

**Attachment Dimensions of Closeness, Anxiety, and Dependence and Parent and Peer Relationships in a Population of Adolescents who have Sexually Offended:
Are These Associations Mediated by Emotion Regulation?**

by

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Abstract

Adolescent males who sexually offend are at great risk for continuing difficulties in managing emotional arousal, their relationships, and their futures. The purpose of this study is to examine the relationship between these adolescent's dimensions of attachment (closeness, anxiety, and dependence), their emotion regulation ability, and their parent and peer relationships. More specifically, this study examines the mediational role of adaptive and maladaptive emotion regulation. For this study, 214 incarcerated adolescents completed self-report questionnaires regarding demographic information, attachment to their parents and peers, and both adaptive and maladaptive emotion regulation ability. Utilizing path analysis as our chosen method of analysis, we found that adolescents' attachment dimensions of closeness, anxiety, and dependence is related to adaptive and maladaptive emotion regulation, as well as adolescents' relationships with their peers and parents. This study was the first to test and find that adaptive and maladaptive emotion regulation ability mediated the relationship between attachment dimensions of closeness, anxiety, and dependence and relationships with peers.

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Introduction

Sexual offending is a societal problem that causes significant distress to the victims, and in many cases, the perpetrators of these crimes. Quite often adolescents as perpetrators are excluded from the discussion of sexual offending because it is assumed that this is a non-normative phenomenon that is relatively rare for the adolescent population. However, a significant number of sexual crimes are committed by adolescents (Barabee & Marshall, 2005) and many adult offenders report that their pattern of offenses began in adolescence (Keelan & Fremouw, 2013). Additionally, adolescents are thought to be responsible for 50% of sexual assaults on children and 30% of rapes of adolescent and adult women (Finkelhor, Ormrod, & Chaffin, 2009). These estimates might even be conservative due to the fact that sexual abuse incidents often are unreported and only a small number of reports result in arrests (Zaremba & Keiley, 2011). Due to the prevalence and severity of sexual offending, it is important to examine this phenomenon in the adolescent population.

Adolescents who have sexually offended are viewed as a distinct group of perpetrators whose sexual offenses are explained by influences that differ from those that explain the offenses of other juvenile delinquents (Worling & Långström, 2006). Adolescents who have sexually offended differ from other adolescent offenders on measures of their sexual and physical abuse histories, early attachment experiences, emotional regulation difficulties, impulsivity, empathy, social skills, attitudes and beliefs

about sexual offending, and atypical sexual interests (Seto & Lalumiere, 2010; Ward & Beech, 2005). This population warrants further investigation because the mechanisms that fuel these adolescents' sexually specific offenses differ from adolescents who commit non-sexual offenses (Worling & Långström, 2006).

Research on adolescent sexual offending is limited. Generally, much of the research conducted on sexual offending focuses on adult males who have perpetrated these crimes. It cannot be assumed that the results of these studies are generalizable to adolescents who have sexually offended. Moreover, even less is known about these adolescents' peer and parent relationships (Keiley, Zaremba-Morgan, Datubo-Brown, Pyle, & Cox, 2014; Ryan, Leversee, & Lane, 2011; Seto & Lalumiere, 2010). It is imperative to investigate these adolescents' relational networks so that interventions can be tailored to disrupt these adolescents' patterns of sexual offending—which often stem from mechanisms of attachment (Baker, Beech, & Tyson, 2006) and poor ability to regulate emotional arousal (Burk & Burkhart, 2003),

Adolescents who have sexually offended often have insecure attachment to parents (Baker, Beech, & Tyson, 2006), difficulties managing emotional arousal (Burk & Burkhart, 2003), and poor parent and peer relationships (Worling & Långström, 2006). Associations between insecure attachment and maladaptive emotion regulation have been previously established (Burk & Burkhart, 2003; Cicchetti & Toth, 1995), but research has not focused on how these mechanisms directly affect parent and peer relationships in the population of adolescents who have sexually offended. No studies of this population exist that have examined how emotion regulation affects the relationship between dimensions of attachment (dependence, anxiety, and closeness) and these

adolescent's parent and peer relationships. The present study will add to the research on emotion regulation as it relates to dimensions of attachment, parent, and peer relationships in adolescent males who have sexually offended.

Review of the Literature

Adolescent males who sexually offend are at great risk for continuing difficulties in managing emotional arousal, their relationships, and their futures. Incarceration can further exacerbate many of these difficulties due to the restricting and often stressful nature of institutionalized environments. Many questions exist about this under-studied population. We will review the existing research on attachment and emotion regulation in order to better comprehend how these constructs affect parent and peer relationships in the population of adolescent males who have sexually offended.

Defining the Population: Male Adolescents Who Have Sexually Offended

Delineating the population of adolescents who have sexually offended, as well as defining what behaviors constitute sexual offending, is important for establishing how the mechanisms of attachment and emotion regulation are differentiated in this population. Adolescents who have sexually offended are individuals who have committed sexual offenses and are under the age mandated by law at which they would be charged as adults (Barabee & Marshall, 2005). These adolescents are a diverse population from all socioeconomic and ethnic backgrounds (Caldwell, 2002). Juvenile offenders report engaging in sexual misconduct in childhood, with the average age of contact offenses beginning between the ages of 10 and 12 (Zolondek, Abel, Northey, & Jordan, 2001). The prevalence of patterns of sexual offending that begins in late childhood suggests that unless interventions take place early in the offending career of

adolescents, sexual offending will frequently persist into adulthood (Oxnam & Vess, 2008). Therefore, it is important to examine the conceptualization of sexual offending in adolescence, so that interventions can target disrupting the progression of these behaviors.

When adolescents engage in sexual behaviors that are considered uncharacteristic and unlawful for their current age group (i.e. engaging in sexual activity with younger partners, use of force or threat of force during sexual activity) these behaviors are defined as deviant even though some of them may be regarded as normative later in development (Barabee & Marshall, 2005). Therefore, sexual offending can be conceptualized as sexual behaviors acted out in deviant and illegal ways (Smallbone, Mchugh, & Smith, 2013). Types of sexual offenses include sexual coercion without the consent of the persons involved, sex with persons under the age of legal consent, or with biological relatives (Smallbone, Mchugh, & Smith, 2013). Additionally, adolescent males commit the majority of reported sexual crimes and offenses (Barabee & Marshall, 2005) therefore males will be the sole focus of this research. Understanding the conceptualization of sexual offending is important because often the behaviors that comprise sexual offending are linked to attachment—the genesis of relationships with others.

Adolescent's Attachment

We are utilizing attachment theory in our research to better understand the relational mechanisms that affect adolescent's relationships with their parents and peers in our population. Bowlby (1969, 1973, 1980) emphasized the important bonds of children with their parents for healthy development. When the bonds of children with

their parents are insecure, this may engender disruptions to the healthy development of these children. The attachment relationships of children with their parents are critical because these relationships over time contribute to the development of internal working models (Bowlby, 1969) which can influence the ways children view themselves and others; as a result, the construction of later relationships may be influenced by children's initial attachment and later their internal working models. These models typically form the beliefs and expectations that children have of how relationships function.

In addition, in the development of attachment during the first year of life, children also develop habitual ways of responding to high arousal. Parenting quality is a critical component to the development of both the attachment bonds of children with parents as well as the development of their habitual patterns of managing arousal. Ainsworth and colleagues (1978) identified four types of attachments of children to their parents: secure, anxious-ambivalent, avoidant, and disorganized. Children whose parents are consistent, sensitive, and responsive usually develop secure attachments. These children trust that they can utilize their parents as a secure base during times of distress. Conversely, insecure (avoidant, anxious) attachments hinder children's ability to regulate emotion, navigate new situations, and maintain reciprocally supportive relationships (Ainsworth et al. 1978; Bowlby, 1980; Keiley et al., 2014). Children with parents who are dismissive and rejecting often develop avoidant attachments. Avoidant children become overwhelmed with emotions when they are distressed, and respond with deactivating strategies; withdrawing or employing flight behaviors (Stevens, 2014). When parents are inconsistent to their children's needs, these children often develop

anxious attachments. Anxious children usually respond to heightened emotional states with fear and frustration. They usually have a difficult time regulating their emotions and self-soothing when distressed.

