

Summer 2011

Attachment and Anxiety in Aggressive Children and Adolescents

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ATTACHMENT AND ANXIETY IN AGGRESSIVE
CHILDREN AND ADOLESCENTS

A Dissertation

Submitted to the Graduate School of Education

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Philosophy

By

Erinn M. Obeldobel

August 2011

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Erinn M. Obeldobel

2011

DUQUESNE UNIVERSITY
SCHOOL OF EDUCATION
Department of Counseling, Psychology, and Special Education

Dissertation

Submitted in partial fulfillment of the requirements
for the degree
Doctor of Philosophy (Ph.D.)

School Psychology Doctoral Program

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May 27, 2011

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ABSTRACT

ATTACHMENT AND ANXIETY IN AGGRESSIVE CHILDREN AND ADOLESCENTS

By

Erinn M. Obeldobel

May 27, 2011

Dissertation Chair: Tammy L. Hughes, Ph.D.

There is rising concern among the general public regarding childhood aggression and its impact on society. This study sought to further the understanding of childhood aggression by examining the variables of anxiety and current attachment in an aggressive population of youth. There is a substantial body of research that relates poor attachment to aggressive-related behaviors (e.g., Allen, Hauser, Borman-Spurrell, 1996; Gacono & Meloy, 1994; Meesters & Muris, 2002; NICHD-ECCRN, 2006; Simons, Paternite, & Shore, 2001). In comparison to the research on the relationship between attachment and aggression in children and adolescents, the relationship between anxiety and aggression is more contradictory and inconsistent. High anxiety has been related to both increased aggression (e.g., Angold, Costello, & Erkanli, 1999; Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1996) and decreased aggression (e.g., Kerr, Tremblay, Pagani, & Vitaro, 1997; Sanson, Pelow, Cann, Prior, & Oberklaid, 1996) in youth.

Inadequate anxiety has also been related to increased aggression (Gacono, Meloy, & Berg, 1992; Gacono & Meloy, 1994; Shaw, Gilliom, Ingoldsby, & Nagin, 2003). In this study, it was hypothesized that subjects with normal anxiety would have more positive attachment than subjects with high anxiety or inadequate anxiety. It was also hypothesized that subjects with high anxiety group would have more positive attachment than those with inadequate anxiety. Anxiety was measured by the Youth Self Report Anxiety Problems scale and an inadequate anxiety construct devised from certain items of the Youth Self Report. Attachment was measured by the number of Rorschach Texture (T) responses given and the Rorschach Human Representational Variable (HRV) score. Significant differences were not found between the anxiety groups in terms of the attachment variables measured. A significant limitation of this study was the low number of subjects. Results are reviewed in the context of existing literature and implications for future research are discussed.

DEDICATION

This dissertation is dedicated to the three people who support have supported me the most over the years, my husband, Joe, and my parents, Bob and Donna. Without you, none of this would have been possible. It is also dedicated to three wonderful reasons that this process took me so long...my sons Alex, Corey, and Justin. You bring joy to my every day.

ACKNOWLEDGEMENTS

I would like to thank the Chair of my Committee, Tammy L. Hughes, Ph.D., as well as Committee members Jeffrey A. Miller, Ph.D., ABPP and Carol Parke, Ph.D. for all of their support and guidance, and for hanging in there with me for a really long period of time. Dr. Hughes, I thank you for a million reasons but especially for your glass always being half full, for your “of course you can do this” attitude, and for making this process bearable and at times even enjoyable. Dr. Miller, I thank you for all of your support over the years and especially for your high expectations which always pushed me to do my best. Dr. Parke, I thank you for all of your assistance with my statistics and for staying with me over many years, even through a sabbatical.

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CHAPTER I

INTRODUCTION

Aggression

Implications

There is rising concern among the general public regarding childhood aggression and its impact on society. The front page of *The USA Today* in July of 2006 contains an article about the recent rise in violent crime across the nation and its connection to an increase in juvenile crime, including armed robberies and assaults (Johnson, 2006). The impact of child and adolescent aggression extends across society on multiple levels. At the government level, the cost of youth violence in the United States exceeds \$158 billion per year (Centers for Disease Control and Prevention, 2008). To understand the impact that aggression can have on a school or community, one only has to recall the shooting spree that took place at Columbine High School in Colorado in 1999. Unfortunately, children who are aggressive are more likely to become violent adults and the difficulties associated with aggression are long lasting (Hawkins et al., 2000, Loeber, 1990; Loeber & Hay, 1996; Zoccolillo, Pickles, Quinton, & Rutter, 1992).

Although childhood aggression has a negative impact on society as a whole, being aggressive also impacts an individual's emotional, social, and cognitive functioning. Children who are aggressive tend to have highly conflictual relationships. For example, Hawkins et al., in 2000, showed that aggressive children are likely to experience poor family bonding, be separated from their parents, and are at risk of being placed outside of their homes, among other emotional and cognitive difficulties.

Because of aggression's profound impact, aggressive adolescents were chosen as

subjects for the current study. In an attempt to better understand child and adolescent aggression and its association with relationship difficulties, this study examined how attachment patterns manifest in aggressive youth. Anxiety, which is reported to have its roots in early attachment relationships (Allen, Moore, Kuperminc, & Bell, 1998; Bowlby, 1973; Meloy, 2001; Schore, 2001; Warren, Huston, Egeland, & Sroufe, 1997), was also examined in terms of its relationship with child and adolescent aggression. In addition, inhibition was added as a variable to further clarify the relationship between aggression, anxiety, and attachment.

Definition

According to Webster's Dictionary, aggression is defined as "...forceful, attacking behavior, either...self-protective or destructively hostile to others or to oneself" (Agnes & Guralnik, 2001, p. 26). The primary psychiatric diagnosis related to aggressive behaviors in adolescence is Conduct Disorder. In order to be diagnosed with Conduct Disorder, three or more criterion must be present within the following categories: aggression to people and animals, destruction of property, deceitfulness or theft, and serious violations of rules (American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders-IV-TR, 2000). In the literature, there are many different terms used to refer to aggressive behaviors including violence, delinquency, antisocial behaviors, externalizing behaviors, and conduct problems. These terms are used interchangeably and at times applied inconsistently in the literature. For the purposes of this paper, only the term aggression was used, and is defined as physical aggression toward people.

Attachment

Definitions/Theory

There is a substantial body of research highlighting the positive effects of good attachment and the negative effects of poor attachment. Attachment is a primary psychosocial factor that occurs very early in the developmental sequence, beginning even within the first few hours of life (Bowlby, 1969; 1973; Brazelton, 1992; Klaus & Kennell, 1982; Schore, 2001). Attachment results from the dependence of infants on their caregivers, most often mothers, to meet their biological and emotional needs. That is, close proximity to caregivers decreases the threat of danger for infants. Predictability is a key factor in the development of secure attachment (Bowlby 1969; 1973; Schore; 2001). When caregivers are able to consistently anticipate and meet the needs of the child, secure attachment is the result. Securely attached children are more likely to have the confidence to utilize their caregivers as a secure base from which to explore their world. The positive outcomes of secure attachment include a positive self-image, as well as a positive outlook on relationships with others and the world in general (Ainsworth, 1989; Bowlby 1969; 1973; Collins, 1996; Simons, Paternite, & Shore, 2001; Sroufe, 1979; Sroufe, 2005).

When caregivers are unavailable or not able to consistently meet the needs of the child, insecure attachment is often the result (Bowlby, 1969; 1973). These caregivers cannot or do not appropriately comfort the anxious or scared child. In turn, children show decreased coping skills and increased behaviors related to fear, anger, and anxiety. Children who are insecurely attached tend to either avoid relationships altogether or are highly anxious and overly dependent upon their caregivers (Ainsworth, Blehar, Waters,

and Wall, 1978). Experiencing insecure attachment in childhood has lasting effects; how adults view themselves and approach their world relates back to the availability and responsiveness of their original and primary attachment figures (Bowlby 1969; 1973; Schore, 2001).

Ainsworth et al. (1978) were the first to develop descriptions of the types of attachment infants show. The three attachment classifications are secure, insecure-resistant/anxious, and insecure-avoidant. When children are secure, they show signs of distress when their caretakers leave them, but then welcome interaction upon their return. They display confidence to explore their environment and seek out their attachment figure when distressed. The primary characteristic of the anxious/resistant category is ambivalence. Infants appear to be angry with their attachment figure for leaving but at the same time elicit interaction from them. They are distressed by separations, but are difficult to comfort during reunions with their caregivers. Infants who fall into the avoidant category do not appear to be distressed by separations and avoid or ignore their caretakers upon reunions. They do not seek out their caretakers for comfort.

Main and Solomon (1986) developed a fourth category of attachment, insecure-disorganized/disoriented, for infants whose behaviors do not fit into Ainsworth et al.'s (1978) initial three categories. Infants whose behaviors fall into this category do not exhibit a coherent attachment strategy, but rather engage in a combination of resistant/ambivalent behaviors and avoidant behaviors (Abrams, Rifkin, & Hesse, 2006; Main & Solomon, 1986). Their behaviors are marked by apprehension, helplessness, and conflict (Lyons-Ruth, 1996). Researchers have adapted these categories for describing children (e.g., Main & Cassidy, 1988), adolescents, and adults (e.g., George, Kaplan, &

Main, 1985) with some modification in terms. The attachment categories typically used for adolescents and adults are secure, insecure-dismissive (parallels insecure-avoidant in children), insecure-preoccupied (parallels insecure-resistant/ambivalent), and insecure-unresolved (parallels insecure-disorganized/disoriented).

Working Models of Attachment

Attachment experiences and relationships result in patterns of behavioral expectations called “working models” (Bowlby 1969; 1973). That is, how responsive and accessible caregivers are during childhood builds a foundation for how children understand themselves, others, and the world around them (Ainsworth, 1989; Bowlby, 1969; 1973; Bretherton & Munholland, 1999; Kennedy & Kennedy, 2007; Sroufe, 1979). For example, if children experienced secure attachment, they are more likely to approach the world with confidence and build positive relationships with others (Bowlby 1969; 1973). These positive relationships are associated with how well the environment, such as parenting, has met biological and emotional needs and provided support when needed (van IJzendoorn, Goldberg, Kroonenberg, & Frenkel, 1992). Insecure attachment, on the other hand, often develops a working model that is based upon inconsistent responses in the environment. Children develop expectations based on inconsistent patterns which show that adults cannot be relied upon, relationships are difficult and unstable, and relationships are not a source of support for coping with life’s challenges. Insecure attachment and negative working models can lead to negative outcomes across psychosocial development (Bowlby, 1969, 1973; Brazelton & Greenspan, 2000; Leslie, 2004).

A newly developing area of the attachment field has begun to examine working

models and the effects of attachment patterns during school age years. As adolescents develop cognitive abilities, they are better able to verbalize their needs and behavioral proximity becomes less important in expressions of attachment (Cyr & van IJzendoorn, 2007; Kehle, Bray, & Grigerick, 2007; Kerns & Richardson, 2005; Marvin & Britner, 1999). In addition, it is during the period of adolescence that people typically begin to use people other than their original caregivers to get their attachment needs met (Cyr & van IJzendoorn, 2007; Kehle et al., 2007; Kerns & Richardson, 2005; Marvin & Britner, 1999).

When measuring attachment across the developmental period, it has been argued that the insecure/secure dichotomy should be collapsed into a single construct as opposed to separating the insecure into separate categories (Bosquet & Egeland, 2006; Fagot & Kavanagh, 1990; van IJzendoorn et al., 1992). In addition, there is not a consensus in the attachment field regarding which attachment categories should be used in research and which categories are associated with the most risk (Moss et al., 2006). As children develop, their behaviors and emotions expand and their social interactions become more complex (Brazelton, 1992). These factors could make fitting child and adolescent behaviors into a discrete attachment category much more difficult. Also, when examining typical populations, only a small percentage falls into the ambivalent and avoidant categories (Fagot & Kavanagh, 1990; Roelofs, Meesters, ter Huurne, Bamelis, & Muris, 2006; van IJzendoorn et al., 1992). Therefore, more variance is explained in statistical analysis by use of the whole construct of insecure attachment. For these reasons, many researchers reject the need to use the categories used to describe infants and instead use the general concept of insecure or poor attachment (e.g., Dailaire & Weinraub, 2007;

Gacono, Meloy, & Berg, 1992; Roelofs et al., 2006; Smith, Gacono, & Kaufman, 1997; Weber, Meloy, & Gacono, 1992). The current study uses the term poor attachment to describe all individuals who evidence attachment difficulties and attachment failure.

Attachment in the Current Study

When separating adolescents into attachment categories, many researchers use self-report rather than coding interactions which is often conducted when categorizing children (e.g., Allen et al., 1998; Muris, Meesters, Van Melick, & Zwambag, 2001; Simons et al., 2001). There have been several researchers who question the validity of this type of attachment assessment (e.g., Kelly, 1997; Roelofs et al., 2006; Smallbone & Dadds, 2001); they argue that self report assumes insight about feelings as well as adequate memories around childhood events. In addition, attachment and working models of attachment are dynamic and can change as people develop (Bowlby, 1969; 1973; NICHD-ECCRN, 2006; Waters, Hamilton, & Weinfield, 2000; Waters, Merrick, Treboux, Crowell & Albersheim, 2000). Thus, when working with older children it is recommended that current attachment modes are coded (Lewis, Feiring, & Rosenthal, 2000). In this study, current indications of attachment were utilized.

Relationship Between Aggression and Attachment

There is a substantial body of research that relates current indications of poor attachment to aggressive-related behaviors in children (Greenberg, DeKlyen, Speltz, & Endriga, 1997; NICHD-ECCRN, 2006; Simons et al., 2001), adolescents (Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992), and adults (Allen, Hauser, Borman-Spurrell, 1996; Bookwala & Zdaniuk, 1998; Meesters & Muris, 2002). There is also evidence that early indications of poor attachment are linked to aggression later in life.

For example, longitudinal studies have found that poor attachment in infancy and toddler years has been related to aggressive behaviors later in childhood (Goldberg, 1997; Lyons-Ruth, Alpern, & Repacholi, 1993; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989; Schmidt, Demulder, & Denham, 2002; Sroufe, 2005). As Moss et al. (2006) point out, few studies have examined how early attachment status affects behaviors in middle childhood. With a nonclinic subject group, these researchers found that attachment insecurity at age six was predictive of aggression at age eight.

Many studies examining attachment and aggression utilize behavior checklists such as the Child Behavior Checklist (Achenbach & Rescorla, 2001) or Youth Self Report (Achenbach & Rescorla, 2001) to assess externalizing behaviors, including aggression (e.g., Lyons-Ruth et al, 1993; Goldberg, 1997; Moss et al., 2006; Renken et al., 1989). These checklists ask questions regarding whether the youth has demonstrated behaviors such as being cruel to animals, fighting, hitting, destroying property, and hurting others. Other studies examine children and adolescents who have been diagnosed with DSM disorders that also include aggression (e.g., Gacono & Meloy, 1994; Greenberg et al., 1997; Rosenstein & Horowitz, 1996; Smith et al., 1997; Weber et al., 1992) such as Oppositional Defiant Disorder and Conduct Disorder. There is a consistent finding that children and adolescents with diagnoses related to aggression are more likely to have indicators of poor attachment than those diagnosed with disorders not related to aggression (Gacono et al., 1992; Gacono & Meloy, 1994; Weber et al., 1992) and nonpatients (Gacono et al., 1992; Greenberg et al., 1997; Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992).

In summary, the research described above shows how closely poor attachment

and aggression are intertwined. Poor attachment patterns in the past (e.g., Goldberg, 1997; Lyons-Ruth et al., 1993; Sroufe, 2005), as well as current indications of poor attachment (e.g., Gacono & Meloy, 1994; Greenberg et al., 1997; NICHD-ECCRN, 2006; Rosenstein & Horowitz, 1996) are linked to aggressive behaviors. In addition, some studies examining the relationship between aggression and attachment use attachment as the independent variable (e.g., Lyons-Ruth et al., 1993; Renken et al., 1989) while others studies use aggression-related constructs as the independent variable (e.g., Rosenstein & Horowitz, 1996; Smith et al., 1997; Weber et al., 1992). Regardless, a connection is found between these two constructs. While much is known about young children in terms of aggression and attachment, it is important to continue clarifying the role that attachment plays in adolescent aggression. This study therefore not only examined attachment in aggressive adolescents, it also examined how anxiety and attachment are related in an aggressive population.

