

THE ROLE OF PARENT AND PEER ATTACHMENT IN THE RELATIONSHIP BETWEEN
ABUSE HISTORY AND ADOLESCENT SOCIAL AND BEHAVIORAL OUTCOMES

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ABSTRACT

Anna Christine Stagg: The Role of Parent and Peer Attachment in the Relationship between Abuse History and Adolescent Social and Behavioral Outcomes
(Under the direction of Rune J. Simeonsson)

Although associations between abuse and social and behavioral outcomes, abuse and attachment relationships, and attachment and social and behavioral outcomes are well documented in the literature, little research has examined all three of these variables together. The current study addresses gaps in past research by examining relationships between the experience of physical abuse, attachment to parents and peers, and social and behavioral outcomes in adolescents. Analyses were conducted using follow-up data from a large study examining outcomes of children with a history of abuse first studied in pre-adolescence and their case matched, non-abused classmates. The sample consisted of adolescents (N=153) with and without a history of abuse. Sociometric assessments were conducted to assess adolescent outcomes including interpersonal competence, internalizing and externalizing behaviors, total behavior problems, and attachment relationships to parents and peers. Findings revealed significant associations between abuse history, attachment, and social and behavioral outcomes. When adolescents with and without a history of abuse were examined separately, attachment was found to be predictive of outcomes only in adolescents without a history of abuse. When the sample was examined as a whole, significant mediation effects were found for parent attachment. Specifically, parent attachment was a mediator of the relationship between abuse and externalizing behavior problems, total behavior problems, and social competence. Attachment to peers was not found to play a significant role in the relationship between preadolescent abuse

and adolescent social and behavioral outcomes. Implications of findings are discussed with a focus on prevention and attachment-based interventions.

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CHAPTER 1: INTRODUCTION

Child abuse and maltreatment is a social problem of pressing concern. According to the U.S. Department of Health and Human Services, in 2012 approximately 686,000 children were victims of maltreatment (Child Welfare Information Gateway, 2013a). Over 18% of these children suffered physical abuse, generally defined as the infliction of physical injury on a child by non-accidental means (U.S. Department of Health and Human Services, 2012; Child Welfare Information Gateway, 2013b). This form of maltreatment was first brought into the realm of social awareness in the 1960s when physicians began referring to children who had been physically harmed or injured by their parents as suffering from “battered child syndrome.” Increased awareness of the problem and growing knowledge of the detrimental impact of abuse on child development resulted in the passing of federal legislation to protect children and federal programs to provide services and supports to victims and their families (Trickett, Negriff, Ji, & Peckins, 2011).

Child maltreatment, particularly physical abuse, is associated with maladaptive outcomes across multiple developmental domains. Children who experience abuse are deprived of the experiences necessary to promote healthy development. Instead, they are exposed to unhealthy relational environments that place them at great risk for negative psychological and biological developmental outcomes (Cicchetti & Toth, 2005). A body of research links early physical abuse to externalizing behavior problems including aggression (Lansford, Dodge, Pettit, Bates, Crozier, & Kaplow, 2002; Dodge, Pettit, & Bates, 1990; Shields & Cicchetti, 1998; Johnson, Kotch,

Catellier, Winsor, Dufort, Hunter, & Amaya-Jackson, 2002) and internalizing symptomology including depression and anxiety (Toth, Manly, & Cicchetti, 1992; Johnson et al., 2002). Not surprisingly, maltreatment is also associated with maladaptive social outcomes including problematic peer relationships (Salzinger, Feldman, Hammer, & Rosario, 1993; Manly, Cicchetti, & Barnett, 1994; Dodge, Pettit, & Bates, 1997; Flisher, Kramer, Hoven, Greenwald, Alegria, Bird, Canino, Connell, & Moore, 1997). Perhaps of most concern, victims of maltreatment are at heightened risk for becoming perpetrators and perpetuating the cycle of abuse (U.S. Department of Health and Human Services, 2013).

Although a direct relationship between child abuse and later negative outcomes has been well documented in the literature, there are many potential factors that may help explain this relationship. Attachment theory (Bowlby, 1969/1982; Ainsworth, Blehar, Waters, & Wall, 1978) offers a lens through which to explore possible pathways between the experience of abuse and maladaptive development. According to attachment theory, the development of a secure attachment relationship between the child and the primary caregiver in early life is critical to the integration of cognitive, affective, and behavioral abilities that have an impact on the development of the child's self-image and capacity for social relationships. Individuals who experience secure early attachment relationships view the world as positive and predictable and themselves as worthy of love. In contrast, individuals with insecure attachment styles tend to view the world as unpredictable and hostile, and themselves as unworthy of love (Buist, Dekovic, Meeus, & van Aken, 2004).

The experience of early abuse contributes to the development of insecure attachment relationships and negatively affects children's sense of self-worth, primes negative expectations for social interactions, and leads to externalizing behavior problems (Crittenden & Ainsworth,

1989). Interactions with caregivers in early life influence the construction of experience based mental representations of attachment relationships, known as internal working models. These internal working models establish expectations for future social interactions and affect the formation of a self-image (Bowlby, 1973; Cicchetti & Toth, 2005; Dykas & Cassidy, 2011). Due to their abusive experiences with attachment figures, maltreated children and youth develop internal working models that lead them to be hyper-vigilant to threat and hostility. As a result, they may be more likely to misinterpret the actions of others and respond with aggression due to biased patterns of processing social information (Dodge, Pettit, Bates, & Valente, 1995; Dodge et al., 1990). More research is needed to fully understand the role of attachment in social and behavioral outcomes, particularly in individuals who have experienced abuse.

Less research has focused on the role of attachment in the adolescent years and the impact of past abuse on attachment relationships during this critical period of development. A review of existing evidence suggests that attachment quality to parents may be protective against the development of externalizing and internalizing behavior problems in adolescence and related to increased social competence (Buist et al., 2004; Duchesne & Larose, 2007; Engels, Finkenauer, & Dekovic, 2001). Research on peer attachment in adolescence has shown mixed findings. Some studies provide support for the importance of peer attachment and suggest that close attachment relationships to peers may be more protective than parent attachment relationships in adolescence (Nelis & Rae, 2009; Laible, Carlo, & Raffaelli, 2000) while others suggest that parent attachment plays a more important role (Wilkinson & Wallford, 2001). Still other studies indicate that the quality of both parent and peer attachment are related to social and behavioral outcomes in adolescence (Armsden & Greenberg, 1987; Tambelli, Laghi, Odorisio, & Notari, 2012). None of these studies focused on assessing the impact of attachment relationships

in a population who had experienced abuse; therefore research is needed to understand the impact of past abuse on attachment relationships during adolescence.

Although past research has focused on effects of abuse on social and behavioral functioning, of abuse on attachment, and of attachment style on social and behavioral functioning, little research has examined the relationships between all of these variables together (Lowell, Renk, & Adgate, 2014). The current study attempts to build on and address gaps in past research in an attempt to learn more about the mechanisms contributing to the different manifestations of adverse outcomes in victims of physical abuse by exploring the relationships between parent and peer attachment quality, social competence, and internalizing and externalizing behavioral outcomes in adolescents who experienced physical abuse in pre-adolescence. Quality of parent and peer attachment and social competence are predicted to mediate the effects of abuse on behavioral outcomes.

Unlike many previous studies investigating the impact of abuse on behavioral and social emotional outcomes in early and middle childhood, the current investigation focuses on the long-term impact by examining adolescent outcomes. Social relationships and peer networks take on increasing importance in adolescence as children separate and individuate from their parents and families (Salzinger et al., 1993). Social interactions also become more complex during this time, and there is a greater demand for social skills and competence to maintain successful peer relationships (Engels et al., 2001). There is a significant need for research on this topic to contribute to the development of appropriately targeted interventions for victims of abuse. Only when the pathways between the experience of maltreatment and adverse outcomes are better understood can we begin to end the cycle of abuse.

CHAPTER 2: LITERATURE REVIEW

Physical Abuse and Behavior Problems

A large body of research has demonstrated an association between the experience of child abuse and a range of internalizing and externalizing behavior problems that have been shown to persist into adolescence (Moylan, Herrenkohl, Sousa, Tajima, Herrenkohl, & Russo, 2010). For example, a great deal of research exists to link abuse and externalizing behavior problems, specifically aggression. According to the work of Dodge et al. (1990), two major theories can be used to explain how the experience of abuse leads to aggressive behavior in the child.

Attachment theory (Crittenden & Ainsworth, 1989) posits that insecure attachment relationships lead victims of abuse to develop internal working models based on their view of the world as a threatening place. As a result, these individuals may become hyper-vigilant toward threat and hostile social cues and ultimately respond in an aggressive manner. According to social learning theory (Bandura, 1973), the experience of physical abuse leads children to respond aggressively as a result of their own experiences and the salience of aggressive responses in their repertoire of social behaviors. These individuals may also be more likely to see aggressive responses as efficacious and leading to their desired outcomes.

Dodge et al. (1990) tested the relationship between the experience of early physical abuse and aggression empirically using data from a longitudinal multi-site study. In addition to collecting data on the experience of early physical harm and aggressive behavior in kindergarten, they evaluated children's social information processing patterns at age 5 and aggressive behavior

in school six months later. Their findings showed that early childhood physical abuse places children at risk for the development of chronic aggressive behavior. The association between abuse and aggression was found to hold true above and beyond the effects of family and environmental context variables such as poverty, deprivation, and marital conflict. Dodge et al. also discovered that social information processing patterns mediated the association between the experience of physical abuse and aggressive behavior. Their work has important implications for intervention by suggesting that targeting biased social information processing patterns may ameliorate the effects of abuse on aggressive behavior.

Shields and Cicchetti (1998) also found empirical support for the association between abuse and aggressive behavior. They studied impoverished, inner-city youth in the context of a summer day camp and compared the maltreated group to the non-maltreated group on a variety of outcome domains. Shields and Cicchetti concluded that maltreated children were more likely than the non-maltreated children to show aggressive behavior. The youth in their study who were victims of physical abuse were more likely to engage in reactive aggression. This finding supports Dodge et al.'s (1990) theory of social cognition as a possible mechanism by which abuse leads to aggressive behavior by providing evidence that physically abused children react with higher levels of arousal and aggression in potentially threatening situations and attribute hostile intent even in ambiguous social situations.

In a longitudinal study of children who have witnessed violence or experienced physical abuse, Johnson et al. (2002) assessed both internalizing and externalizing behavioral outcomes. They examined the relationship between the predictor variables of victimization (physical abuse), child-report of witnessed violence, and caregiver report of witnessed violence to the outcome variables of anger, aggression, depression, and anxiety. Results revealed an association

between each of the three predictor variables and negative mental health outcomes. Child self-reports of witnessed violence were related to heightened scores for each outcome variable. The effects of victimization through physical abuse were also significant. Overall, children who experienced physical victimization scored higher than average on the outcome variables of depression, anxiety, and anger when compared to the population at large. Johnson et al. concluded that physical abuse is a strong predictor of child depression and aggression. Compared to children who only witnessed violence, children in their study who had experienced direct physical abuse had more severe behavioral and emotional problems.

The work of Kaufman (1991) provides additional evidence linking abuse to the presence of internalizing behavior problems. Kaufman compared pre-adolescents who had experienced different forms of maltreatment on the prevalence of depressive disorders. Findings indicated that children who met criteria for depression had higher scores on the experiences of physical abuse and emotional maltreatment. This association did not hold true for the experience of sexual abuse or neglect, but Toth et al. (1992) found support for the association between abuse and depression. Their study examined depressive symptomology in children from low socioeconomic status families who had experienced physical abuse, physical neglect, or no maltreatment. Toth et al. found that victims of physical abuse had significantly higher levels of depressive symptomology than the other two groups of children. These studies provide growing evidence that maltreatment in childhood is associated with depressive symptomology. This link appears to be especially strong for physical abuse. Although neither of the above studies explored the pathways through which abuse leads to depression, Toth et al. theorize that insecure attachment to primary caregivers may generalize to problems in social relationships with peers which in turn could contribute to the development of depressive symptomology.

In summary, the review of studies on the impact of abuse on behavior indicated that abuse is associated with externalizing behavior problems. Specifically, physical abuse appears to be related to the development of aggressive behavior. Empirical evidence supports social information processing as a possible mechanism through which the experience of abuse influences aggressive behavior. Evidence also exists to support a relationship between the experience of abuse and internalizing behavior problems including depression and anxiety. More research is needed to better understand the pathways through which the experience of early physical abuse impacts these behavioral outcomes during adolescence.

Physical Abuse and Interpersonal Relationships

In addition to affecting internalizing and externalizing behavioral outcomes, research indicates that the experience of abuse is also related to impairments in social functioning. The work of Flisher, Kramer, Hoven, Greenwald, Alegria, Bird, Canino, Connell, and Moore (1997) examined the relationship between physical abuse and outcomes on a variety of psychosocial measures in a community based probability sample of children and adolescents ranging from 9-17 years. Their results revealed a relationship between a history of physical abuse and a variety of maladaptive outcomes including poor social competence, depression, anxiety, and conduct problems. Their findings held true even when controlling for the possible confounding variables of family income, family psychiatric history, perinatal problems, physical health, and sexual abuse.

Research conducted by Salzinger et al. (1993) provides additional support for the negative impact of abuse on social outcomes by examining additional measures of interpersonal functioning. In their study, the social behavior and peer status of physically abused children between the ages of 8 and 12 and their case-matched, non-maltreated classmates were compared.

Salzinger et al. found that physically abused children were perceived by their peers to be more aggressive and less cooperative. Abused children also had lower overall peer status and less positive reciprocity with peers chosen as friends. Teachers and parents rated these children as more disturbed, and their social networks were characterized by greater atypicality, insularity, and negativity than their non-maltreated counterparts.

In an attempt to clarify how the experience of abuse impacts social outcomes, Manly et al. (1994) investigated the impact of subtype, frequency, chronicity, and severity of child maltreatment on social competence and behavior problems in children aged 5-11 years who participated in a summer camp program. Child victims of physical neglect, physical abuse, and sexual abuse were identified through reports from Child Protective Services and classified into three groups—those who had experienced sexual abuse with or without other forms of maltreatment, those who had experienced physical abuse with no sexual abuse, but who may or may not have experienced physical neglect, and those who experienced physical neglect without physical or sexual abuse.