Main and Solomon (1990) developed the fourth attachment category classified as disorganized. Disorganized children experience their parents as a source of fear and unpredictability (Baker, Beech, & Tyson, 2006). They are often unable to adopt organized strategies of utilizing their parents as a secure base, resulting in unusual and opposing behaviors (Baker, et al. 2006). Furthermore, insecure and disorganized attachments have been associated with sexual offending in adolescent and adult populations (Baker et al. 2006; Burk & Burkhart, 2003; Cassidy 2008). Adolescents who display disorganized attachment patterns are at high risk of developing aggression and violent behaviors (Wampler & Downs, 2009).

Insecure and disorganized attachments may contribute to sexual offending. Insecurely attached individuals are more likely to satisfy intimacy needs in inappropriate ways (Righthand & Welch, 2001; Smallbone, 2006). Insecure attachments likely hinder the development of adaptive self-regulatory skills, lead to less organized views of self, and exacerbate negative emotions (Burk & Burkhart, 2003). These combined factors may increase the possibility of sexual offending by reducing empathy, increasing maladaptive emotion regulation strategies, and increasing coercive and dominating behaviors (Baker, Beech, & Tyson, 2006).

Relationships with Parents

Attachment difficulties established in early childhood often persist into adolescence. For adolescent offenders, early distressing family processes (e.g., abuse,

neglect, violence, substance abuse) result in problematic parent-child relationships during adolescence (Keijsers, Loeber, Branje, & Meeus, 2012). Relations among parents and adolescents that are restrictive and characterized by low levels of trust have been associated with increased aggressive and delinquent behaviors (Keijsers, Loeber, Branje, & Meeus, 2011). As adolescents venture into new experiences that parents cannot control, attachment systems can become strained (Keiley, 2011). This is particularly relevant when adolescents engage in delinquent behaviors (Higgings, Jennings, & Mahoney, 2010).

Parents' internal working models of attachment also affect parent-adolescent relationships. Parents' internal working models influence how they behave with their children which, in turn, influence the internal working models of attachment of their children (Bowlby, 1969/1982, 1973). Parents with insecure attachments have either intrusive or detached interactions with their children that are often made worse by parents' poor emotion regulation (Mikulincer & Shaver, 2007). Parents with avoidant attachments perceive their relationships with their children as more detached, and have difficulty providing emotional support to their children (Jones, Ehrlich, Lejuez, & Cassidy, 2015). As a result of habitually experiencing detached and rejecting interactions with avoidant parents, children may avoid support-seeking behaviors from their parents when faced with distressing situations. Additionally, children may become avoidantly attached themselves and show hostile, aggressive, and antisocial behavior patterns to their parents and others (Rholes, Simpson, & Friedman, 2006).

Conversely, parents with anxious attachments tend to display parenting behaviors that are overly involved, dependent, and intrusive (Collins, Guichard, Ford, &

Feeney, 2006). As a result, adolescents may react unfavorably to this anxious type of parenting and be disinclined to disclose to anxious parents any information that could prompt additional intrusive behaviors (Jones et al., 2015). Additionally, children whose parents have anxious attachments frequently develop their own anxious attachments, becoming impulsive, over-stimulated, restless, inattentive, with a low frustration tolerance (Keiley & Seery, 2001). These characteristics are often associated with the development of aggressive behaviors and later delinquency (Cassidy, 2008; Kim & Cicchetti, 2010).

Relationships with Peers

Peer relationships become particularly salient during adolescence as adolescents strive for autonomy and independence from parents. During adolescence, peers provide social support both behaviorally and emotionally, and peer relationships provide a context in which adolescents enhance vital social skills (Preveaux, Ray, LoBello, & Mehta, 2004). Furthermore, problematic peer relationships have been associated with both current maladjustment and later psychopathology (Bukowski & Adams, 2005; Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006).

Attachment is thought to influence adolescents' behaviors in social situations involving peers (Dykas, Ziv, & Cassidy, 2008). More precisely, adolescents with secure attachments are able to navigate with confidence the challenges associated with establishing and maintaining healthy peer relations (Nelis & Rae, 2009). Conversely, adolescents with insecure attachments exhibit more hostile and aggressive behaviors towards peers (DeKlyen & Greenberg, 2008; Dykas, Ziv, & Cassidy, 2008) or clinging or intrusive behaviors ultimately making them more likely to be rejected by peers (Chen,

Drabick, & Burgers, 2014). Missing out on important socialization experiences that positive peer interactions provide, these adolescents become more vulnerable to stress and display higher levels of externalizing symptomatology (Kim & Cicchetti, 2010).

Despite these difficulties, delinquent adolescents are not without friends (Goldweber, Dmitrieva, Cauffman, Piquero, & Steinberg, 2011), and adolescents low in self-control (a trait highly correlated with offending) may be more peer involved (McGloin & Shermer, 2009). Adolescents low in self-control gravitate toward one another largely because they are not attractive friends to prosocial individuals, and as such, they are often excluded from conventional ties (McGloin & Shermer, 2009). In terms of friendship stability, delinquent adolescents' friendships are of shorter duration and are more volatile than friendships of non-delinquent adolescents (McElhaney, Immele, Smith, & Allen, 2006). This instability in friendships is due to the greater amount of conflict and lack of security evidenced by delinquent adolescents (Kreager, Rulison, & Moody, 2011). These adolescents appear to have less ability to bond emotionally (low levels of emotional warmth and closeness) with peers than non-offending adolescents (Kreager Rulison, & Moody, 2011).

Emotion regulation

Emotion regulation develops as part of attachment development during infancy (Ainsworth, 1989; Ainsworth & Bowlby, 1991) and comprises the awareness, expression, and control of emotional experiences (Gratz & Roemer, 2004). Emotions can be regulated to lessen unfavorable and increase favorable interactions with others, thus allowing individuals to withstand or tolerate their emotions (Tomkins, 1963). Individuals who have the ability to manage their emotional arousal are able to respond

to negative emotional states with flexibility and openness (Kullik & Petermann, 2013). On the contrary, individuals with maladaptive emotion regulation display exaggerated emotional reactivity and/or emotional deficits, including restricted emotions, diminished empathy, and inappropriate reactions to distressing emotions (Kim & Cicchetti, 2010). Generally, when individuals have maladaptive emotion regulation it is exhibited in two ways: over-controlled or under-controlled. When emotion is under controlled, individuals are more inclined to become impulsive, aggressive, or criminally active (Keiley & Seery, 2001). When emotion is over-controlled, distressing emotions are experienced as more restricted and inhibited. As a result, individuals who avoid or deny their emotions may develop depression, addictions, or anxiety disorders (Keiley & Seery, 2001). Additionally, individuals, especially those who are disorganized, may display freezing behaviors which cause them to shut down completely when emotions become too distressing.

Early attachment experiences are the environment in which children develop these emotion regulation capacities (Ainsworth & Bowlby, 1991). If attachment in infancy is insecure, this engenders problems with the ability to manage emotions throughout life. This is particularly relevant for adolescents who have sexually offended as they often have insecure or disorganized attachments that allow the development of maladaptive emotion regulation strategies (Baker et al. 2006; Burk & Burkhart, 2003; Cassidy 2008). When faced with distressing experiences, these adolescents may utilize behaviors that seem socially problematic or abnormal, such as sexual offending, as a way to augment their self-control and attempt to diminish negative emotions (Burk & Burkhart, 2003).