Anxiety

Definitions/Theory

Anxiety is defined as “an unpleasant emotional state consisting of psychobiological responses to anticipation of real or imagined danger” (Dorland’s Illustrated Medical Dictionary, 1988, p. 108). Symptoms of high anxiety include nervousness, apprehension, avoidance of certain stimuli, decreased ability to concentrate, heart palpitations, abdominal distress, and perspiration (*DSM-IV-TR*, 2000).

Anxiety is the most commonly diagnosed mental health disorder in the United States (Zajecka, 1997). It is also among the most common disorders in adolescents (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Ford, Goodman, & Meltzer, 2003;

Morris & March, 2004). The experience of anxiety has lasting effects; anxiety in childhood and adolescence is related to increased anxiety problems in adulthood (Kendall & Ollendick, 2004; Saavedra & Silverman, 2002).

Individuals have general patterns in how they respond to anxiety provoking situations; some appear to be relaxed and calm while others react with a great deal of worry. An individual's ongoing level of anxiety is referred to as "trait anxiety" (Lin, Endler, and Kocovski, 2001; Shedletsky & Endler, 1974). Individuals also differ in terms of what they perceive to be threatening, which are considered to be differences in "state anxiety" or situational anxiety (Lin et al., 2001; Shedletsky & Endler, 1974). Appropriate levels of anxiety typically result in the development of a sense of right and wrong and a desire to avoid being punished by society (Brazelton & Greenspan, 2000; Meloy, 2001). Behavioral inhibition occurs when people are fearful of novel situations and engage in withdrawal or avoidance of those anxiety provoking situations (Gray, 1987; Kagan, Reznick, & Gibbons, 1989). This includes anxiety and fear related to the possibility of being punished for behaviors.

Inadequate anxiety occurs when there is little regard for the feelings of others and a lack of concern about negative consequences or punishment for behavior (Meloy, 2001). This group has impairments in the development of the conscience and has not internalized the moral values of society (Frick and Morris, 2004; Meloy, 2001). They therefore lack the internal monitoring system necessary for controlling behavior. According to the *DSM-IV-TR* (2000), the primary feature of Conduct Disorder is a pattern of violating the rights of others and the rules of society. Psychopathy is a personality pattern that is diagnosed in adults but its hallmark symptoms are reported to be

experienced in adolescents (Frick, O'Brien, Wootton, & McBurnett, 1994; Loeber, 1982). Psychopathic individuals demonstrate antisocial behaviors related to Conduct Disorder, in addition to personality traits including inadequate anxiety, egocentricity, and a lack of guilt (Hare, 1993). Frick et al. (1994) identified how the hallmark symptoms of psychopathy (i.e., lack of anxiety, remorse, guilt and empathy for others, and superficial charm) are evident in youth. They termed this group of symptoms "callous/unemotional" traits.

Relationship Between Aggression and Anxiety

The research on the relationship between anxiety and aggression is contradictory and inconsistent with children and adolescents. High anxiety has been related to both increased aggression (e.g., Angold, Costello, & Erkanli, 1999; Jalongo, Edelson, Werthamer-Larsson, Crockett, & Kellam, 1996; Serbin, Moskowitz, Schwartzman, & Ledingham, 1991) and decreased aggression (e.g., Kerr, Tremblay, Pagani, & Vitaro, 1997; Sanson, Pelow, Cann, Prior, & Oberklaid, 1996; Walker et al., 1991) in youth. Inadequate anxiety has also been related to increased aggression (Gacono et al., 1992; Gacono & Meloy, 1994; Shaw, Gilliom, Ingoldsby, & Nagin, 2003; Weber et al, 1992). Thus, understanding the role of anxiety needs to be a priority in the research. To date there are no studies that examine both high and inadequate anxiety as it relates to aggression. Each pairing reported in the literature is examined below.

Empirical evidence: High anxiety and increased aggression. As stated, high anxiety has been related to both increased and decreased aggression. Researchers have found that when children anticipate the negative intent of others, they are more likely to engage in aggressive behaviors (Simons, 2001). Kashani et al. (1991) makes the

connection between the perception of negative intent, fear, and aggression; perception of threat leads to increased anxiety which leads to an aggressive response to deal with the anxiety and protect oneself. In this model, anxiety precedes aggression.

Many researchers have focused on understanding the nature of comorbid high anxiety and aggression. In fact, high rates of comorbidity are found between anxiety disorders and the diagnosis of Conduct Disorder in children and adolescents (Angold et al., 1999; Russo & Beidel, 1993; Zoccolillo, 1992). Other researchers have found that the personality traits of being anxious and withdrawn are related to increased conduct behaviors, including aggression (Fergusson & Horwood, 1993; Krueger et al., 1994). The reverse has also been found: highly aggressive children have been found to experience the most anxiety (Kashani, Deuser, & Reid, 1991). Longitudinal studies have also been utilized to demonstrate the link between anxiety and aggression. For example, it has been found that aggressive children with anxious symptoms were more likely to continue engaging in aggressive behaviors than those without anxious symptoms (Ialongo et al., 1996; Serbin et al., 1991). It has also been found that children who are aggressive and/or diagnosed with Conduct Disorder and have high anxiety are the most impaired (Ialongo et al., 1996; Kashani et al., 1991; Serbin et al., 1991). For example, it has been found that aggressive children with anxious symptoms were more likely to continue being aggressive (Ialongo et al., 1996; Serbin et al., 1991).

Empirical evidence: High anxiety and decreased aggression. The above research highlights the relationship between high anxiety and increased aggression. Other researchers have found that high anxiety can also act as a protective factor to decrease aggression. Walker et al., (1991) found children with conduct problems and anxious

symptoms engage in less serious conduct behaviors than children with conduct problems alone. Similarly, Kerr and colleagues (1997) studied a group of disruptive boys and found that those that were inhibited were less likely to become delinquent than those that were uninhibited.

Most studies examining behavioral inhibition in clinical samples are cross sectional (e.g., at a single time point), however longitudinal studies have also been utilized to examine the long-term effects of anxiety on high risk children. For example, researchers examining anxiety in infancy reported a decrease in the likelihood of engagement in aggressive behaviors at six years of age (Sanson et al., 1996). Similar results were found in longitudinal studies following antisocial adolescents into adulthood (Mitchell & Rosa, 1981; Raine, Venables, & Williams; 1995). For example, Raine et al. (1995) found that indications of anxiety in antisocial adolescents were a protective factor against criminal behavior, including aggression, in early adulthood. In addition, children with conduct issues who also reported high levels of anxiety showed a lower rate of recidivism (Quay & Love, 1977). Longitudinal studies show compelling evidence that childhood anxiety can act as a protective factor against aggression later in life.

Lahey and colleagues (2003) attempt to explain the complicated relationship between high anxiety and aggression with the following theory. When anxiety is related to shyness and behavioral inhibition, the anxiety acts as a protective factor against conduct behaviors. When anxiety is related to negative emotions, it increases the likelihood of conduct behaviors including aggression.

Empirical evidence: Inadequate anxiety and increased aggression. While high anxiety has been related to both increased and decreased aggression, inadequate

anxiety tends to be related only to an increase in aggression. For instance, Shaw et al. (2003) found that toddler fearlessness was associated with a higher rate of aggression and opposition later in childhood. Gacono and colleagues found that children diagnosed with Conduct Disorder had less indications of adequate anxiety than adolescents diagnosed with dysthymia (Gacono & Meloy, 1994; Weber et al., 1992), and control samples (Smith et al., 1997). Gacono et al. (1992) examined adults diagnosed with Antisocial Personality Disorder and found that they also had less indications of adequate anxiety than adults diagnosed with disorders not specifically related to aggression.

Having psychopathic traits, such as a lack of anxiety and guilt, has also been reported as a strong predictor of violent behavior in adolescents (Porter, Birt, & Boer, 2001; Salekin, Neumann, Leistico, DiCicco, & Duros, 2004). Pardini, Lochman, and Frick (2003) studied children with callous/unemotional traits and found that they had difficulty altering their social cognitions and considering negative outcomes for their antisocial behavior. As described by the results, it is likely that this group lacked the internal anxiety that results in concern and forethought regarding how particular actions will affect others, in addition to possible negative outcomes for self.

Conclusions: Aggression and anxiety. In an effort to explain the confounding relationship of anxiety and aggressive behaviors, researchers such as Frick, Lilienfeld, Ellis, Loney, & Silverthorn (1999), Gray (1987), and Ialongo et al., (1996) have sorted the empirical data and now theorize that there are two different types of aggressive offenders. One group engages in proactive aggression. This group typically plans aggressive acts and shows little guilt or empathy. They experience less anxiety and are not concerned about the effects of their aggression. This group is typically described in

the literature on psychopathy and callous/unemotional traits. The second group engages in reactive or defensive aggression. Aggressive acts are not planned and may be due to a real or perceived threat. Behaviorally, this group is impulsive and engages in aggressive behavior in response to a situation and/or emotions that they are unable to control. When children engage in reactive aggression, anxiety increases negative emotions and can lead to an increase in aggressive behaviors (Ialongo et al., 1996; Lahey et al., 2003). To further illustrate:

Proactive aggression:

decreased anxiety → little concern regarding consequences for behavior → increased aggression

Reactive aggression:

increased anxiety → increased negative emotions → increased aggression

Relationship Between Attachment and Anxiety

While the above research focuses on how anxiety and attachment individually relate to aggressive behaviors, there has been some, albeit limited, studies examining the relationship between anxiety and attachment. Similar to the relationship between anxiety and aggression, the relationship between anxiety and attachment is contradictory; poor attachment has been related to both high anxiety (Allen et al., 1998; Bosquet & Egeland, 2006; Dallaire & Weinraub, 2007; Kemp & Neimeyer, 1999; Muris et al., 2001; Roelofs et al., 2006; Sroufe, 2005) and inadequate anxiety (Meloy, 2001; Warren et al., 1997).

When describing the relationship between attachment and anxiety, Appleton (2008) states “Both aspects of attachment theory, i.e. the child’s access to emergency protection (under conditions of fear and anxiety), and the child’s confidence in exploration and play (via

secure relationships with parents or parent figures), provide rich insights into the experience of children showing problematic anxiety, or anxiety disorders” (p. 14).

Empirical evidence: Poor attachment and high anxiety. As stated, when caregivers are able to adequately meet the needs of their children, this ultimately leads to children having a greater sense of control (Craske, 2003) and the ability to regulate their emotions (Ruff & Rothbart, 1996; Schore, 2001). When children have the perception that their attachment needs will not be met, this can lead to feelings of insecurity and subsequent increased anxiety (Allen et al., 1998; Chorpita & Barlow, 1998; Schore, 2001). The relationship between anxiety and attachment has been examined in at-risk children (Shamir-Essakow, 2005), non-clinical children (Roelofs et al., 2006), at-risk adolescents (Allen et al., 1998), non-clinical adolescents (Muris et al., 2001), and college students (e.g., Kemp and Neimeyer, 1999; Kobak and Sceery, 1988). Each of these studies found that those with secure attachment were less likely to experience symptoms of excessive or pathological anxiety.

Longitudinal studies have also found a connection between insecure attachment early in life and anxiety later in life (Bohlin, Hagekull, & Rydell, 2000; Bosquet & Egeland, 2006; Dallaire & Weinraub, 2007; Kochanska, 2001; Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997). These studies emphasize the developmental nature of anxiety and how many factors, including insecure attachment, can initiate a developmental pathway that will eventually contribute to the development of high anxiety.

Empirical evidence: Poor attachment and inadequate anxiety. It is theorized that when caregivers are unable to meet the needs of their children and poor attachment

occurs, children are less able to internalize the values of society (Meloy, 2001). When an avoidant attachment style is developed, people protect themselves by avoiding anxious feelings, as well as attachment feelings (Warren et al., 1997), leading to impaired interpersonal relationships and attachment patterns. When examining attachment and anxiety in adolescents diagnosed with Conduct Disorder (Gacono & Meloy, 1994; Weber et al., 1992) and adults diagnosed with Antisocial Personality Disorder (Gacono, 1990; Gacono & Meloy, 1991, Gacono et al., 1992), researchers found that both adolescents and adults diagnosed with disorders related to aggression had increased likelihood of inadequate anxiety, as well as poor attachment. Thus, there is support for understanding the importance of inadequate anxiety and its relationship to attachment and aggression.

Relationship Between Aggression, Attachment, and Anxiety

Kehle et al. (2007) use MacDonald and Leary's (2005) social pain theory to explain the connection between attachment, anxiety, and aggression. They purport that anxiety in response to the anticipation of social pain can lead to involuntary and defensive acts of aggression. Insecurely attached children are highly sensitive to the pain of rejection and are more likely to experience the anxiety that leads to this type of aggression.

There are few studies that examine how aggression, attachment, and anxiety interrelate with one another. There are some findings in the adult literature that may inform how to conceptualize issues with adolescents. For example, Lyn and Burton (2005) found that sexual offenders were more likely to have indications of insecure attachment and generalized anxiety. Dutton, Saunders, Starzomski, and Bartholomew (1994) found that men who were anxiously attached were more likely to experience a

high amount of chronic anxiety, as well as more likely to emotionally and physically abuse their partners. These researchers also theorize that early attachment problems lead to anger and anxiety regarding relationships and an increased likelihood of aggression toward partners later in life.

While some studies have investigated attachment and anxiety in aggressive children as separate variables (e.g., Gacono & Meloy, 1994; NICHD-ECCRN, 2006; Weber et al., 1992), Allen et al. (1998) and Dallaire and Weinraub (2007) examined all three variables together. Allen et al. (1998) investigated how anxiety and attachment interrelate in a group of children at risk for aggression. Researchers found that insecure-preoccupied attachment was a significant predictor of higher levels of internalizing behaviors, including anxiety. Secure attachment predicted less internalizing behaviors but this relationship was no longer statistically significant when demographic variables were taken into account.

Dallaire and Weinraub (2007) studied the relationship of these three variables in a longitudinal study that followed children from toddlerhood to first grade. They found that children who experienced many stressful life events and were classified as insecurely attached at 15 months exhibited more anxiety symptoms in first grade than children who experienced similar stressful life events but were securely attached at 15 months. Although the relationship was not as strong, this study also found that attachment insecurity was associated with an increase in aggressive behaviors in childhood.

Although these studies provide some initial results, they did not discuss the relationship between anxiety and attachment styles that have been related to inadequate

anxiety (e.g., insecure-dismissive). Also, the categories in the Allen et al. (1998) were quite broad where internalizing behaviors included anxiety and depression and externalizing behaviors included aggressive behaviors and other delinquent behaviors. Further refinement is warranted.

Inhibition

As discussed, the relationship between anxiety, attachment, and aggression is not clearly understood. A relatively new set of literature includes behavioral inhibition as a variable in the study of the relationship between anxiety and attachment. As discussed previously, behavioral inhibition occurs when people are fearful of novel situations and engage in withdrawal or avoidance of those anxiety provoking situations (Gray, 1987; Kagan et al., 1989). People who are uninhibited, on the other hand, have a decreased ability to control impulses. Inadequate anxiety has been related to a lack of behavioral inhibition (Kerr et al., 1997; Meloy, 1991) while increased anxiety is related to increased behavioral inhibition (Gray, 1987; Kagan et al., 1989).

Manassis and Bradley (1994) argue that attachment and inhibition must be examined together in order to understand the development of anxiety. They propose an integrated model which theorizes that insecure attachment results in a decreased likelihood of functional affect regulation. In turn, behavioral inhibition and anxious symptoms are more likely to occur. In their model, insecure attachment and inhibition contribute individually to the development of anxiety, but it is their interaction that carries the most variance and plays a critical role in explaining behavior. Insecure attachment and behavioral inhibition together are more likely to result in the development of anxiety.