Manly et al.'s (1994) findings generally support the hypothesis that maltreated children have lower social competence than their non maltreated peers. They found severity of abuse, frequency of abuse, and the interaction between the two to be significant predictors of children's functioning. The results were more complex when frequency, chronicity, and severity of abuse were examined. As frequency of maltreatment increased, social competence and peer ratings of prosocial behavior decreased while behavior problems increased. Severity of maltreatment was related to lower social competence and increased behavior problems. Duration of maltreatment was associated with increased peer perceptions of maltreated children as a source of conflict. Subtype analyses revealed a relationship between physical abuse and behavior problems.

Children who were victims of sexual abuse had higher scores on social competence than the victims of physical abuse and physical neglect.

Social information processing is a possible mechanism through which abuse affects social relationships and behavior, particularly aggression. A body of research conceptualizes aggressive behavior as a form of social incompetence and is grounded in the belief that children's way of interpreting their experiences influences the way they respond to adversity (Dodge, Pettit, McClaskey, & Brown, 1986). To test this model empirically, Dodge et al. investigated individual differences in response to provocation as related to social information processing skills. Their findings provided evidence that a child's encoding, interpretation, and response generation in the face of provocation are indicative of the manner in which the child would respond in actual situations (as confirmed by observation). Children who attributed hostile and aggressive intentions to a peer, who easily accessed negative behavioral responses, and who viewed aggression positively were more likely to respond with aggressive behavior in the face of conflict than children who did not interpret peer cues in this way.

Children who have experienced physical abuse may be more likely to act aggressively in social situations as a result of their past experiences of victimization which lead them to process social information in biased ways. Research conducted by Dodge et al. (1995) provides evidence that social information-processing patterns partially mediate the effect of early physical abuse on social competence and behavior problems. Drawing on models of social information processing, Dodge et al. tested the hypothesis that early physical abuse is associated with later externalizing behaviors and that the relationships is mediated by the development of biased social information processing patterns. They hypothesized that physically abused children or those who experienced

harsh discipline in early life would develop deviant patterns of processing social information when they reached school age.

Dodge et al. (1995) found that physical abuse was related to a fourfold increase in teacher ratings of children's externalizing behavior problems in third and fourth grade. Additionally, abuse was related to later patterns of social information processing which was predictive of externalizing behaviors. Abused children were more likely to attribute hostile intent to others in ambiguous social situations than typical children and would not have had large repertoires of non-aggressive responses to interpersonal problems. These findings suggest that through impacting patterns of processing social information, the experience of physical abuse can lead to the development of chronic aggressive behavior.

Overall, these studies provide evidence for the relationship between abuse and impairments in social functioning. In addition to internalizing problems and aggressive behavior, the experience of abuse has been linked to overall poor social competence and lower social status. The factors of severity and frequency may impact the degree to which abuse affects these social and behavioral outcomes. Research is needed to examine aspects of the complex relationship between physical abuse, behavioral outcomes, and social outcomes and the ways in which each influences the others.

Long Term Effects of Physical Abuse

Much of the research on the effects of abuse has focused on the short-term, immediate effects on children's behavior. However, there is a growing body of research exploring the long-term impact of abuse on adolescent outcomes and providing evidence that the effects of abuse are pervasive and lasting. Specifically, the experience of abuse in preadolescence appears to have a strong relationship with both internalizing and externalizing behavior problems in adolescence

as well as social outcomes (Moylan et al., 2010; Malinosky-Rummell & Hansen, 1993; Lansford, Dodge, Pettit, Bates, Crozier, & Kaplow, 2002).

Malinosky-Rummell and Hansen (1993) reviewed extant literature on the long-term consequences of physical abuse in childhood on externalizing, internalizing, and social outcomes in adolescents. They found a strong link between physical abuse and aggressive behavior, particularly for adolescent males. The literature they reviewed showed that female victims of physical abuse had higher incidences of anxiety and depression than their non-abused peers. The effects of early physical abuse on interpersonal relationships were less clear. The studies reviewed by Malinosky-Rummell and Hansen revealed mixed findings on peer relationships in maltreated children and adolescents. While several studies using parent and teacher reports concluded that physically abused children were less socially competent than their peers, other studies found no difference.

More recently, Lansford, Dodge, Pettit, Bates, Crozier, and Kaplow (2002) conducted a longitudinal study in order to determine whether early physical abuse has an enduring role in the development of adolescent behavior problems or if the effects fade over time. They collected data annually from 1987 to 1999 using a community-based, non-clinical sample of adolescents who experienced physical abuse prior to beginning kindergarten and their non-abused counterparts. Lansford and his colleagues found early maltreatment to be predictive of psychological and behavioral problems in adolescence. These effects persisted at least 12 years. The adolescents who experienced early physical abuse missed more school, were less likely to plan to attend college, and differed from their non-maltreated peers on a wide range of psychosocial outcomes. Even when child and family characteristics associated with abuse were

controlled for, the abused group had higher scores on measures of aggression, anxiety, depression, social problems, and social withdrawal, among others.

Taken together, these studies provide evidence that the experience of childhood physical abuse has a long-term detrimental impact on a variety of adolescent outcomes. More research is needed in order to specify the long-term impact of early physical abuse including adolescent outcomes. Research on the impact of abuse on social relationships in adolescents and young adults is especially necessary due to inconclusive and mixed findings in past studies.

Neglect

Neglect is the most prevalent form of child maltreatment and often co-occurs with other forms of abuse. Although the research that has been done on neglect suggests that its effects are just as detrimental as those of physical abuse, sexual abuse, and exposure to domestic violence, it has been the least studied form of maltreatment (DeBellis, 2005; Hildyard & Wolfe, 2002). One reason is that it is difficult to examine the impact of neglect independent of other forms of maltreatment and environmental and emotional factors such as parenting including parent mental health, poverty, educational opportunities, and the presence of family or community violence (DeBellis, 2005). Additionally, defining neglect and measuring it in a reliable and valid way is challenging. Both Federal and state law provide basic definitions of neglect. According to the Federal Child Abuse Prevention and Treatment Act (CAPTA), neglect is any significant omission in care by a parent or caregiver causing or creating an imminent risk of serious physical or mental harm to a child less than 18 years of age. State law commonly defines neglect as the failure of a parent or caregiver to provide necessary food, clothing, shelter, medical care, or supervision to the degree that a child's health, safety or wellbeing may be harmed (Child Welfare Information Gateway, 2012; DeBellis, 2005).

Research has shown that child neglect can have a wide range of negative effects on children's health and physical development, cognitive development, emotional and psychological development, and social and behavioral development (Child Welfare Information Gateway, 2012). Neglect tends to differ from physical or sexual abuse which may be incident-specific in that it is typically the result of a chronic situation which often begins at an early age and has a cumulative effect on a child's development (Hildyard & Wolfe, 2002). Because neglect often co-occurs with other forms of abuse, children who experience both neglect and physical or sexual abuse may be at risk for the worst outcomes. Indeed, research indicates that experiencing neglect along with other forms of maltreatment worsens its impact (Smith & Fong, 2004).

In an investigation of developmental issues and outcomes in child abuse and neglect, Hildyard and Wolfe (2002) reviewed literature and found both theoretical and empirical support for association between neglect and a range of adverse across stages of life. Similar to research on the impact of physical abuse on attachment, they found evidence that neglect is associated with insecure attachment to primary caregivers in infancy (Crittenden & Ainsworth, 1989). They also found evidence for cognitive delays and social problems during the preschool years including social withdrawal. Research shows that neglected preschoolers are more aggressive than their non-maltreated counterparts, however they tend to be less aggressive than young children who have experienced physical abuse (Crittenden, 1992).

Hildyard and Wolfe (2002) found evidence that many of these negative effects persist into early and middle childhood. Similar to the preschool years, studies provide evidence that neglected children show more aggressive and disruptive behavior than their non-maltreated counterparts, but to a lesser degree than children who have experienced physical abuse (Erikson & Egeland, 1996). A study by Manly, Rogosch, and Cicchetti (2001) investigated the impact of

neglect (physical and emotional), physical abuse, and sexual abuse and found that although all groups were rated higher than their non-maltreated peers in externalizing problems, the distinctive feature of the neglected children was an elevation in internalizing symptomatology.

Although few studies have looked at the long-term impact of neglect in childhood by studying adolescents and adults, research to date suggests that both childhood physical abuse and neglect in childhood are associated with long term negative outcomes including deficits in cognitive functioning, delinquent and criminal behavior, increased risk of personality disorders, and internalizing problems (Hildyard & Wolfe, 2002; Perez & Widom, 1994; Widom, 2001). In a study of adolescent outcomes, Johnson, Smailes, Cohen, Brown, & Bernstein (2000) found evidence that neglect is associated with higher rates of anxiety and depression even when other forms of maltreatment were controlled for statistically.

Overall, research suggests that neglect is often a chronic form of maltreatment that negatively impacts child development. Neglect is associated with a range of maladaptive outcomes including risky behaviors and psychopathology, and appears to have an especially detrimental impact in the areas of social and emotional wellbeing across stages of development. More research is needed to understand the ways in which the impact of neglect in childhood persists into adulthood and how neglect interacts with other forms of maltreatment such as physical and sexual abuse.

Attachment

Attachment theory offers a lens through which the effects of abuse on behavior and social relationships can be examined. According to Bowlby's early work on attachment, infants are biologically predisposed to form attachments with available adult caregivers (Bowlby, 1973). Ainsworth et al. (1978) identified three primary attachment organizations—secure, anxious-

ambivalent, and avoidant. Children who form a secure relationship with a primary caregiver (often the mother) are trusting that the caregiver will be available, helpful, and comforting towards them. Secure relationships are formed when adults are responsive and sensitive to the needs of the child. Parents of securely attached infants have good parenting skills and the ability to immediately respond to the needs of the infant. In contrast, insecure attachment relationships, which can be further broken down into avoidant and anxious-ambivalent attachment styles, stem from a lack of responsiveness on the part of the caregiver when the child attempts to seek comfort or protection. Parents of avoidant infants neglect to meet their child's needs leading the child to detach from the relationship. Parents of anxious-ambivalent infants alternate between adequately meeting the needs of the infant and neglecting his or her needs, leading the child to be uncertain, cry frequently, and resist attempts to sooth his or her distress (Ainsworth et al., 1978; Bowlby, 1988).

Attachment is theorized to affect social and behavioral functioning based on the concept that parents serve as models for their children of how to organize relationships with others and their representations of themselves (Engels et al., 2001). It is through attachment experiences that children learn to predict both their own and their caregivers' behaviors (Muller, Thornback, & Bedi, 2012). Therefore, attachment not only influences children's interactions with primary caregivers, but also has implications for peer relationships. Children internalize early relationship experiences with primary caregivers into what is known in attachment theory as internal working models, or cognitive frameworks for understanding the world, self, and others that ultimately influence behavior in future social interactions (Ainsworth et al. 1978; Bowlby, 1982).

Secure attachment relationships are characterized by trust and dependability and teach children that they deserve to be loved and cared for by others and to have their needs for

autonomy and independence respected (Bowlby, 1973, 1982). With the foundation of a secure relationship with a primary caregiver, children develop the ability to integrate cognitive, affective, and behavioral capacities that impact social relationships and understanding of the self through the formation of an internal working model of the self as appreciated and autonomous and others as dependable and trustworthy. In contrast, insecure attachment results when caregivers ignore the needs of the child for comfort or autonomy. These early experiences contribute to a view of the self as incompetent and unworthy of love and to a view of others as rejecting and unreliable (Bowlby, 1982; Cicchetti & Toth, 2005). These internal working models for self-other relationships tend to remain relatively stable into adulthood although adjustments may occur as the result of interactions with others throughout the child's development. Overall, literature generally supports the idea that early attachment relationships formed through interactions with primary caregivers in childhood continues to impact views of self and others in interpersonal relationships across the lifespan (Bretherton, 1992; Sroufe, 1988).

Empirical evidence provides support for the association between secure attachment and positive outcomes and the association between insecure attachment and maladaptive outcomes, including aggression. A large body of research indicates that children who have strong, positive relationships with their parents have a host of better outcomes than those whose relationships with their parents are characterized by negative interactions (Lansford, Malone, Stevens, Dodge, Bates, & Pettit, 2006). For example, research shows that children with secure attachments with primary caregivers tend to have better social, academic, and emotional outcomes than children with insecure attachment relationships (Hamre & Pianta, 2001).

In an attempt to better understand the impact of attachment relationships in victims of maltreatment, Toth and Cicchetti (1996) studied patterns of relatedness, depressive

symptomology and perceived competence (scholastic, social, and behavioral) in a sample of 8 to 12 year old children identified through public records as having experienced maltreatment (neglect, physical, or sexual abuse) and non-maltreated comparisons. They considered positive, optimal patterns of relatedness to be representative of secure attachment relationships, whereas non-optimal patterns of relatedness were viewed as consistent with an insecure attachment relationship. Findings showed that maltreated children with non-optimal patterns of relatedness (insecure attachment) to their mothers, teachers, and best friends had higher levels of depressive symptomology. They also found that each subgroup of maltreated children had lower perceived competence in scholastic, social, and behavioral domains. Non-maltreated children with optimal or adequate patterns of relatedness (secure attachment) were found to have less depressive symptomology and more perceived competence. Toth and Cicchetti's findings suggest that relatedness, representative of the quality attachment relationships, may be a protective factor and decrease the likelihood or intensity of adverse outcomes including depression in victims of child maltreatment.

Both theory and research provide evidence that attachment is important across the lifespan. The effects of attachment relationships with the primary caregiver have a lasting impact and continue to affect interpersonal relationships through adolescence and beyond (Bowlby, 1982). Most research on attachment has focused on early attachment relationships with primary caregivers, and more recently, on attachment relationships in adulthood. Although adolescence is an important developmental period, less research has focused on the impact of attachment with adolescent populations (Scott-Brown & Wright, 2003). During adolescence, peer relationships take on increasing importance and begin to serve attachment functions. According to attachment theory, social skills and relational competence are part of adolescents' internal working models

developed based on early attachment relationships (Ainsworth et al., 1978; Bowlby, 1982).

Therefore, attachment theory would suggest that adolescents who have better attachments to their parents should be better able to develop these social skills required for healthy relationships with peers and romantic partners (Engels, Finkenauer, Meeus, & Dekovic, 2001).

