI among adolescents and young adults presents a significant challenge for the future. If sexual risk behaviors can be reduced in adolescence, the costs related to HIV and other STIs may be mitigated. Currently, however, risky sexual behaviors are highly prevalent among adolescents. In 2013, 46.8% of high school students reported having ever had sexual intercourse and 5.6% reported having had sexual intercourse before age 13 years old, while 34.0% reported having had sexual intercourse within the past 3 months and 15.0% reported having had four or more lifetime sexual partners (Kann et al., 2014). Moreover, only 59.1% of high school students reported having used a condom during their last sexual intercourse and 13.7% reported not having used any contraception method at last sexual intercourse (Kann et al., 2014). Lastly, 22.4% reported having used alcohol or drugs before their last sexual intercourse (Kann et al., 2014), which has been shown to decrease the likelihood of condom use and increase number of sexual partners (Brookmeyer & Henrich, 2009).

Present knowledge about risking sexual behavior among adolescents

Given the severe negative consequences of risky sexual behavior, research among adolescents to understand predictive factors for engaging in risky sexual behavior is important. The majority of research, both in adolescents and adults, has focused on decision-making factors as predictors of risky sexual behavior as guided by three major theoretical frameworks: 1) the Theories of Reasoned Action (TRA) and Planned Behavior (TPB); 2) Social Learning and Social Cognitive Theories (SCT); and 3) Health Belief Model (HBM). Each of these theories builds upon one another. The TRA/TPB predict behavior based on attitudes, perceived social norms, and intentions specific to a particular context (Ajzen & Fishbein, 1973). Attitudes about when to have sex, having multiple sexual partners, and

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condom use have been shown to predict each of their respective behaviors (Karen Basen-Engquist & Parcel, 1992; Carvajal et al., 1999; Meier, 2003). Moreover, perceived peer sexual behavior has been associated with more sexual partners, more unprotected sex, and having contracted a sexually transmitted infection (Bachanas et al., 2002; Voisin, 2003).

Developing separately from the TRA/TPA framework, SCT posited that behavior was determined by self-efficacy—a person's perception of their own ability to behave in such a way as to produce a desirable outcome (Bandura, 1977). Bandura himself suggested self-efficacy may be an important influence upon AIDS-related risk behavior (Bandura, 1990). Results from empirical research confirm the association of greater self-efficacy with greater likelihood of abstinence, later age at first sex, less unprotected sex, and fewer sexual partners (Karen Basen-Engquist, 1992; Reitman et al., 1996; Santelli et al., 2004). Research has shown that self-efficacy is a flexible concept that can be applied individual factors (e.g., use of safer sex practices; Karen Basen-Engquist, 1992) and interpersonal factors (e.g., communication with potential sex partners; DiIorio et al., 2001).

Limitations of previous research

The above review makes clear that sexual attitudes, norms, and self-efficacy are useful markers of the propensity for engaging in risky sexual behavior. However, despite the predictive validity of TRA/TPB, SCT, and HBM models for risky sexual behavior, there are several limitations to the current literature base.

Lack of clinical samples. One important limitation of previous research is that the majority of studies have been conducted among community samples of adolescents (Buhi & Goodson, 2007; Romero, Galbraith, Wilson-Williams, & Gloppen, 2011). Research has shown that adolescents with a psychiatric diagnosis are at an increased risk of engaging in

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risky sexual behaviors (for reviews: Brown, Danovsky, Lourie, DiClemente, & Ponton, 1997; Smith, 2001), with one study showing psychiatric inpatient adolescents were twice as likely to be sexually active and to practice unsafe sex (Ralph J. DiClemente & Ponton, 1993). More recent research among psychiatric adolescent samples has recruited from outpatient mental health clinics (Brawner, Gomes, Jemmott, Deatricks, & Coleman, 2012; Donenberg, Emerson, Bryant, Wilson, & Weber-Shiffrin, 2001; Donenberg & Pao, 2005; Oshri, Tubman, Wagner, Leon-Morris, & Snyders, 2008) or therapeutic schools (Brown, Lourie, Zlotnick, & Cohn, 2000), while other studies have utilized several recruitment sources including outpatient and inpatient psychiatric facilities (Brown et al., 2010). Few have focused exclusively on inpatient psychiatric adolescent samples that are likely to have the most severe psychopathology. Often underlying severe psychopathology are emotional vulnerabilities that impact functioning and decision-making. Studying sexual risk behavior among inpatient adolescents would allow researchers to examine emotional vulnerabilities that may be associated with increasingly risky behavior. Such findings may then inform the field of how such vulnerabilities operate among adolescents who do not exhibit clinical-level psychopathology. Thus, more research is needed to examine risk factors for engaging in risky sexual behavior among psychiatrically hospitalized adolescents.

Limited effectiveness of decision-making-based interventions. Another limitation of the current findings on decision-making predictors of risky sexual behavior has been the limited translation of basic research into the development of widely effective interventions (Ralph J. DiClemente, Salazar, & Crosby, 2007; Picot et al., 2012). Three separate reviews of interventions designed to mitigate adolescent risky sexual behavior covered studies published from 1990 to 2008 (Picot et al., 2012; Robin et al., 2004; J. M. Sales, Milhausen,

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& Diclemente, 2006). Among all three, increased condom use was the most frequent positive effect observed. Proportions of studies reviewed that reported positive effects ranged from two out of 11 (Picot et al., 2012) to 20 out of 39 (J. M. Sales et al., 2006), to 8 out of 12 (Robin et al., 2004). However, the most recent review also conducted meta-analyses for the condom use outcome and reported a non-significant effect across the studies reviewed (Picot et al., 2012). Significant reductions in the age of sexual debut, frequency of intercourse, or number of sexual partners were less prevalent than the significant effects reported for condom use in each of the respective literature reviews.

Techniques associated with successful interventions were adapting the intervention to a specific population, use of theoretical framework in intervention design and implementation, and targeting psychological correlates of risk that went beyond STI education, such as problem-solving, social skills building, and ethnic pride enhancement (J. M. Sales et al., 2006), as well as treatment duration and degree of facilitator training (Robin et al., 2004). Two of the three reviews also noted that social learning and social cognitive theories were among the most frequently used theoretical frameworks for the design of interventions (Robin et al., 2004; J. M. Sales et al., 2006). Yet, despite the incremental successes reported, none of the studies reviewed reported significant positive intervention effects for more than two forms of risky sexual behavior (e.g. condom use, age at sexual debut, frequency of sex, number of sexual partners), and most were only effective for one form of behavior (Picot et al., 2012; J. M. Sales et al., 2006). Overall, significant relations between decision-making factors and risky sexual behavior in basic research have not translated to the development of widely successful interventions. Thus, new clinical research

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into risk factors for risky sexual behavior is needed as a foundation for the development of new, more effective interventions.

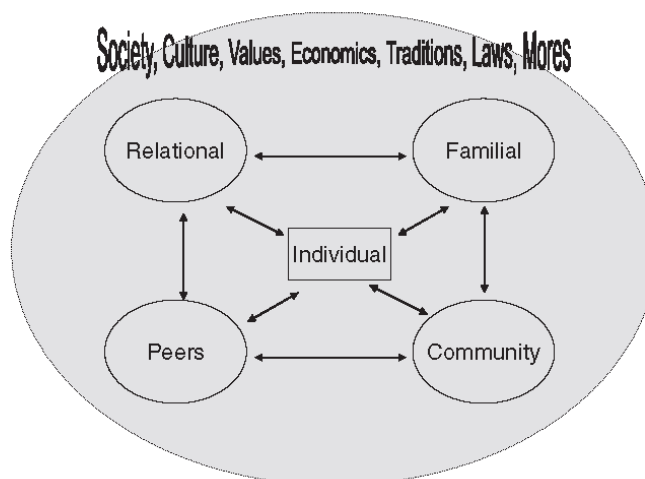
The parent-adolescent relationship: A promising direction for research

Recommendations for future research have included utilizing an adolescent's family and social context as agents of the intervention and targeting psychological correlates—both proximal and distal—of risky sexual behavior (Ralph J. DiClemente et al., 2008; J. M. Sales et al., 2006). In particular, the ecological approach suggested by DiClemente and colleagues (2007), illustrated in Figure 1, has emphasized the multiple levels of influence within an adolescent's social context that impact the decision whether to engage in risky sexual behavior. Ecological models emphasize how family factors, such as parent-adolescent relationship quality and parenting behaviors, can have both positive and negative influences on risky decision-making in adolescence (Voisin, Hong, & King, 2012). Moreover, family factors may be particularly important because of greater accessibility for clinicians to an adolescent's parents compared to other levels within the ecological model, such as an adolescent's peers or school system. Therefore, an examination of parental factors, particularly the nature of an adolescent's relationship with caregivers, has become an important variable to explore

in relation to risky sexual behavior among adolescents.

Figure 1

Ecological model of adolescent risky sexual behavior. Figure from DiClemente et al. (2007).



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The importance of parental factors. Parental factors have been shown to associate with protective effects against risky sexual behavior among adolescents (Murry, Simons, Simons, & Gibbons, 2013). Greater parent and family connectedness have been associated with later age of sexual debut (Resnick et al., 1997) and decreased likelihood of having had sexual intercourse (Aronowitz & Morrison-Beedy, 2003; Dittus, Jaccard, & Gordon, 1999; Jaccard, Dittus, & Gordon, 1996; Lammers, Ireland, Resnick, & Blum, 2000; Moore & Chase-Lansdale, 2001), unprotected sex (Aronowitz & Morrison-Beedy, 2003; Jaccard et al., 1996), and contracting HIV (Garofalo, Mustanski, & Donenberg, 2008). Likewise, greater parent-adolescent relationship satisfaction was shown to be associated with later age of sexual debut and greater likelihood of condom use (Dittus & Jaccard, 2000). Moreover, perceived family support has been shown to be associated with delayed sexual debut (Browning, Leventhal, & Brooks-Gunn, 2004), decreased likelihood of having had sexual intercourse (Harper & Robinson, 1999; Robinson, Telljohann, & Price, 1999), fewer sexual partners (Harper & Robinson, 1999), and less unprotected sex (Crosby et al., 2001; Crosby, DiClemente, Wingood, & Harrington, 2002; Harper & Robinson, 1999). Research also suggests that parental monitoring and supervision is protective against risky sexual behavior, as more supervision has been associated with later age of sexual debut (Longmore, Manning, & Giordano, 2001; Romer et al., 1999; S. L. Rosenthal et al., 2001), decreased frequency of sex (Benda, 2002; K. S. Miller, Forehand, & Kotchick, 1999), fewer sexual partners (R. J. DiClemente et al., 2001; K. S. Miller et al., 1999; K. S. Miller, Forehand, & Kotchick, 2000), and safer sex practices (Nappi et al., 2009).

However, negative parent-adolescent interactions can serve as risk factors for adolescent risky sexual behavior. For example, greater family conflict has been associated

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with earlier age of sexual debut (Doljanac & Zimmerman, 1998; McBride, Paikoff, & Holmbeck, 2003), as well as increased likelihood of having had sexual intercourse, more sexual partners, and more unprotected sex (Doljanac & Zimmerman, 1998). Among depressed adolescents, more parent-adolescent relationship stress longitudinally predicted an increased likelihood of engaging in sexual intercourse (Davila et al., 2009).

Limitations of previous research on parental factors. Yet, research on the relation between parental factors and adolescent risky sexual behavior is not monolithic. In their literature review, Buhi and Goodson (2007) reported perceived parental closeness or involvement showed moderated (Ramirez-Valles, Zimmerman, & Juarez, 2002; Ream & Savin-Williams, 2005) or no effects (DiIorio, Dudley, Soet, & McCarty, 2004; Roche et al., 2005; Somers & Paulson, 2000) on risky sexual behaviors. Similarly, adolescent ratings of parent-adolescent relationship satisfaction showed moderated (Davis & Friel, 2001; Rose et al., 2005) or no effects (Cleveland, 2003). Results for parental support have also been inconclusive, as moderated (Benda & Corwyn, 1998; Chewning & Van Koningsveld, 1998; K. S. Miller et al., 2000) and no effects (Benda & Corwyn, 1996; Lammers et al., 2000; Mott, Fondell, Hu, Kowaleski-Jones, & Menaghan, 1996; Perkins, Luster, Villarruel, & Small, 1998; Upchurch, Aneshensel, Sucoff, & Levy-Storms, 1999; Whitbeck, Yoder, Hoyt, & Conger, 1999) were observed in relation to risky sexual behavior. Furthermore, parental supervision also is associated with mixed results within the literature, with indirect (Lynch, 2001; Mandara, Murray, & Bangi, 2003; Rose et al., 2005; Sieverding, Adler, Witt, & Ellen, 2005) or no effects (Aronowitz, Rennells, & Todd, 2005; J. G. Baker et al., 1999; Baumer & South, 2001; Benda & Corwyn, 1996; Browning et al., 2004; French & Dishion, 2003; K. S. Miller et al., 2000; Perkins et al., 1998) being reported by several studies.

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That the above literature contains both significant and null findings regarding the relation between parent factors and risky sexual behavior may suggest the operation of a modifying variable. While parent factors appear to be an important influence upon adolescent sexual behavior, more research is needed to examine the mechanisms by which parent-adolescent relationships exert such influence. The present research seeks to build upon the above-mentioned recommendations to explore ecological, and in particular familial, influences on adolescent sexual behavior (Ralph J. DiClemente et al., 2008; J. M. Sales et al., 2006) by examining attachment to caregivers and emotion regulation abilities as possible influences upon risky sexual behavior.

The influence of attachment on risky sexual behavior

Among the parent factors examined in relation to adolescent risky sexual behavior, attachment to caregivers has received less attention. Yet, strong theoretical and empirical evidence has suggested attachment to caregivers may influence adolescent sexual behavior (e.g., Steinberg, Davila, & Fincham, 2006) as well as risk factors proximal to adolescent decision-making, such as emotion regulation (Brennan & Shaver, 1995; Cassidy, 1994; Sroufe & Waters, 1977).

Attachment theory. From its beginning, attachment security has been conceived of as a fundamentally behavioral system (Bowlby, 1982; Cassidy, 2008). Within the infant-caregiver relationship, infants develop patterns of behavior that elicit the necessary support from their caregivers. Yet, the development of infant attachment behavior is also transactional; the accumulation of caregiver responses to the infant influences the infant's subsequent attempts to elicit support. Throughout early development, the infant modifies attachment behaviors until a patterned support-seeking strategy develops as the typical

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manner of relating to the child's caregivers. These patterned support-seeking strategies have been theorized to reflect the development of expectations—dubbed “internal working models” (Bowlby, 1982)—about how others respond to the self and how the self relates to others (Bretherton & Munholland, 2008).

Based on observational studies early in the development of attachment theory, such as the Strange Situation (Mary D. Salter Ainsworth, Blehar, Waters, & Wall, 1978; M. D. S. Ainsworth & Wittig, 1969), three patterned support-seeking strategies, or attachment styles, emerged that have guided research within the field of attachment: secure, resistant, and avoidant (Weinfield, Sroufe, Egeland, & Carlson, 2008). Secure attachment was observed to develop from a child's recognition of the caregiver's consistent accessibility and responsiveness to the child's needs. In contrast, insecure attachment developed when caregiver behavior toward the child was less responsive or inconsistent, leading to resistant attachment; or when caregiver behavior toward the child was rejecting, leading to avoidant attachment.

Relation between attachment to caregivers and later attachment relationships.