Empirical Evidence: Attachment, Anxiety, and Inhibition

Studies that examine the relationship between attachment, anxiety, and inhibition are limited. Calkins and Fox (1992) was one of the few studies that focus specifically on the relationship between attachment and inhibition. They found that infants classified as ambivalently attached at 14 months were more behaviorally inhibited at 2 years than both securely attached infants and avoidantly attached infants. Those who demonstrated avoidant attachment had the least amount of behavioral inhibition. In their longitudinal study, Warren et al. (1997) found that anxious/resistant attachment was significantly correlated with infant behavioral inhibition in infancy, as well as adolescent anxiety disorders. In addition behavioral inhibition in infancy predicted adolescent anxiety disorders.

A few cross-sectional studies have also examined the relationship between attachment, anxiety, and inhibition. Mannassis, Bradley, Goldberg, Hood, and Swinson (1995) and Shamir-Essakow, Ungerer, & Rapee (2005) studied samples of pre-school children. Muris and Meesters (2002) utilized samples of non-clinical adolescents. These studies found that behavioral inhibition and insecure attachment were independently associated with increased anxiety. They did not, however, find a significant interaction between the two.

In their study examining the relationship between attachment, anxiety, and inhibition, van Brakel, Muris, Bogels, and Thomassen (2006) also utilized samples of non-clinical adolescents. They found a significant interaction between behavioral inhibition and attachment with anxiety disorder symptoms as the dependent variable. Those with both behavioral inhibition and insecure attachment indicated the most anxious

symptoms while low behavioral inhibition and secure attachment indicated the least amount of anxious symptoms. In combination, the above results indicate that there is a relationship between the attachment, anxiety, and inhibition and point to the need for further research to gain a better understanding of this relationship.

Significance of the Problem

The above results not only indicate a relationship between aggression, attachment, and anxiety, but also demonstrate the need for further research to understand how these three factors relate with one another. Although some research has enjoyed empirical and theoretical support (e.g., poor attachment and aggression), more recently Craske and Waters (2005) and Appleton (2008) highlight the need for studies to continue to clarify the relationship between attachment and anxiety. Specifically, the relationships between anxiety and aggression, as well as anxiety and attachment in aggressive children, have theoretical support and initial empirical findings but are in need of development. As reported there are several studies that have examined inadequate anxiety (e.g., Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992) and there have been many studies that have examined high anxiety (e.g., Angold et al., 1999; Russo & Beidel, 1993; Zoccolillo, 1992) in attempts to understand aggressive children and adolescents. However, no published study has considered both inadequate anxiety and high anxiety when studying attachment in a group of aggressive children. In addition, the relationship between attachment, anxiety, and inhibition has only just begun to be examined. The treatment for an aggressive child who has poor attachment, inadequate anxiety, and a lack of behavioral inhibition is much different than for the aggressive child with quality attachment, adequate or high anxiety, and inhibition. Therefore, it is important to

understand the role that these variables play in aggressive children in order to appropriately select and implement treatment interventions. It is hoped that by understanding these symptoms and implementing appropriate interventions, it is less likely that these children and adolescents will evolve into violent adults.

Problem Statement

The primary purpose of this study is to investigate the relationship between anxiety and attachment in aggressive children.

Research Question and Hypotheses

The research question and hypotheses for the current study were as follows:

Research Question

Do aggressive children with high anxiety, inadequate anxiety, and normal anxiety differ in terms of their attachment?

Hypotheses

Subjects with normal anxiety will have more positive attachment than subjects with high anxiety or inadequate anxiety. Subjects with high anxiety group will have more positive attachment than those with inadequate anxiety.

Exploratory Analysis

In addition, inhibition was added as an independent variable in an exploratory analysis to determine the interaction and effects of inhibition and anxiety on attachment.

CHAPTER II

LITERATURE REVIEW

Aggression

Implications

The implications of child and adolescent aggression have major effects on our personal lives, as well as on our communities in general. Homicide is the second leading cause of death for children and young people between the ages of 10 and 24 (Centers for Disease Control and Prevention, 2008). The US Department of Justice (2008) found that approximately 13 percent of all violent crime in the United States was committed by children under the age of 18. As an indication of the rising concern among the general public regarding childhood aggression, the front page of *The USA Today* in July of 2006 contains an article about the recent rise in violent crime across the nation and its connection to an increase in juvenile crime, including armed robberies and assaults (Johnson, 2006).

The impact of child and adolescent aggression extends across society on multiple levels. Youth violence costs the United States more than \$158 billion in overall costs every year, an astounding amount of financial resources (Centers for Disease Control and Prevention, 2008). The shooting spree that took place at Columbine High School in Colorado in 1999 is an indication of the impact aggression can have on a school or community. In addition, externalizing behaviors, such as aggression, are the leading concern of children referred to mental health clinics (Offord, Boyle, & Racine, 1991). Unfortunately, children who are aggressive are more likely to become violent adults and the difficulties associated with aggression are long lasting (Hawkins et al., 2000, Loeber,

1990; Loeber & Hay, 1996; Zoccolillo et al., 1992).

Not only does childhood aggression negatively impact society as a whole, being aggressive also impacts an individual's emotional, social, and cognitive functioning. Children who are aggressive tend to have highly conflictual relationships; they are likely to experience poor family bonding and separation from their parents, and are at risk of being placed outside of their homes, among other emotional and cognitive difficulties (Hawkins et al., 2000). These difficulties include attributing negative intent to others (Dodge, Price, Bachorowski, & Newman, 1990; Samenow, 2001; Simons et al., 2001), having a difficult temperament (Dishion, French, & Patterson, 1995), being less agreeable and conscientious (John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994), and demonstrating low school achievement (Loeber et al., 2001). In an attempt to better understand child and adolescent aggression and its association with relationship difficulties, this study examined how attachment and early relationship experiences manifest in aggressive youth. Anxiety, which is reported to have its roots in early attachment relationships (Allen et al., 1998; Bowlby, 1973; Meloy, 2001; Schore, 2001; Warren et al., 1997), was also examined in terms of its relationship with child and adolescent aggression. In addition, inhibition was added as a variable to further clarify the relationship between anxiety and attachment.

Definitions/Related Diagnoses

According to Webster's Dictionary, aggression is defined as "...forceful, attacking behavior, either...self-protective or destructively hostile to others or to oneself" (Agnes & Guralnik, 2001, p. 26). One childhood psychiatric disorder, Conduct Disorder, and one adult psychiatric disorder, Antisocial Personality Disorder, are strongly

associated with aggression and other violent behaviors. To be diagnosed with Conduct Disorder, there must be “A repetitive and persistent pattern of behaviors in which the basic rights of others or major age-appropriate societal norms or rules are violated...” (*DSM-IV-TR*, 2000, p. 90). Three or more criteria must be present under the following headings: aggression to people and animals, destruction of property, deceitfulness or theft, and serious violations of rules. The prevalence of children diagnosed with Conduct Disorder has continued to rise over the past couple of decades (*DSM-IV-TR*, 2000) with studies reporting prevalence rates between 1% (Compton, Conway, Stinson, Colliver, & Grant, 2005) and 10% (Nock, Kazdin, Hiripi, & Kessler, 2006). It is one of the most common childhood disorders diagnosed in inpatient and outpatient mental health centers. Oppositional Defiant Disorder, another childhood disorder, is distinguished from Conduct Disorder in that the behaviors are less severe and focus more on general disobedience and opposition as opposed to outward aggression.

A diagnosis of Conduct Disorder in childhood can lead to a diagnosis of Antisocial Personality Disorder in adulthood (*DSM-IV-TR*, 2000). “The essential feature of Antisocial Personality Disorder is a pervasive pattern of, disregard for, and violation of, the rights of others that begins in childhood or early adolescence and continues into adulthood” (*DSM-IV-TR*, 2000, p. 645). At least three or more criterion must be met in order to be diagnosed with Antisocial Personality Disorder including breaking the law, deceitfulness, impulsivity, aggression, disregard for safety, consistent irresponsibility, and lack of remorse.

There is substantial research on how children develop aggressive behaviors. Because the problem is so pervasive and complicated it has been studied from many

disciplines, theories, and perspectives. Each of these will be briefly reviewed below.

Theories of Aggression

Cognitive theory. In an attempt to gain an understanding of the development of childhood disorders involving aggression, cognitive theorists focus on cognitive deficits such as difficulty with encoding new experiences and working memory, poor problem-solving skills that emphasize the negative, and biased attributions. Aggressive children often misread social cues by attributing negativity to the actions of others and then react with hypervigilance and hostility (Dodge, Price, Bachorowski, & Newman, 1990; Samenow, 2001; Simons et al., 2001). For example, Simons et al. (2001) found that social cognition of hostile intent increased the likelihood of aggressive behaviors in young adolescents. In a related study, Salzer Burks, Laird, Dodge, Pettit, and Bates (1999) found that children whose memories or “knowledge structures” focused on hostility were more likely to attribute negativity when processing and problem-solving. In turn, these children’s behaviors were more stably aggressive. Another study (Vitaro, Pelletier, & Coutu, 1989) found that aggressive children were less likely to identify positive intentions of people when given a scenario and asked to problem-solve.

Psychodynamic theory. Psychodynamic theorists such as Anna Freud (1968; 1971) and Kate Friedlander (2001) emphasize the belief that a person’s thoughts, behaviors, and feelings are determined by the interactions of three psychological forces: the id, the ego, and the superego. Urges, instinctual needs, and unconscious drives make up the id and aggressive impulses originate from the id. The ego represents rational thought and attempts to regulate the id. Morality is at the crux of the superego and includes internalizing the values of society as a whole. Deviant behaviors, including

aggression, occur when there is a conflict between the id, the ego, and the superego (Freud, 1968; 1971). The ego is unable to regulate the impulses of the id and positive values are not internalized through the superego.

Anna Freud (1971) and John Bowlby (2001) theorize about these types of conflicts and conclude that child psychopathology and aggression result from a weakened ego state. The ego is unable to regulate the id and the result is children acting directly on their aggressive impulses. When parents are unable to meet the developmental needs of their children, this compounds and contributes to this weakened ego state and the resulting aggressive behaviors (Brazelton & Greenspan, 2000; Freud, 1968).

Biological theory. Biological theorists assert that disorders including aggression are associated with problems in either biochemical or anatomical brain cell function, both of which can occur through either genetics or physical injury. Twin studies, such as those utilizing the Young Netherlands Twin Register, have examined the role that genetics and other risk factors play in the development of emotional and behavioral problems (e.g., Bartels et al., 2006). Bartels et al. (2006) concluded from their results that genetic factors play the most important role in individual differences in emotional and behavioral problems, including aggression, in children.

Biochemical problems occur when brain chemicals such as neurotransmitters and hormones do not enable the brain cells to function properly. For example, both high levels of monoamine neurotransmitters (Berman & Coccaro, 1998) and low levels of the neurotransmitter serotonin (Brown, 1990) have been associated with aggression. In addition, aggressive behavior has been associated with malfunctions in the brain areas that regulate emotions, specifically the amygdala and prefrontal areas (Blair, 2001;

Sterzer, Stadler, Krebs, Kleinschmidt, & Poustka, 2005). The frontal lobe controls executive functioning or planning, sequencing, and the expression of behavior (Lezak, 1995). Impulsive, emotional acts of aggression are more likely to occur when there is a malfunction of the frontal lobe and subsequently in executive functioning. In addition, people with these malfunctions tend to be less concerned with how their behaviors will impact others or society.

Another biological issue related to aggression is physiological arousal. Properly functioning physiological arousal signals people to respond to aversive consequences and punishment (Meloy, 2001). The specific symptoms of low physiological arousal that have been connected to criminal behavior are poor skin conductance, slow EEG, and low resting heart rate (Hare, 1970; Raine et al., 1995).

Pregnancy and birth complications have also been associated with aggressive behaviors. For example, 80 percent of the violent offenders in Kandel and Mednick's (1991) study reported delivery complications when they were born. In addition, Raine, Brennan, and Mednick (1994) found that when birth trauma and maternal rejection happen to children, their predisposition to aggression prior to the age of 18 increases.

Personality theory. Personality theorists study the role that certain personality traits play in the development of aggressive behaviors. For example, level of maturation, temperament, and emotional development are considered to be risk factors for antisocial behavior (Dishion et al., 1995). In a longitudinal study, The Pittsburgh Youth Study, it was found that boys with externalizing behaviors were more extraverted and less agreeable and conscientious (John et al., 1994). These researchers also identified three basic types of male adolescent personality structures: Resilients, Overcontrollers, and

Undercontrollers. The adolescents who fell into the Undercontrollers category had more externalizing behaviors, such as aggression.

The personality disorder most strongly associated with aggressive behaviors is Antisocial Personality Disorder, described above. It should be pointed out that people diagnosed with Antisocial Disorder have demonstrated a consistent pattern of behavior of being in constant conflict with other people and society in general (*DSM-IV-TR*, 2000; Englander, 2003). This pattern of behaviors typically begins in childhood or adolescence; a criterion for a diagnosis of Antisocial Personality Disorder is to have demonstrated symptoms of Conduct Disorder before 15 years of age (*DSM-IV-TR*, 2000).

Social learning theory. Social learning theorists examine the context within which people live when theorizing about behaviors such as aggression. They believe that aggression is a result of the psychosocial environment and being rewarded or seeing others being rewarded for aggressive behavior (Englander, 2003). Bandura's (1977) social learning theory focuses on children's interactions with family, friends, and the community in general and what children learn from these interactions. In their study, Finkelhor, Turner, Ormrod, Hamby, and Kracke (2009) found that 60 percent of the children and adolescents surveyed were exposed to either direct or indirect violence in the past year and discuss how these children are more likely to engage in violence themselves. It has also been found that there is a positive correlation between exposure to violence on television and violent behavior (Eron, 1987; Lance & Ross, 2000). Researchers such as Englander (2003) note that this correlation is much more likely to occur in children who are already at risk due to factors such as biology or family issues.

Family influences and their relationship to childhood aggression and other

negative behaviors are heavily researched. For example, it has been found that children of highly controlling, power asserting parents are more likely to become aggressive (Eberly & Montemayor, 1999; Weiss, Dodge, Bates, & Pettit, 1992). Poor supervision, weak discipline style, a conflictual parent/child relationship, and little parental involvement have also been associated with the development of aggressive behaviors in children (Dishion et al., 1995). Other factors such as abuse and neglect, having teenage parents, large family size, and broken homes are also associated with the development of aggression (Rutter, Giller, & Hagell, 1998). Poverty (primarily due to decreased health care opportunities) (Englander, 2003), social class (Triplett & Jarjoura, 1997), low educational achievement (Englander, 2003), and being of a certain race such as African American (Greenfeld, 1992; Hewitt, 1988) are other psychosocial factors that have been related to aggression.

Developmental theory. Developmental theorists believe that behaviors such as aggression are a result of what people have experienced throughout their lifetimes. Developmentalists emphasize the importance of examining multiple risk factors, in addition to the developmental trajectories and course of aggression. They typically use longitudinal studies to examine people at various points throughout their lives to study the effects of the development of behaviors such as aggression. For example, the Pittsburgh Youth Study, lead by Rolf Loeber, has collected data from 1986 to present on males who started in first, fourth, and seventh grade. Studies using the Pittsburgh Youth Study data have identified various developmental pathways to aggressive behavior. One of these developmental pathways is childhood-onset. Children in this category often begin to demonstrate mild conduct problems in preschool or elementary school and their

behaviors continue to escalate in quantity and severity throughout childhood and adolescence (Lahey & Loeber, 1994; Loeber, 1987). Another developmental pathway is when the demonstration of conduct behaviors coincides with the onset of adolescence (Hinshaw, Lahey, & Hart, 1993). It has been found that children in the childhood-onset category have more severe behaviors and are more likely to continue offending into adulthood (Hinshaw et al., 1993; Moffitt & Caspi, 2001).