The family environment is another factor that influences these adolescents' emotion regulation abilities. Adolescents who have sexually offended often come from families with high levels of negative emotions and low levels of positive emotions (Barbaree & Langton, 2005). Families with high levels of negative emotions and low levels of positive emotions are often characterized by substance abuse, emotional neglect or rejection, aggression, sexual abuse, criminal activities, instability, and unpredictability (Marshall & Marshall, 2000). Parents from families like these often react to their own emotional experiences with intense pursuit (abuse) or withdrawal (neglect) (Veneziano & Veneziano, 2002). They are less likely to provide support and scaffolding when their children are upset (Kim & Cicchetti, 2010) resulting in ineffective methods of helping them to manage appropriately or tolerate distressing emotional states.

Adolescent's Attachment, Emotion regulation, and Parent and Peer Relationships.

Adolescents who have sexually offended are most often insecurely attached (Baker, Beech, & Tyson, 2006) and have maladaptive strategies to manage emotional arousal (Burk & Burkhart, 2003). This can have deleterious effects on their relationships with parents and peers. Adolescents who demonstrate externalizing behaviors, that are a consequence of the inability to effectively manage emotions (Zaremba & Keiley, 2011), often have parents who are rejecting and less involved which, in turn, leaves them feeling less motivated to please their parents because of this disconnection (Keiley & Seery, 2001). Parents and adolescents who experience these habitual patterns have been shown to suffer from great despair and disconnectedness (McKillop, Smallbone, Wortley, & Andjic, 2012). Additionally, being unable to regulate emotion

effectively engenders difficulties in creating and maintaining peer relationships; whereas, effective emotion regulation ability promotes future success in creating and maintaining relationships with peers (Zimmermann, Maier, Winter, & Grossmann, 2001). Thus, poor emotion regulation ability greatly influences the relationships that these adolescents have with parents and peers, particularly during adolescence.

We will investigate the mechanism by which adolescents' attachment dimensions are associated with adolescent's relational outcomes with parents and peers in the population of those who sexually offend. In particular, we will examine adolescents' feelings of closeness with others, their levels of anxiety and fear of abandonment, and their ability to depend on others. We will also investigate the effects of these attachment dimensions on adolescent's emotion regulation and subsequent parent and peer relationships in the population of adolescents who have sexually offended.

Methods

Participants

The sample for this Multiple Family Group Intervention (MFGI; Keiley, 2011) and research study was drawn from the juvenile department of youth services (DYS) correctional facility in Alabama for male adolescents who sexually offend and their family members. Male juveniles from across the state who have committed criminal offenses are incarcerated at this facility for periods of a few months to several years, but the focus of this intervention and research are only on those who have committed sexual offenses. All of the adolescents in this study were involved in the Accountability Based Sex Offender Program (ABSOP; Burkhart, Peaton, & Sumrall, 2009) as part of their treatment. These adolescents have committed various sexual offenses, including

(but not limited to) fondling and molestation, receiving and/or giving anal and/or oral sex, digital penetration, and forced vaginal intercourse. As part of their ABSOP treatment, they are required to attend the MFGI. All parents are invited to attend the MFGI, but some are unable or unwilling to attend; in the case of non-attendant parents, the adolescents are still required to attend.

The adolescents in ABSOP are housed in dorms, each serving 12-16 boys, and they are under constant supervision unless alone in their bedroom. During the day, they are involved in treatment (individual and/or group therapy), school, and free time for reading, TV, socializing, and/or sports. Despite their structured lifestyle, there are still many opportunities for the adolescents to experience emotion regulation and behavioral difficulties. Therapists and case managers often keep primary parents informed of their adolescent's observable behaviors and difficulties by phone. In addition, the adolescents are allowed to talk with their families on the phone if they have not broken any rules. The majority of adolescents are incarcerated for approximately 1 year. Because most of the adolescents are scheduled to return to their parents' homes after incarceration, the family focus of the MFGI becomes extremely important in their rehabilitation. The few who will not return to their families of origin or who have not reached the age of 18 will be placed in half-way houses or foster families.

Sample. Two hundred and fourteen (214) male adolescents who had sexually offended are included in this study from the multiple-family groups that were conducted from 2006 to 2015. The adolescents ranged from 12 to 19 years old ($M = 15.7$; $SD = 1.6$). The majority of adolescents identified as European-American (61%; 31% African

American). Adolescents ranged from currently being enrolled in the 6th grade to having completed their GED.

It is also important to identify these adolescents' family factors. The majority of parents identified as European-American (79% mothers; 87% fathers; 18% African American mothers; 11% African American fathers). Fifty two percent (52%) of mothers and 20% of fathers went beyond high school graduation or GED achievement. The majority of mothers (65%) and fathers (83%) were employed and married (mothers, 51%; fathers, 66%) at the beginning of the intervention. On average, annual income for mothers was \$29,516 ($SD = \$27,959$) and fathers was \$39,434 ($SD = \$26,748$).

Procedures

Parents are invited to participate in the MFGI by the adolescent's therapist. Participation in the MFGI enables parents to see their adolescent twice a month rather than the one visit that is normally allowed. Additionally, parents are given a small monetary reimbursement to pay for travel to the facility. All MFGI sessions are 1½ hours long and facilitated by master's-level marriage and family therapists who are supervised by Dr. Margaret Keiley. Each of the full 8-week MFGI sessions is conducted with eight to eleven adolescents and their available family members (including mothers, fathers, grandparent(s), aunts, uncles, older siblings) all together in one room with the facilitators. The research study uses pre-intervention, post-intervention (4 months after pretest), and 1-year follow-up quantitative assessments. On the first day of the intervention, group facilitators explain the parameters of participation in the MFGI research study to both parents and adolescents. Signed informed research consents and self-report questionnaires are administered to all participants on the first day of the

intervention and on the last day of the intervention (4 months later). This study only utilized pre-intervention data.

Measures

Demographic Questionnaire

The adolescent questionnaire included a brief overview of demographic information including the adolescent's age, sex, ethnic background, grade, number of siblings, family position, and living arrangement prior to being incarcerated.

Adolescent Attachments

Adolescents complete the attachment scale (AS; Collins & Read, 1990), an 18-item scale measuring three attachment dimensions (dependence, anxiety, closeness) using a five-point Likert scale from 1 (not at all like me) to 5 (very much like me) at all 3 time points. The average alpha of each subscale that was used was "feelings of being able to depend on others" ($\alpha = .72$), "anxiety or fearfulness about being abandoned" ($\alpha = .61$), and "feelings of closeness with others" ($\alpha = .55$). This measure has been validated on deviant offenders (Miller, 2013).

Adolescent Relationships with Parents and Peers

The Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) is a 53-item scale that assesses the quality of the emotional and cognitive dimensions of adolescent's relationships with parents and peers. This scale consists of three subscales that assess Trust, Communication, and Alienation in parent and peer relationships. Each item is rated on a 5-point Likert scale ranging from 1 (Almost Never or Never) to 5 (Almost Always or Always). In our sample, the alpha for the parent attachment section was .95 and the alpha for the peer attachment section was .93.

Adolescent Emotion regulation

Adolescents complete the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1995). The ERC was created to differentiate between emotionally well-regulated versus dysregulated children and adolescents. The ERC consists of 24 items that are rated on a 4-point Likert scale from 1 (Almost always) to 4 (Never) and are divided into two subscales: Emotion Regulation and Lability/Negativity. The Emotion Regulation subscale measures 'adaptive emotion regulation' including situationally-appropriate affective displays, emotional self-awareness, and empathy. Higher scores indicate a greater ability to manage emotional arousal. The alpha for the Emotion Regulation subscale in our sample was .67. The Lability–Negativity subscale measures 'maladaptive emotion regulation' including inflexibility, unpredictability, dysregulated negative emotions, and abruptness of mood changes. Higher scores indicate greater levels of emotional reactivity and a less ability to effectively manage emotional arousal. The alpha for the Lability Negativity subscale in our sample was .77.