Parent Attachment and Adolescent Outcomes

Research suggests that the influence of attachment security to parents in adolescence is similar to its impact on development and behavior in early childhood. Although adolescence is a period in which time spent with parents often decreases while time spent with peers increases, there is a body of evidence linking secure, strong parent attachment relationships in adolescence to social, emotional and behavioral competence (Moretti & Peled, 2004). For example, Raja, McGee, and Stanton (1992) examined the impact of perceived attachment to parents and peers on psychological health and well-being in a large sample of adolescents and found a significant association between low well-being scores and lower perceived attachment to parents. Although the adolescents who had the highest scores on measures of psychological health and wellbeing had a high level of perceived attachment to both parents and peers, their findings revealed that high peer attachment did not compensate for the impact of low parent attachment scores. These findings highlight the important role of parent attachment in adolescent psychological wellbeing.

Attachment quality to parents may be protective against the development of externalizing and internalizing behavior problems (Duchesne & Larose, 2007). In a short-term longitudinal investigation, Buist, Dekovic, Meeus, & van Aken (2004) examined the role of parental attachment relationships in early adolescence by studying the reciprocal relationship between parental attachment and internalizing and externalizing behaviors. Their sample was composed of middle-class Dutch youth from 11 to 15 years of age, with a mean age of 13.5 years.

Participants provided self-reports of their parental attachment relationships as measured by the Inventory of Parent and Peer Attachment (IPPA) and problem behavior at three time points with one-year intervals between reporting periods.

Buist et al.'s (2004) results showed stability in indicators of attachment and problem behavior over time. Attachment and internalizing problem behaviors were negatively related within measurement waves as well as longitudinally. Adolescents who reported higher quality attachment relationships had fewer internalizing problems one year later, while adolescents who reported more internalizing problems reported lower quality attachment relationships one year later. The findings were similar for externalizing behavior problems. Not only was attachment relationship quality related to externalizing problems within measurement waves, attachment quality was found to have a significant inhibitory effect on externalizing problems one year later. These findings suggest that high quality parental attachment in early adolescence may serve as a protective factor against the development of internalizing and externalizing behavior problems.

In addition to internalizing and externalizing behavior problems, research provides evidence for the relationship between the quality of parent attachment relationships in adolescence and social competence. Based on the belief that adolescents learn how to interact socially with peers through their interactions with their parents, Engels, Finkenauer, Meeus, & Dekovic (2001) examined the relationship between parental attachment and emotional adjustment with social skills and relational competence in a large sample of 12-18 year-olds. They hypothesized that the relationship between parental attachment and emotional adjustment in adolescents is mediated by social skills and relational competence. Engels et al. found that in both the 12-14 year-old and 15-18 year-old age groups, emotional adjustment was significantly predicted by parental attachment and relational competence. While no effect of parental

attachment on social skills and relational competence was found for 12 to 14 year olds, in the 15-18 year old age group parental attachment was moderately related to social skills which in turn affected social competence. Engels et al. (2001) explain the age effects of parental attachment in adolescence by suggesting that in early adolescence, youth begin secondary school and develop new friendships that may cause them to distance themselves from their parents. Later in adolescence, they may have fewer reasons to question parental values and norms thus parental attachment plays a more significant role than in early adolescence.

The processing of social information may be a possible mechanism through which attachment impacts social relationships and interpersonal competence. A body of research indicates quality of parental attachment relationships is related to adolescents' attention to social information, memory for social information as well as their perceptions, expectations and attributions within social relationships (Dykas & Cassidy, 2011). Zimmermann (2004) studied attachment and friendship in adolescence using the Adult Attachment Interview (AAI) as a measure of attachment representations of primary caregivers during childhood and interview techniques to assess friendship characteristics. Data was collected within three months of participants' sixteenth birthdays. Results showed that adolescents with secure attachment relationships reported emotionally close friendships and integration into a larger peer group than adolescents with insecure attachment relationships. Insecurely attached adolescents were more likely than securely attached adolescents to have expectations of rejection by others and to make less positive attributions of peer integration and friendships. Zimmermann's work provides evidence that differences in attachment organization to parents is related to differences in friendship quality and friendship concept.

Dykas and Cassidy (2011) presented a theoretical life-span model to explain ways in which experiences in close interpersonal relationships may affect social information processing from childhood through adulthood. According to attachment theory, individuals develop internal working models of attachment relationships that help them interpret social information related to parents, peers, and romantic partners. The model developed by Dykas and Cassidy is grounded in the belief that experiences in individual's close personal relationships are related to individual differences in the processing of social information. They propose that individuals who have secure-based internal working models of attachment process a wide range of positive and negative attachment-relevant social information. Secure individuals draw on positive attachment experiences and process social information in positively biased schematic way. On the other hand, those who have experienced insecure attachment either fail to process information further because they think it will cause them psychological pain, or process it in a negatively biased schematic fashion based on their past negative attachment related experiences. Insecure adolescents tend to be negatively biased in their expectations and attributions about others versus securely attached adolescents who have more positive expectations and attributions of others.

The findings of these studies stress the importance of attachment both early in life and later in adolescence and provide evidence that parent attachment may exert its influence on social relationships through impacting the way social information is processed. As the findings of Dodge et al. (1995) indicated, social information processing patterns may mediate the effects of abuse on aggressive behavior. Taken together, these bodies of research suggest that parental attachment affects social information processing which in turn affects social competence, which has an impact on both internalizing and externalizing behavioral outcomes. More research is needed to examine the role of social information processing in order to better understand the

potential pathways through which attachment relationships affect social and behavioral outcomes, particularly in children who have experienced abuse.

Peer Attachment and Adolescent Outcomes

Relationships with peers, close friends, and romantic partners become especially influential during the adolescent years and begin to take over some of the attachment functions previously fulfilled by parents and guardians. Adolescents may not only transfer attachment functions to peers, but it is also possible that peer attachment has a differential influence to parent attachment in adolescent functioning (Nelis & Rae, 2009). Research on peer attachment in adolescence has shown mixed findings. While some studies have failed to find support for an association between peer attachment and adolescent outcomes, others provide evidence suggesting that peer attachment plays a more important role.

For example, Nelis and Rae (2009) examined the relationship between peer attachment styles (secure, avoidant, ambivalent) and psychological well-being in adolescents and found that securely attached individuals were significantly less depressed and anxious than insecurely (anxious and ambivalent) attached adolescents. There were no significant differences in reported symptoms between the avoidant and ambivalent attachment groups in reported symptoms of anxiety or depression. Their findings provide support for the idea that peer attachment impacts adolescent outcomes, specifically internalizing symptomatology. Research by Laible et al. (2000) also underscores the important role of peer attachment. In an examination of both parent and peer attachment, they found that adolescents with high peer attachment and low parent attachment showed better adjustment than those with low peer attachment and high parent attachment. Their findings suggest that peer attachment may be relatively more influential on adolescent outcomes than parent attachment.

In contrast, there are also studies suggesting that parent attachment has a greater impact on adolescent outcomes than peer attachment. In a study of the role of attachment relationships in adolescent psychosocial adjustment, Noom, Dekovic, and Meeus (1999) found a relationship between peer attachment and social competence in adolescence, however they also found that peer attachment was related to increased engagement in problem behavior. The results of their study indicated that the quality of relationship with parents is more important than peer relationships for overall adolescent psychosocial adjustment. Research conducted by Wilkinson and Walford (2001) also provides evidence that parent attachment may be more influential in adolescence than peer attachment. They examined the role of personality characteristics, positive and negative life events, and quality of parent and peer attachment in predicting psychological well-being in adolescents and found weak relationship between peer attachment and adolescent well-being. However, quality of attachment to parents was predictive of increased well-being independent of other study variables such as personality characteristics and life events. They concluded that parental attachment is clearly an important factor in adolescent psychological health, but the role of peer attachment relationships was unclear.

Other studies provide evidence for the important role of both parent and peer attachment relationships. For example, Armsden and Greenberg (1987) studied the Inventory of Parent and Peer Attachment (IPPA) as a measure of attachment relationship quality in college students (aged 16-20 years) and found a significant relationship between psychological well-being and perceived quality of both parent and peer attachment. Tambelli et al. (2012) used the same measure, however rather than looking at overall attachment relationship quality, they examined the three dimensions of attachment captured by the IPPA: Alienation, Trust, and Communication. They found that internalizing problems were predicted by high scores on the

parental attachment dimension of Alienation and by low scores on the peer attachment dimension of Trust. Externalizing problems were only predicted by parental attachment relationship quality. Adolescents with comorbid internalizing and externalizing problems scored significantly lower on overall parental attachment than adolescents who only exhibited internalizing problems, adolescents who only exhibited externalizing problems, and the control group. The adolescents who had scored high for purely internalizing problems also scored significantly lower on peer attachment than all other groups. The work of Tambelli et al. expands on the findings of Armsden and Greenberg by providing additional evidence that secure attachment relationships with both parents and peers may be a protective factor for adolescent adjustment, but by also suggesting that each type of attachment relationship may have a differential impact on adolescent behavioral outcomes. Further research is needed in order to better understand the role of peer attachment in adolescent outcomes and the ways in which the impact of peer relationships may differ from parent relationships.

Abuse and Attachment Relationships

Not surprisingly, the experience of abuse has a detrimental impact on attachment relationships. The attachment security of children who experience abuse is challenged and they may have difficulty trusting the adult who hurt them or trusting other adults in the future. Subsequent experiences of rejection and criticism may lead abused children to develop schemas that strengthen a tendency toward anxiety and/or avoidance in relationships. These negative schemas are carried with the child unless they are challenged by future relationships or in a therapeutic setting (Muller et al., 2012). Research provides support for this finding. In a longitudinal study of infants, Barnett, Ganiban, and Cicchetti (1999) found that maltreated infants were significantly less likely than non-maltreated infants to be securely attached at 12,

18, and 24 months of age. In later childhood, they were at heightened risk for insecure and conflict-ridden relationships with their parents, which could contribute to the development of aggressive behavior (Crittenden & Ainsworth, 1989; Dodge et. al, 1995).

The experience of abuse also negatively impacts peer relationships because patterns of behavior modeled by parents and witnessed by abused children at home are likely to be generalized to interpersonal interactions within a wider peer network (Bandura, 1973). In order to form positive social relationships, victims of abuse must overcome a lack of trust and learn not to behave in aggressive ways even though they have been treated aggressively (Lansford et al., 2006). It is possible that during adolescence when peer relationships take on increasing importance, abused adolescents may be able to separate from negative family relationship models and form healthy peer relationships, which may protect against negative outcomes (Muller et al., 2012).

The negative effects of abuse on attachment are important because of the impact they have on children's functioning. To date, very few studies have examined attachment as potential variable that may explain variability in the relationship between child abuse and later emotional and behavioral outcomes. Attachment may be a critical pathway between the experience of abuse and negative outcomes to the extent that an insecure style of relating to others results and leads to poor functioning (Muller et al., 2012). It is important to note that relatively few studies have examined the role of attachment as a mediator along the pathway to later symptomatology and many of those that have focused on outcomes in adulthood. For example, research by Styron and Janoff-Bulman (1997) provides evidence that the long-term impact of childhood abuse on adult attachment and depression may be mediated by early attachment experiences. Additionally, a more recent study by Muller and colleagues (2012) examined adult attachment in close

relationships as a potential mediator of the relationship between childhood abuse perpetrated by parents and outcomes in adulthood. They found that adult attachment relationships partially mediated the effects of psychological maltreatment on externalizing, internalizing, and trauma-related symptoms.

A recently published study by Lowell et al. (2014) contrasts with Muller et al.'s (2012) findings. In a retrospective study, Lowell and colleagues investigated the role of attachment in the relationship between childhood maltreatment and later emotional and behavioral functioning in a college student population. Their results showed that both childhood maltreatment, particularly the experience of emotional abuse, and attachment relationships, particularly to mothers and peers, were significant predictors of emotional and behavioral outcomes in early adulthood. Additionally, they found that attachment contributed unique and significant variance to the relationship between childhood maltreatment experiences and outcomes. They did not find evidence of attachment as a mediator of the relationship between maltreatment and later outcomes. Instead, childhood abuse remained a significant predictor of later behavior problems even when the role of attachment relationships were considered in analyses, suggesting that the experience of abuse was strongly linked to later behavioral functioning even when close attachment relationships were considered as a potential protective factor.

Overall, the results of these studies underscore the importance of attachment relationships and suggest that secure attachment relationships may be protective against negative outcomes in children who have experienced maltreatment. Little research has focused on the role of attachment as a mediator along the pathway to social and behavioral outcomes, and the few studies that have examined this have those focused on outcomes in a college aged or adult population and have relied on retrospective self-reports of maltreatment experiences. Research is

needed to examine the role of attachment in impacting later outcomes for victims of childhood maltreatment, particularly during the critical developmental period of adolescence, in order to provide a clearer understanding of whether attachment may function as a mediator of the relationship between abuse and maladaptive behavioral outcomes.

Statement of Purpose for the Current Study

The purpose of the present study was to explore the relationships between parent and peer attachment, social competence, and internalizing and externalizing behavior problems in adolescents who experienced physical abuse in pre-adolescence compared to their non-maltreated peers. This study attempted to close gaps in the current literature by exploring the role of attachment as potential mediator of the well-documented relationship between the experience of abuse and maladaptive outcomes by focusing on long-term effects of abuse during adolescence and investigating both parent and peer attachment as pathways through which physical abuse exerts its influence social competence and behavioral problems. This research is critically important because the more that is understood about the adverse effects of physical abuse and the pathways through which it affects developmental outcomes, the easier it will be to provide appropriate interventions to victims and ultimately, to end the cycle of abuse.

CHAPTER 3: METHOD

Design

A quantitative approach was used to answer questions about the relationship between attachment, social competence, and internalizing and externalizing behavior problems in adolescents physically abused in pre-adolescence and a control group of matched, non-abused peers. First, the strength of associations between variables was explored in an attempt to better understand the relationship between the experience of physical abuse in preadolescence and the variables of internalizing and externalizing behavior problems, social competence, and dimensions of parent and peer attachment in adolescence. Next, the group with a history of abuse and the control group were compared on each outcome measure to answer the following question: Is there is a significant difference between adolescents with a history of physical abuse and adolescents with no abuse in quality of parent and peer attachment relationships, social competence, and internalizing and externalizing behavior problems? The role of attachment as a predictor of social competence and behavioral outcomes was also examined in each group separately. Finally, parent and peer attachment were examined as potential pathways through which the experience of abuse leads to adverse outcomes. Hypothesized outcomes were as follows:

1. The experience of preadolescent physical abuse will be significantly associated with internalizing and externalizing behavior problems, social competence and parent and peer attachment relationship quality.