The risk factors associated with the development of aggression in children and adolescents include individual child factors such as lack of guilt feelings and low school achievement, as well as neighborhood factors such as living in an impoverished neighborhood (Loeber et al., 2001). There are also many family factors that have been related to aggression in children and adolescents. These include parenting characterized by maternal rejection (Shaw et al., 2003), having a parent diagnosed with Antisocial Personality Disorder (Loeber, Green, Lahey, Frick, & McBurnett, 2000), poor communication between child and parents, poor parental supervision, physical punishment by mother, high parental stress, coming from a broken family, and coming from a family on welfare (Loeber et al., 2001). These risk factors are considered to be cumulative; the more children and adolescents endure, the more likely it is that they will engage in physical aggression (Hawkins et al., 2000; Loeber & Farrington, 2000; Loeber et al., 2001). Many of these risk factors, especially the risk factors associated with family, are associated with attachment (e.g., Rosenstein & Horowitz, 1996; van IJzendoorn, Goldberg et al., 1992).

Integrated theories. It is important to note that no single factor or theory, or even combination of factors or theories, can completely explain the development of aggressive

behavior (Englander, 2003; Hughes, Crothers, & Jimerson, 2008). Englander (2003) developed a biosocial model that takes into account all of the risk factors that increase the likelihood of aggression instead of attempting to find a single cause or using a single theory to explain aggression. This model also takes into account protective factors which decrease the likelihood that aggression will occur. The diathesis stress model also considers more than one causal factor for abnormal behavior, including aggression (Walker, Downey, & Bergman, 1989). This theory states that in order to develop and maintain aggressive behavior, there must be predisposing factors, precipitating factors that cause stress, and maintaining factors.

Poor attachment is one risk factor associated with aggression. Attachment was chosen as the focus of this study on aggressive children and adolescents because it is the primary psychological construct to develop (Bowlby, 1969, 1973; Brazelton & Greenspan, 2000; Schore, 20001); it literally begins within the first few minutes of life. Further, attachment continues to have foundational effects on people and their psychosocial functioning throughout their lives (Bowlby, 1969, 1973; Brazelton & Greenspan, 2000; Leslie, 2004). Without quality attachment, all other aspects of development will be compromised (Leslie, 2004).

Attachment

History/Theory

There is a considerable body of research that focuses on the positive effects of good attachment and the negative effects of poor attachment. Utilizing monkey as subjects in the 1950s and 1960s, Harry Harlow conducted the surrogate mother experiment which was the first experiment to manipulate factors related to attachment

and examine its importance (Harlow, 1958). In a series of experiments, monkeys were separated from their mothers at birth and were subsequently introduced to a surrogate mother made of wire and/or a surrogate mother made of cloth. Regardless of which provided food, the monkeys most often sought comfort and physical contact with the terrycloth mother and went to the terrycloth mother when frightened or in a novel situation. In addition, the monkeys raised only with a wire surrogate mother gained less weight and suffered more physical ailments. It was argued that these results demonstrated the importance of contact comfort from caregivers and companionship in the early stages of primate development.

At approximately the same time that Harlow was performing his experiments, John Bowlby began studying and theorizing about the effects of human attachment. Modern attachment theory originated with Bowlby's (1969; 1973) pioneering work in the late 1960s and early 1970s. Regardless of theoretical background, the majority of current day research on attachment is grounded in Bowlby's work.

Attachment is a primary psychosocial factor that occurs very early in the developmental sequence, beginning even within the first few hours of life (Bowlby, 1969; 1973; Brazelton, 1992; Klaus & Kennell, 1982; Schore, 2001). Bowlby's (1969; 1973) theory of attachment evolved from the view that when people are in close proximity to one another, the threat of danger is decreased. At a basic level, Bowlby defined attachment behavior as behavior that has the purpose of seeking and maintaining closeness. One of Bowlby's primary premises is that secure attachment results when caregivers, most often mothers, anticipate and effectively meet the biological and emotional needs of their infants, engage in positive reciprocal interactions with them, and

provide them with predictability. When children are securely attached, they use their caregivers as a secure base, from which they have the confidence to leave their attachment figure and explore their environment, returning intermittently to rebond with their attachment figure. When describing Bowlby's theory, Waters, Weinfield, and Hamilton (2000) stated, "[p]ersistent attachment representations allow positive secure base experiences to guide behavior when someone "stronger and wiser" is not at hand" (p.703). In other words, the security felt from experiencing a secure attachment relationship gives children, as well as adults, an enduring confidence to explore their world and thus have a greater chance of developing appropriately and functioning effectively.

Insecure attachment occurs when caregivers do not consistently meet the needs of or provide a sense of predictability for their infants. These caregivers are not able to effectively comfort their children when the children are anxious or scared due to being unavailable or inappropriately responsive (Bowlby, 1973; Schore, 2001). While secure attachments typically result in confidence and security, Bowlby theorized that insecure attachments result in feelings of fear, anxiety, and anger, as well as decreased confidence and ability to cope. In addition, people with insecure attachments often engage in avoidance. Avoidance can be viewed as a defense mechanism (Ainsworth et al., 1973). In an effort to avoid the possibility of experiencing painful thoughts and feelings about relationships, people with avoidant attachment avoid meaningful interactions with others. If they allowed themselves to interact with others, painful thoughts and feelings may occur and result in them engaging in attachment behaviors. In order to protect themselves, they avoid meaningful relationships and interactions altogether.

Attachment Assessments and Classifications

Attachment assessment and classification in infants. Utilizing Bowlby's (1969, 1973) attachment theory as a premise, Ainsworth et al. (1978) were the first to develop an assessment for, as well as classifications of, attachment status. They based this assessment and their classifications on typical, low-risk children. An assessment termed the "Strange Situation" was utilized where stressful situations were artificially created to elicit attachment behavior. Separations and reunions between mothers and their children and reactions to a stranger are videotaped and analyzed to classify children as displaying secure attachment, insecure-avoidant attachment, or insecure-resistant/anxious attachment. These classifications are based on how the children react to the various situations they are confronted with during the "Strange Situation" and how they maintain attention and protection from their attachment figure.

According to Ainsworth et al.'s (1978) classifications, when children are secure, they show signs of distress when their caretakers leave them, but then welcome interaction upon their return. In the presence of their caretakers, they display the confidence to leave their caretakers for intervals of time and explore their environment. When distressed by the presence of a stranger, they seek out their attachment figures and are able to be comforted. The primary characteristic of the anxious/resistant category, on the other hand, is ambivalence. Although they appear to be angry with their attachment figures for leaving, they also engage in behaviors that elicit interaction from their attachment figures. They are very distressed by separations, but then difficult to comfort during reunions. Infants who fall into the avoidant category do not appear to be distressed by separations and avoid or ignore their caretakers upon reunions. They do not seek out

their caretakers for comfort.

As Lyons-Ruth (1996) points out, between the 1970s and mid-1980s, the majority of studies examining attachment focused on infant behavior in nonclinical samples and replicated Ainsworth et al.'s (1978) study by utilizing the Strange Situation (e.g., Belsky, Rovine, & Taylor, 1984; Thompson & Lamb, 1983; Thompson, Lamb, & Estes, 1982; Waters, 1978). From the mid-1980s to present, studies increasingly began to focus on examining attachment in at-risk populations.

In 1986, Main and Solomon used an at-risk population to identify a fourth category of attachment, disorganized/disoriented, for infants whose behaviors do not fit well into Ainsworth et al.'s (1978) initial three categories. Infants whose behaviors fall into this category do not exhibit a coherent attachment strategy (Abrams et al., 2006; Main & Solomon, 1986). Rather, they engage in a combination of what are typically considered to be avoidant and resistant/ambivalent behaviors in an attempt to organize their caregivers' unpredictable and frightening behavior (Main & Solomon, 1986; Moss et al., 2005). Their behaviors are considered to be odd and marked by apprehension, helplessness, and conflict (Lyons-Ruth, 1996). When children are assigned this category, they are typically also assigned one of the original three categories as well. Although many attachment researchers believe in utilizing this fourth category (e.g., Goldberg, 1997; Greenberg et al., 1997; Lyons-Ruth, 1996; Main & Cassidy, 1988; Rosenstein & Horowitz, 1996), many also continue to focus on the original three categories when doing their studies (e.g., Hamilton, 2000; Smallbone & Dadds, 2001; Waters, Merrick, et al., 2000; Weinfield, Sroufe, & Egeland, 2000).

Attachment assessment and classification in children and adolescents.

Paralleling Ainsworth et al.'s (1978) Strange Situation assessment and classifications, Main and Cassidy (1988) developed an assessment and classifications for attachment in children, focusing on six year olds. Videotapes of reunions are analyzed to classify the children into one of four primary categories: secure, insecure-avoidant, insecure-ambivalent, and insecure-controlling. The insecure-controlling category was created for children who attempt to reverse roles with their parents or control them. Cassidy (1988) distinguishes the insecure-controlling category and the insecure-avoidant category by their behaviors: children classified as insecure-controlling are much more outwardly hostile and angry, where the avoidant children appear much less concerned with their parents and basically ignore them. Her study also indicated that children classified as avoidant were significantly more likely to minimize or dismiss the importance of relationships than children in the other categories.

Recently, an area of attachment literature and research focusing on the effects of attachment patterns during school age years has begun to emerge (e.g., Jimerson, Coffino, & Sroufe, 2007; Kennedy & Kennedy, 2007; Moss et al., 2004). For example, Moss et al. (2004) followed children to their school age years. They found that children with disorganized attachment develop one of two forms of controlling behavior: controlling-punitive attachment or controlling-caregiving attachment. The school age children who develop controlling-punitive attachment are often directive and hostile in their interactions with their caregiver. Those who develop controlling-caregiving attachment are very cheerful, cooperative, and obliging with their caregivers. Moss et al. (2004) continue to consider these school aged children to have an attachment status of

disorganization because outside of the relationship with their caregivers, these children continue to demonstrate working models of attachment that are disorganized (Solomon, George, & De Jong, 1995).

Although infant and child attachment and attachment categories have been extensively researched, not as much research has been done on adolescents in the attachment field (Allen et al., 1998; Cyr & van IJzendoorn, 2007; Jimerson et al., 2007; Lyons-Ruth, 1996; Moss et al., 2006). In addition, methods utilized to assess attachment in clinic settings (e.g., Strange Situation) are not practical outside of the clinic and lack adequate norms for adolescents (Kennedy & Kennedy, 2007). In 1998, Allen et al. stated “In adolescence, unlike childhood and adulthood, the meaning and the importance of the construct of attachment for social functioning is derived primarily from a theoretical inference and from a few studies examining its correlates within unusual samples” (p. 1406).

Attachment assessment and classification in adults. As attachment research began to expand past infancy in the mid-1980s, measurements of attachment moved from being purely behavioral to a more representational level (Cassidy, 1988). In the mid-1980s, George, Kaplan, and Main (1985) created the Berkeley Adult Attachment Interview to assess adult attachment. While previous research in attachment had focused primarily upon infant and child behavior, the creation of the Berkeley Adult Attachment Interview opened up the field to examining the effects of quality of attachment in adults as well. This tool has also been utilized to assess the attachment of older adolescents (e.g., Allen et al., 1996; Allen et al., 1998; Rosenstein & Horowitz, 1996). The Berkeley Adult Attachment Interview is based upon Bowlby’s (1969, 1973) internal working

models and uses information from a semi-structured interview to assess people's memories and internal representations of attachment figures. Although it is reported to be fairly complex to administer and time consuming, it is commonly used in studies examining attachment in adolescents and adults (Smallbone & Dadds, 2001).

The resulting three possible adult attachment categories from the Adult Attachment Interview (George et al., 1985) parallel Ainsworth et al.'s (1978) attachment classifications for infants. Adults classified as secure by the Adult Attachment Interview value attachment relationships and view them as an important part of their life and development (Waters et al., 2000). These securely attached adults are able to easily and coherently relay childhood experiences related to attachment. People classified as dismissive have difficulty remembering childhood experiences and deny the importance of attachment figures in their life (Waters et al., 2000). When they do discuss childhood memories, they are often memories of rejection. The adult dismissive category parallels the infant insecure-avoidant category (Allen et al., 1996) and has been found to be associated with being impoverished and in a high-risk population (Weinfield et al., 2000). Adults in this category have been found to be less willing to acknowledge emotions such as distress (Collins, 1996). The third adult attachment category is insecure-preoccupied and parallels the insecure-resistant/ambivalent infant category (Allen et al., 1996). Adults classified as insecure-preoccupied communicate ambivalence during their interviews; although they are angry about past experiences with their attachment figures, they also communicate a desire to please (Waters, Hamilton, et al., 2000). They have some difficulty recalling past experiences; they get confused about the specifics when relaying their experiences. Finally, when people are unable to coherently relay their past

experiences with respect to the loss of a loved one or past abuse, they are assigned the category of unresolved (Waters, Hamilton, et al., 2000). In addition to being categorized as unresolved, these people are also assigned a category from the primary three: secure, preoccupied or dismissing. This unresolved category parallels Main and Solomon's (1986) disorganized category in infants.

Two less commonly used assessments of adult attachment are Hazan and Shaver's (1987) Adult Attachment Questionnaire and Collins and Read's (1990) Adult Attachment Scale. The Adult Attachment Questionnaire classifies adults as falling into one of three categories of attachment styles: secure, insecure-avoidant, and insecure-ambivalent. Subjects are given three paragraphs that focus on feelings about relationships and then asked to choose the one that best describes their feelings. The subjects self assign one of the three attachment categories. The Adult Attachment Scale (Collins & Read, 1990), on the other hand, requires subjects to respond to 18 questions about close interpersonal relationships. The scale contains three subscales: closeness, dependency, and anxiety. Although Collins (1996) feels that these three scales give more useful information about people and their attachments, a cluster analysis interpretation can be done on the three scales to classify subjects into one of three categories: secure, insecure-avoidant, and insecure-preoccupied.

Although infant and child attachment assessments rely on the observations of overt behaviors, the above assessments of adult attachment all rely on self-report in some form. The validity of this type of attachment assessment has been questioned by many researchers (e.g., Kelly, 1997; Roelofs et al., 2006; Smallbone & Dadds, 2001), due to people having to be honest, as well as rely on their insight about themselves and/or their

memories. The problem with this is exemplified in Cooper, Shaver, and Collins' (1996) study which utilized two different self-report measures of attachment. Twenty-percent of their subjects were assessed as having two different attachment statuses based on the two different assessments. In addition to relying on a person's insight, memory, or self-report, there is a lack of psychometric data to assist in analyzing the scores of these types of assessments (Smallbone & Dadds, 2001).

The Rorschach Inkblot Method as an assessment of attachment. The Rorschach Inkblot Method, on the other hand, is an assessment that is most often used with clinical populations and does not rely on observable behaviors or self-report. It has been used with children (e.g., Gacono & Meloy, 1994), but is most commonly used with adolescents and adults. The subject is presented with ten inkblots, one at a time, and asked the question "What might this be?" After going through all ten inkblots, the inquiry phase begins where examiners go back through each inkblot to get additional information regarding three particular elements of the subjects' original answers: what it is, what makes it look like that, and where it is (Rose, Kaser-Boyd, & Maloney, 2001). Because of the open ended nature of responding to ambiguous inkblots and there being no "right" answer, the Rorschach Inkblot Method is able to assess underlying personality dynamics, thoughts, and emotions by standardized scoring of responses based on the problem-solving style of the examinee. The examinee "projects" their inner thoughts, feelings, and emotions onto the inkblot (Kelly, 1997). These underlying personality dynamics and problem-solving styles are not captured by rating scales, questionnaires, or videotapes (Kelly, 1997; Pierce & Penman, 1998). In the case of attachment, the Rorschach Inkblot Method is important because it gives insight into how people perceive

and feel about interpersonal relationships, without having to rely on self-report.

The Comprehensive System for the Rorschach Inkblot Method was first created in 1974 by John Exner. There have been multiple volumes and editions since then with the most recent edition being published in 2005. New normative data for adults and children has also been provided (Exner, 2003). The Comprehensive System was developed in order to provide normative data, as well as a set of guidelines to ensure a standardized practice of administering, scoring, and interpreting protocols. Although development of the Comprehensive System resulted in great advances in the use of the Rorschach Inkblot Method and personality assessment as a whole, it did not initially provide specific normative data or information about children and adolescents. In order to focus specifically on assessing children and adolescents, Exner and Weiner (1982; 1995) developed the Comprehensive System for children and adolescents. It provides normative data on individual Rorschach Inkblot Method variables and summative scores, as well as seven basic clusters: ideation, mediation, processing, controls, affect, self perception, and interpersonal perception (Exner & Weiner, 1995). It also provides specific information regarding how to interpret the results of the Rorschach Inkblot Method with children and adolescents.