Attachment security has strong links to interpersonal effectiveness in relationships. From its conception, attachment theory has hypothesized that early attachment relationships influence the development of internalized representational models of the self and of the attachment figure (Berlin, Cassidy, & Appleyard, 2008; Bowlby, 1982) and that these mental representations influence the development of future relationships with non-caregivers, such as peers (Englund, Levy, Hyson, & Sroufe, 2000; Sroufe, Egeland, & Carlson, 1999) and romantic partners (Furman, Simon, Shaffer, & Bouchey, 2002; Grossmann, Grossmann, & Kindler, 2005; Hazan & Shaver, 1994) and even strangers (Roisman, 2006). Moreover,

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insecure attachment to caregivers has been associated with relationship problems with peers and romantic partners (Furman et al., 2002; Sroufe et al., 1999; Way & Chen, 2000).

Similarly, insecure attachment to peers during adolescence has predicted anxious attachment to romantic partners during young adulthood (Pascuzzo, Cyr, & Moss, 2013).

Attachment security and risky sexual behavior. Among the parent-adolescent relationship factors that have been studied in relation to risky sexual behavior, adolescent attachment to caregivers has been underrepresented. A literature search, utilizing two electronic databases (PsycInfo and MedLine) and examining the references cited in relevant peer-reviewed articles and a recent literature review (Dewitte, 2012), produced only eight studies (nine articles) that examined the relation between attachment security and sexual behavior among adolescents. Of these, four studies focused specifically on attachment security with caregivers (Emerson, Donenberg, & Wilson, 2012; R. Kobak, Herres, Gaskins, & Laurenceau, 2012; Moore & Chase-Lansdale, 2001; Steinberg et al., 2006). The remaining studies examined attachment security within romantic (Cooper, Shaver, & Collins, 1998; Kershaw et al., 2007; Letcher & Slesnick, 2013; Tracy, Shaver, Albino, & Cooper, 2003) and peer (A. L. Miller, Notaro, & Zimmerman, 2002; Ritchwood, Traylor, Howell, Church, & Bolland, 2014) relationships. Only one reported no significant association specifically between romantic attachment security and risky sexual behavior (Letcher & Slesnick, 2013). The remaining seven studies reported significant effects.

Among the studies that assessed attachment to caregivers, one examined whether attachment to caregivers mediated the relation between an adolescent's perception of conflict between parents and her engagement in risky sexual behavior (Steinberg et al., 2006). In a sample of community females ($N = 96$; mean age 13.24 years), attachment to

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caregivers was measured dimensionally using both the Family Attachment Interview (FAI; Bartholomew & Horowitz, 1991) and a self-report measure. Two dimensions of attachment were examined: model of self (reflective of attachment anxiety); and model of other (reflective of attachment avoidance). It was reported that model of self was unrelated to risky sexual behavior ($r = -.10, p > .05$), but that a more negative model of other was associated with increased risky sexual behavior ($r = -.32, p < .01$). Utilizing structural equation modeling (SEM), the overall model showed good fit ($\chi^2(4) = 4.54, p = .34$; CFI = 1.00; RMSEA = 0.04) and model of other mediated ($\beta = -.20, p < .05$) the relation between perceived parental conflict and risky sexual behavior (Steinberg et al., 2006).

Another study utilized data from 128 poverty-impacted community adolescents who completed a baseline assessment at age 14 and follow-up assessments at ages 15 and 17 (R. Kobak et al., 2012). Preoccupied attachment, as measured by a Q-sort composite based on the Adult Attachment Interview (AAI) at age 15, was indirectly associated with risky sexual behavior; however, no effect was observed for dismissing attachment. Path analyses showed that preoccupied attachment was directly related to a 15 year-old's choice of a romantic partner—instead of a caregiver—as one's primary attachment figure ($\beta = .29, p < .01$). Via association with primary attachment figure, preoccupied attachment was indirectly related to sexual risk taking at age 15 ($\Delta\chi^2(1) = 3.55, p < .10$). Analyses for gender moderation further showed that for females, but not males, preoccupied attachment was directly ($\beta = .37, p < .01$) and indirectly (via age-15 primary attachment figure) related to more risky sexual behavior at age 15; and was indirectly predictive of more risky sexual behavior at age 17 ($t = 2.52, p < .05$) via its direct relations with both age-15 primary attachment figure and age-15 risky sexual behavior (R. Kobak et al., 2012).

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The remaining studies utilized self-report measures of attachment to caregivers.

Emerson et al. (2012) examined whether peer norms and peer attachment security served as mediators of the relation between maternal attachment security and risky sexual behavior. Notably, it was the only study to examine attachment and sexual behavior among clinical adolescents ($N = 262$); it sampled African American females, ages 12 to 16 years old, who were seeking outpatient mental health services. Using SEM, results showed that the latent variable for peer norms (a composite of scales measuring negative peer influence, girlfriend dating behavior, and likelihood of peer pressure), but not peer attachment security, was a significant mediator. Specifically, total indirect effects in the model were significant ($\beta = -.18, z = -3.45, p < .01$), as was the indirect pathway ($\beta = -.15, z = -3.40, p < .01$) from maternal attachment security through peer norms ($\beta = -.27, p < .001$) to risky sexual behavior ($\beta = .57, p < .001$; Emerson et al., 2012).

In a community sample ($N = 289$; ages 15-18 years) of poverty-impacted African-American females, it was reported that better quality of mother-daughter relationships were associated with later age at sexual debut ($OR = .41, p < .001$), even after individual, peer, and social network variables were entered into the logistic regression model (Moore & Chase-Lansdale, 2001).

Attachment security with figures other than caregivers has also shown associations with risky sexual behavior among adolescents. Focusing exclusively on attachment security with peers, one study reported that attachment significantly prospectively predicted subsequent substance use during sex, but was unrelated to number of sexual partners or frequency of sexual intercourse in the past year (A. L. Miller et al., 2002), while another study reported greater peer attachment security associated with fewer sexual partners

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(Ritchwood, Traylor, et al., 2014). Studies examining attachment to romantic partners have also shown significant effects. In a large study of adolescents ages 12-18, romantic attachment avoidance was associated with less likelihood of having ever had sex ($\eta^2 = .022$, $p < .01$), the fewest non-intercourse sexual experiences among virgins ($\eta^2 = .011$, $p < .05$), and the lowest frequency of sexual intercourse over the previous six months among non-virgins ($\eta^2 = .007$, $p < .05$); however, greater romantic attachment security was associated with lowest rates of substance use during first sex with most recent partner ($\eta^2 = .022$, $p < .001$) and frequency of intoxication during sex during the past six months ($\eta^2 = .011$, $p < .05$), and a lower rate of substance use at first sex compared to avoidant ($\eta^2 = .009$, $p < .05$), but not anxious, attachment (Tracy et al., 2003). Similarly, a separate report on the same study showed that romantic attachment security was associated with the least likelihood of having ever had sex with a stranger ($\eta^2 = .013$, $p < .01$), while romantic attachment anxiety among females was most associated ($\eta^2 = .015$, $p < .05$) with ever having been pregnant (Cooper et al., 1998). In a study with pregnant adolescents and young adults, romantic attachment anxiety explained unique variance in the percentage of condom use and unprotected sex with a risky partner during the previous 6 months; and sexual attitudes did not mediate this relation (Kershaw et al., 2007). Indirect effects of attachment anxiety ($\beta = -.02$, $p < .001$) and avoidance ($\beta = .03$, $p < .001$), via dating identity exploration and healthy sexual attitudes, have also been observed on an index of risky sexual behaviors (McElwain, Kerpelman, & Pittman, 2015). Attachment anxiety and attachment avoidance associated with dating identity exploration (negatively with anxiety; positively with avoidance) and healthy sexual attitudes (positively with anxiety; negatively with avoidance), which in turn were associated with risky sexual behaviors (McElwain et al., 2015).

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Indeed, the literature showing a relation between attachment insecurity and risky sexual behavior among adolescents has been further supported by similar findings among college students and adults (see for review: Dewitte, 2012). One study examined how attachment styles in adolescence related to sexual behavior in young adulthood and reported several significant findings (Cooper et al., 2006). Attachment avoidance related to increased likelihood of having casual sexual partners—a relation that was motivated by a need for affirmation among women and needs for affirmation, coping, and partner approval among men (Cooper et al., 2006). In the same way, studies among college students and young adults have shown that greater attachment avoidance is associated with more risky attitudes about sex with casual partners (Moors, Conley, Edelstein, & Chopik, 2015), while greater attachment anxiety is either negatively associated with (Owen, Quirk, & Fincham, 2014) or unrelated to (Sprecher, 2013) attitudes about casual sexual partnerships. Likewise, attachment anxiety has been observed to be associated negatively with sexual self-efficacy and positively with risky attitudes about condom use (Feeney, Peterson, Gallois, & Terry, 2000).

Mechanism linking attachment and risky sexual behavior: Emotion regulation

Emotion regulation. In efforts to understand the relations between affect and psychological functioning and behavior, emotion regulation has emerged as an explanatory construct. Several models have been put forward to defining emotion regulation. An early model, based on the hedonic principle, posited that the goal of emotion regulation was to maximize positive affect and minimize negative affect (Clark & Isen, 1982; Thayer, 2000). More recently, the relationship between emotion and emotion regulation has been conceptualized in two different frameworks: a one-factor model (Campos, Frankel, &

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Camras, 2004); and a two-factor model (Gross, 1998b; Thompson, 1994). In the one-factor model, also known as the functionalist perspective, both emotion and emotion regulation have been conceptualized as emerging out of the salience of a mental or environmental event in relation to an individual's values and goals (Campos et al., 2004). Support for the one-factor model has been found in the multifinality of emotionally salient experiences, where a circumstance such as loss of support may result in a variety of emotional responses depending on the meaning of the event to the individual (Sroufe, 1996; Sroufe & Waters, 1976). The benefit of the one-factor model is in its integration of physical sensations and behavioral responses within emotional experience. For example, running from danger would be recognized as the concurrent expression and regulation of an emotion—fear. Moreover, the one-factor model affirms that, depending on the context, “bad” emotions may have positive outcomes, while “good” emotions may have negative outcomes. In this way, the theory of emotion regulation presented by Campos et al. (2004) emphasizes the function of emotion, by which an individual negotiates the relation between internal goals and the external environment (Camras & Shuster, 2013).

In contrast, the two-factor model has distinguished between the processes that generate an emotion and those that impose constraint upon an emotional response (Gross, 1998b; Thompson, 1994). Like the one-factor model, the two-factor model has also recognized that a particular experience may elicit a variety of emotional responses. However, the two-factor model has highlighted the potential dissonance between an initial emotional response and the response required to achieve an individual's goals. Emotion regulation, then, has represented the effort to bring emotional responses in line with environmental constraints in order to achieve one's goals (Thompson, 1994). Emotion regulation has been more closely

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related to the self-regulatory processes and neural systems that overlap with, but are distinct from, those that generate emotion. As such, individual differences may arise in both the expression and regulation of emotion. Indeed, research has shown some emotion regulation strategies are more adaptive than others. For example, cognitive reappraisal—the reframing an emotional stimulus such that the new meaning modulates its associated emotional response—has been shown to be more adaptive than suppression—the effortful prevention of an internal emotional response from being displayed (Gross, 1998a). Yet, further research has shown that no emotion regulation strategy is “good” or “bad,” but the benefits of each depend on contextual factors (Sheppes et al., 2014).

Difficulties in emotion regulation and risky sexual behavior. Emotion regulation has been examined in relation to risky sexual behavior via two models that parallel the one- and two-factor models of emotion regulation. Similar to the one-factor model, risky sexual behavior has been examined as a mood regulation strategy in association with the experience of negative affect. In college samples of men (Bancroft et al., 2003) and women (Lykins, Janssen, & Graham, 2006), increases in sexual interest and response were reported by approximately 10% of responders when feeling depressed and approximately 20% of responders when feeling anxious, leading the authors to conclude that sexual behavior may be a means of mood regulation for a subset of the adult population. Similar findings for the relation between negative affect and risky sexual behavior have been reported among adolescents (Brown et al., 2006; Cooper et al., 1998; Houck, Hadley, Lescano, Pugatch, & Brown, 2008). Moreover, recent research has shown that adolescents experience an increase in positive affect in the hours leading up to sexual intercourse, but experience a decrease in negative affect in the hours following sexual intercourse (Shrier, Koren, Aneja, & de Moor,

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2010; Shrier, Shih, Hacker, & de Moor, 2007). These findings support the hypothesis that risky sexual behavior may be used as an emotion regulation strategy.

While the one-factor model of emotion regulation has captured the goal-directedness, in response to emotional stimuli, of both emotional responses and behavioral modulations, the two-factor model may afford additional explanatory power. As has been pointed out elsewhere (Putnam & Silk, 2005), a key benefit of the two-factor model of emotion regulation has been its ability to distinguish effortful strategies used to modulate an emotional response and the degree to which these strategies may be employed effectively.

Following the two-factor approach, recent research has operationalized emotion regulation as the variety of dysfunctions associated with under-modulated emotional responses. Gratz and Roemer (2004) have developed a measure of problematic emotion regulation (i.e., the Difficulties in Emotion Regulation Scale; DERS), that encompasses the following domains: 1) a lack of awareness or acceptance of, or insight into, one's negative emotions; 2) a lack of strategies to temper the duration and intensity of negative emotions; 3) a resistance to enduring negative emotions during the pursuit of goals; and 4) an inability to inhibit impulsive behavior when experiencing negative emotions. With the emphasis on ways emotion regulation difficulties can be expressed or experienced within an individual, this conceptualization allows for a more explicit examination of the specific emotion regulatory deficits that may be related to a variety of dysregulated behaviors, including risky sexual behavior.

Three studies have looked at the relation between the DERS and risky sexual behavior in college students and/or adults. A study using a sample of inpatient adults with substance use disorder (SUD) examined sexual behavior with a commercial sex partner as

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its outcome (Tull, Weiss, Adams, & Gratz, 2012). The DERS total score explained unique variance in the number of past year commercial sexual encounters (controlling for age, ethnic background, and exposure to Criterion A trauma; $\beta = .19$, $\Delta R^2 = .02$, $F = 2.45$, $p < .05$; $\beta = .20$, $R^2 = .11$, Adjusted $R^2 = .09$, $\Delta R^2 = .04$, final model $F[4, 172] = 5.20$, $p < .01$); and in (non)use of condoms when engaging in sex with a commercial sex worker while high on drugs (controlling for sensation-seeking, exposure to a Criterion A trauma, and substance use severity; $\beta = .47$, $\Delta R^2 = .13$, $F = 3.79$, $p < .01$; $\beta = -.27$, $R^2 = .31$, Adjusted $R^2 = .24$, $\Delta R^2 = .07$, final model $F[4, 43] = 4.72$, $p < .05$) in separate models (Tull et al., 2012).

Another study among adults examined the relation between difficulties in emotion regulation and number of lifetime sexual partners, proportion of partners with whom they used a condom, and lifetime diagnosis of sexually transmitted infections in a largely African American, male sample (Artime & Peterson, 2012). Bivariate analysis showed that DERS total score was marginally associated with number of lifetime sexual partners ($r = .11$, $p = .06$), but unassociated with consistent condom use ($r = .04$, $p = .45$). However, two subscales were significantly associated with number of lifetime sexual partners: impulse control difficulties ($r = .12$, $p = .03$) and limited access to emotion regulation strategies ($r = .16$, $p < .001$). Hierarchical regression analyses and Sobel tests for these two subscales further showed that limited access to emotion regulation strategies was a significant mediator (Sobel = 1.94, $p = .05$) of the relation between having a history of child sexual abuse and number of lifetime partners (Artime & Peterson, 2012).