2. The quality of parent and peer attachment relationships and social competence of adolescents who have experienced physical abuse will be significantly lower and their rate of internalizing and externalizing behavior problems will be higher than those of peers without the experience of abuse.
3. The quality of attachment relationships with parents and peers will significantly predict social competence and behavior problems of adolescents with and without a history of abuse.
4. Attachment relationships with parents and peers will significantly mediate the effects of physical abuse on adolescent social and behavioral outcomes.

Data

The proposed study utilizes the dataset “Adolescent Outcome of Physically Abused Schoolchildren” obtained through the National Data Archive on Child Abuse and Neglect (Salzinger, Feldman, & Ng-Mak, 2008). This dataset is from a follow-up phase of a larger project on the social relationships of abused children conducted at the New York State Psychiatric Institute. Participants were first studied between the ages 9-12 years when they were in fourth-sixth grade, and the follow-up phase occurred when they were between 15-19 years and had completed at least two years of high school. The original sample was composed of 100 physically abused New York City schoolchildren and 100 non-abused classmates matched case by case for gender and age and as closely as possible for race, ethnicity, and socioeconomic status which resulted in each group of families being similar in educational level and occupation. The original sample was demographically representative of the New York City Abuse register for this age group and was 65% male, 35% female; and 47% Black, 43% Hispanic, 7% White, and 3% Other.

The children composing the abused group were identified through entries the New York State Register for Child Abuse in the four urban boroughs of New York City (including Bronx, Brooklyn, Manhattan, and Queens) between 1992 and 1996. Children who were victims of sexual as well as physical abuse were excluded from the sample. However, because neglect and physical abuse frequently co-occur, children who experienced neglect in addition to physical abuse were included in the sample. Out of the 100 physically abused subjects, 60 of the children's records indicated some form of neglect in addition to physical abuse. The majority of children with a history of neglect (49) were classified under inadequate guardianship. Eight were classified under inadequate guardianship along with another category of neglect, and eleven were identified as distributed between one or two categories of neglect, with 8 in the category of parental drug and alcohol abuse.

The sampling pool for the initial phase of the study was composed of 354 families meeting study inclusion criteria. Out of the sampling pool of 354 families, 124 could not be reached, 130 refused, and 100 agreed to participate. Comparisons between families who refused to participate and those who consented using CPS data showed the demographic characteristics of these two groups to be similar. In the follow-up phase assessing adolescent outcomes, the sampling pool consisted of the 200 families studied when the children were preadolescents. One hundred fifty-three of these families were re-recruited resulting in a retention rate of 76.5%. Three abuse families and 7 control families declined participation in the follow-up phase of the study, and the remainder of families could not be located. There was no differential loss of abuse versus control families.

The follow-up sample is composed of 75 adolescents who were physically abused in pre-adolescence and a control group of 78 adolescents with no abuse history. The sample contains 58

matched pairs. Seventeen abused subjects and 20 control subjects remain in the sample without a match. The gender composition of the follow-up sample is 61% male and 39% female. The ethnic composition is 38% Black, 7% White, 54% Hispanic, and 1% Asian. The ethnic and sex distributions closely approximate the distributions on the New York City Abuse Register for the boroughs of the Bronx, Brooklyn, Manhattan, and Queens. In terms of socioeconomic status, 32% of families in the sample received welfare or some form of public assistance during the past year. Of the adolescents in the follow-up sample, 64% lived with a single parent, 11% with one biological and one non-biological parent, and 24% lived with two biological parents. Forty-three percent of mothers in the sample had not completed high school at the time the families were initially recruited. Seventy-two percent of adolescents in the sample had never moved out of their original household between the initial study phase and the follow-up.

Adolescent outcomes in behavioral, social, and academic domains were measured as close as possible to age 17 through parent, teacher, peer, and self reports, interviews, and questionnaires. Data from all guardians and adolescents in families re-recruited is complete. However, there is less than complete data from adolescents' peers and teachers.

Measures

Abuse status. In this study, physical abuse was treated as a dichotomous variable. Adolescents participants were classified into two groups, abused (1) and non-abused (0) based on confirmation of pre-adolescent physical abuse through Child Protective Services (CPS) records. Severity of abuse was not accounted for based on previous research using the same dataset conducted by the principal investigator of the larger study revealing that abuse severity ratings generally did not show stronger bivariate relationships with a range of outcome variables than an agency-defined abuse criterion of abuse versus no abuse (Salzinger, Feldman, Ng-Mak, Mojica,

& Stockhammer, 2001).

Salzinger et al. (2001) examined the impact of variations in severity of abuse by creating severity ratings in the form of an index of abusive behavior and a severity of abuse rating using the dataset utilized in the present study. An index of abusive behavior score was calculated using information from parent interviews about relationships within the household and the number of types of physically aggressive behavior directed toward the child by household adults. Frequency of physically assaultive behavior, the age of the child when any physical punishment, spanking, and more than an ordinary spanking first occurred; and the number of perpetrators of these behaviors. Subjective severity ratings were also calculated based on discrete indicators of abusive behavior and parent narratives describing the worst conflicts experienced with their children. Neither of these indexes showed stronger bivariate relationships to other variables in their study than the experience of abuse itself (abuse vs. no abuse) using an agency-defined abuse criterion. Additionally, they found that approximately 25% of the parents of children in the abused group did not report abusive behavior directed toward their child during parent interviews. Therefore, in the present study the decision was made to treat abuse as a dichotomous variable in all analyses.

Demographics and Sample Characteristics. The Guardian Demographics Interview and Adolescent Demographics Instrument (Salzinger, Feldman, & Ng-Mak, 1993) were used to measure information about the demographics of the sample including household composition, education and occupational status, socioeconomic status, household composition, ethnicity/race, and gender.

Behavioral outcomes. The outcome variables of internalizing, externalizing, and total behavior problems were measured via parent-report, teacher-report, and self-report using the

Achenbach Childhood Behavior Checklist (Achenbach, 1991a), Achenbach Teacher Report Form (Achenbach, 1991b), and Youth Self-Report (Achenbach, 1991c). The Achenbach rating scales were designed as a comprehensive measure of adaptive and maladaptive functioning in children and youth aged 6-18 years. Responses are recorded on a Likert scale: 0 = Not True, 1 = Somewhat or Sometimes True, 2 = Very True or Often True. The school-age checklist contains 120 questions. T-scores ($M=50$, $SD=10$) for Total Problems and Internalizing and Externalizing Problems were used in analyses. Internalizing Problems combines the Social Withdrawal, Somatic Complaints, and Anxiety/Depression scales, while Externalizing combines the Delinquent Behavior and Aggressive Behavior scales. The Total Problems scale was included in analyses to provide a measure of overall problem behavior because it adds the social problems, thought problems, and attention problems scales to the Internalizing and Externalizing scales scores. The scores on the problem items were summed and converted to normalized T scores ($M=50$, $SD=10$).

Interpersonal/Social Competence. Social competence was measured using the Interpersonal Competence Scale (ICS-T; Cairns, Leung, Gest, & Cairns, 1995). The ICS is a brief rating scale consisting of 18 items designed to assess social and behavioral characteristics of children and youth from ages 9-18 years of age on a 7-point Likert type scale. The measure yields three primary factors: AGG (argues, trouble at school, fights), POP (popular with boys, popular with girls, lots of friends), and ACA (spelling, math). The subsidiary factors of AFF (smile, friendly), OLY (appearance, sports, wins), and INT (shyness, sad, worry) are also included. An overall score for interpersonal competence was measured by the “Aggressiveness recoded to calculate Score” (summed interpersonal competence score variable) as rated by a teacher ($M=4.71$, $SD=1.16$) and parent/guardian ($M=4.92$ $SD=1.27$)

Attachment. Attachment was measured using the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987), a self-report questionnaire designed to measure the affective-cognitive dimensions of attachment by assessing adolescents' (aged 12-19 years) relationships with their parents and close friends. Attachment to parents is represented by the adolescent's primary parent figure during high school and peer attachment is represented by the adolescent's "close friends." The IPPA is composed of twenty-five items measuring parent attachment (e.g., "I like to get my parent's point of view on things I'm concerned about"; "I get upset a lot more than my parent knows about.") and 24 peer items ("When I am angry about something, my friends try to be understanding"; "I feel alone or apart when I am with my friends."). Each item is rated for increasing attachment on a 5-point Likert-type scale (1= almost never or never true, 2 = seldom true, 3 = sometimes true, 4 = often true, 5 = almost always or always true). Degree of attachment was represented by the summary score (mean attachment scores, score range 1-5) for both Parent ($M=3.60$, $SD=.81$) and Peer ($M=3.97$, $SD=.63$) scales.

Exposure to Community Violence. The Survey of Children's Exposure to Community Violence – Self Report (ECV; Richters & Saltzman, 1990) was used to measure adolescent's exposure to violence in the community, which was included as a potential confounding variable in this study. The survey was administered to adolescents for exposure to violence both during and before high school. The survey contains questions about the frequency of exposure to the following: being chased; drug activity; serious accidents; forced entry; arrests; threats; slapping, hitting, and punching; beatings and muggings; rape and molestation; carrying guns and knives; serious woundings; knife attacks; dead bodies; suicides; and killings. It determines whether the violence took place in school, in the neighborhood, or at home, and whether family members, friends or strangers were involved. Total count of types of exposure to school and neighborhood

violence was taken as a measure of exposure to community violence. The Total Witnessed Violence self-report score was used in analyses as a control variable (score range 0-36, $M=11.51$, $SD=6.26$).

Procedure

In the context of the larger New York State Psychiatric Institute study, subjects were recruited in pre-adolescence (between the ages of 9-12) and data was collected over the course of 5 years from 1992-1996. The data collection procedure consisted of the researchers contacting families of all eligible confirmed cases of abuse via mail or phone and asking them if they would agree to be interviewed as part of a study of children's friendships and social development. If they agreed, informed consent was obtained from the child's guardian. The control group of peers without an abuse history was recruited by working through lists of classmates in the nearly 100 schools the children constituting the abused group attended.

To ensure control group participants had not experienced abuse, the children's caretakers were interviewed regarding the way disputes are handled in their household and by a scan of the New York City Abuse Register. Same-gender children matched as closely as possible on age and ethnicity were recruited by mail or phone and informed consent was obtained from guardians. Arrangements were then made with school superintendents, principals, and teachers to conduct sociometric assessments of target children's entire classes in order to protect the identity of the participants of interest. Students in each class were not informed that two classmates were the target subjects in the study. Data collectors were blind to the abuse status of subjects and teachers were not told that a member of their class had experienced abuse. Data from non-target children was discarded.

The adolescent data used in the present study were collected over a 6-year period from 1997-2002 as part of the follow-up study conducted by Salzinger and colleagues at the New York State Psychiatric Institute. Each adolescent and guardian was contacted by mail and phone and informed consent was obtained for participation in the follow-up phase of the study. A variety of instruments were used to examine adolescent outcomes including interviews, rating scales, and self-report measures. Teacher ratings of adolescent problem behavior were also collected. Follow-up assessments were conducted with the oldest subjects from the pre-adolescent sample first because investigators required subjects to have completed at least two years of high school and to be as close to age 17 as possible.

Analysis

The Statistical Program for Social Sciences (SPSS) version 22.0 was used in all analyses. First, demographic variables were analyzed, descriptive statistics were obtained, and correlational analyses were run between all study variables. Multivariate Analysis of Variance (MANOVA) was used to determine if there were significant differences among raters (parent/guardian, teacher, self) on outcome variables of interest for adolescents with a history of abuse versus those with no abuse history. Simple regression and hierarchical multiple regression analysis were then used to determine the predictive ability of parent and peer attachment relationships and to determine if attachment relationship quality mediated the impact of preadolescent physical abuse on social and behavioral outcomes in adolescence.

CHAPTER 4: RESULTS

Preliminary Analyses

Means and standard deviations of all study variables were examined and are presented in Appendix A. No extreme values were identified and standard deviations represent reasonable homogeneity given the range of measures. Additionally, bivariate correlations among all study variables are presented in Appendix B. A p-value of less than .05 was required for significance.

Modifications were made to several variables for interpretive purposes. Gender was recoded from the original dataset (male=1, female=2) to allow for female gender to serve as the control (female=0, male=1) when interpreting the analyses. Ethnicity, a categorical variable with multiple levels (Hispanic, Black, White, Asian) was dummy coded for the purpose of inclusion in the regression models where membership in one of the ethnic groups showed a significant association with the outcome variable of interest. Hispanic, the largest ethnic group, was used as the control variable in regression analyses because it was the most prevalent ethnic group in the sample.

Hypothesis 1: Relationships Among Abuse, Attachment, and Outcomes

The experience of physical abuse in preadolescence was hypothesized to have a significant association with the adolescent outcomes of internalizing and externalizing behavior problems, interpersonal competence and quality of attachment relationships with parents and peers. Bivariate correlation analyses were run to determine the direction and strength of the

associations between variables, separated by rater (parent, teacher, self) and results are presented in Tables 1-3 below.

Attachment. As predicted, there was a significant negative relationship between abuse and parent attachment relationship quality ($r = -.20, p < .05$), however there was no significant relationship between abuse history and youth self-reported peer attachment relationship quality (See Appendix B).

Parent/guardian reported outcomes. As predicted, abuse history was significantly positively related with the guardian reported outcomes of total behavior problems, externalizing problems, and internalizing problems. Abuse history was also significantly negatively associated with guardian reported interpersonal competence as predicted (Table 1).

Table 1. Parent reported outcomes: inter-correlations and descriptive statistics

	Abuse history	Ext. Probs.	Int. Probs.	Tot. Prob.	Social Comp.	Parent Attach.	Peer Attach.	Mean	SD
Abuse history								.49	.50
Externalizing	.21**							53.29	12.45
Internalizing	.17*	.62**						51.91	11.13
Total Problems	.25**	.90**	.84**					53.09	12.28
Social Comp.	-.16*	-.57**	-.27**	-.51**				4.93	1.26
Parent Attach.	-.20*	-.25**	-.25**	-.28**	.24**			3.60	.81
Peer Attach.	-.07	-.17*	-.23**	-.28**	.10	.15		3.97	.64

Note. N=153 for abuse history, attachment, and social competence, N=152 for guardian reported behavioral outcomes; * $p < .05$ ** $p < .01$

Teacher reported outcomes. Abuse history was not significantly associated with teacher reported behavioral and social outcomes, although teacher reports of adolescent internalizing problem behaviors were found to have a significant negative relationship with peer attachment (See Table 2).