Historically, Texture (T) responses are the most commonly examined Rorschach Inkblot Method variable in assessing quality of attachment. T is coded when the examinee uses light and dark features or shading components of the inkblot to suggest texture or tactile qualities, such as “furry” or “rough” (Rose et al., 2001). Normatively, people of all ages typically give one T response (Exner & Weiner, 1995). People with poor attachment, on the other hand, often give “T-less protocols” (Cassella & Viglione,

2009; Exner & Weiner, 1995). Results from Cassella and Viglione's (2009) study indicate that one T response is associated with secure attachment, more than one T response is associated with preoccupied/anxious-ambivalent attachment, and no T response is associated with avoidant attachment.

The Rorschach Inkblot Method's ability to assess quality of attachment through the T variable dates back to the 1950s when Breecher (1956) found that a low amount of T responses was correlated with a history of maternal rejection in people diagnosed with schizophrenia. A decreased amount of T responses has also been associated with losing a parent before the age of eight (Pierce, 1978) and being in multiple foster homes (Leura & Exner, 1976). More recently, a decreased amount of T responses has been associated with the absence of a maternal figure at home (Weber et al., 1992). In their review of studies that utilize Rorschach Inkblot Method variables to assess certain personality dynamics, Gacono and Meloy (1997) state that "The Rorschach texture responses... provide a robust measure of affectional desire and dependency" (p. 47). This is directly related to attachment; people with quality attachment have the desire to be close with their attachment figures and are able to appropriately depend on others when in need (Bowlby, 1969).

While T is only one variable of the Rorschach Inkblot Method, other scales incorporate a variety of variables to assess attachment. One such scale is the Mutuality of Autonomy (MOA) which was developed by Urist and colleagues (Urist, 1977; Urist & Shill, 1982) to assess overall object relatedness, including the degree of differentiation between oneself and others, as well as the level of empathic relatedness people possess. In calculating the MOA, a seven-point scale is used to assess Rorschach Inkblot Method

responses that include humans, animals, or inanimate objects described by the examinee to be in some type of relationship.

As Kelly (1997) points out, the MOA's reliability and construct validity has been examined in adults (Urist, 1977) and children (Tuber, 1992), but little has been done with respect to adolescents. The results from studies that have examined the MOA's reliability have been mixed. For example, Urist (1977) found that interrater reliability was .86 when agreement was considered to be within one point, but only .52 for exact agreement. Holaday and Sparks (2001) describe their interrater agreement of approximately 65% on practice items from actual Rorschach Inkblot Method protocols as "dismal" and suggest using their revised guidelines that they claim are more specific and easy to follow.

Another scale that utilizes a number of Rorschach Inkblot Method variables to assess quality of attachment is the Human Experience Variable (HEV). Perry and Viglione (1991) created the HEV to provide information about quality of interpersonal relationships and relatedness which were not specifically included in Exner's (1993) Comprehensive System but could be calculated from the standardized scores. It was also developed in order to overcome limitations of the MOA (Urist, 1977), such as the difficult scoring procedures and only including responses that include relationships. The HEV was originally developed as one of five Rorschach Inkblot Method measures of the Ego Impairment Index (EII), an assessment of overall ego impairment created by Perry and Viglione (1991). By utilizing the Rorschach Inkblot Method to assess EII, environmental influences are minimized in order to assess overall functioning and the degree of thought disturbance in subjects (Perry, Viglione, & Braff, 1992).

As Perry and Viglione (1991) state, "[u]nquestionably, the human content is the

most direct means of assessing internal object representations on the Rorschach” (p. 489-490). In calculating the Human Experience Variable (HEV), responses that include human representation are classified as either good or poor human experiences based on factors such as whether they are part or whole, imaginary or real, whether movement is aggressive, and whether they are accurately perceived. The totals of these types of responses are entered into an algorithm to calculate HEV. Lower HEV scores indicate more quality attachment. Perry and Viglione (1991) found that the HEV was one of the strongest measures of the Ego Impairment Index in predicting treatment outcomes.

Burns and Viglione (1996) were the first to use the Human Experience Variable (HEV) as its own separate measure, separate from the Ego Impairment Index. In their study with nonpatient adult women, they used the Bell Object Relations Inventory (Bell, 1995) to validate the use of the HEV in assessing quality of interpersonal relatedness or attachment. They found that “...the relative number of accurate, popular, whole, benevolent, cooperative, realistic, and logical Rorschach Inkblot Method human representations compared to the number of distorted, partial, damaged, aggressive, imaginary, and confused human representations is related to the quality of interpersonal relatedness” (p. 97). They also found that the HEV made a unique contribution to the prediction of whether or not the women, as well as their significant others, perceived them to have positive or negative interpersonal relationships.

Others studies that have utilized the Human Experience Variable (HEV) have had mixed results, although inconsistencies in many of these studies can be attributed to methodological issues. HEV scores were predictive of treatment outcomes in a sample of patients diagnosed with Borderline Personality Disorder (Baker, 1998), but were unable

to predict treatment outcomes in a small sample of women with eating disorders (Thomas, 2000). It is hypothesized that the lack of statistical significance in the latter study can be attributed to an inadequate power from the small sample size of five subjects. An early study directly related to the current study compared object relations and attachment in nondelinquent versus delinquent adolescents (Loftis, 1997). No significant differences in HEV scores were found between the two groups, however there were several important limitations in the 1997 study. For example, this study was done retrospectively and examined Rorschach Inkblot Method data collected approximately 50 years ago, before Exner (1974) created the Comprehensive System and before there was a standard method of questioning and inquiry. The methods of questioning and inquiry used were much different than the standards used today, affecting the answers, and subsequently the scores, such as the HEV (Loftis, 1997).

Reid (2000) examined the relationship between the adult attachment status of college students as measured by the Relationship Questionnaire (RQ: Bartholomew & Horowitz, 1991) and quality of attachment as indicated by variables of the Rorschach Inkblot Method that have been associated with attachment, including the Human Experience Variable (HEV) and Texture (T). She found that those with a secure attachment status had significantly lower HEV scores (lower scores representing better interpersonal relatedness) and significantly higher T scores than those classified as insecure-avoidant. Those classified as insecure-preoccupied did not significantly differ from the other two groups on either of these Rorschach Inkblot Method variables. This study is considered to validate the use of the HEV in measuring quality of attachment.

Recently, minor revisions were made to the Human Experience Variable (HEV)

in order to create the Human Representational Variable (HRV: Viglione, Perry, Jansak, Meyer, & Exner, 2003). These minor revisions resulted in improved psychometric properties, as well as an increased ability to discriminate between groups (Viglione et al., 2003). In a sample of Rorschach Inkblot Method protocols, the HRV scores were found to be highly correlated with HEV scores, thus is also interpreted as a measure of quality of interpersonal relatedness (Viglione et al., 2003). In addition, a higher HRV score is considered to indicate better interpersonal relatedness while a higher HEV score was indicative of poor interpersonal relatedness.

Use of the Rorschach Inkblot Method in the present study. Variables from The Rorschach Inkblot Method were chosen to measure quality of attachment in this study because attachment is an internal process that is not easily measured through self-report. The Rorschach Inkblot Method looks at underlying psychological processes that the examinee is not necessarily consciously aware of and therefore is more likely able to accurately assess attachment variables. The Rorschach Inkblot Method has been researched extensively which has led to increased quality and integrity in administration, scoring, and interpretation (Hughes, Gacono, & Owen, 2007; Mattlar, 2004; Rose et al., 2001). Watkins, Campbell, Nieberding, and Hallmark (1995) surveyed over 400 clinicians and found that 82% used the Rorschach Inkblot Method regularly. In addition, it was found to be the fourth most used assessment.

T and HRV are the specific Rorschach Inkblot Method variables that were chosen for this study. T has a long history of being used to assess for attachment (Exner & Weiner, 1995). Although HRV is a more recently developed variable, it is a revision of the HEV which has been found to be related to attachment (Burns & Viglione, 1996;

Reed, 2000). HRV also includes individual variables such as human content which have been highly associated with attachment (Exner & Weiner, 1995).

Working Models of Attachment

The assessment of attachment is important because attachment has a major impact on how people operate in their worlds. Attachment relationships, especially those from infancy, have a foundational effect on how children, adolescents, and adults perceive themselves, others, and the world (Ainsworth, 1989; Bowlby, 1969; 1973; Bretherton & Munholland, 1999; Kennedy & Kennedy, 2007; Schore, 2001; Sroufe, 1979). Bowlby (1973) states, “Whether a child or adult is in a state of security, anxiety, or distress is determined in large part by the accessibility and responsiveness of his principal attachment figure” (p. 23). In other words, how people view themselves and approach their world has a lot to do with the availability and responsiveness of their original and primary attachment figures, as well as whether they perceive themselves as someone who is the type of person attachment figures will respond to. Bowlby (1969, 1973) refers to this concept as “working models.” “Individual differences in working models...play an important role by shaping [a person’s] cognitive, emotional, and behavioral response patterns” (Collins, 1996, p. 811).

Researchers such as Collins (1996) and Simons et al. (2001) have studied the concept of working models by exploring factors, such as social cognition and emotional distress, as mediators between attachment style and behavior. For example, in her study with adults, Collins (1996) found that individuals with secure attachment were less likely to attribute their partners’ behaviors to negative factors, such as being purposely rejecting. Those with secure attachment were also less likely to interpret events in ways

that emphasize its negative effects. She also found that those with secure attachment were less likely to expect conflict and less likely to respond to events with high amounts of negative emotion. In other words, cognitions or “working models” and emotional distress were mediators between attachment style and behavioral intentions in relationships.

An emerging area of attachment research focuses on attachment patterns and their effect during school age years. As Cyr and van IJzendoorn (2007) discuss, behavioral proximity becomes less important in expressions of attachment as children develop into adolescents. The cognitive abilities of adolescents include them being able to get their attachment needs met through people other than original caregivers (e.g., peers and other adults) and to utilize verbal communication to express their attachment needs and get them met (Cyr & vanIJzendoorn, 2007; Kehle et al., 2007; Kerns & Richardson, 2005; Marvin & Britner, 1999). In their review of studies examining attachment and behavior, Kennedy and Kennedy (2007) suggest that working models of attachment are mediators between risk factors for externalizing behaviors and actual acting out behaviors, including aggression, in school aged children.

The Relationship Between Attachment and Aggression

When people have insecure attachment and a working model that others will not meet their needs is developed, aggression can occur (Allen et al., 1998; Gacono & Meloy, 1994; Meesters & Muris, 2002; Simons et al., 2001; Smallbone & Dadds, 2001; Solomon et al., 1995). As with all psychological constructs, there are two general methods to examine the relationship between attachment and aggression. The first is longitudinal studies where the constructs of aggression and attachment are examined in a representative sample of the population. In these studies, the subjects and their

development are assessed and monitored at certain intervals throughout a particular span of their life. For instance, researchers can monitor the attachment status or aggressive behaviors of children from infancy to adulthood to see how these factors develop and/or change over time. The other method for examining the relationship between attachment and aggression is to choose and group subjects based on a category in which they already fit. Subjects who are from clinical samples or are already considered to be “at-risk” are compared to a control group or a different type of clinical sample. For example, children who have been referred to a treatment center for aggression may be compared to a group of children who have not been referred. Or, a group of hospitalized patients diagnosed with Conduct Disorder may be compared to a group of hospitalized patients diagnosed with Depression (e.g., Gacono & Meloy, 1994; Weber et al., 1992).

Infant and child attachment and aggression/Longitudinal studies. Due to issues with attrition and costliness, as well as the fact that the majority of children in a representative sample will have secure attachment and no problems with aggression, large scale/longitudinal studies are done less often than simply examining a clinical sample. When longitudinal studies have been completed, the majority of them have focused on infancy attachment and its relation to subsequent externalizing behaviors (Greenberg et al., 1997; NICHD-ECCRN, 2006; Sroufe, 2005). The majority of these longitudinal studies examining low risk subjects utilize some version of the Strange Situation to classify the infants as secure, insecure-avoidant, or insecure resistant. The results of these studies have been mixed.

Sroufe (2005) found that insecure attachment during the first two years of life predicted externalizing behaviors in toddlerhood. Insecure child-mother attachment at age

3 has also been found to predict higher aggression in kindergarten (Schmidt et al., 2002). In addition, attachment insecurity at age 6 has been correlated with externalizing behaviors, including aggression, in middle childhood (Moss et al., 2006). Other researchers have failed to find a relationship between toddler attachment and externalizing behaviors later in childhood (Bates & Bayles, 1988; Fagot & Kavanagh, 1990). NICHD-EDDRN (2006) found that the relationship between infant attachment status and externalizing behaviors such as aggression were mediated by current parenting quality. This type of finding also extends to adulthood; Lewis et al., (2000) found that infant attachment status was not related to maladjustment at 18 years of age, but rather current attachment status was.

Longitudinal studies examining “at-risk” populations (e.g., low-income, high amount of maternal stressors) and using backwards prediction (going back and examining infant attachment status of children who have already been identified to be at-risk) have had better results in showing the relationship between infant attachment and aggression. Lyons-Ruth et al. (1993) argue for the inclusion of Main and Solomon’s (1986) disorganized/disoriented category when studying attachment in “at-risk populations.” They theorize that the reason many longitudinal studies do not find a relationship is because they only use Ainsworth et al.’s (1978) original three attachment categories and do not include disorganized/disoriented as a category. Lyons-Ruth et al. (1993) assessed low-income children at 18 months of age and then at five years of age and found that the strongest predictor of aggressive behavior toward peers at five years of age was a disorganized/disoriented attachment status at 18 months. This finding was supported even when other family factors were statistically controlled in the analysis.

Renken, et al. (1989) went back and examined the infant attachment status of elementary school children showing aggressive behaviors. Although they did not find a relationship in the females, they found that avoidant infant attachment was a significant predictor of aggression in elementary school-aged males. Similarly, in her longitudinal study with children with chronic medical problems, Goldberg (1997) found that the insecure-avoidant classification in infancy was related to both externalizing and internalizing behaviors.

Attachment and aggression in adult non-clinical samples. The majority of studies examining attachment in adult non-clinical samples focus on relationships with significant others. Studies examining the relationship between adult attachment status and aggressive behaviors in non-clinical samples have found that adults with secure attachment are less likely to engage in aggressive behaviors (Meesters & Muris, 2002; Smallbone & Dadds, 2001). For example, Smallbone and Dadds (2000; 2001) examined the relationship between childhood attachment, adult attachment, aggression, and sexually coercive behavior. In their samples of undergraduate college students, they found that insecure attachment in childhood, as well as an insecure attachment status in adulthood, was associated with both aggressive and sexually coercive behavior.

Attachment and aggression in adult clinical samples. Allen et al. (1996) completed a rare longitudinal study in that they did not begin following their sample at infancy or early childhood. Rather, they examined the long-term sequelae of adolescents psychiatrically hospitalized at 14 years of age for problems related to disorders. These disorders included those associated with aggressive behaviors (e.g., Oppositional Defiant Disorder, Conduct Disorder), as well as diagnoses not associated with aggressive

behaviors (e.g., Major Depression and other Mood Disorders). These subjects were re-interviewed 11 years later at the age of 25. They found that psychiatric hospitalization in adolescence, regardless of their particular diagnosis, was a strong predictor of insecure attachment organization at age 25. The majority of these insecure statuses were accounted for by a failure to resolve previous trauma with attachment figures and caregivers.

Gacono and colleagues (Gacono, 1990; Gacono & Meloy, 1991; Gacono et al., 1992) have also examined attachment in adults diagnosed with aggression related disorders. They consistently found that adults with these disorders were more likely to have indications of poor attachment. For example, Gacono et al. (1992) found that adults diagnosed with Antisocial Personality Disorder were significantly less likely to give a T response on the Rorschach Inkblot Method than those diagnosed with Narcissistic Personality Disorder or Bipolar Disorder. Overall, their responses indicated significantly more devaluation of and detachment from interpersonal relationships. These results were also found when the adults with Antisocial Personality Disorder were compared to Exner's (1993) control group of nonpatient males.