Analysis Plan

In the population of adolescents who have sexually offended, we present the following four research questions for this study (Figure 1):

1. Are the dimensions of closeness that adolescents experience with their parents, their ability to depend on others, and their levels of anxiety related to their relationships with their parents and their peers?
2. Are these three dimensions of attachment related to the adolescents' adaptive and maladaptive emotion regulation strategies?

3. Do these maladaptive and adaptive emotion regulation strategies also have an effect on the adolescents' relationships with peers and parents?
4. Finally, does emotion regulation (adaptive and maladaptive) mediate the relationship between adolescents' experience of closeness, dependence, and anxiety and their relationships with their parents and their peers?

We will use path analysis to examine these research questions. The mediation will be tested within the framework proposed by Baron and Kenny (1986). All models were fit using Mplus, which allows for Full Information Maximum Likelihood (FIML) that allows the use of all cases in the analysis even if they are missing some portion of data.

Results

Univariate Analysis

Mean scores and standard deviations for each of the measures used in this study, and adolescent age, are summarized in Table 1. All of the measures (AS, IPPA, and ERC) appear to be normally distributed and each of the distributions appears to be symmetric.

Bivariate Analysis

A bivariate analysis was conducted to examine the relationships that each variable had with the others to determine preliminary associations, as shown in Table 2. The estimated correlations show that all of the main study variables are significant except for the relationship between adolescents' closeness and their relationships with parents. Significant relationships between the main study variables and age yielded mixed results. Significant relationships only existed between age and dependence, anxiety, and relationships with parents. This indicates that younger adolescents report

greater attachment dependence and anxiety, as well as better relationships with parents.

Multivariate Analysis

We used MPlus to fit our path models. This method allowed us to simultaneously estimate the relationships between multiple variables. In addition, using MPlus allows for Full Information Maximum Likelihood (FIML) estimation that will allow us to use all of the cases in the analysis even if they are missing some portion of data. We first examined if age is related to our study variables, then we fit the four models that are necessary to fit to determine mediation.

Preliminary Analysis

We regressed dimensions of attachment (closeness, anxiety, dependence) on age to examine this relationship further (Figure 2). The results indicated that age has a significant, negative association with anxiety ($\beta = -0.07$, $r = -0.15$, $p < .05$) and dependence ($\beta = -0.13$, $r = -0.24$, $p < .001$), but no significant relationship with closeness ($\beta = -0.02$, $r = -0.06$, NS). Adolescents who are younger have more anxiety and fear that they are going to be abandoned and a greater ability to depend on their parents. Age accounts for very little of the variance in attachment dimensions of closeness ($R^2 = .03\%$), anxiety ($R^2 = 2\%$), and dependence ($R^2 = 6\%$). Given these results, we omitted age from further analysis.

Model 1

Attachment to parents and peers was simultaneously regressed on dimensions of attachment (closeness, anxiety, and dependence) (Figure 3). The results indicated that closeness has a significant, positive association with adolescents' relationships with

peers ($\beta = 0.21, r = 0.18, p < .01$) and a nonsignificant association with adolescents' relationships with parents ($\beta = -0.10, r = -0.08, NS$). Adolescents' ability to be close is associated with better relationships with their peers, controlling for anxiety and dependence. Additionally, anxiety has a significant, positive association with adolescents' relationships with peers ($\beta = 0.17, r = 0.17, p < .01$) and parents ($\beta = 0.34, r = 0.31, p < .001$). Adolescents' anxiety about being abandoned is associated with better relationships with their peers and parents, controlling for anxiety and dependence. Furthermore, dependence has a significant, positive association with adolescents' relationships with peers ($\beta = 0.15, r = 0.16, p < .05$) and parents ($\beta = 0.45, r = 0.46, p < .001$), indicating that adolescents' dependence on others is associated with better relationships with their peers and parents, controlling for anxiety and closeness. Moreover, dimensions of attachment (closeness, anxiety, and dependence) accounts for 13% of the variance in adolescents' relationships with peers, and 35% of the variance in adolescents' relationships with parents.

Model 2

Maladaptive and adaptive emotion regulation was simultaneously regressed onto dimensions of attachment (closeness, anxiety, and dependence) (Figure 4). The results indicated that closeness, anxiety, and dependence have significant, negative associations with maladaptive emotion regulation (Closeness: $\beta = -0.15, r = -0.22, p < .001$; Anxiety: $\beta = -0.21, r = -0.34, p < .001$; Dependence: $\beta = -0.10, r = -0.17, p < .01$). When adolescents feel less close, have less anxiety about being abandoned, and find it difficult to depend on others, they have higher levels of maladaptive emotion regulation, when controlling for adaptive emotion regulation.

Furthermore, closeness, anxiety, and dependence have significant, positive associations with adaptive emotion regulation (Closeness: $\beta = 0.12$, $r = 0.16$, $p < .05$; Anxiety: $\beta = 0.13$, $r = 0.21$, $p < .001$; Dependence: $\beta = 0.15$, $r = 0.26$, $p < .001$). These results indicate that when adolescents feel close, have more anxiety about being abandoned, and are able to depend on others, they have higher levels of adaptive emotion regulation, controlling for maladaptive emotion regulation. Moreover, dimensions of attachment (closeness, anxiety, dependence) account for 27% of the variance in maladaptive emotion regulation and 20% of the variance in adaptive emotion regulation.

Model 3

Attachment to parents and peers was simultaneously regressed onto maladaptive emotion regulation and adaptive emotion regulation (Figure 5). Results indicate that maladaptive emotion regulation has a significant, negative association with adolescents' relationships with peers ($\beta = -0.45$, $r = -0.27$, $p < .001$), but no significant association with parents ($\beta = -0.15$, $r = -0.08$, NS). This suggests that higher levels of maladaptive emotion regulation are related to lower quality peer relationships. Additionally, adaptive emotion regulation has significant, positive associations with adolescents' relationships with peers ($\beta = 0.43$, $r = 0.27$, $p < .001$) and parents ($\beta = 0.78$, $r = 0.46$, $p < .001$), indicating that higher levels of adaptive emotion regulation are related to higher quality peer and parent relationships. Moreover, maladaptive and adaptive emotion regulation accounts for 20% of the variance in relationships with peers and 25% of the variance in relationships with parents.

Model 4

In order to determine whether maladaptive and adaptive emotion regulation mediate the relationship between adolescents' dimensions of attachment (closeness, anxiety, dependence) and their relationships with peers and parents, the full model was examined in Model 4 (Figure 6). Baron and Kenny's (1986) criterion is satisfied for one of the outcome variables—relationships with peers. When both possible mediators (maladaptive and adaptive emotion regulation) are included in the model, the significant relationships between the predictors (attachment dimensions of closeness, anxiety and dependence) and the outcome (adolescent's relationships with peers) no longer exist (Closeness: $\beta = 0.11$, $r = 0.09$ $p > .05$; Anxiety: $\beta = 0.05$, $r = 0.05$ $p > .05$); Dependence: $\beta = 0.06$, $r = 0.07$ $p > .05$) indicating that emotion regulation does, indeed, mediate the relationship between adolescent's dimensions of attachment and their relationships with their peers. Moreover, when emotion regulation (adaptive and maladaptive) is included in this model, a significant relationship between attachment dimensions of closeness, anxiety, and dependence and relationships with parents still exists (Closeness: $\beta = -0.16$, $r = -0.12$ $p < .05$; Anxiety: $\beta = 0.28$, $r = 0.26$ $p > .001$); Dependence: $\beta = 0.38$, $r = 0.38$ $p > .001$), indicating that emotion regulation does not mediate this association.