Another study examined the relation between child physical abuse (CPA) and/or child sexual abuse (CSA) and number of lifetime sexual partners and an index of risky sexual behavior with a stranger (someone just met) and with a regular sexual partner

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(Messman-Moore, Walsh, & DiLillo, 2010). Difficulties in emotion regulation, as measured by DERS total score, was significantly associated with number of lifetime sexual partners and risky sexual behavior with a stranger, but not with risky sexual behavior with a regular sexual partner (Messman-Moore et al., 2010). Separate path analyses further showed that emotion regulation mediated the relation between both CPA and CSA with risky sexual behavior with a stranger and number of lifetime sexual partners, respectively (Messman-Moore et al., 2010).

Only one study has examined the relation between difficulties in emotion regulation (i.e., the DERS) and risky sexual behavior in adolescence. In a sample of justice-involved adolescents, bivariate analyses of emotion regulation, measured by DERS total and subscale scores, with frequency of condom use showed no significant association; however, one DERS subscale, limited access to emotion regulation strategies, was reported to moderate the relation between high levels of anxiety and infrequent condom use ($B = -.025$, $SE = .013$, $\Delta\chi^2 = 6.12$, $p < .05$, $OR = .975$) among sexually-experienced adolescents (D. J. Miller, Vachon, & Aalsma, 2012).

Attachment as an emotion regulation system. Attachment to caregivers has been suggested as influential upon the development of emotion regulation (Cassidy, 1994). Empirical work among infants (Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996), children (Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000), adolescents (Gresham & Gullone, 2012), and adults (Mikulincer & Shaver, 2008) has supported the theory that the attachment system is closely related to emotion regulation. Infant attachment with caregivers has been conceived as an emotion regulation system in which parent responses to infant emotions influence the infant's development of emotion regulation abilities (Thompson &

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Meyer, 2007). In this way, caregivers serve as co-regulators of infant emotions by being attentive to infant emotional expressions, identifying them, and modulating them toward a desired goal via soothing behaviors and maintaining proximity (Thompson, 1994). Indeed, the attachment system has been shown to impact the development of neural systems responsible for emotion processing, stress modulation, and self-regulation (A. N. Schore, 1994; J. R. Schore & Schore, 2008).

As the attachment system develops, individual differences in attachment have been observed to be associated with different emotion regulation strategies. Among insecurely attached individuals, Mikulincer and Shaver (2007) have identified hyperactivating emotion regulation strategies among individuals characterized by resistant/anxious attachment and deactivating strategies among those characterized by dismissing/avoidant attachment. In response to threat, anxious attachment has been associated with heightened attention to the threat stimulus, outward expressions of fear, and rumination about the availability of a caregiver in response to the threat. In contrast, avoidant attachment has been associated with ignoring or underestimating the threat stimulus, suppression of emotion response, and denial of any need for help from a caregiver (Cassidy, 2008). Moreover, attachment styles have been associated differentially with priming effects in response to threat (Mikulincer, Gillath, & Shaver, 2002). Whereas a threat was shown to prompt memories of past support from caregivers among securely attached individuals, painful attachment experiences were primed among those who are insecurely attached. These schemas have been shown to guide the selection of emotion regulation strategies. Hyperactivating individuals, anxious about the availability of support, have shown heightened expressions of fear and distress to solicit help from others, while deactivating individuals suppress emotion expression to avoid further

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disappointment caused by unavailable caregivers and attempt to manage the threat independently (Collins & Read, 1994; Mikulincer & Shaver, 2007).

Within the past 20 years, emotion regulation has been conceptualized in a variety of ways (Putnam & Silk, 2005); understanding how different operationalizations of emotion regulation relate to attachment may offer new insights into how emotion regulation is related to attachment. Several studies have utilized observational coding methods to delineate the relationship between attachment and emotion regulation (R. Kobak, Ferenz-Gillies, Everhart, & Seabrook, 1994; R. R. Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Zimmermann, Maier, Winter, & Grossmann, 2001). Utilizing a Q-sort methodology with the Adult Attachment Interview (AAI), adolescents were coded for attachment security and the use of hyperactivating/deactivating strategies; these dimensions were then compared to ratings of emotional expression during a problem-solving interaction with their mother (R. R. Kobak et al., 1993). Results showed that for adolescents with greater levels of deactivating strategies, males expressed more dysfunctional anger, while females permitted more maternal dominance; moreover, secure adolescents' interactions were more balanced between teen and mother assertiveness and showed less dysfunctional anger and avoidance of problem-solving (R. R. Kobak et al., 1993). A separate study with similar design examined mothers' attachment and emotional expression and showed that, with older adolescents, mothers with hyperactivating strategies exhibited more emotion dysregulation in the form of anxiety and intrusiveness (R. Kobak et al., 1994). In longitudinal study, adolescents who had completed the Strange Situation as infants, also were assessed via the Adult Attachment Interview with Q-sort and, six months later, were coded for emotional expression during a complex problem-solving task completed with their best friend

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(Zimmermann et al., 2001). Attachment dimensions did not show effects on expressed emotion. However, greater concordance between self-rated and observationally coded expressed “negative” emotions was observed for more secure ($r = -.25, p = .06$) and less dismissing ($r = .29, p = .035$) adolescents. Moreover, an interaction was observed such that insecurely attached participants with high ratings in frustration-related emotions (e.g. disappointment, helplessness) exhibited levels of uncooperative behavior with their best friend that were significantly greater than that of insecure-low-frustration participants and both groups of securely attached participants (Zimmermann et al., 2001).

Similar relations between attachment and maladaptive emotion regulation have been shown using questionnaire measures of both constructs. In a sample of Belgian adolescents, path analyses showed that anxious attachment was associated with dysregulated sadness ($\beta = .31, p < .001$) and avoidant attachment was associated with suppressed sadness ($\beta = .30, p < .001$), and both anxious ($\beta = .22, p < .01$) and avoidant ($\beta = .21, p < .01$) attachment were associated with dysregulated anger (Brenning & Braet, 2013). Additionally, both emotion regulation strategies mediated the relation between both insecure attachment dimensions and depressive symptoms and aggressive behavior (Brenning & Braet, 2013). Similarly, a separate study of inpatient adolescents reported a mediated moderation, with positive regulation strategies mediating ($b = -.36, t = -3.91, p < .001$) the association of paternal attachment security ($b = -3.34, t = -3.21, p < .01$) with features of borderline personality disorder (BPD); and negative regulation strategies moderating the effects of paternal attachment ($b = .95, t = 9.15, p < .001$) and positive regulation strategies ($b = -.01, t = 2.65, p < .01$) on BPD features (Kim, Sharp, & Carbone, 2014). Furthermore, among community adolescents, emotion regulation mediated the relations of both parent (for males and

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females) and peer (for females only) attachment security with depressive symptoms (Kullik & Petermann, 2013).

Difficulties in emotion regulation and attachment. As mentioned above, emotion regulation has also been examined according to the specific deficits that contribute to dysregulation. Difficulties in emotion regulation have been shown to result when emotion regulatory malfunctions lead to disruptions in awareness of and endurance despite negative emotions. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) measures such deficits. Being a fairly new measure, however, there are few studies examining its conceptualization of emotion regulation in relation to attachment. Three studies among adults, using the same self-report measure of attachment, have examined the relation between attachment security and difficulties in emotion regulation. DERS total score was shown to be associated with self-reported avoidant ($r = -.38, p < .01$) and anxious ($r = .51, p < .01$) attachment (Pepping, Davis, & O'Donovan, 2013). Similarly, another study reported that attachment avoidance ($r = .39, p < .001$) and anxiety ($r = .48, p < .001$) were significantly associated with DERS total score, which, in turn, mediated the relations between attachment avoidance and attachment anxiety, respectively, with disordered eating (Ty & Francis, 2013). A third study utilized the subscales of the DERS in its examination (Goodall, Trejnowska, & Darling, 2012). Correlations between subscales of the DERS and another self-report measure of attachment showed significant associations between DERS subscales acceptance, strategies, and clarity and both attachment avoidance ($r = .221; r = .197; r = .458$; all $p < .01$) and attachment anxiety ($r = .341; r = .365; r = .354$; all $p < .01$); attachment anxiety was also associated with the DERS subscales goals and impulse ($r =$

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.203; $r = .321$; both $p < .01$), while attachment avoidance was associated with DERS awareness ($r = .417$, $p < .01$) subscale (Goodall et al., 2012).

Few studies have examined the relations between difficulties in emotion regulation (i.e., the DERS) and attachment security among adolescents. Only one such study has also utilized an interview measure of attachment, the CAI (Venta, Sharp, & Newlin, 2014). Independent T-tests showed that attachment insecurity was associated significantly with more emotion regulation difficulties on two DERS subscales: nonacceptance of emotional responses and emotional awareness (Venta et al., 2014).

With only four total studies having examined the relationship between difficulties in emotion regulation (i.e., DERS) and attachment to caregivers, more research is needed to understand this relationship. Moreover, difficulties in emotion regulation have been shown to be present in a variety of disorders, including Posttraumatic Stress Disorder (Weiss, Tull, Viana, Anestis, & Gratz, 2012), Borderline Personality Disorder (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2009), and Substance Use Disorder (Tull et al., 2012). The prevalence of difficulties in emotion regulation across a variety of psychiatric disorders suggests the importance of examining emotion regulation in relation to risky sexual behaviors in a clinical sample of adolescents.

Aims of the present study

The relations among risky sexual behavior and attachment security (Emerson et al., 2012; R. Kobak et al., 2012; Moore & Chase-Lansdale, 2001; Steinberg et al., 2006); risky sexual behavior and emotion regulation (Arttime & Peterson, 2012; Messman-Moore et al., 2010; D. J. Miller et al., 2012; Tull et al., 2012); and attachment to caregivers and emotion regulation (Goodall et al., 2012; Pepping et al., 2013; Ty & Francis, 2013; Venta et al.,

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2014) have been established within previous research among community adolescents. No studies to date have examined whether emotion regulation mediates the relationship between attachment to caregivers and risky sexual behavior among adolescents. However, several findings suggest that examining emotion regulation as a mediator between adolescent attachment and sexual behavior is worthy of research. First, it has been suggested risky sexual behavior, like other impulsive behaviors (Leith & Baumeister, 1996), may itself be a strategy by which adolescents attempt to regulate emotions (Cooper et al., 1998; Weiss et al., 2012). For example, an examination of psychological distress, measured as the experience of a variety of negative emotion states (e.g. hostility) mediated the differential relations among secure, anxious-ambivalent, and avoidant attachment styles with risky sexual behavior (Cooper et al., 1998). Specifically, the increased rates of sexual episodes with a stranger and history of pregnancy among anxious-ambivalent and avoidant adolescents compared with secure adolescents was explained by increased levels of hostility in the anxious-ambivalent and avoidant groups when hostility was entered into the regression analysis (Cooper et al., 1998). The authors concluded that the mediation of hostility in the relation between attachment and sex with a stranger was evidence of how risky sexual behavior may be an emotion regulation strategy among adolescents.

Additional support for examining whether emotion regulation mediates the relation between attachment to caregivers and risky sexual behavior comes from findings related to other problem behaviors. In addition to risky sexual behavior, the study mentioned above also found evidence that substance use and delinquency also served emotion regulatory functions (Cooper et al., 1998). In addition, behaviors such as non-suicidal self-injury (Gratz, 2003), intimate partner violence (Jakupcak, Lisak, & Roemer, 2002), and aggression

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(Bushman, Baumeister, & Phillips, 2001) have been shown to serve emotion regulatory functions. Moreover, emotion regulation has been shown to predict risky sexual behavior over and above the effect of sensation-seeking, trauma severity, and substance use severity in an adult sample of inpatients with Substance Use Disorder (Tull et al., 2012).

Understanding a potential cause of difficulties in emotion regulation, such as attachment, may aid the development of future prevention and intervention efforts for a variety of problem behaviors, including risky sexual behavior.

Moreover, it has been shown that adolescents with severe psychiatric problems exhibit higher rates of risky sexual behavior (D. G. Baker & Mossman, 1991; Brown et al., 2010; Ralph J. DiClemente & Ponton, 1993; Donenberg et al., 2001). However, only a few studies have examined risky sexual behavior among adolescents in inpatient psychiatric care (D. G. Baker & Mossman, 1991; Ralph J. DiClemente & Ponton, 1993), and none of these studies have examined risky sexual behavior in relation to emotion regulation. Moreover, few studies have examined the relation between risky sexual behavior and attachment to caregivers among severely mentally ill adolescents (Emerson et al., 2012), and none have examined this relation among severely mentally ill adolescent males.

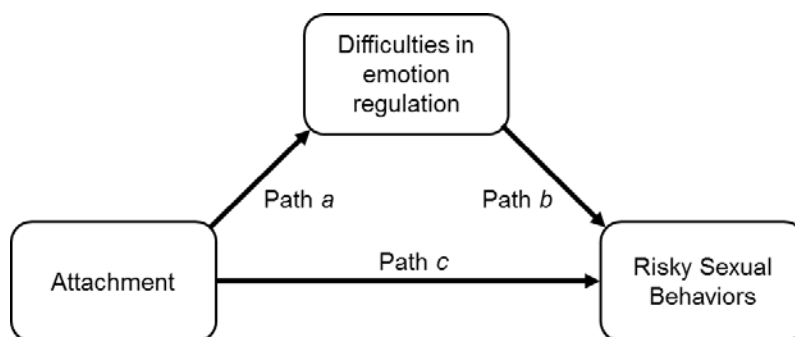
Primary aim. Based on the literature reviewed above, the primary aim of the present research was to examine whether difficulties in emotion regulation explained the relation of attachment security with risky sexual behavior within an inpatient sample of adolescents. Given the relations of attachment to caregivers (e.g., Emerson et al., 2012) and attachment to peers (Ritchwood, Traylor, et al., 2014) with risky sexual behavior, both types of attachment served as independent variables in separate analyses. Since less work has been done to understand how attachment to father functions in adolescent development (Grossmann,

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Grossmann, Kindler, & Zimmermann, 2008), attachment to father and attachment to mother were also examined separately. Risky sexual behavior was operationalized by sexual initiation, number of sexual partners in the past 3 months, and alcohol use concurrent with sexual intercourse and were examined separately. Moreover, the proposed model included theoretically relevant covariates known to associate with risky sexual behaviors: gender (Black, McMahon, Potenza, Fiellin, & Rosen, 2015; Brodbeck, Vilén, Bachmann, Znoj, & Alsaker, 2010), age (Pflieger, Cook, Niccolai, & Connell, 2013), childhood sexual abuse (Littleton, Grills, & Drum, 2014), and alcohol use (Fielder & Carey, 2010). It was hypothesized that attachment, examined separately for mother, father, and peers, would exert an indirect effect on risky sexual behaviors via emotion regulation and that the direction of the indirect effect would be negative (see Figure 2). Specifically, greater attachment security was expected to associate with lower levels of difficulties in emotion regulation, which would then relate to fewer risky sexual behaviors.

Figure 2

Proposed model: Difficulties in emotion regulation explained the relation between attachment and risky sexual behaviors in the past three months.



Secondary aim. Because of the low base rate of sexual behavior among adolescents, it was possible that the rate of sexual behaviors may be low in the present sample. Sexual attitudes, sexual self-efficacy, and communication about sex may be equally relevant measures of risk, given the strong empirical and theoretical relation of these factors with risky sexual behaviors (Karen Basen-Engquist & Parcel, 1992; Buhi & Goodson, 2007).