Table 2. Teacher reported outcomes: inter-correlations and descriptive statistics

	Abuse history	Ext. Probs.	Int. Probs.	Tot. Prob.	Social Comp.	Parent Attach.	Peer Attach.	Mean	SD
Abuse history								.49	.50
Externalizing	.02							54.60	10.42
Internalizing	.11	.43**						51.81	8.84
Total Problems	.02	.86**	.69**					53.68	9.85
Social Comp.	-.08	-.17	-.10	-.20				4.71	1.16
Parent Attach.	-.20*	-.08	-.18	-.09	.12			3.60	.81
Peer Attach.	-.07	-.12	-.27*	-.20	.10	.15		3.97	.64

Note. N=153 for abuse history, attachment, and social competence, N=63 for teacher reported behavioral outcomes; * $p < .05$ ** $p < .01$

Self reported outcomes. Similar to the findings for teacher reported outcomes, no significant association was found between abuse and adolescent self-reported behavioral outcomes. As there was no measure included in this study designed to assess adolescent self-reported social competence, no data is reported for this outcome variable. The only significant associations for adolescent self-reported behaviors were with parent and peer attachment relationship quality (Table 3).

Table 3. Adolescent self-reported outcomes: inter-correlations and descriptive statistics

	Abuse history	Ext. Probs.	Int. Probs.	Tot. Prob.	Social Comp.	Parent Attach.	Peer Attach.	Mean	SD
Abuse history								.49	.50
Externalizing	.12							53.82	11.04
Internalizing	.12	.56**						50.27	10.33
Total Problems	.14	.85**	.87**					52.15	10.63
Social Comp.	--	--	--	--	--			--	--
Parent Attach.	-.20*	-.38**	-.44**	-.46**	--			3.60	.81
Peer Attach.	-.07	-.18*	-.20*	-.25**	--	.15		3.97	.64

Note. N=153; * $p < .05$ ** $p < .01$

Interrater correlations. The relationships between parent, teacher, and self reported behavioral outcomes and between parent/guardian and teacher reported social outcomes were also examined (see Appendix B). Parent reports were significantly correlated with youth self reported total problems ($r=.278$, $p<.01$), externalizing problems ($r=.258$, $p<.01$), and internalizing problems ($r=.218$, $p<.01$). There were also significant positive relationships between teacher ratings and parent/guardian ratings of total problem behavior ($r=.425$, $p<.01$), internalizing problems ($r=.215$, $p<.05$), externalizing problems ($r=.352$, $p<.01$), and social competence ($r=.327$, $p<.01$). No significant relationships were found between teacher reported behavior problems and youth self reported behavior problems.

Hypothesis 2: Group Differences in Outcomes by Rater

To determine whether there were differences on behavioral and social outcomes between adolescents with and without a history of preadolescent abuse, a MANOVA was run for each rater (parent, self, teacher) with abuse history as the independent variable and internalizing, externalizing and total problem behaviors and social competence as the dependent variables. No significant effects were found for teacher rated behaviors or self-reported behavioral outcomes

and social competence. The MANOVA containing parent-rated outcomes was significant ($F(4,147)=3.102, p<.05, \eta^2=.078$) indicating a difference in behavioral and social outcomes between adolescents with and without a history of abuse.

Confirming Hypothesis 2, significant univariate effects were found indicating a significant difference in the abused and non-abused groups on parent-reported social and behavioral outcomes (See Table 4). On behavioral outcomes, adolescents experiencing abuse had significantly higher levels of internalizing ($F(4,147)=4.22, p<.05, \eta^2=.027$), externalizing ($F(4,147)=6.90, p<.01, \eta^2=.044$), and total problem behaviors ($F(4,147)=9.65, p<.01, \eta^2=.060$), than the non-abused group. There were also significant differences in guardian rated social competence such that the non-abused control group had higher levels of social competence than their counterparts with a history of abuse ($F(4, 147)=4.03, p<.05, \eta^2=.026$).

Table 4: Univariate effects for abuse history on parent reported behavioral outcomes

Dependent Variable	<i>df</i>	<i>df error</i>	<i>F</i>	Abuse history	Means	95% Confidence Interval	
						Lower Bound	Upper Bound
Internalizing	4	147	4.22*	abused	53.797	51.268	56.327
				control	50.128	47.664	52.592
Externalizing	4	147	6.90**	abused	55.959	53.155	58.764
				control	50.756	48.025	53.488
Total Problems	4	147	9.65**	abused	56.176	53.432	58.920
				control	50.154	47.481	52.826
Soc. Competence	4	147	4.03*	abused	4.725	4.438	5.012
				control	5.132	4.853	5.412

Note. N=152; * $p < .05$ ** $p < .01$

A MANOVA was also run to test for differences between adolescents with and without a history of abuse in the quality of parent and peer attachment relationships. The multivariate result was significant for abuse experience indicating a difference in parent and peer attachment

between adolescents experiencing abuse and their peers without that experience, $F(2,150)=3.226$, $p<.05$, $\eta^2=.041$. Univariate tests revealed a significant difference in parent attachment ($F(1, 152)=6.228$, $p<.05$, $\eta^2=.040$) confirming the hypothesized outcome that adolescents without a history of abuse would have higher levels of parental attachment than adolescents with a history of abuse (Table 5). No significant difference was found between groups on peer attachment.

Table 5: Univariate effects for abuse history on attachment outcomes

Dependent Variable	<i>df</i>	<i>df</i> error	<i>F</i>	Abuse history	Means	95% Confidence Interval	
						Lower Bound	Upper Bound
Parent Attach.	1	152	6.228*	abused	3.437	3.255	3.619
				control	3.759	3.580	3.937
Peer Attach.	1	152	.749	abused	3.928	3.784	4.073
				control	4.017	3.875	4.159

Note. $N=153$; * $p < .05$ ** $p < .01$

Hypothesis 3: Attachment as a Predictor of Outcomes

Regression analyses were performed to investigate the role of parent and peer attachment in predicting behavioral outcomes and social competence of adolescents. To this end, effects were examined separately for adolescents with and without the experience of abuse in order to determine whether attachment relationships would predict social and behavioral outcomes based on guardian reported outcome variables. Guardian reported outcomes were used in all analyses because there were guardian reports for all outcome variables available in the dataset and because of the finding that only guardian reported outcomes showed significant differences in outcomes for the abused and non-abused groups.

The demographic variables of ethnicity, gender, and socioeconomic status and exposure to community violence were considered as possible confounding variables and correlational

analyses were run with outcome variables for the two groups separately to determine their significance and the variables significantly correlated with each dependent variable were controlled for in subsequent regression analyses.

Parent attachment. To test Hypothesis 3, the role of parent attachment in predicting the outcomes of total, internalizing, and externalizing problems was examined for each group independently. For adolescents with a history of abuse, parent attachment was not significantly correlated with any of the outcome variables. No further analyses were conducted in that the correlational data indicated that parent attachment was not predictive of social and behavioral outcomes for this group.

Next, the predictive contribution of parent attachment on outcomes was tested for adolescents without a history of abuse. In this group, parent attachment quality was found to have a significant negative correlation with each behavioral outcome. The correlations between the predictor variable and the dependent variables were weak to moderately strong, ranging from $r = -.279, p < .05$ to $r = -.365, p < .001$. This indicates that the correlated nature of variables with the dependent variable justified linear regression analysis. However, there was not a significant relationship between parent attachment and interpersonal competence; therefore no further analyses were conducted for that outcome domain.

Total problem behavior. First, regression analysis was run to investigate the contribution of parent attachment in predicting total problem behavior in adolescents without a history of abuse. No control variables were included in the analysis because none of the hypothesized confounding variables were found to have a significant relationship with total problem behavior in the non-abused group. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Parent attachment was entered as a

predictor in a simple linear regression model with overall problem behavior as the outcome variable. This model was statistically significant $F(1,76)=11.285, p<.001$ and explained 12.9% of the variance in overall problem behavior in non-abused adolescents. Parent attachment was found to be a significant predictor of total problem behaviors ($\beta = -.360, p < .01, \eta^2=.129$).

Table 6. Total problems: Summary of regression for adolescents without abuse history

Variable	β	t	sr^2	R	R^2
Parent Attach.	-.360	-3.359**	.129	.360	.129

Note. N=78; * $p < .05$ ** $p < .01$

Externalizing behavior problems. Next, regression analysis was used to determine whether parent attachment predicted externalizing behavior problems. None of the hypothesized confounding variables were significantly related to externalizing problems, thus no control variables were included in the predictive model. Preliminary analyses revealed no violations of the assumptions of regression analysis. Results revealed this model to be statistically significant $F(1,76)=6.435, p<.05$, indicating that parent attachment explained 7.8% of the variation in externalizing behavior problems in non-abused adolescents. Parent attachment was a significant predictor of externalizing behavior problems ($\beta = -.279, p<.05, \eta^2=.078$).

Table 7. Externalizing problems: Summary of regression for adolescents without abuse history

Variable	β	t	sr^2	R	R^2
Parent Attach.	-.279	-2.573	.078	.279	.078

Note. N=78; * $p < .05$ ** $p < .01$

Internalizing behavior problems. Finally, the ability of parent attachment to predict internalizing behavior problems was assessed. Hierarchical multiple regression analysis was performed to investigate the role of parent attachment in predicting internalizing problems after controlling for exposure to community violence which was found to have a significant relationship with the outcome variable of interest. Preliminary analyses were conducted to ensure

no violation of the assumptions of normality, linearity, and homoscedasticity. Additionally, the correlation between the predictor variables (parent attachment and exposure to community violence) was examined and found to be weak ($r = -.102$, $p = .374$) indicating that multicollinearity was unlikely to be a problem (Tabachnick & Fidell, 2012). Each predictor variable was statistically correlated with internalizing problems, which indicates that the variables were sufficiently correlated with the dependent variable for examination through multiple linear regression (attachment and internalizing $r = -.365$, $p = .001$; exposure to community violence and internalizing $r = .234$, $p = .039$).

In the first step of hierarchical multiple regression, exposure to community violence was entered as a predictor. This model was statistically significant $F(1, 76) = 4.421$; $p < .05$ and explained 5.5 % of variance in internalizing behavior problems (Table 8). After entry of parent attachment at Step 2 the total variance explained by the model as a whole was 17.2% ($F(2, 75) = 7.803$; $p < .01$, $\eta^2 = .172$). The introduction of parent attachment explained an additional 11.7 % variance in internalizing behavior problems after controlling for exposure to community violence ($R^2 \text{ Change} = .117$; $F(1, 75) = 10.624$; $p < .01$). In this final model, parent attachment was the only statistically significant predictor of internalizing problems ($\beta = -.334$, $p < .01$, $\eta^2 = .117$).

Table 8. Internalizing problems: Summary of regression for adolescents without abuse history

Variable	β	t	sr^2	R	R^2	ΔR^2
Step 1				.234	.055	.055
Exp. to Violence	.23	2.10*	.055			
Step 2				.415	.172	.117
Exp. to Violence	.20	1.89	.039			
Parent Attach.	-.34	-3.26**	.117			

Note. $N = 78$; * $p < .05$ ** $p < .01$

Peer attachment. Peer attachment was also investigated to identify its role in predicting social and behavioral outcomes for each group. Similar to the findings for parent attachment, peer attachment was not significantly correlated with any of the outcome variables for adolescents with a history of abuse indicating that peer attachment is not predictive of social and behavioral outcomes for this group, thus no further analyses were conducted. For the non-abused group, peer attachment was significantly associated with total problem behavior and internalizing behavior problems. The correlations between the predictor variable and the dependent variables were moderate, ranging from $r = -.357$, $p = .001$ to $r = -.364$, $p = .001$. This indicates that the variables were sufficiently correlated with the dependent variable for examination through multiple linear regression to be reliably undertaken. There was not a significant relationship between peer attachment and interpersonal competence or externalizing behavior problems; therefore no further analyses were conducted for these outcome variables.

Total problem behavior. First, the ability of peer attachment to predict total problem behavior in adolescents without a history of abuse was tested. No control variables were included in the analysis because none of the hypothesized confounding variables were found to have a significant relationship with overall problems in the non-abused group. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Peer attachment was entered as a predictor in the simple linear regression model with overall problem behavior as the outcome variable. This model was statistically significant $F(1,76) = 11.63$, $p = .001$ and explained 13.3% of the variance in overall problem behavior in non-abused adolescents. Peer attachment was found to be a significant predictor of total problem behaviors ($\beta = -.364$, $p = .001$, $\eta^2 = .133$).

Table 9. Total problems: Summary of regression for adolescents without abuse history

Variable	β	t	sr^2	R	R^2
Peer Attach.	-.364	-3.410**	.133	.364	.133

Note. N=78; * $p < .05$ ** $p < .01$

Internalizing behavior problems. Next, hierarchical multiple regression was used to assess if peer attachment was a significant predictor of internalizing behavior problems after controlling for exposure to community violence. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Additionally, no association was found between the predictor variables indicating that multicollinearity was unlikely to be a problem. Each predictor variable was statistically correlated with internalizing problems, which indicates that the data was suitably correlated with the dependent variable for examination through multiple linear regression to be reliably undertaken (peer attach and internalizing $r = -.357$, $p = .001$ and ECV and internalizing $r = .234$, $p = .039$).

In the first step of hierarchical multiple regression, exposure to community violence was entered as a predictor. This model was statistically significant $F(1, 76) = 4.421$; $p < .05$ ($p = .039$) and explained 5.5 % of variance in internalizing behavior problems (Table X). After entry of peer attachment at Step 2 the total variance explained by the model as a whole was 16.8% ($F(2, 75) = 7.550$; $p = .001$). The introduction of parent attachment explained an additional 11.3 % of the variance in internalizing problems, after controlling for exposure to community violence ($R^2 \text{ Change} = .113$; $F(1, 75) = 10.146$; $p = .002$). In the final model, peer attachment was the only statistically significant predictor of internalizing problems ($\beta = -.337$, $p = .002$, $\eta^2 = .113$).