Attachment and aggression in clinical or referred children and adolescents.

Cross-sectional studies have found a strong connection between insecure attachment and aggressive behaviors (Allen et al., 1998; Greenberg et al., 1997; Simons et al., 2001). Greenberg et al. (1997) utilized Main and Cassidy's (1988) classification system for children, as well as a security of attachment Likert rating scale that they created, to examine the role of attachment in young children diagnosed with Oppositional Defiant Disorder. They completed two independent studies comparing groups of children

diagnosed with Oppositional Defiant Disorder to control groups. They found that there were significantly more insecurely attached children in the groups that had been diagnosed with Oppositional Defiant Disorder. In one of their studies, they assessed only male subjects and found that the insecure children in both the control group and clinical group displayed higher levels of aggression in their attachment stories when compared with securely attached children.

Utilizing the Inventory of Parent and Peer Attachment (IPPA: Armsden, 1986; Armsden & Greenberg, 1988) to measure attachment, Simons et al.'s (2001) study examined how social cognitions act as a mediator between attachment and aggression in a sample of sixth graders. They found a relationship between perceived quality of attachment and self-report of aggression, but also that social cognition of hostile intent was a mediator between perceived attachment and aggressive behaviors.

Allen et al. (1998) examined a group of moderately at-risk adolescents as defined by the adolescents falling into at least one of four "at-risk" categories. They primarily utilized George et al.'s (1996) revised Adult Attachment Interview to assess attachment status. They found that an insecure attachment status was related to higher levels of externalizing behaviors, as well as higher levels of internalizing behaviors. Their findings suggested that secure attachment is linked to overall psychosocial functioning through various mechanisms including the internal organization of affect and how adolescents process and think about attachment experiences. Rosenstein and Horowitz (1996) utilized George et al.'s (1985) Adult Attachment Interview classification system to examine attachment in psychiatrically hospitalized adolescents. They found that adolescents classified as having dismissive attachment were more likely to be diagnosed with

psychiatric disorders related to aggressive behaviors (e.g., Conduct Disorder and Antisocial Personality Disorder).

In addition to examining attachment in aggressive adults as previously described, Gacono and colleagues (Gacono & Meloy, 1994; Smith et al., 1997; Weber, et al., 1992) have examined child and adolescent attachment and its relationship with aggression through the use of the Rorschach Inkblot Method. In each of these studies, they used Conduct Disorder as an indication of antisocial and aggressive behavior and found a strong relationship between this diagnosis and poor quality of attachment when compared with various child or adolescent control groups. For example, in Gacono and Meloy's (1994) study, children between the ages of five and 12 who had been diagnosed with Conduct Disorder were administered the Rorschach Inkblot Method. It was found that these children produced significantly fewer T responses than controls. In a sample of psychiatrically hospitalized adolescents, those diagnosed with Conduct Disorder were found to have significantly less indications of positive attachment than those diagnosed with Dysthymic Disorder as evidenced by less frequency of certain responses on the Rorschach Inkblot Method such as T and pure H (Gacono & Meloy, 1994; Weber et al., 1992). It was found that children diagnosed with Conduct Disorder have more indications of poor attachment than norms. In these studies (Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992), the Conduct Disordered adolescents had significantly less T responses and pure H responses than Exner's (1993) control group of nonpatients.

Conclusions: Aggression and attachment. In summary, the research described above shows how closely poor attachment and aggression are intertwined. Poor attachment patterns in the past (e.g., Goldberg, 1997; Lyons-Ruth et al., 1993; Sroufe,

2005), as well as current indications of poor attachment (e.g., Gacono & Meloy, 1994; Greenberg et al., 1997; Rosenstein & Horowitz, 1996) are linked to aggressive behaviors. In addition, some studies examining the relationship between aggression and attachment use attachment as the independent variable (e.g., Lyons-Ruth et al., 1993; Renken et al., 1989) while others studies use aggression-related constructs as the independent variable (e.g., Rosenstein & Horowitz, 1996; Smith et al., 1997; Weber et al., 1992). Regardless, a connection is found between these two constructs. Although much is known about young children in terms of aggression and attachment, it is important to continue clarifying the role that attachment plays in adolescent aggression. In an effort to do so, this study not only examined attachment in aggressive adolescents, it also examined how the construct of anxiety relates to aggression and attachment.

Anxiety

Overview of Anxiety

Anxiety is defined as “an unpleasant emotional state consisting of psychobiological responses to anticipation of real or imagined danger” (Dorland’s Illustrated Medical Dictionary, 1988, p. 108). Symptoms associated with anxiety include nervousness, intense apprehension, avoidance of certain stimuli, excessive worry, and difficulty concentrating (American Psychiatric Association, 2000). Physical symptoms such as racing heart, shortness of breath, abdominal distress, and perspiration have also been be related to anxiety (American Psychiatric Association, 2000).

Anxiety disorders are the most commonly diagnosed category of mental health disorders in the United States (Zajecka, 1997). Approximately 29 percent of people in the United States have been diagnosed with an anxiety disorder or could meet diagnostic

criteria for an anxiety disorder (Kessler, Berglund, Demler, Jim, & Walters, 2005). In addition, it has been found that anxiety disorders are among the most common disorders in adolescents (Costello et al., 2003; Ford et al., 2003; Morris & March, 2004). Child and adolescent anxiety is related to an increased risk of experiencing anxiety problems in adulthood (Kendall & Ollendick, 2004; Saavedra & Silverman, 2002) and there appears to be an increase in anxiety disorders throughout the ages of 18 and 64 years (Somers, Goldner, Waraich, & Itsu, 2006).

Factors Related to Anxiety

There are two necessary components that determine the state of distress people experience: a stressor and a stress response (Comer, 2007). The stress response is dependent on how people appraise the situation and their ability to effectively cope with it. When people perceive a situation as threatening, fear and anxiety responses occur. These responses are generated through the autonomic nervous system (ANS) which connects the central nervous system (CNS) to the rest of the body's organs (Comer, 2007; Lezak, 1995). When a situation is perceived to be dangerous, the brain excites the sympathetic nervous system, a specific group of ANS fibers. This activation of the sympathetic nervous system results in people taking particular action to deal with their feelings of anxiety and fear.

People have general ways that they respond to anxiety provoking situations; some appear to be relaxed and calm while others react with an abundance of worry. A person's ongoing level of anxiety is referred to as "trait anxiety" (Lin et al., 2001; Shedletsky & Endler, 1974). People who have high levels of trait anxiety have a lower threshold for what they perceive to be stressful or fear-laden situations. Danger may not actually exist.

People also differ in terms of what they perceive to be threatening which are considered to be differences in “state anxiety” or situational anxiety (Lin et al., 2001; Shedletsky & Endler, 1974). For example, attentional bias, a vigilance to real or perceived threats, (Kindt, van den Hout, deJong, & Hoekzema, 2000), has been found to play a role in the development of anxious symptoms and anxiety disorders. Attentional bias, also referred to as social cognition of negative intent by others (Simons et al., 2001) has been related to the development of anxiety (Wilson & MacLeod, 2003; Williams, Matthews, & MacLeod, 1996), as well as increased aggression (Simons et al., 2001).

How people respond to situations is also related to their judgment regarding cause-effect relationships and attention to environmental cues (Craske & Waters, 2005). Both poor cause-effect judgment and attention to cues (Grillon, 2002) are related to high levels of anxiety and the development of anxiety disorders. It is developmentally appropriate for children to experience unjustified fears and anxiety related to these fears (Brazelton, 1992). When children engage in attentional bias towards threats and subsequently experience high amounts of anxiety, these fears often continue past the appropriate developmental phase (Kindt et al., 2000). In addition, anxious children have attentional biases or hypervigilance towards threats to themselves (Williams et al., 1996; Wilson & MacLeod, 2003) and overestimate their own risk in concurrence with negative situations (Chorpita, Albano, & Barlow, 1996; Suarez & Bell-Dolan, 2001).

Another variable related to how anxiety manifests itself is behavioral inhibition. This inhibition occurs when people react with a sense of fear to novel situations and subsequently engage in withdrawal or avoidance (Gray, 1987; Kagan et al., 1989). This includes anxiety and fear related to the possibility of being punished for one’s behaviors.

Gray (1982; 1987) hypothesizes that anxiety and behavioral inhibition occur due to perceived negative consequences and result from the activation of the Behavioral Inhibition System (BIS) which operates through specific areas of the brain. The Behavioral Activation System (BAS), on the other hand, activates reward seeking and aggressive behavior once people perceive a pending reward or the possibility of escape from punishment (Gray, 1982; 1987). How these two systems interrelate and effect behavior is referred to as the two-factor theory of conduct behavior (Gray, 1987). As discussed later, an active BIS is associated with a decreased likelihood of conduct behaviors.

In addition to behavioral inhibition, risk factors that have been associated with the development of anxiety symptoms include genetics (Bartels et al., 2007; Muris, 2006), poor emotional regulation (Bosquet & Egeland, 2006), loss (Grover et al., 2005; Muris, 2006), social adversity (Grover et al., 2005), negative family environment (Grover, Ginsburg, & Ialongo, 2005; Muris, 2006), and insecure attachment (Allen et al., 1998; Bosquet & Egeland, 2006; Cooper et al., 1998; Kobak & Sceery, 1988; Ryan, Avery, & Grolnick, 1985). In their longitudinal study, Grover et al. (2005) found that risk factors had an additive affect; a greater number of risk factors experienced as a child resulted in higher levels of anxiety seven years later. Muris (2006) points out that few studies examine protective factors specifically in relation to protection against the development of anxiety. In his review of childhood anxiety disorders from a developmental perspective, Muris (2006) includes the belief that one has control over what happens to oneself and the ability to regulate emotions and inhibit behavior when appropriate as protective factors against the development of anxiety.

Although the experience of anxiety can be unpleasant, it also serves an important function. Anxiety can prompt people to problem-solve in order to avoid danger and the unpleasant feelings associated with anxiety (Schwartz, 2000). Adequate levels of anxiety assist in governing behavior through the development of a sense of right and wrong (Brazelton & Greenspan, 2000; Meloy, 2001). When people experience an inadequate amount of anxiety, they lack the internal monitoring system necessary for controlling behavior and engaging in appropriate amounts of behavioral inhibition (Meloy, 2001).

Factors Related to Inadequate Anxiety

According to Cloninger (1987), three factors describe people with conduct problems: high novelty seeking, low harm avoidance, and low reward dependence. Each of these can be related to having inadequate anxiety. The first two factors, novelty seeking and harm avoidance, can be related to behavioral inhibition (Kerr et al., 1997). People with behavioral inhibition are less likely to engage in novelty seeking and more likely to engage in harm avoidance. The third factor, reward dependence, refers to when people are concerned with and respond to signals of approval from society and are concerned about punishment. People with inadequate anxiety are unconcerned about approval from others and the possibility of being punished (Meloy, 2001).

Conduct Disorder is a psychiatric disorder that is associated with low amounts of behavioral inhibition (Kerr et al., 1997). As discussed earlier, the primary feature of Conduct Disorder is a pattern of violating the rights of others and the rules of society (American Psychiatric Association, 2000). Researchers such as Gacono and colleagues (Gacono et al., 1992; Gacono & Meloy, 1994; Weber et al., 1992) have associated conduct disorder behaviors such as aggression with inadequate anxiety. These researchers

hypothesize that there is a subset of individuals with Conduct Disorder who experience little to no anxiety regarding how their behaviors will affect others or how they may be punished for their behaviors. They engage in conduct behaviors with little concern regarding consequences.

Psychopathy is a personality pattern that is diagnosed in adults but its hallmark symptoms are reported to be experienced in adolescents (Frick et al., 1994; Loeber, 1982). In addition to antisocial behaviors related to Conduct Disorder (e.g., impulsivity, poor behavioral controls, and lack of responsibility), these personality traits include egocentricity, pathological lying, and lack of anxiety (Hare, 1993). Frick and colleagues (1994) concluded that the hallmark symptoms of psychopathy (i.e., superficial charm and lack of anxiety, remorse, guilt and empathy for others) are evident in youth and termed this group of symptoms “callous/unemotional” traits. Frick and Morris (2004) reviewed the various theories regarding the relationship between callous and unemotional traits, including inadequate anxiety, and antisocial behavior. They report that the majority of these theories include a developmental process where inadequate anxiety leads to impairments in the development of conscience (e.g., empathy and guilt) and moral reasoning which lead to an increase in conduct problems, including aggression.

Anxiety Assessments

The assessment of anxiety brings many challenges including accurately measuring a primarily internal emotion and separating anxiety from other disorders such as depression (Bosquet & Egeland, 2006; Costello, Egger, & Arnold, 2005). In addition, anxiety is influenced by context and all people experience feelings of anxiety from time to time (Bosquet & Egeland, 2006; Costello et al., 2005; Kendall & Ollendick, 2004). In

their examination of the developmental epidemiology of anxiety disorders, Costello et al., (2005) discuss how the assessment of anxiety has improved in terms of accuracy, reliability, and validity in the past few years. Tests that examine anxiety, as well as other psychological symptoms and disorders, are generally separated into two primary categories: performance based (previously referred to as projective assessments) and self-report (previously referred to as objective assessments).

Performance based assessments of anxiety. While self-report assessments rely on the report of the examinee, performance based assessments such as the Rorschach Inkblot Method rely on the interpretation of ambiguous situations. The examinees must draw upon their past experiences, as well as their unconscious feelings and desires, to answer questions about ambiguous situations. Instead of checking off items on a checklist, they have to engage in activities such as looking at the Rorschach Inkblot Method inkblots and telling the examiner what they see. There is typically no way for the examinee to know how they are ‘supposed to’ respond during performance based assessments.

Shading (Y) responses during the Rorschach Inkblot Method assessment have been related to anxiety; high amounts of shading responses are related to high anxiety while low amounts of shading responses are related to inadequate anxiety (Exner & Weiner, 1995). As Exner and Weiner (1995) discuss though, the Y response is a very unstable and highly situational variable. It can change from one day to the next based on the examinees experiences. Gacono and Meloy (1991) review the studies that have attempted to validate the use of Y in assessing anxiety. The findings are equivocal; some have found a relationship between Y and anxiety while many studies have not. For this

reason, shading responses were not chosen as a variable to assess for anxiety in this study. In addition, since the Rorschach Inkblot Method is being used to assess attachment in this study, a different measure of anxiety was used in order to avoid measuring overlapping variables.

Rating scales as assessments of anxiety. Rating scales require the person completing the assessment to answer questions regarding the subject's behaviors and emotions. Many rating scales have multiple versions such as self-report, teacher-report, and parent/caregiver report. The two primary means of assessment through rating scales are narrow band assessments and broad band assessments. Narrow band assessments ask the examinee to answer questions, often yes or no, to assess for the presence of one construct. The danger in utilizing these types of assessments is that people are more easily able to answer these questions in a way that purposely attempts to validate or invalidate the presence of the symptom or disorder being assessed. For example, if a child thought that being assessed as anxious would result in teachers having lower expectations, this child may answer questions in a way that he or she believes increases the likelihood of being assessed as having a high amount of anxiety. Examples of narrow band assessments that focus specifically on anxiety as a construct are the Revised Children's Manifest Anxiety Scale (R-CMAS) (Reynolds & Richmond, 1985), the Revised Child Anxiety and Depression Scale (RCADS) (Chorpita & Daleiden, 2000), the Spence Children's Anxiety Scale (SCAS) (Spence, 1998) and the Anxiety Symptom Questionnaire (Cattell, 1963).

Broad band assessments look at multiple symptoms, constructs, and/or disorders by having the examinee answer questions about symptoms related to various disorders.

Therefore, examinees are less able to answer according to what they believe are the correct answers. Diagnostic interviews, such as the Structured Interview for the Diagnostic Assessment of Children – Revised (SIDAC-R), are examples of broad band assessments. During these interviews, a clinician asks the examinee to either endorse or not endorse symptoms related to specific diagnoses. Symptoms related to anxiety disorders are included in these interviews.