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Therefore, as a secondary aim, the present study tested the above model substituting sexual attitudes, sexual self-efficacy, and communication about sex for risky sexual behaviors. As with aim 1, it was hypothesized that difficulties in emotion regulation would explain the relation of attachment security to sexual attitudes, sexual self-efficacy, and communication about sex, respectively.

Method

Participants

Adolescents between the ages of 12 and 17 years old ($N = 113$) were recruited from a local inpatient psychiatric treatment facility. Exclusion criteria for the study included having a diagnosis of schizophrenia or any psychotic disorder or diagnosis of mental retardation. Additionally, participants who had not completed all study assessments were excluded from analyses ($n = 13$). The final sample included 100 adolescents (67% female; $M_{age} = 15.19$ years) from the following racial/ethnic backgrounds: 78 Caucasian, 3 Asian, 1 Native American/Alaskan, 4 Other or Multiracial, and 14 declined reporting. Similar to previous samples from this treatment facility (Ha, Sharp, Ensink, Fonagy, & Cirino, 2013; Venta, Kenkel-Mikelonis, & Sharp, 2012), the current sample exhibited severe mental health problems, as evidenced by the Computerized Diagnostic Interview Schedule for Children (C-DISC): 53% of participants met criteria for any anxiety disorder; 59% for any depressive disorder; 8% for Posttraumatic Stress Disorder; and 40% for any externalizing disorder.

Procedures

Adolescents admitted between January 2013 and January 2015 to an inpatient psychiatric unit, along with their caregivers, were offered participation in this study. Caregivers were first be provided informed consent; when parental consent was given, the

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respective adolescents were then be provided informed assent. All study procedures followed the guidelines of the institutional review boards at the University of Houston and Baylor College of Medicine. Participants were assessed by doctoral-level clinical psychology students, licensed clinicians, and/or trained clinical research assistants under the supervision of the author's supervisor, Dr. Carla Sharp. Assessments took place within the first two weeks of admission. Order of assessment was randomized by nature of the scheduling constraints of the naturalistic setting.

Measures

Risky sexual behavior. A modified version of the Safer Choices Survey (SCS; K. Basen-Engquist et al., 1999) was used to measure risky sexual behaviors and related factors. The original Safer Choices Survey was a 110-item self-report questionnaire. For the purposes of this study, 24 items were removed that regarded exposure to school HIV/STI prevention information and resources. The remaining 76 items measured participant drug use and included the Sexual Risk Behaviors Beliefs and Self-efficacy Scales (SRBBS; K. Basen-Engquist et al., 1999). The sexual behaviors queried in the SRBBS are age of sexual initiation, condom use (at both first and last sexual encounters), frequency of sexual intercourse over the past three months (with and without a condom), number of sexual partners over the past three months (with and without a condom), frequency of alcohol or drug use coinciding with sex, history of testing for HIV/STI, and history of pregnancy. Additionally, the SRBBS contains subscales regarding alcohol/substance use in the past 30 days, knowledge about HIV/STIs; personal attitudes about sexual intercourse and condoms; perceived peer norms regarding sexual intercourse and condoms; self-efficacy for refusing sexual intercourse, for communicating about sex, and for buying condoms; communication

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about sex (with parents and romantic partners); perceived barriers to condom use; and perceived susceptibility to contracting HIV/STIs. The SRBBS measures categorically whether an adolescent has ever had sexual intercourse (*Yes* = 1, *No* = 0) and measures dimensionally age at sexual debut, number of sexual intercourse episodes, number of sexual partners, and number of intercourse episodes and sexual partners with whom a condom was used.

The SCS was designed for use among middle and high school students (ages 12-18 years; K. Basen-Engquist et al., 1999) and has been used in three separate intervention studies: *Safer Choices* (K. Coyle et al., 1996); *Safer Choices 2* (Tortolero et al., 2008); and *Draw the Line/Respect the Line* (K. K. Coyle, Kirby, Marín, Gómez, & Gregorich, 2004). Reliability of the SRBBS subscales was examined in a sample of 6213 adolescents at the baseline assessment of the *Safer Choices* intervention and were as follows: attitudes about sexual intercourse: .78; norms about sexual intercourse: .78; self-efficacy for refusing sex: .70; attitudes about condom use: .87; norms about condom use: .84; self-efficacy in communicating about condoms: .66; self-efficacy in buying and using condoms: .61; and barriers to condom use: .73 (K. Basen-Engquist et al., 1999). Correlations among the subscales were modest (absolute values ranging from .23 to .63), suggesting that they each measured unique constructs. Furthermore, all items loaded onto their respective subscales in confirmatory factor analyses of the intercourse involvement and condom use models. Finally, construct and concurrent validities were established using multivariate analysis of variance, such that attitude, norms, and self-efficacy significantly differentiated between sexually experienced and inexperienced adolescents; and between consistent and inconsistent condom users (K. Basen-Engquist et al., 1999).

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For the purposes of this study, having ever had sex (i.e., being sexually experienced), number of sexual partners during the previous three months, and frequency of alcohol/substance use concurrent with sexual intercourse during the previous three months were used as outcome variables in separate models. Response options for the concurrent alcohol/substance use item were as follows: “Never” (coded = 0), “Once in a while” (= 1), “Most of the time” (= 2), and “Always” (= 3). Additionally, attitudes about when to have sex, multiple sex partners, and condom use, as well as self-efficacy to refuse sex and self-efficacy to negotiate condom use, served as outcomes. Two items assessing personal attitudes about when to have sex (attitudes about whether to have sex and attitudes about having sex with a steady partner) were summed to create an index of personal attitudes about having sex. Attitudes about having multiple sexual partners in the same month was assessed separately, via a single item, because of its direct theoretical relation to the behavioral outcome of number of sexual partners. All attitudes items were recoded such that higher scores reflected increasingly risky attitudes (i.e., acceptance of sexual behaviors; rejection of condom use). In contrast, the self-efficacy items were coded such that higher scores reflected greater self-efficacy and, thereby, reduced likelihood of engaging in risky sexual behaviors. The scales for personal attitudes about having sex ($\alpha = .85$), personal attitudes about condom use ($\alpha = .96$), self-efficacy to refuse sex ($\alpha = .81$), and self-efficacy to communicate about condom use ($\alpha = .85$) showed good to excellent internal reliability. Finally, an item assessing the number of days alcohol was consumed in the past 30 days served as a covariate. Response were rated on a 6-point scale, ranging from 0 (“I’ve never had alcohol” or “0 days in the past 30 days”) to 5 (“20 to 30 days in the past 30 days”).

Attachment to caregivers and peers. The Inventory of Parent and Peer Attachment

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(IPPA) was used to measure attachment to caregivers (Armsden & Greenberg, 1987). The IPPA is a 75-item self-report questionnaire that assesses attachment to mother, attachment to father, and attachment to peers in three separate scales. Scales for each attachment figure further divide into three subscales: Trust, Communication, and Alienation. Items are rated on a five-point scale, with values ranging from 1 (“Almost never or never true”) to 5 (“Almost always or always true”). Each of the parent-related scales share the same items, with the respective target attachment figures interchanged (e.g., “My mother[/father] respects my feelings,” and, “My father[/mother] expects too much of me” [reverse coded]). Some of the items on the peer attachment scale are shared with the parent-related scales (e.g., “My friends respect my feelings.”), while others are unique to the peer scale (e.g., “I feel alone or apart when I am with my friends.”). The IPPA scales have shown good internal reliability ($\alpha = .86$ to $.91$), good inter-correlations between the parent scales (with absolute values of $r = .70$ to $.76$), and convergent validity with related constructs, such as self-concept, family environment, trait affectivity, and family utilization (Armsden & Greenberg, 1987). Validated among adolescents and young adults (ages 16-20 years; (Armsden & Greenberg, 1987), the IPPA has since been used widely among adolescent and young adult samples (Klein, Elifson, & Sterk, 2008; Lohman & Billings, 2008; Ritchwood, Howell, Traylor, Church, & Bolland, 2014; Youngblade & Curry, 2006). In the present study, the internal reliabilities of both parent attachment scales ($\alpha = .95$) and the peer attachment scale ($\alpha = .93$) were excellent. Each of the three scales served as independent variables in separate analyses in the present study.

Difficulties in emotion regulation. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item self-report questionnaire that measures emotion

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regulation along six subscales derived via exploratory factor analysis: 1) non-acceptance of emotion responses (e.g. “When I’m upset, I become irritated with myself for feeling that way.”); 2) difficulties engaging in goal-directed behavior (e.g. “When I’m upset, I have difficulty concentrating.”); 3) impulse control difficulties (e.g. “When I’m upset, I become out of control.”); 4) lack of emotional awareness (e.g. “When I’m upset, I acknowledge my emotions.”); 5) limited access to emotion regulation strategies (e.g. “When I’m upset, my emotions feel overwhelming.”); and 6) lack of emotional clarity (e.g. “I am confused about how I am feeling.”). Items are rated on a Likert scale, with 1 as ‘almost never (0-10%)’ and 5 as ‘almost always (91-100%)’. Higher scores on the total scale and each subscale signify more difficulties with emotion regulation.

Internal consistency was reported to be high (Cronbach’s $\alpha = .93$) for the DERS total scale and for all six subscales (range $\alpha = .80$ to $.89$); and test-retest reliability over 4 to 8 weeks for the DERS total scale ($\rho_T = .88, p < .01$) was good, and for all six subscales ($\rho_S = .57$ to $.89$, all $ps < .01$) ranged from adequate to good (Gratz & Roemer, 2004). Construct validity was established via significant correlations with measures of emotion regulation, emotional expressivity, and experiential avoidance; moreover, these constructs showed differential relations among the subscales that fit with the theoretical framework of the DERS (Gratz & Roemer, 2004). Moreover, predictive validity for the DERS and its subscales was supported via significant correlations with frequency of self-harm behavior among men and women, as well as frequency of intimate partner violence among men (Gratz & Roemer, 2004). Furthermore, the DERS has also been validated for use among adolescents, showing similar reliability statistics compared with those observed among adults (Weinberg & Klonsky, 2009). In the current study, internal reliability among the

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DERS subscales was good ($\alpha = .85$ to $.92$), and for the DERS total scale was excellent ($\alpha = .94$). The DERS total scale score served as the proposed mediator in the present study.

Sexual trauma history. The Childhood Trauma Questionnaire-Short Form (CTQ-SF) was used to assess the degree of childhood sexual abuse (Bernstein et al., 2003). The CTQ-SF is a 28-item measure of childhood abuse and neglect that is based on the Childhood Trauma Questionnaire (Bernstein et al., 1994). Confirmatory factor analyses show that the CTQ-SF yields the same five subscales as the original CTQ: Sexual Abuse, Physical Abuse, Emotional Abuse, Physical Neglect, and Emotional Neglect. Each subscale contains five items that produce both dimensional and categorical (“None/Minimal,” “Low,” Moderate,” “Severe”) ratings for each type of childhood trauma. An additional three items yield the Minimization/Denial validity scale. The CTQ has shown good internal reliability ($\alpha = .87$ to $.94$, except for Physical Neglect: $\alpha = .60$) and criterion validity (Bernstein et al., 2003; Spinhoven et al., 2014). The Childhood Sexual Abuse subscale was used as a covariate because of strong associations between childhood sexual abuse and risky sexual behavior (Houck, Nugent, Lescano, Peters, & Brown, 2010; Lloyd & Operario, 2012; Senn, Carey, & Vanable, 2008). The CSA subscale of the CTQ-SF showed excellent internal reliability ($\alpha = .95$). In the present study, CSA served as a covariate.

Psychopathology. The parent version of the Computerized Diagnostic Interview Schedule for Children (C-DISC; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) was administered upon admission to inpatient psychiatric care. The C-DISC was used solely to describe the levels of psychopathology within the sample as a validity check for inpatient severity. The C-DISC is a structured clinical interview for the diagnosis of psychopathology in children and adolescents between ages 9 to 17 (Shaffer et al., 2000). In the present study,

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all interviews were completed by doctoral students in clinical psychology or clinical research assistants trained in the administration of the C-DISC who will have conducted several sessions under the supervision of the Dr. Carla Sharp. Co-morbid psychopathology was coded according to the diagnostic criteria of the Diagnostic and Statistical Manual for Mental Disorders, 4th edition.

Data analysis strategy

The skewness and kurtosis of the study outcome variables were examined by dividing the value for each variable by its standard error to produce a *t*-statistic. The *t*-statistic was then compared to the critical *t*-value of 1.984 (two-tailed; $\alpha = .05$; $df = 99$). Outcome variables with *t*-statistics larger than the critical *t*-value were determined to have skewness or kurtosis that was significantly different from the normal distribution (Wright & Herrington, 2011).

Mediation analyses were conducted using the PROCESS SPSS macro. Bootstrapping of ordinary least squares regression mediation analysis was selected for its ability to detect statistical mediation effects in the presence of covariates that are not hypothesized as mediators; to detect both direct and indirect effects; and to detect statistical mediation effects in smaller sample sizes (Fritz & MacKinnon, 2007; Preacher & Hayes, 2004). To calculate indirect effects, the beta coefficients from two linear regression models are multiplied (*a* x *b*): the “*a*” coefficient represents the effect of the independent variable on the proposed mediator; and the “*b*” coefficient represents the effect of the mediator on the dependent variable (see Figure 2). In bootstrapping, resampling, with replacement, produces thousands of smaller samples from a sample of observed scores and the indirect effect is calculated within each of these samples to yield a sampling distribution of the indirect effect (Hayes,

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2013). A benefit of bootstrapping is that, unlike traditional regression theory, bootstrapping does not assume normality of observed data (Hayes, 2013).

A 95% bias-corrected and bootstrap-accelerated confidence interval was created using 10,000 bootstrap samples. Separate models were run for attachment to mother and attachment to father, respectively. Gender, age, childhood sexual abuse, and alcohol use were included as covariates. Critical *p*-values were used to establish significant direct effects, while confidence intervals that did not include zero were considered significant evidence for indirect effects (Preacher & Hayes, 2004). All study variables, except gender (Hayes, 2013), were standardized to produce standardized point estimates. The effect size of the indirect effect was measured using two methods. First the proportion of the total effect accounted for by the indirect effect (P_M) was calculated by dividing the point estimate for the indirect effect by the total effect of the independent variable upon the dependent variable (Hayes, 2013). Second, κ^2 , defined as “the proportion of the maximum possible indirect effect” (Hayes, 2013; Preacher & Kelley, 2011), was calculated using the PROCESS macro with all covariates removed from the model (Hayes, 2013; Preacher & Kelley, 2011). Benchmarks for the κ^2 are suggested to as small (.01), medium (.09), and large (.25), following Cohen’s benchmarks for r^2_{xy} (Cohen, 1977; Hayes, 2013; Preacher & Kelley, 2011). The cross-sectional design of the present study required testing two comparison models in order to verify the order of influence among the variables within the mediation model (Preacher & Hayes, 2008; Shrout & Bolger, 2002). In the comparison model 1, the predictor and mediator variables were switched: in comparison model 2, the mediator and outcome variables were switched.

Results

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Excluded participants

A total of 13 participants who had completed the SCS were excluded for not having completed the IPPA. See Table 1 for comparison of excluded and included participants. Independent samples t-tests showed that excluded participants did not differ from those included on any study outcomes except for alcohol/substance use concurrent with sexual intercourse ($t = 2.632$; $p = .010$; $M_{\text{excluded}} = 0.54$, $SD = 0.88$). Excluded participants also did not differ from those included in difficulties in emotion regulation or any study covariates, with the exception of childhood sexual abuse ($t = 2.014$; $p = .046$; $M_{\text{excluded}} = 8.00$, $SD = 6.69$). All but one excluded participant identified as Caucasian; the one exception identified as “Multiracial/Other.”