Table 10. Internalizing problems: Summary of regression for adolescents without abuse history

Variable	β	t	sr^2	R	R^2	ΔR^2
Step 1				.234	.055	.055
Exp. to Violence	.23	2.10*	.055			
Step 2				.409	.172	.113
Exp. to Violence	.20	1.90	.040			
Parent Attach.	-.34	-3.19**	.113			

Note. N=78; * $p < .05$ ** $p < .01$

Hypothesis 4: Attachment as a Mediator of the Relationship between Abuse and Outcomes

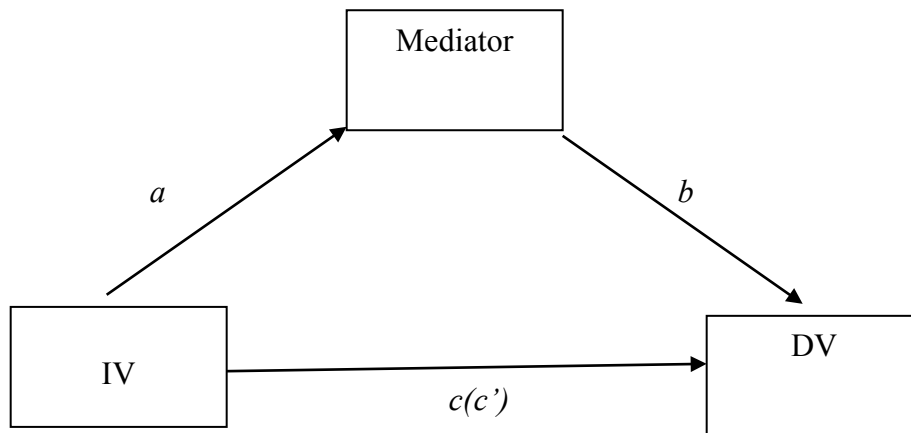
Parent and peer attachment were hypothesized as mechanisms by which pre-adolescent abuse leads to interpersonal and behavior problems in adolescence. Baron and Kenny (1986) proposed a four-step approach in which several regression analyses are conducted and significance of the coefficients is examined at each step. The following four conditions must be met in order to determine that mediation has occurred:

- 1) The predictor variable is significantly associated with the outcome variable.
- 2) There is a significant association between the predictor variable and the hypothesized mediating variable.
- 3) The mediating variable is significantly associated with the outcome variable after controlling for the predictor variable.
- 4) The association of the predictor variable with the outcome variable is significantly lower after controlling for the mediating variable.

These conditions were used to guide mediation analyses for Hypothesis 4 in order to explain the relationship between the independent variable (experience of abuse) and dependent variables (adolescent social and behavioral outcomes) in terms of parent and peer attachment, the hypothesized mediating variables. A series of three regression analyses were run to test

for the relationships between the IV and the mediating variable (path a), the mediating variable and the dependent variable (path b), and the IV and the dependent variable (path c) and the IV and DV while controlling for the mediating variable (c'). The IV has an indirect effect on the DV that is transmitted through the mediator, which is calculated through the product of these two paths (ab).

Figure 1: Mediation Model



To determine the significance of the indirect effect, the decision was made not to use the traditional Sobel's test (1982). This approach tends to have low statistical power and recent advances in statistics have allowed for other methods of testing the indirect effect (Falk, 2013). For this reason, in the present study, confidence intervals were calculated using the hierarchical Bayesian method, which has been shown to outperform other methods including forms of bootstrapping (Biesanz, Falk, & Savalei, 2010). If the confidence interval does not contain zero then the indirect effect is considered to be statistically significant. Significance of the indirect effects was computed using the partial posterior method (Biesanz et. al., 2010), which has been shown to have higher power than traditional approaches while adequately controlling for Type I errors (Falk, 2013).

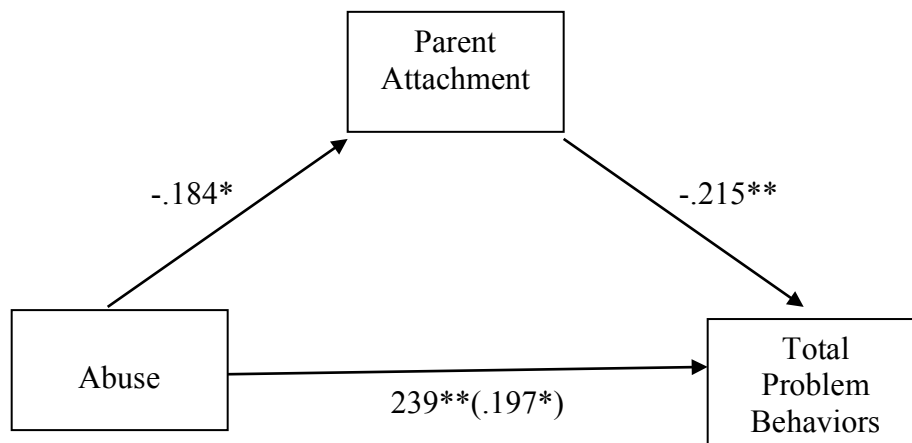
Parent attachment. First, the mediation effects of parent attachment were tested. A series of three regression analyses were conducted to assess each potential mediation effect by measuring the relationship between the predictor (abuse history) and each dependent variable (behavioral and social outcomes), the relationship between the predictor (abuse history) and parent attachment, and both abuse history and parent attachment as predictors of each outcome variable. Gender, ethnicity, exposure to community violence, and socioeconomic status were hypothesized as potential confounding variable and were correlated with each outcome variable to determine which variables should be controlled for in each subsequent analysis. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity.

Total problem behavior. To determine if parent attachment mediates the relationship between abuse and total behavior problems, hierarchical multiple regression was used to regress overall problem behavior on abuse history after controlling for exposure to community violence and ethnicity to determine the size, direction, and significance of the relationship between abuse and overall problem behavior. This model was statistically significant $F(5,146)=4.782, p<.001, \eta^2=0.141$ and abuse history explained 14.1% of the variance in overall problem behavior. The experience of preadolescent abuse was found to be a significant predictor of overall problem behaviors ($\beta = .239, p = .003, \eta^2=.056$). Next, parent attachment was regressed on abuse history. This model was also statistically significant $F(5,147)=3.060, p=.012, \eta^2=.094$ and abuse history explained 9.4% of the variance in parent attachment. Abuse history was determined to be a significant predictor of poor parent attachment ($\beta = -.184, p = .022, \eta^2=.033$). In the final regression analysis, after accounting for the control variables in block 1 of the hierarchical regression analysis and for parent attachment in block 2, parent attachment was entered in block

3 as a mediating variable and abuse experience was entered as the predictor variable. The model was statistically significant ($F(6,145)=5.385, p=.000, \eta^2=0.182$). The coefficient for parent attachment as a mediator was significant, $\beta = -.215, p = .007, \eta^2=.042$ and the coefficient for abuse history decreased to $\beta = .197, p = .012, \eta^2=.036$. Although the effect of abuse decreased after controlling for parent attachment, it must be noted that abuse history remains a significant predictor of total behavior problems in this model at the .05 level suggesting that parent attachment is just one mechanism through which abuse exerts its influence on the outcome variable.

As Figure 2 illustrates, the standardized regression coefficient between abuse and parent attachment was statistically significant, as was the standardized regression coefficient between parent attachment and total problem behavior. The standardized indirect effect was $(-.184)(-.215) = .040$. The significance of this indirect effect was tested using the hierarchical Bayes method (95% CI = .067-2.303). Zero did not fall within the confidence interval, indicating that there is a significant indirect effect. The partial posterior p-value was also significant ($p=0.020$). These findings provide evidence that the reduction in the effect of abuse after including parent attachment in the model was statistically significant and allow for the determination that parent attachment is a significant mediator of the impact of abuse on total problem behaviors.

Figure 2: Parent Attachment as a Mediator of the Relationship between Abuse and Total Problems



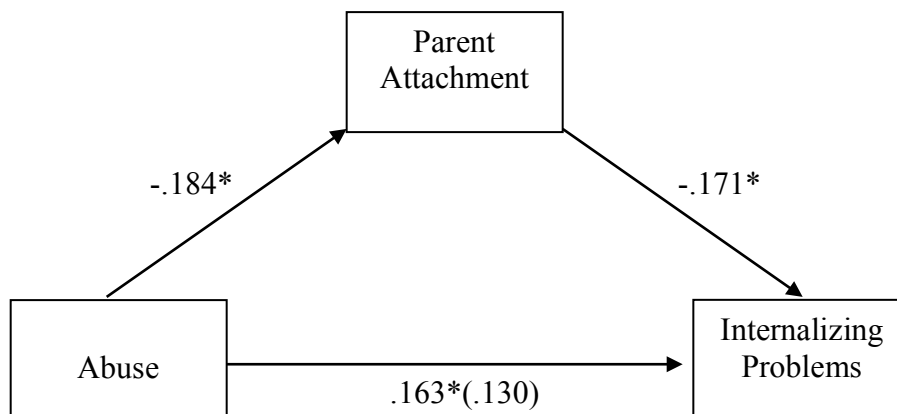
Note. * $p < .05$ ** $p < .01$

Internalizing behavior problems. Next, hierarchical multiple regression was used to investigate parent attachment as a mediator of the effects of abuse on internalizing behavior problems after controlling for exposure to community violence and ethnicity. Internalizing problems were regressed on abuse history after controlling for exposure to community violence and ethnicity. This model was statistically significant $F(5,146)=5.235$, $p < .001$, $\eta^2=.026$ and abuse history explained 15.2% of the variance in internalizing behavior problems. Abuse history was found to be a significant predictor of internalizing problems ($\beta = .163$, $p = .037$, $\eta^2=.026$). Next, parent attachment was regressed on abuse history. This model was also statistically significant $F(5,147)=3.060$, $p = .012$, $\eta^2=.094$ and abuse history explained 9.4% of the variance in parent attachment. Abuse history was determined to be a significant negative predictor of parent attachment ($\beta = -.184$, $p = .022$, $\eta^2=.033$). In the final regression analysis, after accounting for the control variables in block 1 and for parent attachment in block 2, parent attachment was entered in block 3 as a mediating variable and abuse history was entered as the predictor variable. The model was statistically significant ($F(6,145)=5.244$, $p = .000$, $\eta^2=.178$). The

coefficient for parent attachment as a mediator was significant, $\beta = -.171$, $p = .033$, $\eta^2=.026$ and the coefficient for abuse history decreased to $\beta = .130$ $p = .098$, $\eta^2=.016$.

As Figure 3 illustrates, the standardized regression coefficient between abuse and parent attachment was statistically significant, as was the standardized regression coefficient between parent attachments and internalizing behavior problems. The standardized indirect effect was $(-.184)(-.171) = .0315$. The significance of this indirect effect was tested using the hierarchical Bayes method (95% CI = $-.008$ - 1.798). Zero fell within the confidence interval, indicating that parent attachment does not mediate the relationship between abuse and internalizing behavior problems.

Figure 3: Parent Attachment as a Mediator of the Relationship between Abuse and Internalizing Problems



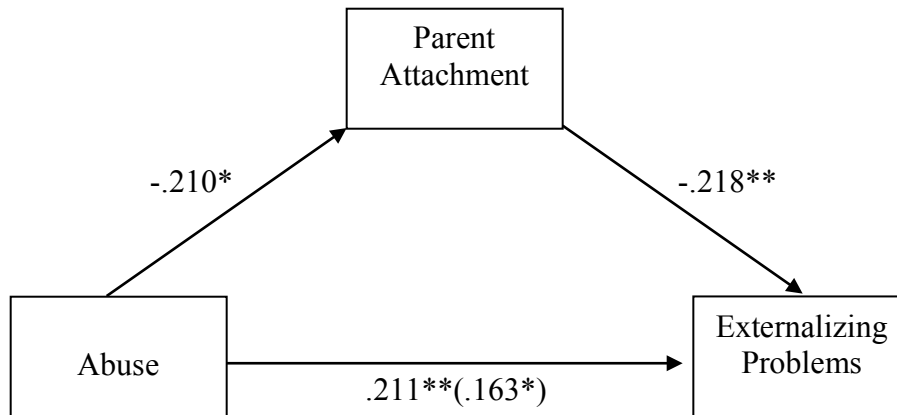
Note. * $p < .05$ ** $p < .01$

Externalizing behavior problems. Next, parent attachment was assessed as a potential mediator of the impact of abuse on externalizing behavior problems. Externalizing problems was regressed on abuse history after controlling for ethnicity. This model was statistically significant $F(4,147)=3.241$, $p=.014$, $\eta^2=0.081$ and abuse history explained 8.1% of the variance in externalizing behavior problems. Abuse history was a significant predictor of internalizing problems ($\beta = .211$ $p = .009$, $\eta^2=0.044$). Next, parent attachment was regressed on abuse history

after controlling for ethnicity. Although this model was not statistically significant $F(4,148)=2.006, p=.097, \eta^2=0.0514$, abuse history was determined to be a significant negative predictor of parent attachment ($\beta = -.210, p = .010, \eta^2=0.043$). In the final regression analysis, after accounting for the control variable in block 1 and for parent attachment in block 2, parent attachment was entered in block 3 as a mediating variable and abuse history was entered as the predictor variable. The model was statistically significant ($F(5,146)=4.211, p=.001, \eta^2=0.126$). The coefficient for parent attachment as a mediator was significant, $\beta = -.218, p = .007, \eta^2=0.045$ and the coefficient for abuse history decreased to $\beta = .163, p = .043, \eta^2=0.025$. Similar to the finding for total behavior problems, it should be noted that although the effect of abuse decreased after controlling for parent attachment, it still remained significant predictor of externalizing behavior problems in this model at the .05 level. This suggests that although parent attachment is one mechanism through which abuse exerts its influence on the outcome variable, other factors including the direct impact of abuse itself explain the relationship between a history of abuse and behavioral outcomes.

As Figure 4 illustrates, the standardized regression coefficient between abuse and parent attachment was statistically significant, as was the standardized regression coefficient between parent attachment and externalizing behavior problems. The standardized indirect effect was $(-.210)(-.218) = .046$. The significance of this indirect effect was tested using the hierarchical Bayes method (95% CI = .140-2.573). Results of this test indicate that the reduction in the effect of abuse after including parent attachment in the model was statistically significant because zero did not fall within the confidence interval. The partial posterior p-value was also significant ($p = 0.011$). These findings confirm Hypothesis 4 indicating that parent attachment is a significant mediator of the effects of abuse history on externalizing behaviors in adolescence.