The Achenbach System of Empirically Based Assessment (ASEBA) (Achenbach & Rescorla, 2001) is a broad band assessment that asks raters to answer questions regarding how a wide variety of behaviors and symptoms relate to their experience over the past 6 months. There are three versions of the ASEBA that focus on school age children: the Teacher’s Report Form (TRF; Achenbach & Rescorla, 2001), the Youth Self-Report (YSR; Achenbach & Rescorla, 2001), and the Child Behavior Checklist for Ages 6-18 (CBCL/6-18; Achenbach & Rescorla, 2001). The ASEBA was chosen for this study for a number of reasons. It has good validity and reliability and is well standardized (Achenbach & Rescorla, 2001; Sattler & Hoge, 2006). In addition, it allows researchers to only look at symptoms specifically related to anxiety. It is also the most widely used broad band assessment for children and therefore allows comparisons to findings of other studies. Finally, the ASEBA is able to effectively create specific psychopathological constructs (Achenbach et al., 2003; Morris, 2004).

Many studies have reported low agreement among reporters when multiple informants are utilized to examine childhood anxiety (Mesman & Koot, 2000; Schniering, Hudson, & Rapee, 2000). Anxiety is an internal state and symptoms are not always obvious to outside observers (Achenbach, McConaughy, & Howell, 1987;

Bosquet & Egeland, 2006; Costello et al., 2005). In addition, children as young as eight years old have been found to be accurate reporters of their problem behaviors (Moss et al., 2006). Therefore, the Youth Self-Report version of the ASEBA was chosen for this study.

The syndrome scale on the YSR that assesses anxiety is referred to as Anxious/Depressed. In addition to including the symptoms related to anxiety, it also assesses symptoms that are only related to depression. The DSM oriented scale, on the other hand, is referred to as Anxiety Problems and only includes symptoms related to anxiety DSM diagnoses. In order to assure that this study only examined anxious symptoms in aggressive children, the DSM oriented scale of Anxiety Problems was utilized.

Relationship Between Anxiety and Aggression

The research examining the relationship between anxiety and conduct problems is complicated and seemingly contradictory. It appears that both high anxiety and low or inadequate anxiety are related to increased aggression. Researchers such as Frick (1998), Ialongo et al. (1996), Loeber, & Keenan (1994), Russo & Beidel (1994), and Zoccolillo (1992) have found that high anxiety is related to conduct problems. Other researchers such as Conner (2003), Kerr et al. (1997), and Gacono and colleagues (e.g., Gacono, & Meloy, 1992; Gacono et al., 1992; Smith et al., 1997) have made the connection between inadequate anxiety and conduct problems. Thus, understanding the role anxiety plays in the manifestation of aggressive behavior needs to be a priority in the research. To date there are no studies that examine both high and inadequate anxiety as it relates to aggression. The relationship between each of these constructs is examined below.

Relationship between high anxiety and aggression. Studies using non-clinical subjects have contributed understanding regarding the relationship between high anxiety and aggression. For example, Krueger et al. (1994) focused on personality traits (e.g., anxious/withdrawn) and found a positive correlation between externalizing behaviors and anxious/withdrawn behaviors. Kashani et al. (1991) examined a non-clinical group of children and found that the highly aggressive subjects experienced the most anxiety. Longitudinal studies have also been utilized to examine the relationship between anxiety and externalizing behaviors, including aggression. For example, Fergusson and Horwood (1993) followed children from eight to twelve years of age and Roza et al. (2003) followed children and adolescents for fourteen years. Each found that externalizing problems early in life predicted higher rates of anxiety later in life. Fergusson and Horwood (1993) also looked at cross-sectional data and found that externalizing problems and anxiety were positively correlated at each age studied.

Comorbidity studies have produced the most evidence for a connection between anxiety and externalizing behaviors such as aggression. They have found high rates of comorbidity of anxiety disorders and Conduct Disorder in children and adolescents (Angold et al., 1999; Russo & Beidel, 1993; Zoccolillo, 1992). Zoccolillo (1992) reviewed several studies that examined the relationship between anxiety and a diagnosis of Conduct Disorder. He concluded that out of all children diagnosed with Conduct Disorder, the ones diagnosed with anxiety were the most impaired. For example, it has been found that when children with Conduct Disorder are withdrawn socially, their conduct behaviors are more serious and more likely to continue (Serbin et al., 1991). Similarly, Ialongo et al. (1996) found that aggressive first-graders with anxious

symptoms were more likely to demonstrate enduring aggressive behaviors than those without anxious symptoms. They hypothesize that these findings are a result of the anxious first graders being more likely to engage in cognitive biases and perceiving their environment to be hostile and threatening.

Researchers such as Costello et al. (2005) and Kashani et al. (1991) equate fear and anxiety. Kashani et al., (1991) makes a connection between anticipation of the negative intent of others, fear, and aggression; perception of threat leads to increased fear or anxiety which can lead to an aggressive response to cope with the anxiety and protect oneself. Gray (1987) relates this to a system in the brain that he has termed the “fight/flight system.” People engage in defensive aggression when they anticipate the negative intent of others. In this model, anxiety precedes aggression.

Relationship between high anxiety and decreased aggression. Paradoxical to the above findings, other studies support Gray’s (1987) two- factor theory of conduct behavior that focuses on the Behavioral Inhibition System (BIS) and the Behavioral Activation System (BAS). They have found that high anxiety and behavioral inhibition can serve as a protective factor against externalizing behaviors such as aggression (Kerr et al., 1997; Walker et al., 1991). For example, Walker et al., (1991) examined youth diagnosed with Conduct Disorder and found that those with a comorbid anxiety disorder engaged in less serious conduct behaviors than those without an anxiety disorder. They were less likely to get suspended from school, less likely to have police contact, and were rated as less mean than those diagnosed only with Conduct Disorder. These findings are related to behavioral inhibition; when anxiety is present, people are more likely to be inhibited behaviorally and therefore less likely to engage in acting out behaviors. Kerr et

al. (1997) also examined the effects of behavioral inhibition and compared this concept to harm avoidance anxiety. They studied a group of disruptive boys and found that those that were inhibited were less likely to become delinquent than those that were uninhibited. Behavioral inhibition acted as a protective factor with nondisruptive boys as well; those with inhibition were significantly less likely to become delinquent.

While the studies examining behavioral inhibition in clinical samples were cross sectional (e.g., at a single time point), longitudinal studies have been utilized to examine the long-term effects of anxiety on high-risk children. For example, researchers examining anxiety in infancy reported a decrease in the likelihood of engagement in aggressive behaviors at six years of age (Sanson et al., 1996). Similar results were found in longitudinal studies following children with conduct problems into adulthood (e.g., Mitchell & Rosa, 1981; Raine et al., 1995). Raine et al. (1995) found that indications of anxiety in antisocial fifteen year olds were a protective factor against criminal behavior, including aggression, at the age of 20. Mitchell and Rosa (1981) examined criminality in adults who were followed from elementary school to adolescence and found that excessive worrying in childhood years was negatively associated with criminality, including aggressive behaviors, in adulthood. Further, children with conduct issues who also reported high levels of anxiety have been found to show a lower rate of recidivism in adulthood (Quay & Love, 1977). These longitudinal studies show compelling evidence that childhood anxiety can act as a protective factor against aggression later in life.

Relationship between inadequate anxiety and aggression. As described above, high anxiety has been related to both increased and decreased aggression. Inadequate anxiety has been related to increased aggression only. For instance, in their longitudinal

study, Shaw et al. (2003) found that toddler fearlessness was associated with a higher rate of aggression and opposition later in childhood. Gacono and Meloy (1994) and Weber et al. (1992) compared conduct disordered adolescents to those diagnosed with Dysthymia. They found that those diagnosed with Conduct Disorder had a greater likelihood of inadequate anxiety than adolescents diagnosed with Dysthymia. In a related study, Smith et al. (1997) found that adolescents with Conduct Disorder were more likely to have indications of inadequate anxiety than a control group of normals. Interestingly, Weber et al. (1992) found that although adolescents diagnosed with Conduct Disorder had less indications of anxiety than those diagnosed with Dysthymia, they had more indications of anxiety than a group of controls. They attributed this difference to Conduct Disordered adolescents experiencing increased situational anxiety due to their home life. It should be noted that although these studies examined both the effects of attachment and anxiety on conduct problems, they did not examine how attachment and anxiety interrelate with one another.

Researchers such as Shapiro, Quay, Hogan, and Schwartz (1988) and O'Brien and colleagues (O'Brien, Frick, & Lyman, 1994; O'Brien & Frick, 1996) have utilized Gray's (1987) two factor theory and reward seeking behavior to better understand the relationship between conduct problems and anxiety. In support of Gray's (1987) two factor theory of conduct, Shapiro et al. (1988) examined children diagnosed with Conduct Disorder and found indications that their Behavior Activation System (BAS) was more active than their Behavior Inhibition System (BIS). In other words, these children were more likely to seek reward than engage in withdrawn or fear driven behaviors. O'Brien and colleagues (O'Brien et al., 1994; O'Brien & Frick, 1996) completed similar research

but also included anxiety and psychopathic traits as variables. Results indicated that conduct disordered children exhibited increased reward dominant behaviors only when they were not diagnosed with a comorbid anxiety disorder. When the conduct disordered children were also diagnosed with an anxiety disorder, their responses did not differ from the control group. O'Brien and Frick (1996) argue that their results support examining conduct disordered children without anxiety separately from conduct disordered children with high anxiety. O'Brien and Frick (1996) also examined the connection between psychopathic features and reward dominant behaviors. They found that nonanxious children with psychopathic traits were more likely to engage in reward dominating behavior than anxious children with psychopathic traits. They also found that nonanxious children with psychopathic traits were more likely to engage in reward dominant behavior, regardless of the presence of conduct problems. They utilize Gray's (1987) Behavioral Activation System (BAS) and Behavioral Inhibition System (BIS) to explain their results. Nonanxious children with psychopathic traits have a stronger BAS which contributes to increased reward dominated behavior. Anxious children with psychopathic traits have a stronger BIS which cancels out any tendency toward reward dominated behavior.

Having psychopathic traits, such as a lack of anxiety and guilt, has been reported as a strong predictor of violent behavior in adolescents (Porter et al., 2001; Salekin et al., 2004). Pardini et al. (2003) focused on children with callous/unemotional traits and found that they had difficulty altering their social cognitions and considering negative outcomes for their antisocial behavior. As described by the results, it is likely that this group lacked the fear or internal anxiety that results in concern and forethought regarding how

particular actions will affect others, as well as possible negative outcomes for self.

In summary, inadequate anxiety, specifically regarding negative outcomes for behavior, has been related to increases in antisocial behavior including aggression. When people lack appropriate amounts of anxiety, they do not experience guilt and empathy nor do they have the social cognition that provokes consideration of negative outcomes for behavior. In short, they lack behavioral inhibition because they do not experience the anxiety that provokes feelings of fear regarding consequences.

Conclusions: Anxiety and aggression. Lahey and colleagues (2003) attempt to explain the complicated relationship between anxiety and aggression with the following theory. When anxiety is related to shyness and behavioral inhibition, the anxiety acts as a protective factor against conduct behaviors. When anxiety is related to negative emotions, it increases the likelihood of conduct behaviors including aggression. They also hypothesize that when children are withdrawn because they are not interested in developing social relationships with others, they are more likely to engage in conduct behaviors.

Researchers such as Frick et al. (1999), Gray (1987), and Ialongo et al. (1996) have examined the empirical data and theorize that there are two types of offenders who have two different mechanisms operating. One group engages in reactive or defensive aggression. They are impulsive and irresponsible and typically engage in unplanned aggression in response to a situation and/or emotions that they are unable to control. The second group engages in proactive aggression. They are considered to be callous and unemotional and have no guilt or empathy. Their aggressive acts are much more likely to be planned. These people have less trait and situational anxiety and are less concerned

about the effects of their behavior than the children in the first group. For example, Frick et al. (1999) studied trait anxiety versus fearlessness in an effort to understand this concept. They separated the antisocial behaviors into the two categories: those of the impulsive, irresponsible nature known as conduct problems and those related to callous/unemotional traits that have been specifically linked to psychopathy. They found that anxiety was positively correlated with conduct problems but not with callous/unemotional traits. They hypothesized that those with callous/unemotional traits are less distressed by their actions and therefore experience less anxiety. They discuss the importance of separating conduct problems and callous/unemotional traits in order to thoroughly understand how anxiety relates to conduct behaviors such as aggression.

Ialongo et al. (1996) use the proactive/reactive aggression theory to hypothesize about why their results were so different from Walker et al.'s (1991) results. In summary, Ialongo et al. (1996) found that aggressive children with anxiety were more likely to engage in ongoing aggression while Walker et al.'s (1991) found that anxiety acted as a protective factor and decreased the likelihood of ongoing aggression. Similar to Frick (1994) and Frick et al. (1999), Ialongo et al. (1996) attribute this discrepancy to Gray's (1987) theory that there are two forms of aggression: proactive and reactive. They hypothesize that their sample was dominated by children with reactive tendencies while Walker et al.'s (1991) sample was dominated by children with proactive aggression. With proactive aggression, anxiety is more likely to play an inhibitory factor when it comes to continued aggression. Since reactive children are acting on impulse, anxiety serves to perpetuate the aggressive behaviors.

Kerr et al.'s (1997) theory can be related to proactive and reactive aggression as

well. They focus on behavioral inhibition as an explanation for why anxiety puts some children at risk for aggression and serves as a protective factor for others. If anxiety results in behavioral inhibition, then there is a decreased likelihood of aggression occurring. If children are anxious but do not experience behavioral inhibition, they have an increased likelihood of coping with their anxiety through acting out behaviors. Children who engage in reactive aggression are more likely to fall into this category.

Relationship Between Anxiety and Attachment

The above research focuses on how anxiety and attachment individually relate to aggressive behaviors. There is also a relationship between the constructs of attachment and anxiety. Secure attachment has been related to an increased ability to manage emotions, including anxiety, and cope with life's challenges (Allen et al., 1998; Bowlby, 1969; 1973; Kobak, Cole, Ferenz-Gillies, Fleming, and Gamble, 1993; Kobak & Sceery, 1988; Schore, 2001; Sroufe, 2005). In addition, anxiety, depression, and levels of distress, which are often related to inabilities to modulate affect and cope effectively (Blatt, 1991; Gjerde, Block, & Block, 1988), have been found to be related to insecure attachment by many researchers (e.g., Allen et al., 1998; Cooper et al., 1998; Kobak & Sceery, 1988; Manassis, Bradley, Goldberg, Hood, & Swinson, 1994; Muris et al., 2001; Ryan, Avery, & Grolnick, 1985; Sroufe, 2005).

Because of the strong connection between secure attachment and the ability to regulate emotions such as anxiety, Schore (2001) refers to attachment theory as a "regulatory theory." According to Barlow (1988), prediction and control are fundamental to anxiety and being able to manage it. Craske (2003) and Schore (2001) theorize that appropriate levels of emotional responsiveness from caregivers lead to a greater sense of

prediction and control for their children. When caregivers are able to meet the needs of their infants and respond appropriately, not only does quality attachment occur (Bowlby, 1969; 1973), there is also a greater likelihood that these children will develop adequate emotional regulation (Chorpita & Barlow, 1998; Ruff & Rothbart, 1996; Schore, 2001; Thompson, 2001).

Chorpita and Barlow (1998) hypothesize that insecure attachment contributes to a cognitive style characterized by a belief that events are out of one's control which increases the likelihood that high anxiety will develop. Allen et al. (1998) discuss how internal working models of attachment effect anxiety. They state "The presence of negative evaluations of one's ability to get attachment needs met may thus serve as a mediator between insecurity and...anxiety..." (p. 1407). That is, when caregivers do not offer comfort and do not meet the needs of children, the children question the availability of the caregiver. Anxiety is the result because the children do not believe that their caregivers are available to meet their needs and protect them during this vulnerable developmental period. When describing this connection between attachment and anxiety, Appleton (2008) states "Both aspects of attachment theory, i.e. the child's access to emergency protection (under conditions of fear and anxiety), and the child's confidence in exploration and play (via secure relationships with parents or parent figures), provide rich insights into the experience of children showing problematic anxiety, or anxiety disorders" (p. 14).