Descriptive statistics for the study sample

Descriptive statistics and correlations among study variables are presented in Table 2. In the present sample, 31 participants reported having ever had sex, while 17 reported having had sex in the previous 3 months. The average number of sexual partners during the previous three months was 0.27 ($SD = 0.66$; range: 0-3); among those who were sexually experienced, the average number of sexual partners was 1.50 ($SD = 0.79$); two participants reported 3 partners, six reported 2 partners, and nine reported 1 partner. The average level of concurrent alcohol/substance use with sex was 0.11 ($SD = 0.40$; range: 0 to 2) in the whole sample and 0.65 ($SD = 0.79$) among sexually experienced participants. Levels of self-efficacy to refuse sex were moderate ($M = 4.19$; $SD = 1.82$; range: 0 to 6), while self-efficacy to communicate about condom use was relatively high ($M = 5.03$; $SD = 1.65$; range: 0 to 6). Attitudes about whether to have sex ($M = 1.18$; $SD = 1.04$; range: 0 to 3) and having sex with a steady boyfriend/girlfriend ($M = 1.80$; $SD = 1.13$; range: 0 to 3) both reflected

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moderate risk, while attitudes about sex with multiple partners in the same month ($M = 0.70$; $SD = 0.93$; range 0 to 3) and condom use reflected low levels of risk across the sample ($M = 1.08$; $SD = 2.09$; range: 0 to 9). All criterion variables demonstrated non-normal sampling distributions (see Table 2).

Average attachment ratings within the sample signified moderate levels of attachment to mother ($M = 70.66$; $SD = 29.60$), father ($M = 61.74$; $SD = 32.27$), and peers ($M = 88.77$; $SD = 19.17$), but with considerable variability as evidenced by large standard deviations. Levels of difficulties in emotion regulation in the present study ($M = 114.41$; $SD = 27.65$) were much greater than observed in the validation study for the DERS ($M = 77.99$; $SD = 20.72$; (Gratz & Roemer, 2004), but were similar to other samples with severe psychopathology ($M = 112.99$; $SD = 14.17$; (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006). The average number of days in the past month that participants reported having a drink of alcohol was 1.05 ($SD = 1.213$; range: 0 to 6), signifying approximately “1 or 2 days in the past 30 days.” Dimensional scores for childhood sexual abuse were in the “Low” range ($M = 5.73$; $SD = 3.24$); nine participants (9.2%) reported sexual abuse ratings on the CTQ-SF above the “None/Minimal” cutoff (Low = 4; Moderate = 2; Severe = 3).

Correlations among study variables

Bivariate correlation analyses showed that attachment to mother correlated with attitudes about condom use ($r = -.198$; $p = .049$) and communication with parents about sex ($r = .263$; $p = .009$), but no other outcome variables. Likewise, attachment to peers correlated with number of sexual partners ($r = .206$; $p = .040$), alcohol/substance use concurrent with sex ($r = .212$; $p = .034$), attitudes about when to have sex ($r = .231$; $p = .021$), and attitudes about having sex with a steady partner ($r = .212$; $p = .035$), but no other

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outcomes. Finally, attachment to father did not show any significant correlations with study outcomes.

Aim 1: Examine indirect effects on risky sexual behaviors

The lack of bivariate relation between the predictor and outcome variables in the proposed model would have prevented further testing of mediation effects according to the most prevalent method for analyzing statistical mediation (Baron & Kenny, 1986).

However, a growing consensus among statisticians has challenged the logical inferences upon which the Baron and Kenny (1986) method was based and suggested that bivariate correlation of predictor and outcome variables is not mathematically necessary to test for statistical mediation effects. As Hayes explained in his introductory text on mediation and moderation analyses:

“The basis for [the Baron and Kenny (1986) method] logic is flawed, however, for it is possible for X [the predictor] to exert an effect on Y [the outcome] indirectly through M [the mediator] even if one cannot establish through a hypothesis test that the total effect is different from zero. Although this seems paradoxical, that doesn’t make it not true. ... This happens much more than people probably recognize, and there is a growing consensus among quantitative methodologists (e.g., Cerin & Mackinnon, 2009; Hayes, 2009; LeBreton, Wu, & Bing, 2009; MacKinnon, 2008; Rucker, Preacher, Tormala, & Petty, 2011; Shrout & Bolger, 2002; Zhao, Lynch, & Chen, 2010) that a total effect of X on Y should not be a prerequisite to searching for evidence of indirect effects” (Hayes, 2013, p. 169).

Therefore, the indirect effect of attachment on risky sexual behavior outcomes via difficulties in emotion regulation was examined to test for statistical mediation.

The proposed theoretical model was examined using the PROCESS macro (Hayes, 2013). To adjust for the non-normality of study criterion variables, bootstrapped resampling

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methods were used because bootstrapped ordinary least squares analyses do not assume normality of observed data (Hayes, 2013). All indirect effects are presented in Tables 3-5. Model fit statistics for each of the analyses for aim 1 may be found in Tables 6-8. With ever having had sex as the criterion variable, no significant indirect effect through the DERS was observed for attachment to mother (standardized point estimate = .082, BC 95% CI: -.030 to .343), attachment to father (standardized point estimate = .001, BC 95% CI: -.113 to .123), or attachment to peers (standardized point estimate = .094, BC 95% CI: -.090 to .381).

With number of sexual partners as the criterion variable, a significant positive indirect effect through the DERS was observed for attachment to mother (standardized point estimate = .080, BC 95% CI: .013 to .203; direct effect of attachment to mother controlling for DERS = -.020, $SE = .098$, $p = .838$; effect size of indirect effect: $P_M = 1.341$, $\kappa^2 = .074$, CI: .015 to .177), which demonstrated a small effect size (Cohen, 1977; Hayes, 2013; Preacher & Kelley, 2011). The positive indirect effect suggested that as secure attachment to mother increased, the number of sexual partners increased, and that this effect was explained by negative associations between both attachment and number of sexual partners with difficulties in emotion regulation (see Figure 2). Neither of the comparison models for attachment to mother (comparison model 1: standardized point estimate = .005, BC 95% CI: -.055 to .070; comparison model 2: standardized point estimate = -.019, BC 95% CI: -.130 to .060) demonstrated a significant indirect effect, which supported the direction of effects in the proposed theoretical model. In the model with number of sexual partners as the dependent variable and attachment to father as the independent variable, a significant indirect effect through the DERS-Index was not observed (standardized point estimate = .001, BC 95% CI: -.081 to .076). For the relation of attachment to peers and number of

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sexual partners, indirect effects were observed in the proposed model (standardized point estimate = .101, BC 95% CI: .017 to .245; direct effect of attachment to peers controlling for DERS = .075, $SE = .102$, $p = .462$) and comparison model 2 (standardized point estimate = -.0050, BC 95% CI: -.153 to -.002; direct effect of attachment to peers on DERS controlling for number of sex partners = -.289, $SE = .095$, $p = .003$), but not comparison model 1 (standardized point estimate = -.025, BC 95% CI: -.101 to .023). That both the proposed model and comparison model 2 showed indirect effects suggests that the direction of indirect effect was inconclusive.

In models of alcohol/substance use concurrent with sexual behavior, a positive indirect effect was observed for attachment to mother via DERS (standardized point estimate = .054, BC 95% CI: .006 to .160; direct effect of attachment to mother controlling for DERS = .127, $SE = .101$, $p = .211$; effect size of indirect effect: $P_M = .297$, $\kappa^2 = .053$, CI: .007 to .155). The positive indirect effect suggested that as secure attachment to mother increased, alcohol/substance use concurrent with sexual intercourse increased, and that this effect was explained by negative associations between both attachment and concurrent alcohol/substance use with difficulties in emotion regulation. Neither of the comparison models for attachment to mother (comparison model 1: standardized point estimate = -.031, BC 95% CI: -.134 to .007; comparison model 2: standardized point estimate = -.040, BC 95% CI: -.140 to .001) demonstrated a significant indirect effect, which supported the direction of effects in the proposed theoretical model. No indirect effect was observed for attachment to father (standardized point estimate = .001, BC 95% CI: -.057 to .068). For attachment to peers, an indirect effect via DERS was observed (standardized point estimate = .070, BC 95% CI: .003 to .195; direct effect of attachment to peers controlling for DERS =

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.135, $SE = 104$, $p = .199$; effect size of indirect effect: $P_M = .519$, $\kappa^2 = .060$, CI: .006 to .160). Neither of the comparison models for attachment to mother (comparison model 1: standardized point estimate = -.046, BC 95% CI: -.160 to .005; comparison model 2: standardized point estimate = -.040, BC 95% CI: -.133 to .001) demonstrated a significant indirect effect, which supported the direction of effects in the proposed theoretical model.

Figures 3-6 display the observed indirect effects.

Figure 3

Proposed model with results: Difficulties in emotion regulation explained the relation between attachment to mother and number of sexual partners in the past three months.

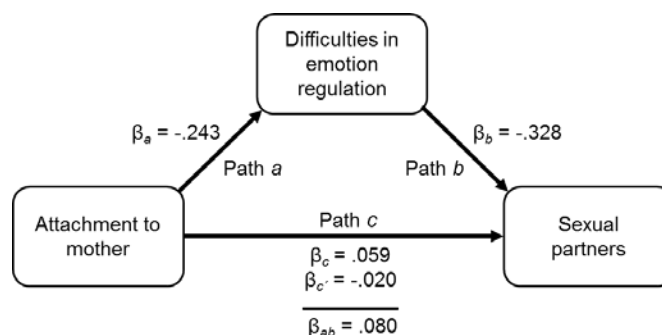


Figure 4

Proposed model with results: Difficulties in emotion regulation explained the relation between attachment to mother and alcohol/substance use concurrent with sexual intercourse in the past three months.

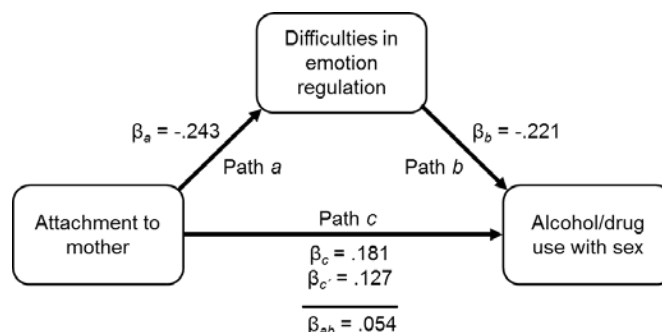
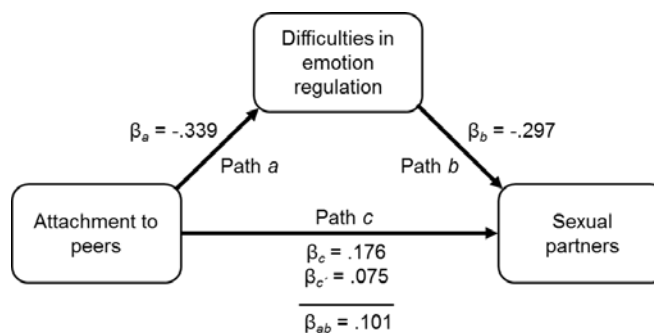


Figure 5

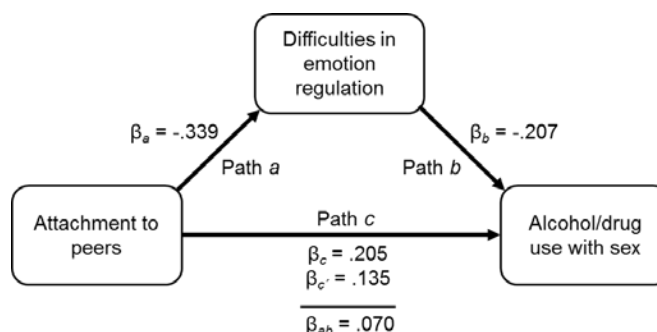
Proposed model with results: Difficulties in emotion regulation explained the relation between attachment to peers and the number of sexual partners in the past three months.



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Figure 6

Proposed model with results: Difficulties in emotion regulation explained the relation between attachment to peers and alcohol/substance use concurrent with sexual intercourse in the past three months.

**Aim 2: Examine indirect effects on sexual attitudes and self-efficacy**

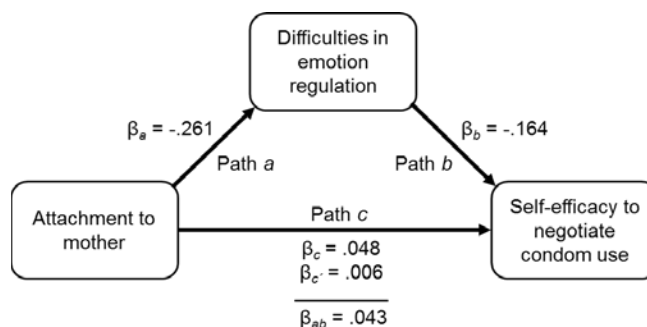
To address the second aim of the present study, the indirect effects of attachment via DERS on sexual attitudes and self-efficacy, respectively, were examined. No indirect effect was observed for attachment to mother, attachment to father, or attachment to peers on attitudes about when to have sex, attitudes about having multiple sex partners, condom use attitudes, or self-efficacy to refuse sex (see Tables 3-5). However, for self-efficacy to negotiate condom use, a significant positive indirect effect was observed from attachment to mother via DERS (standardized point estimate = .043, BC 95% CI: .006 to .131; direct effect of attachment to mother controlling for DERS = .006, $SE = .105$, $p = .956$; effect size of the indirect effect: $P_M = .882$, $\kappa^2 = .030$, CI: .003 to .099). The positive indirect effect suggested that as secure attachment to mother increased, self-efficacy to negotiate condom use increased, and that this effect was explained by the negative association of difficulties in emotion regulation with both attachment and self-efficacy to negotiate condom use (see Figure 7). The comparison models showed no significant indirect effects (comparison model 1: standardized point estimate = -.002, BC 95% CI: -.088 to .063; comparison model 2: standardized point estimate = -.008, BC 95% CI: -.067 to .025). Also of note, attachment to mother exerted a significant negative direct effect on attitudes about condom use ($\beta = -.211$, $SE = .106$, $p = .049$); and attachment to peers exerted a significant positive direct effect on

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attitudes about when to have sex ($\beta = .233$, $SE = .089$, $p = .010$). Model fit statistics for each of the analyses for aim 2 may be found in Tables 9-13.

Figure 7

Proposed model with results: Difficulties in emotion regulation explained the relation between attachment to mother and risky sexual behaviors in the past three months.



Discussion

The present study was the first to examine whether difficulties in emotion regulation explained the relation of attachment to mother, father, and peers, respectively, with risky sexual behaviors within a clinical sample of adolescents. Results suggested partial support for the study's theoretical model. Specifically, the study's first hypothesis was partially supported for two of the three risky sexual behaviors examined. Attachment to mother and attachment to peers independently exerted indirect effects via difficulties in emotion regulation on number of sexual partners and alcohol/substance use concurrent with sexual intercourse. However, the direction of the observed indirect effect was unexpected. While it was hypothesized that greater attachment security would be associated with less risky sexual behavior, the opposite association was observed. As expected, attachment variables were negatively associated with difficulties in emotion regulation; however, contrary to expectation, difficulties in emotion regulation was negatively associated with number of sexual partners and alcohol/substance use concurrent with sexual intercourse. Importantly, the indirect effects of attachment to mother and attachment to peers on number of sexual partners and alcohol/substance use concurrent with sexual intercourse were observed while

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adjusting for the effects of covariates known to be related to risky sexual behaviors, including gender, age, childhood sexual abuse, and alcohol use.