To ensure that the paths between attachment dimensions of closeness, anxiety, and dependence and relationships with peers taken together are indeed zero, we conducted a delta chi-square test. From the results of the $\Delta\chi^2$ test, we cannot reject the null hypothesis that the paths between relationships with peers and attachment dimensions of closeness, anxiety, and dependence are zero in the population simultaneously, controlling for all else in the model [$\Delta\chi^2 = 4.17$, $\Delta df = 3$; χ^2 Crit ($\alpha = .05$, $df = 3$) = 7.82; $4.17 < 7.82$]. This confirms that emotion regulation (maladaptive and

adaptive) mediates the relationship between attachment dimensions of closeness, anxiety, and dependence and relationships with peers for this population when controlling for all else in the model.

Discussion

It was hypothesized that attachment dimensions of closeness, anxiety, and dependence are related to adolescents' relationships with their parents and their peers. We predicted that these three dimensions of attachment are related to adolescents' adaptive and maladaptive emotion regulation strategies. Additionally, we proposed that adolescents' maladaptive and adaptive emotion regulation strategies are related to their relationships with their parents and their peers. Finally, we predicted that emotion regulation (maladaptive and adaptive) would mediate the relationship between attachment dimensions of closeness, anxiety, and dependence and parent and peer relationships. Our results support most, but not all, of these hypotheses.

A hypothesis that was initially supported is the association among attachment dimensions and adolescent's relationships with their parents and peers. Dimensions of attachment—comfort with closeness, anxiety about being abandoned, and the ability to depend on others—may affect the relationships adolescents who have sexually offended have with their parents and their peers. When adolescents who have sexually offended feel comfortable being close, have a heightened anxiety about being abandoned, and feel they can depend on their peers, they report better relationships with their peers. No previous research has focused specifically on these dimensions of attachment and their effects on peer relationships in the population of adolescents who have sexually offended; however, previous research has established that when

normative adolescents are able to be close, fear losing important relationships, and can depend on others they report better peer relationships (Nelis & Rae, 2009). However, as noted below, the relationship between these attachment dimensions and peer relationships is mediated by emotion regulation. Additionally, heightened anxiety about being abandoned and the ability to depend on parents, but not closeness, were the attachment dimensions that were predictive of higher quality parent relationships. Comfort with closeness may not have been associated with better parent relationships, because adolescents generally transition to seeking closeness from their peers rather than their parents during adolescence (Preveaux, Ray, LoBello & Mehta, 2004). As adolescents' pursue more autonomy from their parents, their comfort with closeness with their parents may diminish and certainly adolescents in prison for sexual offending have much less opportunity to forge close relationships with their parents. As a result, comfort with closeness may be a more relevant component for better quality peer relationships rather than parent relationships during adolescence, especially if the adolescents are in prison. Additionally, for adolescents who have sexually offended, engaging in delinquent behaviors can cause a disruption to these attachment dimensions (Allen, Moore, & Kuperminc, 1997) and may engender adolescents to feel less comfortable being close with their parents.

It is important to note that generally anxiety about being abandoned is an attachment dimension that indicates attachment insecurity (Collins & Read, 1990). However, in our population anxiety about being abandoned is associated with better parent and peer relationships, as well as higher ability to utilize adaptive emotion regulation strategies. For adolescents who have sexually offended, anxiety about being

abandoned may motivate these adolescents to seek closeness with their peers as well as increase their ability to depend on their peers and parents because they are fearful of losing these important relationships. As a result, anxiety about being abandoned suggests that these adolescents care significantly about these relationships, do not want to lose these relationships, and may be a mechanism that motivates these adolescents to have higher quality parent and peer relationships.

Dimensions of attachment are also associated with emotion regulation (Ainsworth, 1989; Ainsworth & Bowlby, 1991). Our results indicate that dimensions of attachment which indicate security (comfort with closeness, fear of abandonment, and ability to depend on others), are associated with more adaptive emotion regulation strategies (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969/ 1982) for incarcerated adolescents who sexually offend. Conversely, dimensions of attachment that indicate insecurity (not comfortable with closeness, less anxiety about being abandoned, and decreased ability to depend on others) are associated with maladaptive emotion regulation strategies (Magai, 1999) for this population.

Emotion regulation is not only related to dimensions of attachment, but it also has an effect on adolescents' relationships with parents and peers. Adolescents who are more adept at regulating negative emotions have better relationships with parents (Willemen, Schuengel, & Koot, 2009) and show higher social competence in peer interactions (Calkins et al., 1999). In contrast, poor ability to manage emotional arousal is a significant predictor of maladaptive social functioning (Kim & Cicchetti, 2010) which can lead to lower quality parent and peer relationships (Zimmermann et al., 2001). Generally, adolescents who have sexually offended have difficulty managing their

emotional arousal (Burk & Burkhart, 2003) which can cause disruptions to their peer relationships (Laible, Carlo, Panfile, Eye, & Parker, 2010). Our results indicate support of the research. When adolescents who sexually offend are able to utilize adaptive emotion regulation strategies, they report better parent and peer relationships. However, peer relationships, but not parent relationships, were significantly affected when adolescents utilized maladaptive emotion regulation strategies. This may be due to the fact that adolescents have minimal contact with parents while incarcerated, and have fewer opportunities to utilize maladaptive emotion regulation strategies when interacting with their parents.

Emotion regulation, adaptive and maladaptive, mediates the relationship between attachment dimensions of closeness, anxiety, and dependence for sexually offending adolescent's relationships with peers but not parents. This is in partial support of our hypothesis. Emotion regulation may be a significant mechanism by which attachment dimensions affects relationships with peers in the population of adolescents who have sexually offended. In other words, even though it appears as if an adolescent's comfortability with closeness, their fear of abandonment, and ability to depend on others has an effect on their relationships with peers, this relationship is mediated through their emotion regulation ability. This is consistent with previous research that suggests that emotion regulation is the link between dimensions of attachment established in early infancy with parents and adolescent's relationships with their peers (Kerns, Contreras, Neal-Barnett, 2000).

Contrary to what we hypothesized, maladaptive emotion regulation is not an important mechanism for relationships with parents in this population. A few reasons for

this finding might exist. One possible explanation is that peer relationships are often developed by choice and are susceptible to change. If adolescents utilize emotion regulation strategies characterized by hostility, aggression, and violence, their peers may be less likely to accept these unfavorable behaviors, resulting in higher conflict and poorer friendship quality. However, because adolescents who have sexually offended often have emotion regulation difficulties stemming from early childhood (Marshall & Marshall, 2000; Burk & Burkhart, 2003) parents may be less affected by these maladaptive emotion regulation strategies because they have been a salient aspect of their relationships prior to adolescence. As a result, emotion regulation may be more significant for adolescent's peer relationships than parent relationships in the population of adolescents who have sexually offended. Another possible explanation is that only adolescent's emotion regulation abilities were measured in this research—not parents. Parents of adolescents who have sexually offended often have their own difficulties managing their emotional arousal in adaptive ways (Barbaree & Langton, 2005; Veneziano & Veneziano, 2002). Perhaps parent's maladaptive emotion regulation is a more relevant predictor of parent-child relationships, rather than adolescent's maladaptive emotion regulation.