Figure 4: Parent Attachment as a Mediator of the Relationship between Abuse and Externalizing Problems



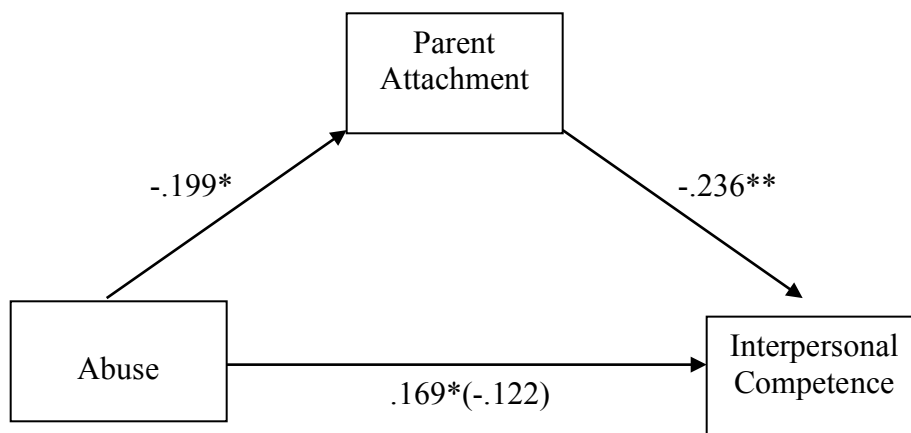
Note. * $p < .05$ ** $p < .01$

Interpersonal competence. Next, the role of parent attachment as a mediator of the impact of abuse on interpersonal competence was tested. Gender was controlled for in these analyses due to its statistically significant relationship with interpersonal competence scores. In the first analysis, interpersonal competence was regressed on abuse history. This model was statistically significant $F(2,150)=4.454$, $p=.013$, $\eta^2=.056$ and abuse history explained 5.6% of the variance in interpersonal competence. Abuse history was a significant predictor of interpersonal competence ($\beta = -.169$ $p = .035$, $\eta^2=.029$). Next, parent attachment was regressed on abuse history. This model was statistically significant $F(2,150)=4.997$, $p=.008$, $\eta^2=.062$ and abuse history was determined to be a significant predictor of poor parent attachment ($\beta = -.199$, $p = .013$, $\eta^2=.039$). In the final regression analysis, after accounting for the control variable in block 1 and for parent attachment in block 2, parent attachment was entered in block 3 as a mediating variable and abuse history was entered as the predictor variable. The model was statistically significant ($F(3,149)=6.026$, $p=.001$, $\eta^2=.108$). The coefficient for parent attachment as a mediator was significant, $\beta = .236$, $p = .004$, $\eta^2=.052$ and the coefficient for abuse history

decreased to $\beta = -.122$, $p = .123$, $\eta^2 = .014$ and was no longer a statistically significant predictor of interpersonal competence after controlling for parent attachment.

As Figure 5 illustrates, the standardized regression coefficient between abuse and parent attachment was statistically significant, as was the standardized regression coefficient between parent attachment and interpersonal competence. The standardized indirect effect was $(-.199)(.236) = -.047$. The hierarchical Bayes method was used to test the significance of the indirect effect (95% CI = $-.264$ – $-.015$). Zero did not fall within the confidence interval indicating that the reduction in the effect of abuse after including parent attachment in the model was statistically significant. The partial posterior p-value of the effect was also significant ($p = 0.012$). Therefore, parent attachment was found to be a significant mediator of the impact of abuse on interpersonal competence.

Figure 5: Parent Attachment as a Mediator of Relationship between Abuse and Interpersonal Competence



Note. * $p < .05$ ** $p < .01$

Peer attachment. Peer attachment was not significantly correlated with abuse history, therefore no further tests were conducted to determine whether it might mediate the effects of

abuse on the outcome variables because a significant relationship between the predictor variable and the hypothesized mediating variable is necessary in order for mediation to occur.

CHAPTER 5: DISCUSSION

The aim of this study was to investigate the role of parent and peer attachment in the relationship between pre-adolescent physical abuse and social and behavioral outcomes in adolescence and to add to literature on the mechanisms by which childhood abuse leads to maladaptive social and behavioral outcomes. Previous research has demonstrated relationships between maltreatment and poor social and behavioral functioning in adolescence, between maltreatment and attachment relationships, and between attachment relationships and social and behavioral outcomes, but very few studies have examined these variables collectively. The present study was designed in an effort to further our understanding of the relationships between the experience of abuse, attachment to parents and peers, and social and behavioral outcomes during the critical developmental period of adolescence. There were a number of important findings that will be reviewed and discussed below.

Abuse History and Adolescent Outcomes

Results of the current study provide evidence for a relationship between the experience of pre-adolescent physical abuse and social and behavioral outcomes in adolescence. It is important to note that only parent rated outcomes showed significant associations with abuse history. Findings were consistent with hypothesized outcomes and revealed significant positive associations between history of abuse and parent/guardian reported behavior problems (total, internalizing, externalizing) and a significant negative association with social competence. This association did not hold true for teacher reported outcomes nor youth self-reported outcomes.

Although there were significant associations between parent and teacher ratings and between adolescent self-reports and parent ratings when outcomes for the entire sample of adolescents were examined, when effects were examined by different raters (parent/guardian, teacher, self) in Hypothesis 2, only parent/guardian rated outcomes revealed significant differences between adolescents with a history of abuse and those without. Guardian reports showed that the abused group had significantly higher levels of internalizing and total problem behavior and lower interpersonal competence than their non-abused peers. No significant group differences emerged when teacher and adolescent self-reported outcomes were examined.

Literature on consistency of ratings across informants suggests that the degree among raters may depend on the behavior being rated. Some research has revealed that adolescent, parent, and teacher reports showed variability but were significantly correlated, while other studies provide evidence for consistent reporting between parents and adolescents but not teachers (Steele, Forehand, & Devine, 1996; Thomas, Forehand, Armistead, Wiersen, & Fauber, 1990). In the current study, the fact that only guardian reports reflected significant group differences in social competence and behavior of adolescents with a history of abuse and those with no history of abuse may be explained by a variety of factors. Significant differences may have emerged in guardian reports due to the fact that guardians are aware of their child's abuse history, see their child in a variety of settings, and have known them over an extended period of time (years).

Teachers, on the other hand, only observe student behavior within a structured classroom setting for limited periods of time on a daily basis for a single semester or academic year. Teacher ratings may not have reflected significant differences between adolescents with and without an abuse history because striking difference in the behavior of these groups was not

observed in the school setting. Additionally, it is notable that youth self-reports did not reveal significant overall differences between groups. This is consistent with research suggesting that adolescents, particularly those without strong attachment relationships to caregivers, may minimize the extent to which they report their distress and difficulties to others (Berger, Jodl, Allen, & Davidson, 2005). Given evidence for the negative relationship between abuse and attachment relationship quality, this tendency to minimize symptoms may explain the lack of significant differences in the self-reported behavior and social problems of adolescents with a history of abuse and those without.

Attachment and Adolescent Outcomes

The results of the present study add to past research evidence linking secure parent attachment relationships in adolescence to social, emotional and behavioral competence (Moretti & Peled, 2004; Raja et al., 1992). Findings revealed significant associations between parent attachment with all parent reported social and behavioral outcomes (total problems, internalizing problems, externalizing problems, social competence). Additionally, youth self-reported behavioral outcomes (total problems, internalizing problems, externalizing problems) were also significantly associated with the quality of parent attachment relationships. These findings are consistent with data from other studies indicating that parent attachment relationships have significant relationships to social and behavioral functioning in adolescence (Raja et al., 1992; Buist, Dekovic, Meeus, & van Aken, 2004; Dykas & Cassidy, 2011; Zimmerman, 2004).

Previous research on the role of peer attachment relationships in adolescence has shown mixed findings. The results of the current study revealed that peer attachment was also significantly correlated with both parent and adolescent self-reported behavioral outcomes. It should be noted that the strength of the relationship was generally not as strong as the

relationship between behavioral outcomes and parent attachment, particularly for youth self reported outcomes. Although examining the relative importance of each attachment relationship was not a focus of the current investigation, the significant associations between both parent and peer attachment relationships in our sample are consistent with previous research suggesting that attachment to both parents and peers plays an important role in adolescent behavior and psychological wellbeing (Armsden and Greenberg, 1987; Tambelli et al., 2012).

Interestingly, peer attachment was not significantly related to interpersonal competence in the current study. This finding contrasts with previous research conducted by Noom et al. (1999) who found a significant relationship between peer attachment and social competence in adolescence. However, the finding that parent attachment was related to guardian rated interpersonal competence while peer attachment was not is consistent with studies indicating that parent attachment is relatively more influential than peer attachment in adolescence (Wilkinson & Walford, 2001; Noom et. al., 1999). The results of the current study suggest that in our adolescent sample, parent attachment relationships had a stronger relationship with social outcomes in adolescence. Given the findings of the current study and discrepancies in the literatures, more research is indicated in order to better understand the role of peer attachment in impacting a range of adolescent outcomes and the ways in which the impact of peer relationships may differ from parent relationships.

Abuse History and Attachment in Adolescence

The results of the current study revealed a significant association between abuse history and parent attachment confirming the hypothesis that the levels of parental attachment of adolescents with a history of abuse would be significantly lower than that of adolescents without a history of abuse. No significant association was found between the experience of abuse and

peer attachment and no significant difference was found between groups on peer attachment. These findings suggest that the experience of abuse, which is by definition perpetrated by a parent or caregiver, has a stronger impact on attachment to caregivers in adolescence than to friends or peers. This is consistent with literature providing evidence that abuse negatively impacts early attachment relationships with primary caregivers that continue to be influential across the lifespan (Barnett et al., 1999; Crittenden & Ainsworth, 1989).

In contrast to the significant association found for abuse history and parental attachment, the results of the current study do not provide evidence for a strong association between abuse history and peer attachment. The findings of the present study suggest that the experience of pre-adolescent abuse does not necessarily have a detrimental impact on peer attachment or relationships in adolescence. Further, the lack of association between abuse and peer attachment is not consistent with prior literature suggesting that peer relationships and social networks might exert an especially strong influence on adolescents who have experienced abuse (Muller et al., 2012). Given the mixed findings regarding peer attachment in adolescence in general, more research will be needed to begin to understand the impact of abuse on peer attachment in adolescents.

Parent and Peer Attachment as Predictors of Adolescent Outcomes

In an attempt to clarify the relationships between abuse, attachment relationships, and adolescent outcomes in the current study, parent and peer attachment relationship quality were examined as predictors of social and behavioral outcomes for adolescents with a history of abuse and those without a history of abuse separately (Hypothesis 3). Results showed that attachment was only predictive of behavioral outcomes for adolescents without a history of abuse. For these adolescents, parent attachment was predictive of all behavioral outcomes (total problems

internalizing and externalizing behavior problems) and peer attachment was a significant predictor of total problems as well as internalizing problems. However, attachment relationship quality was not predictive of interpersonal competence for either group.

The finding that attachment was only predictive of behavioral outcomes in the group without a history of abuse suggests that attachment serves a different function in adolescents who have experienced abuse in preadolescence than it serves in adolescents who have not experienced abuse. The results of the current study suggest that attachment is more influential in impacting behavioral outcomes for children without a history of abuse whereas factors outside of the parent/caregiver and peer attachment relationships, such as the experience of abuse itself, function as stronger predictors of these outcomes for adolescents with a history of abuse. Past research provides evidence that abuse in and of itself is a significant predictor of externalizing and internalizing behavior problems in adolescence (Moylan et al., 2010; Malinosky-Rummell & Hansen, 1993; Lansford et al., 2002).

Research on attachment relationships as a predictor of adolescent psychological wellbeing has not focused on comparing populations with a history of abuse or exposure to violence to those without, thus studies providing support for the association between parent attachment and behavioral outcomes in adolescence cannot be generalized to a population with a history of abuse. Further research is needed to define the differential impact of parent attachment on adolescent outcomes in each of these populations.

Relationships between Abuse History, Attachment, and Adolescent Outcomes

The results of the study did not find parent attachment to be predictive of social and behavioral outcomes in the sample of adolescents with a history of abuse in Hypothesis 3. However, when the role of attachment as a mediator of the impact of abuse was examined in the

sample as a whole to test Hypothesis 4, mediation effects were found for parent attachment on total behavior problems, externalizing behavior problems, and interpersonal competence. The finding that parental attachment relationships in adolescence mediated the relationship between preadolescent physical abuse and adolescent social competence and behavioral outcomes (externalizing, total problems) is consistent with attachment theory (Bowlby 1988).

Results of the current study extend past research indicating that attachment relationships may mediate the long-term impact of abuse (Styron & Janoff-Bulman, 1997; Muller et al. 2012). These results contrast with the findings from recent research conducted by Lowell et al. (2014). Although Lowell and colleagues found significant associations between the experience of multiple forms of maltreatment and internalizing and externalizing behavior problems as well as significant associations between attachment relationships and behavioral problems, they did not find support for attachment as a mediator of the relationship between childhood abuse and emotional and behavioral outcomes. They found that the experience of maltreatment (particularly of emotional abuse) and attachment (particularly to mothers and peers) were significant predictors of internalizing and externalizing problems in early adulthood. Rather than functioning as a mediator, however, the results of their study showed that attachment contributed unique and significant variance to the relationship between childhood maltreatment and later outcomes. It is possible that the use of a self-selected college student population and the retrospective design of the study impacted their findings in that participants were asked to reflect back on their experiences of maltreatment in childhood. As Lowell et al. acknowledge, low incidences of maltreatment were reported in this population. This is in contrast to the present study, which drew participants from an abuse registry using agency-defined criteria.

Although parent attachment functioned as a mediator of the relationship between abuse and externalizing behavior, total problems, and social competence in the present study, it is important to note that abuse history remained a significant predictor of behavioral outcomes. In other words, controlling for attachment only explained part of the variation in total problems and externalizing behavior problems suggesting that abuse history itself and/or other explanatory variables are also at play. A number of individual, family, or community level factors ranging from genetic predispositions to psychopathology, family support symptoms and resources, and access to community resources including education, healthcare, and mental health services have an impact. More research is needed to investigate these other variables that could play a role in explaining the relationship between abuse and maladaptive outcomes.

Peer attachment relationships were also predicted to mediate the effects of preadolescent abuse on social and behavioral outcomes. No mediation analyses were carried out because in the sample of adolescents as a whole, peer attachment was not significantly related to the outcomes variables of interest. This adds to the finding from Hypothesis 3 that peer attachment relationships were not predictive of interpersonal competence or behavior problems in adolescents with an abuse history. Therefore, the results of the current study indicate that peer attachment does not mediate the impact of preadolescent abuse on social and behavioral outcomes in adolescence. Studies investigating the role of peer attachment in adolescence have had mixed findings. This may be attributable to differences in the way parent and peer attachment are measured and quantified, or due to differences in the nature of these relationships themselves. For example, parent attachment relationships may be more stable and fundamental for many children, while peer relationships and social networks are often more transient in nature, particularly during adolescence. Although the current study's findings contrast with past

research suggesting that peer relationships become more important during the adolescent years than the quality of relationships with parents or primary caregivers, results are consistent with other past research showing that parent attachment relationships play an important role in adolescent outcomes (Nelis & Rae, 2009; Laible et al., 2000). The current study adds to a growing body of evidence indicating that parent attachment continues to be influential in adolescence as a mechanism through which abuse exerts its impact on social and behavioral outcomes during this critical developmental period. Future research should continue to explore the differential impact of attachment to peers or close friends as a potential mediator of the impact of childhood maltreatment on a broad range of outcomes during various stages of life, particularly during adolescence and young adulthood when attachment to peer groups may take on increasing importance.