When examined in relation to being sexually experienced, attachment to mother and attachment to peers did not demonstrate significant indirect effects. Furthermore, attachment to father did not demonstrate an indirect effect on any of the sexual behaviors examined.

The study's second hypothesis was largely unsupported. The only exception was that attachment to mother exerted an indirect effect via difficulties in emotion regulation upon self-efficacy to negotiate condom use. However, unlike the indirect effect observed with the sexual behavior criterion variables, increased attachment security to mother was associated with increased self-efficacy to negotiate condom use, which would be expected to reduce the likelihood of risky sexual behavior. Otherwise, attachment variables did not exert indirect effects on any other attitudes and self-efficacy criterion variables. However, several direct effects were observed that aided in interpreting the present findings. As attachment security to mother increased, personal attitudes about condom use became more positive and less risky; and as attachment security to peers increased, personal attitudes about when to have sex, particularly with a steady partner, became more accepting.

The findings of the present study contrast with previous research that has suggested that insecure attachment to mother (Emerson et al., 2012; R. Kobak et al., 2012; Moore & Chase-Lansdale, 2001; Steinberg et al., 2006) and to peers (Ritchwood, Traylor, et al., 2014) and difficulties in emotion regulation (Messman-Moore et al., 2010; D. J. Miller et al., 2012; Tull et al., 2012) are associated with risky sexual behaviors. However, such differences may be explained by the larger sample sizes or recruitment of participants (e.g., sexually traumatized; justice-involved; (Messman-Moore et al., 2010; D. J. Miller et al., 2012) with

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greater likelihood of engaging in risky sexual behaviors in previous studies compared to the present study (Cohen, 1977). The wider age range of participants within the present study may have reduced the rate of sexual behavior within the sample, which effectively decreased the study's power. The power calculations for the present study assumed that 46.8% of participants would be sexually experienced, according to the national average for high school-aged adolescents (Kann et al., 2014). However, the study observed only 30% of participants were sexually experienced, a rate closer the average for 9th grade students (Kann et al., 2014). It is also possible that the severity of psychopathology within the present sample may have slowed the overall sexual development of participants, reducing rates of sexual behavior.

The associations of greater attachment security and fewer difficulties in emotion regulation with increased numbers of sexual partners and frequency of alcohol/substance use concurrent with sexual intercourse suggest that the types of sexual behavior observed within the present study reflect normative sexual development and exploration. The majority of sexually experienced adolescents (nine out of 17) reported only one sexual partner during the previous 3 months, and the greatest number of partners was three (two out of 17). Similarly, for alcohol/substance use concurrent with sexual intercourse, the majority of sexually experienced adolescents reported either none (nine of 17) or "once in a while" (five of 17). Moreover, the present data showed that greater attachment security with peers associated with greater acceptance of having sex, particularly with a steady boyfriend or girlfriend. While the study hypothesis had assumed that more accepting attitudes about when to have sex would imply greater likelihood of engaging in risky sexual behaviors, the study data suggested a different interpretation. The low levels of risky sexual behavior, as well as

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more accepting attitudes about condoms and greater self-efficacy for negotiating condom use in the present sample, suggest typical adolescent exploration, an interpretation further supported by the positive association of secure attachment with both of the above sexual behaviors, as well as with more protective sexual attitudes and self-efficacy for condom use.

The relations between attachment to mother and peers, difficulties in emotion regulation, and sexual behavior observed in the present study may reflect normative sexual developmental patterns among those participants who were sexually experienced. Higher levels of secure attachment to mother and peers, along with fewer difficulties in emotion regulation both associated with increased numbers of sexual partners and greater likelihood of alcohol/substance use concurrent with sexual intercourse. Some research suggests that secure attachment may facilitate normative sexual exploration in adolescence. For example, securely-attached adolescents report more frequent sexual intercourse events than insecure adolescents, and do not differ in reported numbers of sexual partners (Cooper et al., 1998; Tracy et al., 2003). Secure attachment is also associated with more positive sexual self-schema (Cyranowski & Andersen, 1998), and more positive and less negative emotions around sex (Gentzler & Kerns, 2004; Tracy et al., 2003). Within attachment theory, secure attachment signifies looking to caregivers as a secure base from which to explore the world (Allen, 2008; Weinfield et al., 2008), and such exploration seems to extend into adolescence (Grossmann et al., 2008), including openness to sexual exploration (Dewitte, 2012) and perhaps even alcohol/substance use, as the present data suggest.

The observation within the present study that fewer difficulties in emotion regulation were associated with having more sexual partners and more alcohol/substance use concurrent with sexual intercourse is unique within the research on emotion processes and

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sexual behavior. This finding suggests that, in adolescence, better emotion regulation abilities may facilitate normative sexual development. Better emotion regulation, as it relates to secure attachment, has been suggested as a means of reducing negative affect and increasing positive affect about sex (Dewitte, 2012). For example, securely attached college students are less likely to report sexual motives to reduce negative affect (Cooper et al., 2006; Tracy et al., 2003). Emotion regulation abilities may also increase success in initiating and maintaining a romantic relationship via better interpersonal effectiveness (Brennan, Wu, & Loev, 1998). However, few studies have specifically examined the role of emotion regulation within normative sexual behavior and development. More research is needed examining normative sexual development in the context of emotional development during adolescence.

Difficulties in emotion regulation is strongly linked to negative affect. Previous research on the relation of negative affect with sexual behaviors has been mixed (Crepaz & Marks, 2001). Research among adults suggests that, for the majority of people, negative affect reduces the likelihood of engaging in sexual behavior (Bancroft et al., 2003; Crepaz & Marks, 2001; Lykins et al., 2006). However, some research suggests that the relation of negative affect with risky sexual behaviors may be curvilinear, with moderate levels of negative affect presenting the greatest risk. While some research suggests trait negative affect may predict the onset of risky sexual behaviors (Brody, Chen, & Kogan, 2010), previous research has not yet clarified the functions of negative affect in adolescent sexual development. The significant negative association of difficulties in emotion regulation with number of sexual partners observed within the present study suggests that experiencing distress may play a role in reducing the likelihood of sexual behaviors among adolescents. It

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may be that negative affect related to the severity of internalizing psychopathology within the present sample accounts for the lower rates of being sexually experienced when compared with normative statistics (Caminis, Henrich, Ruchkin, Schwab-Stone, & Martin, 2007; Donenberg, Emerson, & Mackesy-Amiti, 2011; Kann et al., 2014). In contrast, sexually experienced males and females report less negative affect about sex, as well as higher self-esteem and more positive self-concept (Horne & Zimmer-Gembeck, 2005; Impett & Tolman, 2006; O'Sullivan & Brooks-Gunn, 2005; O'Sullivan & Hearn, 2008; O'Sullivan & Thompson, 2014). Therefore, the lower levels of difficulties in emotion regulation reported by sexually experienced participants in the present study seems to reflect affective patterns typical to normative sexual development.

Several other dimensions of the present results further suggest that the indirect effect of attachment, via difficulties in emotion regulation, on risky sexual criteria reflected normative sexual behavior. First, when compared to younger participants, older adolescents were more likely to be sexually experienced, an association that has been documented in previous research on normative sexual development (Herbenick et al., 2010). Younger adolescents are more likely than older adolescents and young adults to report satisfying romantic relationships that do not involve sexual intercourse (Welsh, Haugen, Widman, Darling, & Grello, 2005). Moreover, nearly half of the sexually experienced participants reported no sexual intercourse in the previous three months, which also conforms with previous research that suggests adolescent sexual behavior is intermittent (Ott, Ofner, Tu, Katz, & Fortenberry, 2010). And while alcohol use was significantly associated with sexual behavior outcomes, the significant indirect effect of attachment to mother was observed while controlling for the effects of alcohol use. Lastly, reported sexual behavior was not

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associated with sexual trauma history. Previous research suggests that childhood sexual abuse increases the likelihood of engaging in risky sexual behaviors (N. L. Johnson & Johnson, 2013; Kaltman, Krupnick, Stockton, Hooper, & Green, 2005; Messman-Moore et al., 2010; Walsh, Latzman, & Latzman, 2014). Yet, previous study designs have not yet clarified the mechanisms linking childhood sexual abuse with risky sexual behaviors.

However, the present study did not observe an indirect effect on any risky sexual criteria for attachment to father. Unlike attachment to mother and attachment to peers, attachment to father was not associated with difficulties in emotion regulation. This finding supports previous research suggesting attachment to father develops separately and functions differently from attachment to mother (Bretherton, 2010; Dumont & Paquette, 2013; Grossmann et al., 2008). Compared with mothers, fathers often appear lower on adolescents' hierarchies of attachment figure (Markiewicz, Lawford, Doyle, & Haggart, 2006; N. L. Rosenthal & Kobak, 2010). While attachment to both parents contributes to emotional development, father attachment specifically predicts the development of emotion regulation abilities in the context of intense emotional stimuli (Hazen, McFarland, Jacobvitz, & Boyd-Soisson, 2010), such as conflict resolution skills (Bretherton, 2010; Freeman & Almond, 2010; Lieberman, Doyle, & Markiewicz, 1999; Steele & Steele, 2005), and is a better predictor of social competence with peers (Doyle & Markiewicz, 2009). That difficulties in emotion regulation was not associated with attachment to father may also be attributed to the specificity of the instrument used to assess emotion regulation in the present study. The DERS specifically assesses how an individual manages intrapersonal distress. Given that previous research suggests attachment to father has a greater influence on interpersonal, versus intrapersonal, aspects of emotion regulation, it is not unreasonable that

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attachment to father was not associated with the emotion regulation difficulties in the present study.

Previous research has shown that lower quality father-adolescent relationships are related to increased behavior problems (N. L. Rosenthal & Kobak, 2010) and more secure attachment to father decreases the likelihood of sexual activity (Freeman & Almond, 2010). Yet, attachment to father was not directly related to sexual behavior outcomes in the present study. Future research could explore alternative mechanisms that may link attachment to father with sexual behavior outcomes. It may be that the effects of attachment to father upon the development of interpersonal conflict resolution may generalize to increase effective communication about sex with potential sexual partners. If so, then parental attachment may indirectly reduce sexual risk behaviors via better interpersonal skills, such as more effective communication about sex with potential partners (Donenberg et al., 2011; Jessica McDermott Sales et al., 2008; Seth, Raiji, DiClemente, Wingood, & Rose, 2009).

Limitations

The present study had several limitations. First, the cross-sectional design of the present study prohibited conclusions about causation based upon the study's proposed model. Statistical power within the present study was limited by several factors. Within the current sample, the prevalence of lifetime sexual experience and number of sexual partners during the previous three months were lower than anticipated based on the national averages for high school students, which limited the study's power to detect hypothesized effects. The low prevalence of sexual experience within the sample required that only sexual behaviors that could meaningfully be reported by the entire sample, including adolescents who were sexually inexperienced, could be measured. The small number ($n = 30$) of participants who

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reported being sexually experienced did not have enough statistical power to detect differences in other risky sexual behaviors (e.g., condom use; alcohol/drug use prior to sex). While some previous research had suggested that risky sexual behavior may increase with the severity of psychopathology (Brown et al., 1997; Ralph J. DiClemente & Ponton, 1993), the opposite was observed in the present study. The study's small sample size ($N = 100$) further decreased statistical power and prevented testing the proposed model via separate statistical analyses for each gender. The use of chronological age rather than pubertal development hindered the study's ability to control for differences in sexual development (O'Sullivan & Thompson, 2014). Furthermore, important factors related to sexual behavior (e.g., romantic relationship status, sexual orientation) were not collected and were not accounted for in study analyses. Additionally, the results in the present study may have been influenced by measurement effects, as all study variables were collected via participant self-report. In measuring sexual behavior, the instrument used did not assess the number of lifetime sexual partners, an important indicator of risk. While the measure used in the present study to assess attachment to caregivers has been used in previous research on adolescent sexual behavior (Emerson et al., 2012), the IPPA does not produce the anxious/avoidant attachment scales that typically assess attachment to caregivers (Crowell, Fraley, & Shaver, 2008) and hindered comparison to other measures of attachment to caregivers.

Strengths

Despite its limitations, the present study had several strengths. It was the first to examine whether emotion regulation difficulties explained the relation between attachment to caregivers and risky sexual behaviors. The study also included theoretically-relevant

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covariates in statistical analyses that are not often controlled for in previous studies (e.g., childhood sexual abuse, alcohol use). Therefore, the significant indirect effect of attachment to mother on number of sexual partners was observed in the present study while over and above the effects of variables known to influence risky sexual behaviors. The examination of attachment to father is another strength of this study, as many previous studies have examined only attachment to mothers (Grossmann et al., 2008), particularly in relation to sexual behavior (Donenberg et al., 2011). Moreover, the present study operationalized attachment in the context of both caregiver and romantic relationships, both of which are important for adolescent development (Markiewicz et al., 2006; N. L. Rosenthal & Kobak, 2010). While previous studies have examined risky sexual behavior in outpatient clinical populations (Brown et al., 2010; Donenberg et al., 2011; Emerson et al., 2012), the present study is the first in twenty years to examine risky sexual behaviors among inpatient adolescents and, in contrast to those previously reported, observed reduced rates of risky sexual behavior (Brown et al., 1997; Ralph J. DiClemente & Ponton, 1993).

Future Research

The present study's observation of an indirect effect of attachment to mother, via emotion regulation difficulties, upon number of sexual partners among adolescent inpatients of a psychiatric hospital provides a promising foundation for future research. In order to understand the generalizability of the present results, research among non-hospitalized, typically-developing adolescents is needed. Additionally, in order to clarify the direction of causation within the proposed model, prospective research is needed. While the present study focused on difficulties in emotion regulation when experiencing distress, future research could examine emotion regulation in the presence of both positive and negative

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affect. Intensive longitudinal methods (e.g., ecological momentary assessment; daily diary methods) should also be incorporated into study designs in order to differentiate the effect of state versus trait affect in relation to both emotion regulation and risky sexual behaviors. Furthermore, future research should also examine how cognitive factors known to influence sexual behavior among adolescents (e.g., social norms, intentions, self-efficacy) may function as additional mediators or moderators within the present study's proposed model. The limitations related to statistical power in the present study also suggest that future research, particularly among adolescents with severe psychopathology, should utilize large sample sizes ($N \geq 500$) to ensure a sufficient number of sexually experienced participants and adequate statistical power. Finally, future research should utilize a variety of assessment methods (e.g., self-report, interview, tasks) and reporters (e.g., participant, caregivers, romantic partners) to reduce the likelihood of measurement effects in statistical analyses.

Impact and Conclusions

Results from the present study support previous research suggesting that attachment to mother may be an important factor in the development of emotion regulation abilities and normative sexual behavior. Similar findings related to attachment to mother and other risk behaviors, such as substance use (Jones, Ehrlich, Lejuez, & Cassidy, 2015; Zhai, Kirisci, Tarter, & Ridenour, 2014), suggest that the connection between attachment to mother and emotion dysregulation may be an important factor to account for in the treatment of risk behavior. Attachment-focused treatments have recently developed that adapt treatment planning to the vulnerability profiles of specific attachment styles (Fletcher, Nutton, & Brend, 2015), particularly among adolescents (Downs, Seedall, Taylor, & Downs, 2015). Tailoring such approaches to the prevention and treatment of risky sexual behaviors may

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better account for the interpersonal skills deficits that increase the risk of contracting HIV and other STIs (e.g., partner communication, condom use negotiation) among adolescents. Specifically, attachment-focused treatments address emotion dysregulation difficulties associated with increased risk behavior (Fletcher et al., 2015). While the present study did not observe an association between emotion regulation difficulties and increased risky sexual behavior, it was observed that lower levels of emotion dysregulation difficulties was associated with more normative patterns of sexual exploration and development. Therefore, accounting for attachment and emotion regulation in the prevention and treatment of risky sexual behaviors may help to redirect at-risk adolescents' sexual development into more normative patterns.