Conversely, adolescents' adaptive emotion regulation had a positive effect on their relationships with their parents. This finding aligns with research conducted with normative adolescent populations (Morris, Silk, Steinberg, Myers, & Robinson, 2007) and clinical adolescent populations (Kullik & Petermann, 2013). However, no previous research has focused on this association in the population of adolescents who have sexually offended. Much of the research with this population has focused on

maladaptive emotion regulation and how this negatively impacts relationships with parents (Keijsers, Loeber, Branje, & Meeus, 2011; Zimmermann et al., 2001). Yet, our study indicates that when adolescents who have sexually offended are able to manage their emotional arousal in adaptive ways, they report more positive relationships with their parents. This finding may have significant implications for the treatment of adolescents who sexually offend. Interventions that focus on helping adolescents' manage their emotional arousal in adaptive ways may help augment their relationships with their parents.

Strengths

This study contributes significant findings to the limited research on the relational networks of adolescents who have sexually offended. Emotion regulation as a mediator of specific dimensions of attachment and peer relationships has never before been examined in this population. Additionally, we separated emotion regulation into two constructs, adaptive and maladaptive, so as to better understand how the continuum of emotion regulation affects dimensions of attachment and peer relationships in this population. When adolescents who have sexually offended are able to feel comfortable with closeness, have anxiety about being abandoned, and can depend on their peers as well as utilize adaptive emotion regulation strategies when distressed, they report better relationships with their peers. Additionally, when adolescents who have sexually offended are not comfortable with closeness, have less anxiety about being abandoned, and are less able to depend on their peers, in conjunction with maladaptive emotion regulation strategies, they report poorer relationships with their peers. Our results

indicate that the relationship between dimensions of attachment and peer relationships is explained through emotion regulation ability.

Limitations

A significant limitation of this study is that all adolescents were nearing the end of their treatment and incarceration. It is possible that treatment could have influenced adolescents' reports of attachment dimensions, emotion regulation abilities, and their peer and parent relationships.

A small number of measurement limitations existed in this study. A noteworthy limitation is that all measures were self-report. It is possible that differential findings may have been unearthed if additional reporting sources were included. Moreover, parent's emotion regulation was not measured or included in this study, but may have contributed to the lack of findings in the association between dimensions of attachment, adolescent's emotion regulation, and parent relationships. Additionally, since this is a cross-sectional analysis and not an experiment, causal effects cannot be inferred. For example, it is equally possible that emotion regulation predicts dimensions of attachment or that emotion regulation actually mediates the relationship between peer relationships and dimensions of attachment.

Future Research

In our sample, age explained minimal variance in attachment dimensions of closeness, anxiety, and dependence. It appears that older adolescents have slightly increased difficulty feeling comfortable with closeness, slightly less anxiety about being abandoned, and slightly less ability to depend on others. Further research should investigate whether emotion regulation difficulties are more prominent for younger or

older adolescents and how this association relates to dimensions of attachment, and particularly peer relationships, in the population of adolescents who have sexually offended.

Examining the emotion regulation abilities of these adolescent's parents should also be an area of future research. It is possible that parents' ability or inability to manage their emotional arousal also has an effect on adolescent-parent relationships. This would be particularly relevant to investigate so that additional interventions that focus on teaching both parents and adolescents to better manage their emotional arousal can be implemented.

Conclusion

Adolescents who have sexually offended are a distinct population of juvenile offenders who have increased difficulties with attachment, emotion regulation, and parent and peer relationships. Our study was the first of its kind to implicate emotion regulation as a mediator of dimensions of attachment and peer relationships in this population. This has significant implications for the treatment of these offenders, and highlights the need for interventions that help adolescents to manage their emotional arousal, heal attachment wounds, and improve their relationships with their peers and parents.

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Tables

Table 1

Univariate statistics for all variables in model

<i>Variables</i>	<i>N</i>	<i>M(SD)</i>	<i>Median</i>
Attachment Dimension (Dependence)	208	3.19(0.81)	3.17
Attachment Dimension (Anxiety)	207	3.76(0.74)	3.83
Attachment Dimension (Closeness)	207	3.26(0.63)	3.33
Maladaptive Emotion Regulation	207	2.19(0.45)	2.13
Adaptive Emotion Regulation	207	2.93(0.47)	3
Attachment to Parents	208	3.65(0.80)	3.76
Attachment to Peers	208	3.70(0.75)	3.84
Age (Adolescent)	213	15.7(1.58)	16

Table 2

Pearson Correlation Coefficients for Attachment Scale (Aatc_de1, Aatc_an1, Aatc_cl1) Emotion Regulation (Aerc_in1, Aerc_er1), Relationships with Caregivers (AippaP1), Relationships with Peers (AippaF1), and Adolescents' Age (A_age1) (N = 213)

	Aatc_de1	Aatc_an1	Aatc_cl1	Aerc_in1	Aerc_er1	AippaP1	AippaF1
Aatc_de1	1.00						
Aatc_an1	0.25***	1.00					
Aatc_cl1	0.33***	0.16*	1.00				
Aerc_in1	0.32***	0.41***	0.33***	1.00			
Aerc_er1	0.35***	0.29***	0.28***	0.39***	1.00		
AippaP1	0.50***	0.40***	0.11	0.26***	0.49***	1.00	
AippaF1	0.26***	0.24***	0.26***	0.37***	0.38***	0.28***	1.00
A_age1	0.24***	-0.15*	-0.05	0.02	0.03	-0.19**	-0.06

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

Figures

Figure 1. Hypothesized model that was fit to answer the research questions.