Limitations

The current study has yielded new knowledge about abuse, attachment, and adolescent outcomes, but several limitations pertain to the study. First, a limitation of the study is the relatively small sample size. It is possible that additional effects and differences between adolescents with and without a history of abuse would have been revealed in a larger sample. It is also important to note that the population from which the sample was taken may limit generalizability of results. The sample used in the present study was an urban sample consisting almost entirely of African American and Hispanic adolescents. Although the sample closely approximated the ethnic distributions on the New York City Abuse Register at the time of data collection, it is not representative of the general population. National statistics on abused children indicate that about half are non-minority (Salzinger, Rosario, Feldman, & Ng-Mak, 2007). Additionally, the adolescents in this study with and without a history of abuse may over-

represent lower and lower middle class families. This should be kept in mind when interpreting results because the relationship between abuse, attachment, and social and behavioral outcomes may be different for nonminority groups and a broader range of social classes. Because the population from which the sample used in the current study was drawn is at a somewhat elevated risk for problems, the fact that the effects of abuse revealed themselves despite the high risk status of the comparison group (without an abuse history) serves to strengthen confidence in the study's findings.

Additionally, the current study employed a cross-sectional design, limiting the ability to make causal inferences. While this current study explored parent and peer attachment as possible pathways through which pre-adolescent abuse impacts adolescent social and behavioral outcomes, results suggest that there are other pathways through which abuse exerts its influence on these outcomes. For example, individual characteristics such as genetic predispositions to psychopathology, family characteristics such as family supports systems and financial and educational resources, and community level factors including exposure to violence in the home and community and access to mental health services may account for some of the variation in adolescent outcomes. Further research is needed to learn more about what these pathways may be and explore their role in the relationship between abuse and outcomes.

Due to the cross-sectional nature of the study design, the stability of the relationship between attachment to parents in childhood, when abuse occurred, and attachment to parents in adolescence was not measured empirically. When participants were assessed in adolescence, the sequence of initial causal relationships between abuse and the mediating attachment variables was no longer observable. It is possible that social competence and behavior, which were construed as outcome variables in this study, may themselves have ongoing effects on the

children's attachment relationships to parents and peers due to transactional processes that could not be tested with the current design. Given the current study design, continuity between early patterns of attachment and attachment in adolescence was assumed based on the tenants of attachment theory. To fully examine how pre-adolescent maltreatment affects attachment relationships over time, longitudinal research examining attachment would be necessary.

Another limitation is that the study exclusively examined the effects of physical abuse (with some concurrent neglect). There is a large body of evidence indicating that other forms of abuse, such as sexual abuse and psychological abuse, also have a detrimental impact on social and behavioral functioning and may even lead to different outcomes. The fact that a large portion of the sample with a history of physical abuse in the study also experienced neglect is relevant when interpreting results. Neglect often co-occurs with other forms of abuse and was therefore not used as an exclusionary criterion during the initial recruitment process, primarily for practical reasons. With a large number of participants in the sample also experiencing neglect, some of the findings may be attributable to neglect and inadequate parenting in addition to physical abuse. For example, research conducted by Manly et al. (1994) provided evidence suggesting that the effects of co-occurring neglect are often masked when groups are defined only by the presence or absence of abuse. Their results revealed that neglect was a significant, unique contributor to children's social competence and behavioral outcomes. Further studies are needed to examine the differential impact of various types of abuse on social and behavioral outcomes and the unique role that neglect may play due its frequent co-occurrence with other forms of maltreatment.

The treatment of abuse as a dichotomous variable based on an agency-defined criterion can also be considered a limitation of the study. It is possible that treating abuse as a

dichotomous variable and associating it with continuous variables may have suppressed correlations or regression coefficients. Additionally, this approach does not allow for inferences regarding dimensions of the abuse experience such as its nature, severity, or chronicity. Although previous research with this dataset conducted by Salzinger et al. (2001) indicated that severity ratings were no better at predicting social and behavioral outcomes in the abused group than the agency-defined dichotomous criterion, the impact of severity on the effects of abuse is still important to consider. Past research conducted by other investigators provides support for an association between severity of abuse and a number of outcomes including peer relationships and social functioning (Manly et al., 1994). It is likely that drawing the abused sample from the abuse register based on agency-defined criteria led to the inclusion of relatively severe cases of abuse in the current study. Therefore, the nature of the sample may account for the fact that indexes of severity were not better indexes of severity were not better at predicting outcomes than the occurrence or non-occurrence of abuse itself.

Given the nature of the study and the timing of data collection, the analyses cannot account for the abuse experiences of participants between the time they were identified as abused in the initial phase of the study and the adolescent follow-up. It is possible that even after CPS became involved in these cases, that experiences of abuse were ongoing for certain participants and not for others. It is also important to point out that the relationship between the perpetrator of the preadolescent physical abuse and the primary parental attachment figure in adolescence was not known. While for some participants, the perpetrator of the preadolescent physical abuse may have remained the primary attachment figure in adolescence, for others adolescent attachment may have been associated with a different parental figure or caregiver. In a larger sample with more detailed data, it might be possible to examine the differential impact of these relationships.

Conclusions

The findings of the current study have addressed a gap in the literature by defining relationships between abuse, attachment relationships, and social and behavioral functioning in adolescents with a history of physical abuse. Results indicate that the detrimental effects of preadolescent abuse persist into late adolescence. The association between preadolescent abuse and increased social and behavioral difficulties in adolescence highlights the need for interventions designed to reduce aggressive behavior, to screen for and address symptoms of anxiety and depression, and to increase social competence in both children and adolescents with a history of abuse. Ideally, services designed to prevent abuse should be offered to at-risk families early in order to reduce abusive parenting practices due to evidence of the long-term effects of abuse. Interventions focused on addressing parental mental health problems may also be a way to reduce the likelihood of child abuse or maltreatment because psychologically healthy mothers, fathers, and caregivers are more likely to parent in a way that contributes to more positive social and behavioral outcomes for their children (Lowell et al., 2014).

Additionally, the results of the current study underscore the important role of parent attachment relationships in adolescence. Specifically, results showed that parent attachment mediated the relationship between pre-adolescent physical abuse (and some concurrent neglect) and adolescent social and behavioral outcomes. The mediating role of parent attachment has important implications for intervention approaches. If attachment is a path by which the experience of abuse exerts negative effects on social and behavioral functioning, it may also play an important role in improving outcomes for victims of abuse and maltreatment. In this regard, it is important to highlight that not all of the adolescents in the study with a history of abuse showed behavioral problems or deficits in social competence based on parent, teacher, or self-

reports. Despite an elevated risk for negative outcomes, research has demonstrated that some victims of childhood abuse and maltreatment show amazing resiliency associated with range of individual, contextual, and environmental factors (Haskett, Nears, Ward, & McPherson, 2006). The results of the current study suggest that parent attachment may contribute to resiliency by serving as a protective factor against poor behavioral and social outcomes for adolescents with a history of abuse. Further research is needed to understand how to facilitate adolescents' close relationships with their parents during the critical developmental period of adolescence when many young people increasingly gravitate towards peers and social networks as a source of support.

Research supports attachment-based interventions as an effective focus of treatment for families in which children have experienced abuse or maltreatment. For example, Stubenbort, Cohen and Trybalski (2010) implemented an attachment-based intervention in a therapeutic preschool setting with young maltreated children and found positive effects on personal and social development as well as adaptive behavior. Additionally, an investigation of attachment-based interventions conducted by Puckering, Rogers, Mills, Cox, and Mattsson-Graff (1994) showed improvements in the emotional and behavioral functioning for both parents and young children. Interestingly, the same effects were not found when a similar attachment-based intervention was implemented with a population of school-aged children, suggesting that early intervention efforts may be most effective (Puckering, Connolly, Werner, Toms-Whittle, Thompson, Lennox, & Minnis, 2011). It is possible that attachment-based interventions are less effective with older children because they may have lost hope in their attachment relationship being repaired. Given these findings, it is clear that more research is needed to investigate the utility and effectiveness of attachment-based interventions in adolescent and adult populations.

Although past research has not focused on attachment-based interventions with this population, attachment theory suggests that attachment relationships play an important role in psychological wellbeing and social relationships across the lifespan (Bowlby, 1988).

Overall, the results of the current study provide evidence for important relationships between the experience of preadolescent physical abuse, parent attachment in adolescence, and adolescent social and behavioral outcomes. These findings highlight the importance of prevention work, early intervention for victims of abuse, and the potential of the use of attachment-based interventions in this population. As such, the findings contribute to continued efforts to better understand the ways in which the experience of childhood abuse affects development and later outcomes.

APPENDIX A: *Means and standard deviations of study variables*

Variable	Mean	SD	n
Abuse history	.49	.50	153
Gender	.60	.49	153
Ethnicity			
Hispanic	.543	.50	153
Black	.379	.49	153
White	.065	.25	153
Asian	.013	.11	153
SES	.32	.47	153
Exp. to Comm. Viol.	11.51	6.26	153
Parent Attach.	3.60	.81	153
Peer Attach.	3.97	.64	153
Tot. Probs. (parent)	53.09	12.28	152
Ext. Probs. (parent)	53.29	12.45	152
Int. Probs. (parent)	51.91	11.13	152
Social Comp. (parent)	4.93	1.26	153
Tot. Probs. (teacher)	53.68	9.85	63
Ext. Probs. (teacher)	54.60	10.42	63
Int. Probs. (teacher)	51.81	8.84	63
Social Comp. (teacher)	4.93	1.26	153
Tot. Probs. (self)	52.15	10.63	153
Ext. Probs. (self)	53.82	11.04	153
Int. Probs. (self)	50.27	10.33	153

APPENDIX B: *Bivariate correlations of study variables*

Variables	1	2	3	4	5	6	7
1. Abuse history	-	-.003	-.044	.096	-.101	.002	.125
2. Gender	-	-	-.024	.031	.053	-.141	-.032
3. Hispanic	-	-	-	-	-	-	-.028
4. Black	-	-	-	-	-	-	.066
5. White	-	-	-	-	-	-	-.005
6. Asian	-	-	-	-	-	-	-.148
7. Exp. to Viol.	-	-	-	-	-	-	-
8. Parent Attach.	-	-	-	-	-	-	-
9. Peer Attach.	-	-	-	-	-	-	-
10. Tot. (parent)	-	-	-	-	-	-	-
11. Ext. (parent)	-	-	-	-	-	-	-
12. Int. (parent)	-	-	-	-	-	-	-
13. Soc. (parent)	-	-	-	-	-	-	-
14. Tot. (teacher)	-	-	-	-	-	-	-
15. Ext. (teacher)	-	-	-	-	-	-	-
16. Int. (teacher)	-	-	-	-	-	-	-
17. Soc. (teacher)	-	-	-	-	-	-	-
18. Tot. (self)	-	-	-	-	-	-	-
19. Ext. (self)	-	-	-	-	-	-	-
20. Int. (self)	-	-	-	-	-	-	-

(table continues)

Variables	8	9	10	11	12	13	14
1. Abuse history	-.199*	-.070	.246**	.210**	.165*	-.169*	.023
2. Gender	.152	-.258**	.055	.003	.060	-.166*	.136
3. Hispanic	-.050	-.103	.201*	.113	.276**	-.024	.019
4. Black	.076	.121	-.143	-.041	-.256**	.019	.081
5. White	-.023	-.053	-.058	-.073	-.022	-.040	-.183
6. Asian	-.054	.052	-.142	-.161*	-.072	.113	--
7. Exp. to Viol.	.216**	-.034	.189*	.151	.210**	-.071	-.042
8. Parent Attach.	-	.152	-.283**	-.246**	-.248**	.230**	-.094
9. Peer Attach.	-	-	-.282**	-.169*	-.228**	.095	-.203
10. Tot. (parent)	-	-	-	.905**	.844**	-.509**	.425**
11. Ext. (parent)	-	-	-	-	.622**	-.574**	.411**
12. Int. (parent)	-	-	-	-	-	-.274**	.200
13. Soc. (parent)	-	-	-	-	-	-	-.297*
14. Tot. (teacher)	-	-	-	-	-	-	-
15. Ext. (teacher)	-	-	-	-	-	-	-
16. Int. (teacher)	-	-	-	-	-	-	-
17. Soc. (teacher)	-	-	-	-	-	-	-
18. Tot. (self)	-	-	-	-	-	-	-
19. Ext. (self)	-	-	-	-	-	-	-
20. Int. (self)	-	-	-	-	-	-	-

(table continues)

Variables	15	16	17	18	19	20
1. Abuse history	.017	.111	-.078	.138	.120	.121
2. Gender	.088	.082	-.136	.254**	-.256**	-.252**
3. Hispanic	-.036	.235	.076	.068	.023	.100
4. Black	.132	-.095	-.118	-.085	-.062	-.099
5. White	-.176	-.261*	.050	.044	.079	-.002
6. Asian	--	--	.062	-.029	-.009	-.014
7. Exp. to Viol.	.108	-.141	-.230**	.225**	.265**	.132
8. Parent Attach.	-.080	-.181	.118	-.461**	-.381**	-.444**
9. Peer Attach.	-.121	-.267*	.102	-.253**	-.176*	-.203*
10. Tot. (parent)	.327**	.362**	-.209**	.278**	.258**	.218**
11. Ext. (parent)	.352**	.430**	-.259**	.206*	.251**	.275**
12. Int. (parent)	.128	.215	-.122	.279**	.213**	.275**
13. Soc. (parent)	-.343**	-.078	.327**	-.101	-.144	-.021
14. Tot. (teacher)	.860**	.693**	-.197	-.081	-.031	-.085
15. Ext. (teacher)	-	.430**	-.361**	-.127	-.010	-.160
16. Int. (teacher)	-	-	-.159*	-.040	-.097	-.004
17. Soc. (teacher)	-	-	-	-.275**	-.361**	-.159*
18. Tot. (self)	-	-	-	-	.846**	.868**
19. Ext. (self)	-	-	-	-	-	.559**
20. Int. (self)	-	-	-	-	-	-

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