Appendix

Power analysis

Power analyses were conducted using the statistical software R-3.1.1 (R Core Team, 2014) with code written by Vittinghoff, Sen, and McCulloh (2009). Because no study has examined whether emotion regulation mediates the relation of attachment security with either number of sexual partners or proportion of condom use, bivariate statistics reflecting the relations among these variables were gathered from the literature (CDC, 2014b; Venta et al., 2014). For the purpose of power calculations, it was estimated that participants would report non-condom use during 40% of sexual intercourse experiences (CDC, 2014b), 29% would have had more than one sexual partner in the past three months (Nkansah-Amankra, Diedhiou, Agbanu, Harrod, & Dhawan, 2011), and 18% that had experienced their first sexual intercourse at age 14 years old or younger (Nkansah-Amankra et al., 2011). Based on these estimates, the sample size necessary to detect a significant findings ($\alpha = .05$) with a medium effect size and power of 0.8 would be 110 participants. A sample size of 110 is similar to previous studies that have examined mediation effects between risky sexual behavior and either attachment security ($N = 128$, Kobak et al., 2012; $N = 96$, Steinberg et al., 2006) or emotion regulation ($N = 94$, Miller et al., 2012). However, for the bias-corrected bootstrap test of mediation to be used in the present study, sample sizes ranging from 71 to 148 have been reported as the minimum required to detect mediation path coefficients (β , as a measure of effect size) ranging from .26 to .39 (Fritz & MacKinnon, 2007). Therefore, a sample size of 160 inpatient adolescents was targeted to ensure adequate power.

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Tables

Table 1

Comparison across all study variables of participants who were included versus excluded.

Variable	Included		Excluded		<i>t</i> -value	<i>p</i> -value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Gender (<i>n</i> _{Female} , %) ^a	67	67.00	7	53.85	0.934	.352
Age ^a	15.20	1.47	15.08	1.55	-0.282	.778
CSA ^a	5.72	3.21	8.00	6.69	2.014	.046
Alcohol Use ^a	1.04	1.21	1.08	1.26	0.103	.918
DERS-Total ^c	114.41	27.65	107.38	32.84	-0.843	.401
Sexually Experienced (<i>n</i> , %) ^d	31	31.00	6	46.20	1.091	.277
Number of Sex Partners ^d	0.27	0.66	0.62	0.96	1.667	.098
Concurrent Alcohol Use ^d	0.14	0.45	0.54	0.88	2.632	.010
Attitudes about Having Sex ^d	2.98	2.03	2.77	1.92	-0.354	.724
Attitudes, Multiple Partners ^d	0.70	0.93	0.38	0.96	-1.156	.250
Attitudes, Condom Use ^d	1.08	2.09	0.69	1.38	-0.650	.517
Refusal Self-Efficacy ^d	4.19	1.82	4.08	2.02	-0.211	.833
Negotiation Self-Efficacy ^d	5.03	1.65	5.17	1.70	0.269	.788

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Sexually Experienced, reported as the proportion of participants who have ever had sex (coded 0 = no; 1 = yes); Number of Sex Partners, reported as the number of sexual partners within the previous 3 months; Concurrent Alcohol Use, alcohol/substance use concurrent with sexual intercourse within the previous 3 months, reported on a 4-point scale from 0 “Never” to 3 “Always;” Attitudes about Having Sex, reported on the Safer Choices Survey; Attitudes, Multiple Partners, attitudes about having sexual intercourse with multiple partners in the same month, reported on the Safer Choices Survey; Attitudes, Condom Use, attitudes about when condoms should be used, reported on the Safer Choices Survey; Refusal Self-Efficacy, self-efficacy to refuse sex, reported on the Safer Choices Survey; Negotiation Self-Efficacy, self-efficacy to negotiate condom use with a sexual partner, reported on the Safer Choices Survey.

^a Covariates. ^c Mediator. ^d Outcome Variables.

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Table 2

Zero-order correlations among theoretically-relevant variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Gender (% Female) ^a	-	.326*	-.152	.101	-.022	-.039	-.067	-.099	-.011	-.094	.018	.361**	.410**	-.006	-.276*	-.172
2. Age ^a		-	-.076	.229 [†]	.084	.093	.096	-.100	.322*	.058	.034	.482**	.318*	-.061	.036	.101
3. CSA ^a			-	-.083	.001	-.107	-.125	-.127	.032	-.073	-.043	-.090	-.095	-.041	.000	-.087
4. Alcohol Use ^a				-	-.118	.002	.057	-.035	.194	.239 [†]	.250 [†]	.346**	.217 [†]	.035	-.082	.061
5. Attachment to Mother ^b					-	.539**	.241 [†]	-.238 [†]	.100	.037	.143	-.140	-.113	-.198 [†]	.124	.065
6. Attachment to Father ^b						-	-.006	.011	.071	.106	.102	-.044	-.064	-.061	.007	-.001
7. Attachment to Peers ^b							-	-.309*	.165	.206 [†]	.212 [†]	.237 [†]	.018	.147	.176	.161
8. DERS-Total ^c								-	-.164	-.300*	-.246 [†]	-.077	.043	-.020	-.066	-.132
9. Sexually Experienced ^d									-	.609**	.467**	.461**	.288*	.005	-.130	-.012
10. Number of Sex Partners ^d										-	.582**	.351**	.181	.021	-.068	.080
11. Concurrent Alcohol Use ^d											-	.159	.125	.074	.004	.077
12. Attitudes about Having Sex ^d												-	.648**	.114	-.347**	-.128
13. Attitudes, Multiple Partners ^d													-	.114	-.297*	-.097
14. Attitudes, Condom Use ^d														-	-.329*	-.407**
15. Refusal Self-Efficacy ^d															-	.687**
16. Negotiation Self-Efficacy ^d																-
Mean (or n)	67	15.20	5.72	1.04	70.66	61.74	88.77	114.41	31	0.27	0.14	2.98	0.70	1.08	4.19	5.03
SD (or %)	67	1.47	3.21	1.21	29.60	32.27	19.17	27.65	31.00	0.66	0.45	2.03	0.93	2.09	1.82	1.65

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Sexually Experienced, reported as the proportion of participants who have ever had sex (coded 0 = no; 1 = yes); Number of Sex Partners, reported as the number of sexual partners within the previous 3 months; Concurrent Alcohol Use, alcohol/substance use concurrent with sexual intercourse within the previous 3 months, reported on a 4-point scale from 0 “Never” to 3 “Always;” Attitudes about Having Sex, reported on the Safer Choices Survey; Attitudes, Sex with BF/GF, attitudes about having sex with one’s boyfriend or girlfriend, reported on the Safer Choices Survey; Attitudes, Multiple Partners, attitudes about having sexual intercourse with multiple partners in the same month, reported on the Safer Choices Survey; Attitudes, Condom Use, attitudes about when condoms should be used, reported on the Safer Choices Survey; Refusal Self-Efficacy, self-efficacy to refuse sex, reported on the Safer Choices Survey; Negotiation Self-Efficacy, self-efficacy to negotiate condom use with a sexual partner, reported on the Safer Choices Survey.

^a Covariates. ^b Predictor. ^c Mediator. ^d Outcome Variables. [†] $p < .05$. * $p < .01$. ** $p < .001$.

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Table 3

Direct, indirect, and total effects of attachment to mother on sexual behaviors, attitudes, and self-efficacy.

DV		Effect of IV on M	Effect of M on DV	Direct effect	Indirect effect		Total effect
		(a)	(b)	(c')	(a x b)	95% CI	(c)
Behaviors	Experienced Sex	-.243	-.336	.168	.082	-.030 - .343	.249
	Partners	-.243	-.328	-.020	.080	.013 - .203	.059
	Alcohol with Sex	-.243	-.221	.127	.054	.006 - .160	.181
Attitudes	Having Sex	-.242	-.055	-.153	.013	-.021 - .092	-.140
	Multiple Sex Partners	-.234	.073	-.091	-.017	-.106 - .019	-.108
	Condom Use	-.243	-.085	-.211*	.021	-.020 - .118	-.181
Self-Efficacy	Refuse Sex	-.261	-.084	.069	.022	-.024 - .087	.091
	Negotiate Condom Use	-.261	-.164	.006	.043	.006 - .131	.048

Note: * $p < .05$.

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Table 4

Direct, indirect, and total effects of attachment to father on sexual behaviors, attitudes, and self-efficacy.

DV		Effect of IV on M	Effect of M on DV	Direct effect	Indirect effect		Total effect
		(a)	(b)	(c)	(a x b)	95% CI	(c)
Behaviors	Experienced Sex	-.002	-.376	.113	.001	-.113 - .123	.114
	Partners	-.002	-.323	.090	.001	-.081 - .076	.091
	Alcohol with Sex	-.002	-.252	.104	.001	-.057 - .068	.104
Attitudes	Having Sex	.002	-.016	-.071	.000	-.021 - .023	-.071
	Multiple Sex Partners	.022	.096	-.074	.002	-.022 - .051	-.072
	Condom Use	.002	-.032	-.059	-.0001	-.029 - .027	-.059
Self-Efficacy	Refuse Sex	-.008	-.103	-.029	.001	-.030 - .042	-.028
	Negotiate Condom Use	-.008	-.165	-.041	.001	-.041 - .046	-.041

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Table 5

Direct, indirect, and total effects of attachment to peers on sexual behaviors, attitudes, and self-efficacy.

DV		Effect of IV on M	Effect of M on DV	Direct effect	Indirect effect		Total effect
		(a)	(b)	(c')	(a x b)	95% CI	(c)
Behaviors	Experienced Sex	-.339	-.278	.276	.094	-.090 - .381	.370
	Partners	-.339	-.297	.075	.101	.017 - .245	.176
	Alcohol with Sex	-.339	-.207	.135	.070	.003 - .195	.205
Attitudes	Having Sex	-.326	.060	.233*	-.020	-.098 - .037	.214
	Multiple Sex Partners	-.331	.113	.055	-.037	-.128 - .028	.018
	Condom Use	-.326	.021	.161	-.007	-.083 - .086	.154
Self-Efficacy	Refuse Sex	-.344	-.060	.122	.021	-.052 - .110	.143
	Negotiate Condom Use	-.358	-.142	.068	.051	-.012 - .164	.138

Note: * $p < .05$.

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Table 6

Model fit statistics for ever having had sexual intercourse, lifetime.

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Ever Had Sex		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Mother Attachment	<i>a</i>	-.243	0.100	.017	<i>c'</i>	.168	0.254	.509
DERS	-	-	-	-	<i>b</i>	-.336	0.253	.184
Gender		-.229	0.222	.306		-.720	0.539	.182
Age		-.043	0.107	.686		.845	0.282	.003
CSA		-.151	0.100	.132		.079	0.231	.734
Alcohol Use		-.055	0.102	.590		.360	0.241	.135
constant		.075	0.122	.538		-.754	0.298	.011
$R^2 = .094$								
$F(5, 94) = 1.951, p = .093$								

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Ever Had Sex		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Father Attachment	<i>a</i>	-.002	0.103	.987	<i>c'</i>	.113	0.243	.467
DERS	-	-	-	-	<i>b</i>	-.376	0.248	.129
Gender		-.202	0.230	.381		-.725	0.540	.180
Age		-.076	0.110	.494		.845	0.282	.003
CSA		-.150	0.103	.151		.081	0.230	.725
Alcohol Use		-.020	0.104	.847		.337	0.236	.153
constant		.067	0.126	.598		-.749	0.296	.012
$R^2 = .037$								
$F(5, 94) = 0.718, p = .611$								

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Ever Had Sex		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Peer Attachment	<i>a</i>	-.339	0.119	.414	<i>c'</i>	.276	0.275	.316
DERS	-	-	-	-	<i>b</i>	-.278	0.263	.291
Gender		-.295	0.217	.177		-.628	0.546	.250
Age		-.035	0.104	.739		.853	0.284	.003
CSA		-.195	0.098	.049		.121	0.246	.624
Alcohol Use		-.010	0.098	.923		.337	0.236	.154
constant		.097	0.119	.414		-.801	0.306	.009
$R^2 = .147$								
$F(5, 94) = 3.247, p = .009$								

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Ever Had Sex, being sexually experienced via ever having had sexual intercourse during one's lifetime, reported on the Safer Choices Survey.

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Table 7

Model fit statistics for number of sexual partners during the previous 3 months.

Antecedent Mother Attachment		Consequent						
		Mediator DERS			Criterion Number of Sex Partners			
		path	Coeff.	SE	p	path	Coeff.	SE
Mother Attachment	<i>a</i>	-.243	0.100	.017	<i>c'</i>	-.020	0.098	.838
DERS	-	-	-	-	<i>b</i>	-.328	0.099	.001
Gender		-.229	0.222	.306		-.371	0.214	.086
Age		-.043	0.107	.686		.023	0.103	.220
CSA		-.151	0.100	.132		-.121	0.097	.214
Alcohol Use		-.055	0.102	.590		.227	0.098	.023
constant		.075	0.122	.538		-.122	0.117	.299
				$R^2 = .094$				
				$F(5, 94) = 1.951, p = .093$				
					$R^2 = .178$			
					$F(6, 93) = 3.366, p = .005$			

Antecedent Father Attachment		Consequent						
		Mediator DERS			Criterion Number of Sex Partners			
		path	Coeff.	SE	p	path	Coeff.	SE
Father Attachment	<i>a</i>	-.002	0.103	.987	<i>c'</i>	.090	0.095	.345
DERS	-	-	-	-	<i>b</i>	-.323	0.095	.001
Gender		-.202	0.230	.381		-.350	0.213	.104
Age		-.076	0.110	.494		.009	0.102	.927
CSA		-.150	0.103	.151		-.110	0.097	.259
Alcohol Use		-.020	0.104	.847		.233	0.096	.018
constant		.067	0.126	.598		.115	0.117	.325
				$R^2 = .037$				
				$F(5, 94) = 0.718, p = .611$				
					$R^2 = .186$			
					$F(6, 93) = 3.540, p = .003$			

Antecedent Peer Attachment		Consequent						
		Mediator DERS			Criterion Number of Sex Partners			
		path	Coeff.	SE	p	path	Coeff.	SE
Peer Attachment	<i>a</i>	-.339	0.097	.001	<i>c'</i>	.075	0.102	.462
DERS	-	-	-	-	<i>b</i>	-.297	0.102	.004
Gender		-.295	0.217	.177		-.342	0.216	.116
Age		-.035	0.104	.739		.013	0.102	.898
CSA		-.195	0.098	.050		-.106	0.098	.281
Alcohol Use		-.010	0.098	.923		.228	0.097	.020
constant		.097	0.119	.414		.113	0.117	.339
				$R^2 = .147$				
				$F(5, 94) = 3.247, p = .009$				
					$R^2 = .183$			
					$F(6, 93) = 3.468, p = .004$			

EMOTION REGULATION, ATTACHMENT, AND SEXUAL BEHAVIOR

Table 8

Model fit statistics for alcohol/substance use concurrent with sexual intercourse.