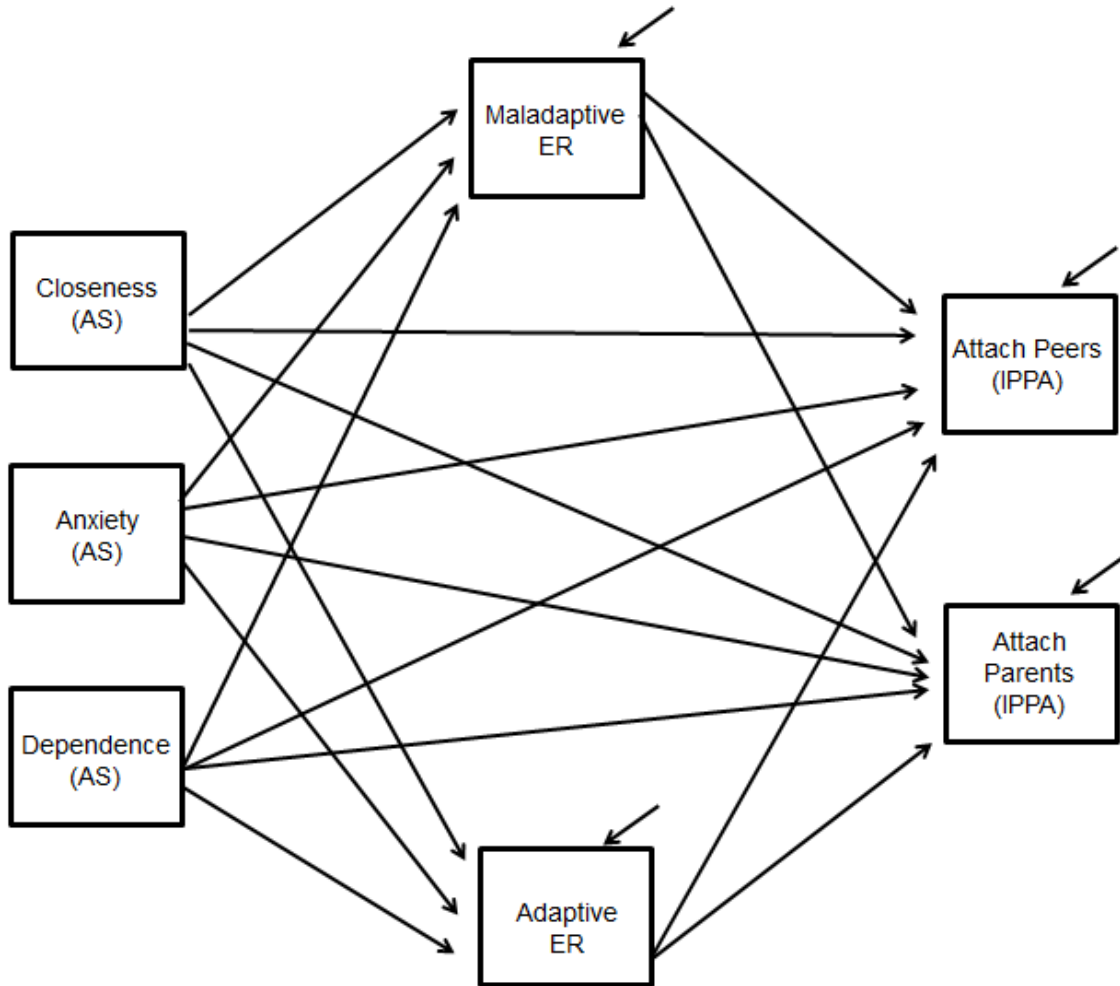
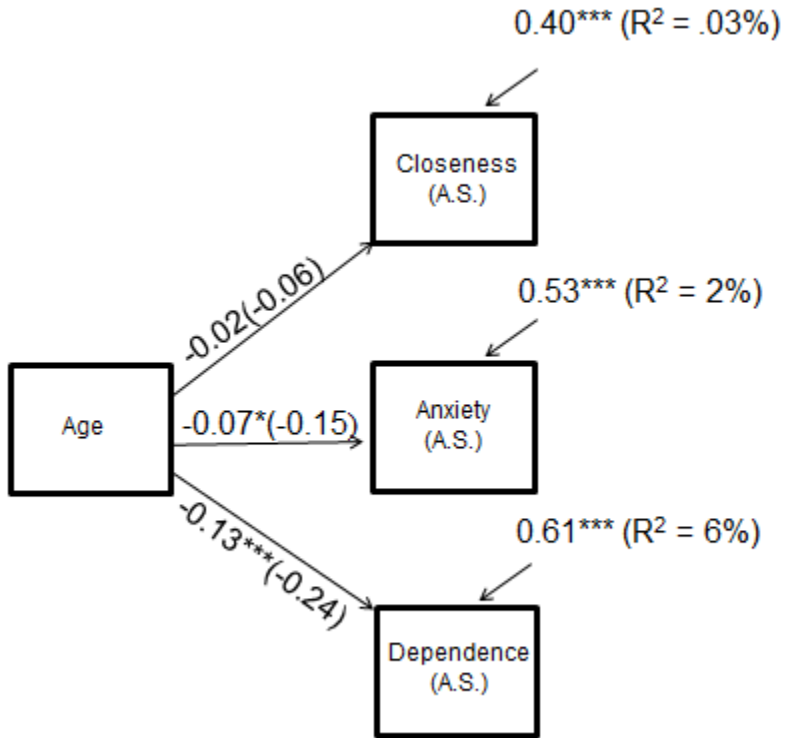
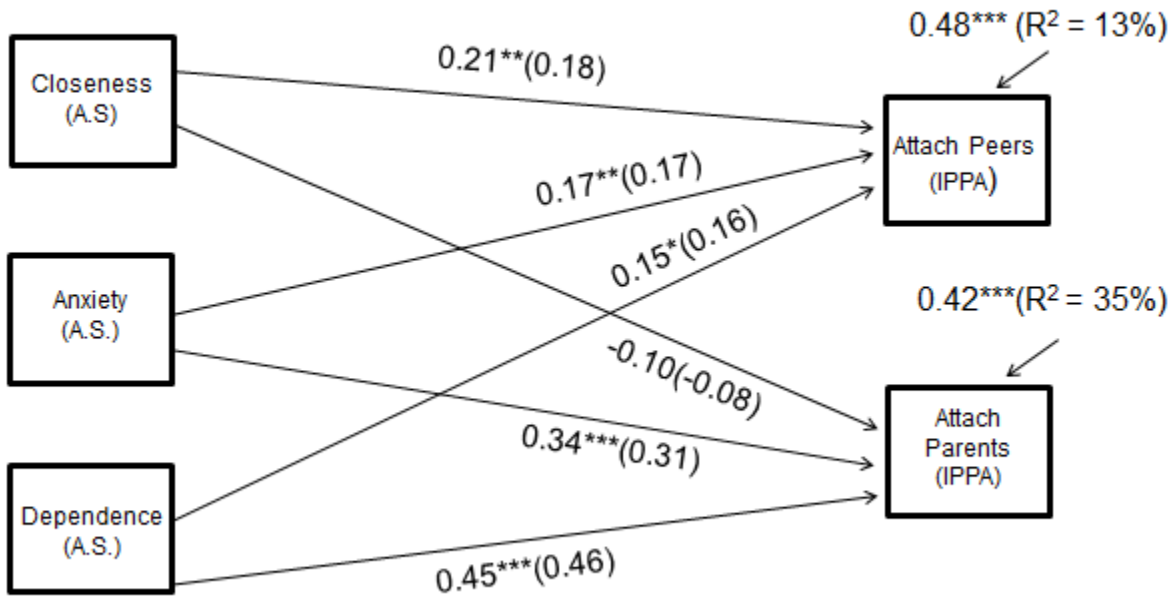


Figure 2. Fitted path model with estimated regression coefficients for dimensions of attachment (closeness, anxiety, and dependence) regressed on age (standardized estimates in parentheses) (N = 214).



Model fit: $\chi^2 = 0$, $df = 0$, $p = 0.00$; RMSEA = 0.00, $p = 0.00$
 * $p < 0.05$, *** $p < 0.001$

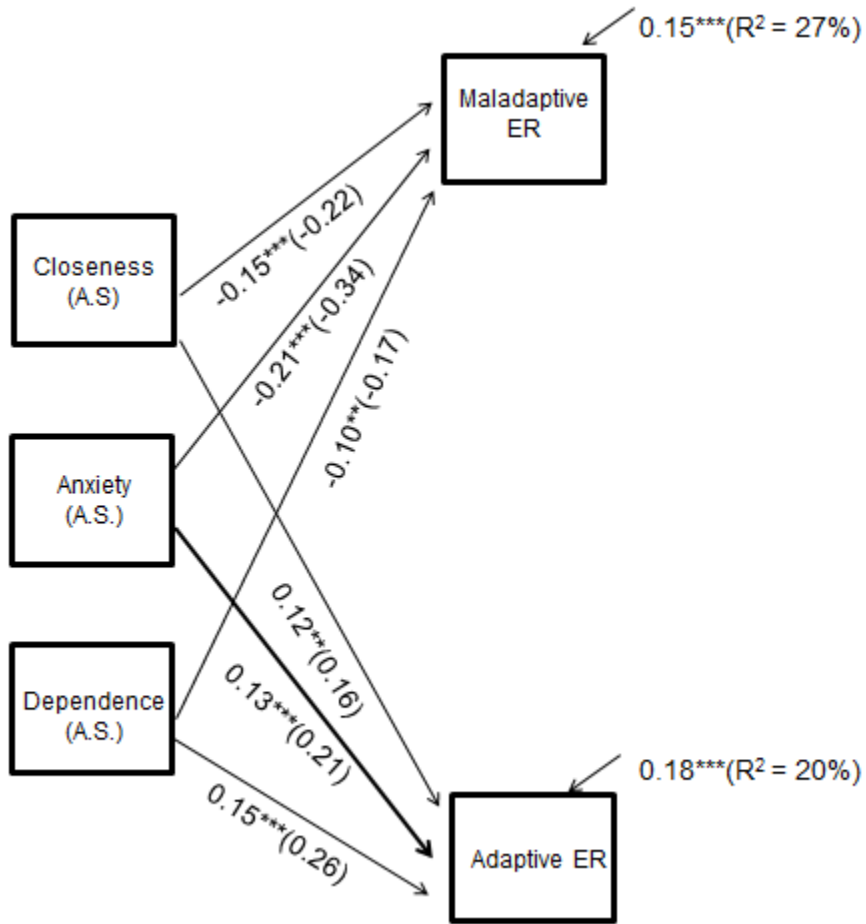
Figure 3. Fitted path model with estimated regression coefficients for attachment dimensions of closeness, anxiety, and dependence regressed on attachment with peers and parents (standardized estimates in parentheses) (Model 1) (N = 214)