Antecedent Mother Attachment		Consequent						
		Mediator DERS			Criterion Concurrent Alcohol Use			
		path	Coeff.	SE	p	path	Coeff.	SE
Mother Attachment	<i>a</i>	-.243	0.100	.017	<i>c'</i>	.127	0.101	.211
DERS	-	-	-	-	<i>b</i>	-.221	0.101	.031
Gender		-.229	0.222	.306		-.037	0.219	.868
Age		-.043	0.107	.686		-.059	0.105	.573
CSA		-.151	0.100	.132		-.056	0.099	.575
Alcohol Use		-.055	0.102	.590		.268	0.100	.009
constant		.075	0.122	.538		.012	0.120	.920
$R^2 = .094$					$R^2 = .140$			
$F(5, 94) = 1.951, p = .093$					$F(6, 93) = 2.518, p = .027$			

Antecedent Father Attachment		Consequent						
		Mediator DERS			Criterion Concurrent Alcohol Use			
		path	Coeff.	SE	p	path	Coeff.	SE
Father Attachment	<i>a</i>	-.002	0.103	.987	<i>c'</i>	.104	0.098	.292
DERS	-	-	-	-	<i>b</i>	-.252	0.098	.012
Gender		-.202	0.230	.381		-.036	0.220	.869
Age		-.076	0.110	.494		-.057	0.105	.588
CSA		-.150	0.103	.151		-.050	0.100	.620
Alcohol Use		-.020	0.104	.847		.252	0.099	.013
constant		.067	0.126	.598		.012	0.120	.921
$R^2 = .037$					$R^2 = .136$			
$F(5, 94) = 0.718, p = .611$					$F(6, 93) = 2.429, p = .032$			

Antecedent Peer Attachment		Consequent						
		Mediator DERS			Criterion Concurrent Alcohol Use			
		path	Coeff.	SE	p	path	Coeff.	SE
Peer Attachment	<i>a</i>	-.339	0.097	.001	<i>c'</i>	.135	0.104	.199
DERS	-	-	-	-	<i>b</i>	-.206	0.104	.050
Gender		-.295	0.217	.177		-.010	0.221	.962
Age		-.035	0.104	.739		-.058	0.105	.583
CSA		-.195	0.098	.050		-.037	0.100	.717
Alcohol Use		-.010	0.098	.923		.246	0.099	.015
constant		.097	0.119	.414		.003	0.120	.977
$R^2 = .147$					$R^2 = .141$			
$F(5, 94) = 3.247, p = .009$					$F(6, 93) = 2.534, p = .026$			

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Concurrent Alcohol Use, alcohol/substance use concurrent with sexual intercourse, reported on the Safer Choices Survey.

EMOTION REGULATION, ATTACHMENT, AND SEXUAL BEHAVIOR

Table 9

Model fit statistics for personal attitudes about having sexual intercourse.

Antecedent Mother Attachment		Consequent						
		Mediator DERS			Criterion Attitudes about Sex			
		path	Coeff.	SE	p	path	Coeff.	SE
Mother Attachment	<i>a</i>	-.242	0.099	.016	<i>c'</i>	-.153	0.087	.082
DERS	-	-	-	-	<i>b</i>	-.055	0.089	.537
Gender		-.177	0.223	.431		.437	0.191	.025
Age		-.053	0.107	.618		.368	0.091	< .001
CSA		-.152	0.099	.128		-.020	0.086	.817
Alcohol Use		-.056	0.101	.583		.217	0.087	.014
constant		.073	0.121	.548		-.141	0.104	.179
$R^2 = .094$				$R^2 = .355$				
$F(5, 93) = 1.926, p = .097$				$F(6, 92) = 8.449, p < .001$				

Antecedent Father Attachment		Consequent						
		Mediator DERS			Criterion Attitudes about Sex			
		path	Coeff.	SE	p	path	Coeff.	SE
Father Attachment	<i>a</i>	.002	0.102	.986	<i>c'</i>	-.071	0.086	.407
DERS	-	-	-	-	<i>b</i>	-.016	0.087	.850
Gender		-.149	0.231	.520		.445	0.194	.024
Age		-.086	0.110	.435		.360	0.092	< .001
CSA		-.150	0.103	.149		-.021	0.087	.812
Alcohol Use		-.021	0.104	.841		.238	0.087	.007
constant		.064	0.125	.610		-.144	0.105	.174
$R^2 = .035$				$R^2 = .339$				
$F(5, 93) = 0.683, p = .637$				$F(6, 92) = 7.852, p < .001$				

Antecedent Peer Attachment		Consequent						
		Mediator DERS			Criterion Attitudes about Sex			
		path	Coeff.	SE	p	path	Coeff.	SE
Peer Attachment	<i>a</i>	-.326	0.098	.001	<i>c'</i>	.233	0.089	.010
DERS	-	-	-	-	<i>b</i>	.060	0.089	.502
Gender		-.252	0.220	.254		.544	0.190	.005
Age		-.044	0.104	.674		.328	0.089	< .001
CSA		-.193	0.097	.050		.030	0.085	.728
Alcohol Use		-.011	0.098	.915		.234	0.084	.007
constant		.095	0.119	.427		-.175	0.102	.090
$R^2 = .139$				$R^2 = .380$				
$F(5, 93) = 3.002, p = .015$				$F(6, 92) = 9.404, p < .001$				

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Attitudes about Sex, personal attitudes about having sexual intercourse, reported on the Safer Choices Survey.

EMOTION REGULATION, ATTACHMENT, AND SEXUAL BEHAVIOR

Table 10

Model fit statistics for personal attitudes about having multiple sexual partners.

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Attitude, Multiple Partners		
		Coeff.	SE	p		Coeff.	SE	p
Mother Attachment	<i>a</i>	-.234	0.103	.025	<i>c'</i>	-.091	0.097	.352
DERS	-	-	-	-	<i>b</i>	.073	0.096	.449
Gender		-.168	0.226	.459		.702	0.209	.001
Age		-.057	0.108	.598		.191	0.100	.058
CSA		-.151	0.099	.133		-.010	0.093	.916
Alcohol Use		-.057	0.102	.577		.130	0.094	.170
constant		.067	0.123	.589		-.225	0.114	.051
				$R^2 = .087$				
				$F(5, 92) = 1.754, p = .130$				
Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Attitude, Multiple Partners		
		Coeff.	SE	p		Coeff.	SE	p
Father Attachment	<i>a</i>	.022	0.105	.831	<i>c'</i>	-.074	0.094	.434
DERS	-	-	-	-	<i>b</i>	.096	0.094	.311
Gender		-.123	0.233	.598		.701	0.210	.001
Age		-.095	0.110	.390		.190	0.100	.060
CSA		-.145	0.103	.163		-.014	0.094	.882
Alcohol Use		-.027	0.104	.793		.142	0.094	.134
constant		.046	0.127	.717		-.226	0.114	.051
				$R^2 = .036$				
				$F(5, 92) = 0.687, p = .611$				
Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Attitude, Multiple Partners		
		Coeff.	SE	p		Coeff.	SE	p
Peer Attachment	<i>a</i>	-.331	0.098	.001	<i>c'</i>	.055	0.099	.579
DERS	-	-	-	-	<i>b</i>	.113	0.100	.262
Gender		-.230	0.220	.299		.739	0.212	< .001
Age		-.051	0.104	.627		.174	0.099	.083
CSA		-.191	0.097	.053		.005	0.095	.961
Alcohol Use		-.018	0.098	.854		.141	0.094	.135
constant		.077	0.120	.523		-.239	0.115	.040
				$R^2 = .143$				
				$F(5, 92) = 3.066, p = .013$				

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Attitude, Multiple Partners, personal attitudes about having multiple sexual partners in the same month, reported on the Safer Choices Survey.

EMOTION REGULATION, ATTACHMENT, AND SEXUAL BEHAVIOR

Table 11

Model fit statistics for personal attitudes about condom use.

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Attitude, Condom Use		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Mother Attachment	<i>a</i>	-.242	0.099	.016	<i>c'</i>	-.211	0.106	.049
DERS	-	-	-	-	<i>b</i>	-.085	0.108	.431
Gender		-.177	0.223	.431		-.018	0.232	.940
Age		-.053	0.107	.618		-.057	0.111	.606
CSA		-.152	0.099	.128		-.056	0.104	.594
Alcohol Use		-.056	0.101	.583		.016	0.105	.878
constant		.073	0.121	.548		.007	0.126	.954
		$R^2 = .094$				$R^2 = .050$		
		$F(5, 93) = 1.926, p = .097$				$F(6, 92) = 0.809, p = .566$		

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Attitude, Condom Use		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Father Attachment	<i>a</i>	.002	0.102	.986	<i>c'</i>	-.059	0.105	.576
DERS	-	-	-	-	<i>b</i>	-.032	0.106	.762
Gender		-.149	0.231	.520		.002	0.237	.994
Age		-.086	0.110	.435		-.074	0.113	.515
CSA		-.150	0.103	.149		-.053	0.106	.623
Alcohol Use		-.021	0.104	.841		.046	0.106	.665
constant		.064	0.125	.610		.000	0.129	.999
		$R^2 = .035$				$R^2 = .013$		
		$F(5, 93) = 0.683, p = .637$				$F(6, 92) = 0.195, p = .978$		

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Attitude, Condom Use		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Peer Attachment	<i>a</i>	-.326	0.098	.001	<i>c'</i>	.161	0.111	.150
DERS	-	-	-	-	<i>b</i>	.021	0.111	.854
Gender		-.252	0.220	.254		.072	0.237	.761
Age		-.044	0.104	.674		-.097	0.112	.386
CSA		-.193	0.097	.050		-.017	0.107	.877
Alcohol Use		-.011	0.098	.915		.044	0.105	.679
constant		.095	0.119	.427		-.022	0.128	.863
		$R^2 = .139$				$R^2 = .031$		
		$F(5, 93) = 3.002, p = .015$				$F(6, 92) = 0.495, p = .810$		

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Attitude, Condom Use, personal attitudes about condom use, reported on the Safer Choices Survey.

EMOTION REGULATION, ATTACHMENT, AND SEXUAL BEHAVIOR

Table 12

Model fit statistics for self-efficacy to refuse sexual intercourse.

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Refusal Self-Efficacy		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Mother Attachment	<i>a</i>	-.261	0.099	.010	<i>c'</i>	.069	0.103	.506
DERS	-	-	-	-	<i>b</i>	-.084	0.104	.421
Gender		-.276	0.222	.216		-.706	.224	.002
Age		-.012	0.108	.910		.151	0.108	.164
CSA		-.157	0.099	.115		-.058	0.100	.567
Alcohol Use		-.063	0.101	.534		-.083	0.102	.419
constant		.108	0.122	.380		.238	0.123	.056
$R^2 = .105$					$R^2 = .119$			
$F(5, 93) = 2.176, p = .063$					$F(6, 92) = 2.064, p = .065$			

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Refusal Self-Efficacy		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Father Attachment	<i>a</i>	-.008	0.102	.939	<i>c'</i>	-.029	0.099	.771
DERS	-	-	-	-	<i>b</i>	-.103	0.100	.310
Gender		-.242	0.230	.297		-.726	0.224	.002
Age		-.051	0.111	.649		.164	0.108	.131
CSA		-.155	0.103	.136		-.065	0.101	.523
Alcohol Use		-.025	0.104	.810		-.094	0.101	.353
constant		.094	0.127	.461		.246	0.123	.049
$R^2 = .038$					$R^2 = .115$			
$F(5, 93) = 0.743, p = .594$					$F(6, 92) = 1.996, p = .074$			

Antecedent	Consequent							
	path	Mediator DERS			path	Criterion Refusal Self-Efficacy		
		Coeff.	SE	<i>p</i>		Coeff.	SE	<i>p</i>
Peer Attachment	<i>a</i>	-.344	0.096	< .001	<i>c'</i>	.122	0.106	.250
DERS	-	-	-	-	<i>b</i>	-.060	0.106	.577
Gender		-.338	0.217	.123		-.675	0.225	.004
Age		-.008	0.104	.938		.147	0.107	.707
CSA		-.200	0.097	.041		-.038	0.102	.707
Alcohol Use		-.014	0.097	.884		-.096	0.100	.341
constant		.127	0.119	.291		.228	0.123	.067
$R^2 = .154$					$R^2 = .127$			
$F(5, 93) = 3.389, p = .007$					$F(6, 92) = 2.232, p = .047$			

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Refusal Self-Efficacy, self-efficacy to refuse sexual intercourse, reported on the Safer Choices Survey.

EMOTION REGULATION, ATTACHMENT, AND SEXUAL BEHAVIOR

Table 13

Model fit statistics for self-efficacy to negotiate condom use.

Antecedent Mother Attachment		Consequent						
		Mediator DERS			Criterion Negotiation Self-Efficacy			
		path	Coeff.	SE	p	path	Coeff.	SE
Mother Attachment	<i>a</i>	-.261	0.099	.010	<i>c'</i>	.006	0.105	.956
DERS	-	-	-	-	<i>b</i>	-.164	0.105	.124
Gender		-.277	0.223	.217		-.559	0.227	.016
Age		-.014	0.109	.898		.158	0.110	.155
CSA		-.158	0.099	.116		-.134	0.102	.191
Alcohol Use		-.064	0.102	.531		.035	0.103	.734
constant		.110	0.124	.377		.190	0.125	.133
$R^2 = .104$					$R^2 = .097$			
$F(5, 92) = 2.146, p = .067$					$F(6, 91) = 1.633, p = .147$			

Antecedent Father Attachment		Consequent						
		Mediator DERS			Criterion Negotiation Self-Efficacy			
		path	Coeff.	SE	p	path	Coeff.	SE
Father Attachment	<i>a</i>	-.008	0.103	.940	<i>c'</i>	-.041	0.100	.682
DERS	-	-	-	-	<i>b</i>	-.165	0.101	.106
Gender		-.241	0.232	.300		-.568	0.227	.014
Age		-.050	0.113	.655		.164	0.110	.139
CSA		-.155	0.104	.139		-.139	0.102	.177
Alcohol Use		-.025	0.105	.812		.033	0.102	.745
constant		.094	0.128	.467		.193	0.125	.126
$R^2 = .038$					$R^2 = .099$			
$F(5, 92) = 0.725, p = .607$					$F(6, 91) = 1.664, p = .139$			

Antecedent Peer Attachment		Consequent						
		Mediator DERS			Criterion Negotiation Self-Efficacy			
		path	Coeff.	SE	p	path	Coeff.	SE
Peer Attachment	<i>a</i>	-.358	0.099	< .001	<i>c'</i>	.068	0.110	.540
DERS	-	-	-	-	<i>b</i>	-.142	0.108	.195
Gender		-.346	0.218	.115		-.534	.229	.022
Age		-.016	0.105	.882		.153	0.109	.165
CSA		-.205	0.097	.038		-.121	0.103	.246
Alcohol Use		-.018	0.098	.855		.034	0.102	.742
constant		.137	0.120	.259		.180	0.126	.156
$R^2 = .158$					$R^2 = .101$			
$F(5, 92) = 3.464, p = .007$					$F(6, 91) = 1.703, p = .129$			

Note: Gender, reported as proportion females (coded 0 = male; 1 = female); Age, reported in years; CSA, Childhood Sexual Abuse, based on the CSA subscale of the Childhood Trauma Questionnaire; Alcohol Use, reported as number of drinking days in the past month; Attachment to Mother, reported as the Mother subscale of the Inventory of Parent and Peer Attachment; Attachment to Father, reported as the Father subscale of the Inventory of Parent and Peer Attachment; DERS-Total, total scale score of the Difficulties in Emotion Regulation Scale; Negotiation Self-Efficacy, self-efficacy to negotiate condom use with a sexual partner, reported on the Safer Choices Survey.