Model fit: $\chi^2 = 0.41$, $df = 2$, $p = 0.81$; RMSEA = 0.00, $p = 0.89$

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

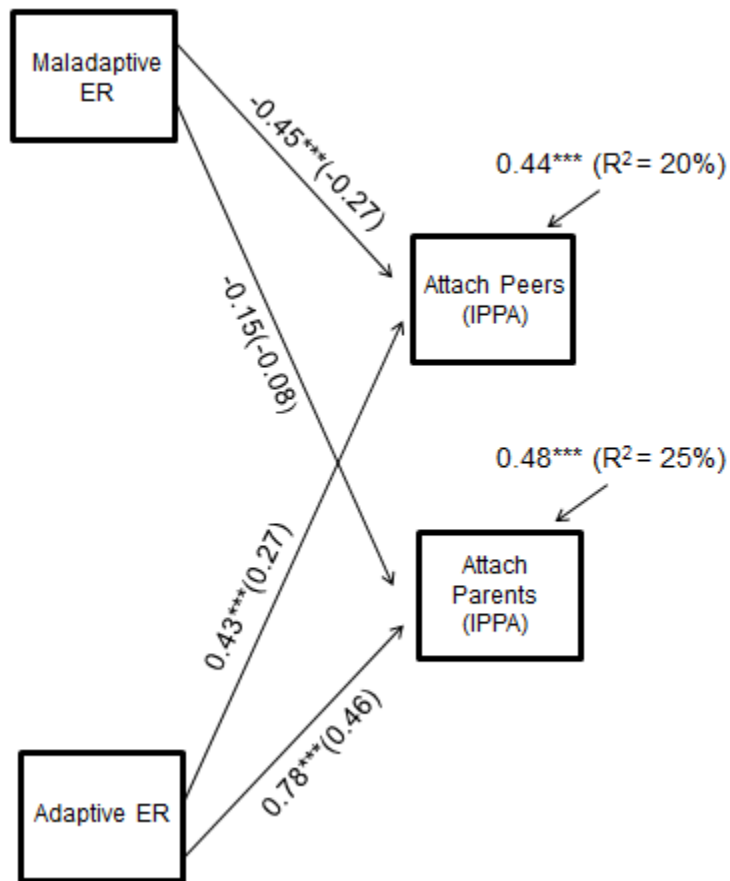
Figure 4. Fitted path model with estimated regression coefficients for attachment dimensions of closeness, anxiety, and dependence regressed on ERC-adaptive and ERC maladaptive (standardized estimates in parentheses) (Model 2) (N = 214).



Model fit: $X^2 = 8.17$, $df = 2$, $p = 0.02$; RMSEA = 0.12, $p = 0.06$

** $p < 0.01$, *** $p < 0.001$

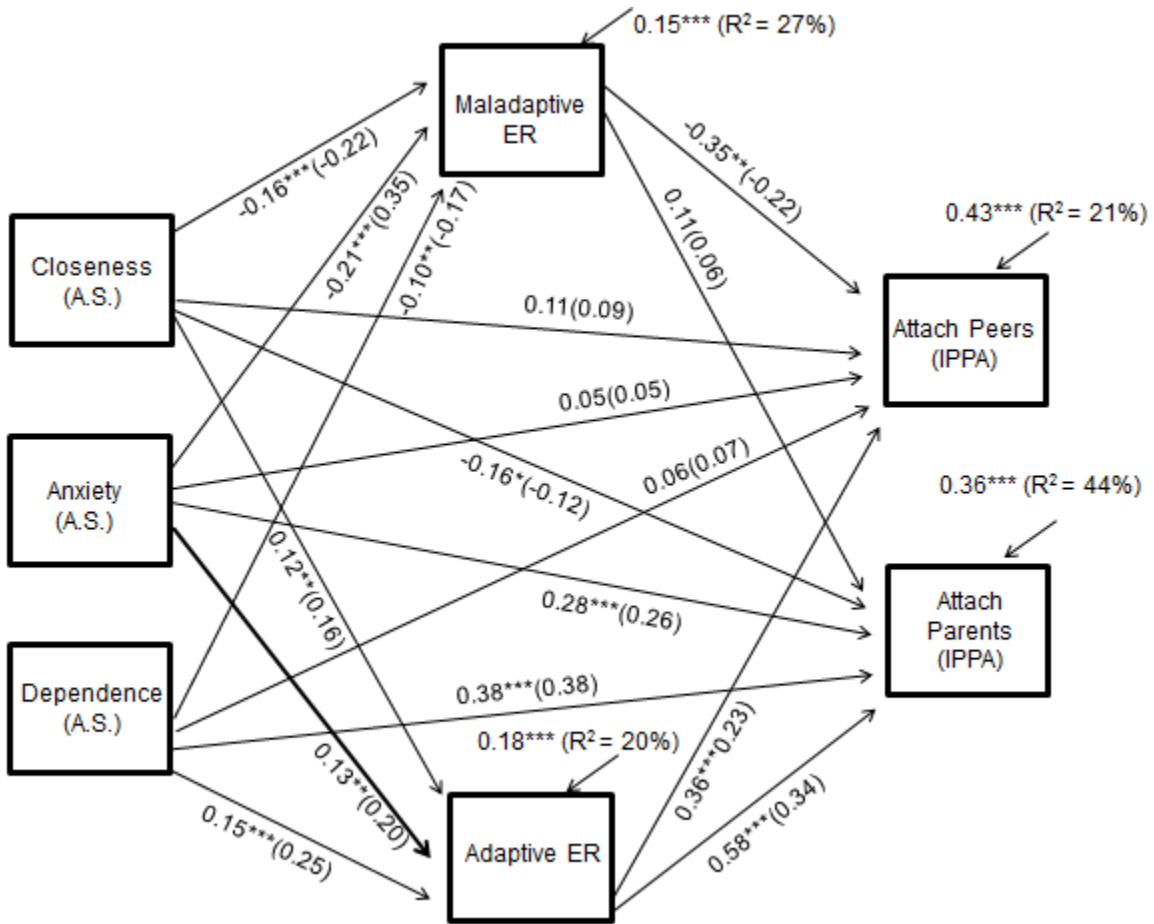
Figure 5. Fitted path model with estimated regression coefficients for ERC adaptive and ERC maladaptive regressed onto attachment with parents and peers (standardized estimates in parentheses) (Model 3) (N = 214).



Model fit: $X^2 = 12.57$, $df = 2$, $p = 0.00$; $RMSEA = 0.16$, $p = 0.01$

$***p < 0.001$

Figure 6. Fitted path model with estimated regression coefficients for emotion regulation as a mediator of attachment dimensions of closeness, anxiety, and dependence and its effect on adolescent's relationships with peers and parents (standardized estimates in parentheses) (Model 1) (N = 214).



Model fit: $\chi^2 = 20.55$, $df = 5$, $p = 0.00$; RMSEA = 0.95, $p = 0.01$
 * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$