While attachment theorists began making connections between insecure attachment and the development of anxiety over 40 years ago, only recently has this relationship been examined in empirical studies. There has been some, albeit limited,

studies specifically examining the relationship between anxiety and attachment. Similar to the relationship between anxiety and aggression, the relationship between anxiety and attachment is contradictory; poor attachment has been related to both high anxiety (Allen et al., 1998; Bosquet & Egeland, 2006; Dallaire & Weinraub, 2007; Kemp & Neimeyer, 1999; Muris et al., 2001; Shamir-Essakow et al., 2005; Shaw et al., 1997) and inadequate anxiety (Meloy, 2001; Warren et al., 1997).

Relationship between insecure attachment and high anxiety.

Developmentalists have utilized longitudinal studies to examine the relationship between attachment and anxiety. They have found that insecure attachment often leads to the development of high anxiety later in life (Bohlin et al., 2000; Bosquet & Egeland, 2006; Dallaire & Weinraub, 2007; Kochanska, 2001; Shaw et al., 1997; Sroufe, 2005; Warren et al., 1997). For example, Shaw et al. (1997) studied low income children from toddlerhood to five years of age. They focused on disorganized attachment and found that this type of insecure attachment contributed to a greater risk for internalizing problems, including anxiety, in childhood. Dallaire and Weinraub (2007) followed children from toddlerhood to first grade and found that children classified as insecurely attached at 15 months who experienced many stressful life events exhibited more anxiety symptoms than children who had experienced the same type of stressful life events but were classified as securely attached as a toddler.

Warren et al. (1997) followed infants into adolescence and found that the children and adolescents diagnosed with anxiety disorders were more likely to have been classified as having anxious/resistant attachment as infants. Bosquet and Egeland (2006) studied a high risk sample of children from infancy to adolescence. They found that

insecure attachment relationships in infancy were associated with anxiety symptoms in adolescence but not during younger ages. They hypothesized that insecure attachment contributed to working models of negative peer relationships in preadolescence which lead to increased anxiety in adolescence. Each of these studies emphasize the developmental nature of the anxiety in which many factors, including insecure attachment, can initiate a developmental pathway that eventually contribute to the development of high anxiety.

Whereas the above researchers followed infants or toddlers into childhood or adolescence, other researchers have examined the relationship between current attachment status and current anxiety symptoms. These studies have found a relationship between insecure attachment and increased anxiety symptoms in populations such as at-risk preschoolers (Shamir-Essakow, 2005), non-clinical children (Roelofs et al., 2006), and moderately at-risk adolescents (Allen et al., 1998).

Allen et al. (1998) looked specifically at the relationship between attachment and anxiety in a sample of moderately at-risk adolescents. They used the Adult Attachment Interview (George et al., 1996) to assess quality of attachment and the Youth Self-Report of the Child Behavior Checklist (Achenbach & Edelbrock, 1986) to assess for internalizing problems such as anxiety. They found that adolescents with secure attachment had lower levels of internalizing problems such as anxiety than those with insecure attachment. As detailed above, this study also found that those with secure attachment had lower levels of externalizing and delinquent behaviors. Kemp and Neimeyer (1999) and Kobak and Sceery (1988) found similar results in their studies with college students, as did Muris et al. (2001) in their study examining adolescents from a

regular secondary school. In each of these studies, those with secure attachment were less likely to experience anxiety and psychological distress. Each of these studies found that secure attachment was associated with less symptoms of excessive or pathological anxiety.

Relationship between insecure attachment and inadequate anxiety. Meloy (2001) stated “Without the biological substrate of normal attachment and the anxiety concomitant with the loss of the maternal object...internalizations largely fail, along with the ability to internalize values” (p.15). In other words, when caregivers are unable to meet the needs of their children and poor attachment occurs, children are less able to internalize the values of society. Warren et al. (1997) hypothesize that when children’s needs are not met and avoidant attachment styles are developed, children protect themselves by avoiding attachment feelings, as well as the expression of anxiety. Due to this avoidance, they experience more impaired interpersonal relationships later in life. When examining attachment and anxiety in adolescents diagnosed with Conduct Disorder (Gacono & Meloy, 1994; Weber et al., 1992) and adults diagnosed with Antisocial Personality Disorder (Gacono, 1990; Gacono & Meloy, 1991, Gacono et al., 1992) researchers found both adolescents and adults diagnosed with disorders related to aggression demonstrated decreased anxiety and decreased attachment. From the results of their study with conduct disordered adolescents, Weber et al. (1992) theorize that poor attachments result in a decreased tolerance for feelings of anxiety and helplessness. If they allowed themselves to feel anxious or helpless, it would threaten their self-view, as well as increase sense their vulnerability. They therefore avoid these feelings altogether.

Relationship Between Aggression, Attachment, and Anxiety

Kehle and colleagues (2007) use MacDonald and Leary's (2005) social pain theory to explain the connection between attachment, anxiety, and aggression. Social pain theory asserts that anxiety is the mind's response to the anticipation of social pain (e.g., social exclusion or being devalued), similar to the anxiety that occurs when physical pain is anticipated (MacDonald & Leary, 2005). An aggressive act in response to the anticipation of social pain is an involuntary and defensive one, much like the flight or fight response to the anticipation of physical pain. Kehle et al (2007) theorize that the anticipation of rejection and high sensitivity to the pain of rejection in insecurely attachment children leads to high anxiety which results in an impulsive, aggressive response.

There are very few studies that examine how aggression, attachment, and anxiety interrelate with one another in children and adolescents. There are some findings in the adult literature that may inform how to conceptualize these issues with adolescents. Some researchers have examined attachment and anxiety in aggressive adults (e.g., Dutton et al., 1994; Lyn & Burton, 2005). For example, in their study, Lyn & Burton (2005) compared incarcerated sexual offenders to incarcerated non-sexual offenders. It was found that sexual offenders were more likely to have indications of insecure-anxious attachment and insecure-avoidant attachment, as well as generalized anxiety. It was also found that increased generalized anxiety was positively correlated with attachment anxiety. Dutton and colleagues (1994) examined anger, attachment, and abuse in intimate relationships. They found that men who were anxiously attached were more likely to experience a high amount of chronic anxiety and anger, as well as more likely to

emotionally and physically abuse their partners. These researchers also theorize that early attachment problems lead to anger and anxiety regarding relationships and an increased likelihood of aggression toward partners later in life.

Most studies examining attachment and anxiety in aggressive youth have not investigated how attachment and anxiety interrelate with one another (e.g., Gacono & Meloy, 1994; NICHD-ECCRN, 2006; Smith et al., 1997; Weber et al., 1992). Daillaire and Weinraub (2007) used attachment security as the independent variable and anxiety and aggression as dependent variables to study how the three variables relate with one another. They studied children who had experienced a high amount of stressful life events and found that infant attachment security more strongly predicted anxiety symptoms in first grade than aggressive behaviors.

Allen et al. (1998) examined how the three variables interrelate with a group of moderately at risk adolescents. They found that insecure-preoccupied attachment was a significant predictor of higher levels of internalizing behaviors, including anxiety. Secure attachment predicted less internalizing behaviors but this relationship was no longer statistically significant when demographic variables were taken into account. While these studies provide some initial results, they do not discuss the relationship between insecure-dismissive attachment and the level of internalizing behaviors, including anxiety. Also, the categories in Allen et al.'s (1998) study were quite broad where internalizing behaviors included anxiety and depression and externalizing behaviors included aggressive behaviors and other delinquent behaviors. Daillaire and Weinraub (2007) only followed their subjects until the first grade. Further investigation is warranted.

Inhibition

Inhibition as a variable

The research described above indicates that the relationship between anxiety, attachment, and aggression is not clearly understood and at times contradictory. A relatively new set of literature has included behavioral inhibition as a variable that may explain the relationship between attachment and anxiety. For example, poor inhibition, defined as the ability to control impulses and stop one's own behavior when it is appropriate for the circumstances (Gioia, Isquith, Guy, & Kenworthy, 2000), has been related to inadequate anxiety (Kerr et al., 1997; Meloy, 1991). In contrast, increased behavioral inhibition has been related to increased anxiety (Gray, 1987; Kagan et al., 1989).

The relationship between attachment and inhibition is not as well studied. In reviewing the relationship between attachment and inhibition, Muris and Meesters (2002) point out that they share two important characteristics: 1) both pertain to children's reactions when in unfamiliar situations and 2) both pertain to children's behaviors in social situations. Cassidy and Berlin (1994) focused their review on children classified as having anxious/resistant attachment and reported increased inhibited behaviors or "inhibited exploration" of the child's environment across studies. They did not, however, extend their review to children classified with other insecure attachment patterns.

As Mannasis and Bradley (1994) discuss, neither inhibition theory nor attachment theory alone provides a complete understanding of how anxiety disorders develop. They therefore argue that attachment and inhibition must be examined together in order to understand the development of anxiety. In their integrated model, Manassis and Bradley

(1994) theorize that insecure attachment results in a decreased likelihood of the development of functional affect regulation. In turn, behavioral inhibition and anxious symptoms are more likely to occur. While insecure attachment and inhibition contribute individually to the development of anxiety, their interaction carries the most variance and as such a critical role in explaining behavior. Specifically, insecure attachment and behavioral inhibition together are more likely to result in the development of anxious symptoms and anxiety disorders.

Assessing Inhibition

The primary methods utilized to assess inhibition are through behavioral observations, rating scales, and continuous performance tests. Behavioral observations typically examine subjects' reactions to unfamiliar events. For example, Rosenbaum et al. (2000) observed fear based behaviors, vocalizations, spontaneous comments, and smiles to determine whether or not the children in their study were behaviorally inhibited. The Behavior Rating Inventory of Executive Function (BRIEF; Gioia et al., 2000) is a rating scale that has a teacher version and parent version and includes Inhibit as one of its clinical subscales. Items on the Inhibit scale include "Blurts things out" and "Acts too wild or out of control." Two examples of self-report rating scales that assess inhibition are the BIS/BAS scale (Carver & White, 1994) which assesses individual differences in the sensitivity of their Behavioral Inhibition System (BIS) and Behavioral Approach System (BAS) and the Behavioral Inhibition Scale (Muris, Merckelbach, Wessel, & Ven de van, 1999) which contains four questions related to inhibition.

In addition to behavioral observations and rating scales, continuous performance tests are often utilized to assess for behavioral inhibition. A continuous performance test

was utilized for the purposes of this study because it is a more direct measure of inhibition than an observer's ratings of his or her observations. A continuous performance task or test, often referred to as CPT, measures a subjects' sustained attention and selective attention. Sustained attention is defined as the ability to focus on a continuous activity and selective attention is the ability to focus on pertinent stimuli and ignore competing stimuli. During CPTs, subjects are presented with a series of stimuli (e.g., letters) on a screen and told to click a button or computer mouse only when they see a certain stimulus (e.g., the letter X). They are told not to click the button if they see a different letter. Two of the most commonly used CPTs are the Test of Variables of Attention (TOVA.: Lark, Greenberg, Kindschi, Dupuy, & Hughes, 2007) and the Conners' Continuous Performance Test II (CPT II: Conners, 2002). While the premise of the two is the same, the TOVA utilizes geometric shapes while the CPT II utilizes letters. The CPT II was utilized to assess inhibition in the present study.

The Relationship between Inhibition, Attachment, and Anxiety

Only a few studies have added inhibition as a variable in order to clarify its role in the relationship between anxiety and attachment in child and adolescent populations. Calkins and Fox (1992) was one of the few studies that focus specifically on the relationship between attachment and inhibition. They found that attachment at 14 months was predictive of behavioral inhibition at 2 years. Infants classified as ambivalently attached were more behaviorally inhibited than both securely attached infants and avoidantly attached infants. Those who demonstrated avoidant attachment had the least amount of behavioral inhibition. Warren et al. (1997)'s longitudinal study tracked children from 12 months to 17 years of age. They found that anxious/resistant attachment

in infancy was significantly correlated with infant behavioral inhibition, as well as adolescent anxiety disorders. In addition behavioral inhibition in infancy predicted adolescent anxiety disorders.

While the above studies were longitudinal in nature, a few cross-sectional studies have also examined the relationship between attachment, anxiety, and inhibition. For example, Mannassis, Bradley, Goldberg, Hood, and Swinson (1995) and Shamir-Essakow, Ungerer, & Rapee (2005) studied samples of pre-school children. Mannassis et al. (1995) found a relationship between insecure attachment and anxiety, but the sample size was too small to determine an interactional effect between attachment and inhibition and the prediction of anxiety. Shamir-Essakow et al. (2005) had similar results and found that while behavioral inhibition and insecure attachment were independently associated with an increase in anxiety, a significant interaction between the two was not indicated.

In their studies examining the relationship between attachment, anxiety, and inhibition, van Brakel, Muris, Bogels, and Thomassen (2006) and Muris and Meesters (2002) utilized samples of non-clinical adolescents. Muris and Meesters (2002) found that insecure attachment was associated with higher levels of behavioral inhibition. While attachment and inhibition each had a significant effect on anxious symptoms, a significant interaction between attachment and inhibition was not found. van Brakel et al. (2006), on the other hand, did find a significant interaction between behavioral inhibition and attachment with anxiety disorder symptoms as the dependent variable. Those with both behavioral inhibition and insecure attachment indicated the most anxious symptoms while low behavioral inhibition and secure attachment indicated the least amount of anxious symptoms. In combination, the above results indicate that there is a relationship

between the attachment, anxiety, and inhibition and point to the need for further research to gain a better understanding of this relationship.

Summary

As described above, poor attachment has been shown to play a significant role in interpersonal relationships and interactions, including aggression (Allen et al., 1998; Bookwala & Zdanuik, 1998; Gacono, 1990; Gacono & Meloy, 1991; Gacono & Meloy, 1994; Gacono et al., 1992; Greenberg et al., 1997; Kobak & Sceery, 1988; Kobak et al., 1993; Lewis et al., 1984; Lyons-Ruth et al., 1993; Meesters & Muris, 2002; Renken et al., 1989; Rosenstein & Horowitz, 1996; Smallbone & Dadds, 2001; Smith et al., 1997; Weber et al., 1992). The effects of anxiety on aggression are not as clear. Some studies have found a relationship between inadequate anxiety and aggression (e.g., Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992). Other studies have found a relationship between high anxiety and aggression (e.g., Russo & Beidel; Sanson et al., 1996; Zoccolillo, 1992).

Early interactions between caregivers and infants are related to the quality of attachment, (Bowlby 1969; 1973) as well as the development of appropriate anxiety (Allen et al., 1998; Bowlby, 1973; Kobak et al., 1993; Sroufe, 2005) and emotional regulation (Bowlby, 1973; Kobak & Sceery, 1988; Rosenstein & Horowitz, 1996). The development of appropriate levels of anxiety are related to attachments and interpersonal relationships; bonds with others result in an understanding of what is right and wrong and a desire to do the right thing. Without quality attachments, children are likely to either develop high levels of anxiety or inadequate anxiety. When they experience low or inadequate levels of anxiety, they are less likely to develop an internal monitoring system

(Meloy, 2001) and experience behavior inhibition (Kerr et al., 1997; Walker et al., 1991). When they experience high levels of anxiety, behavioral inhibition and an inability to regulate emotions is often the result.

Researchers speak to the need for more studies that focus on adolescent attachment and aggression (e.g., Allen et al., 1998; Greenberg et al., 1997; Moss et al., 2006), anxiety and aggression (e.g., Iaolongo et al., 1996), and attachment and anxiety (e.g., Appleton, 2008; Craske & Waters, 2005). While many studies have examined the role of attachment and anxiety as separate variables in the development of aggression and conduct problems (e.g., Gacono & Meloy, 1994; Smith et al., 1997), few (e.g., Allen et al., 1998) have examined how the two are interrelated in aggressive children. No published study has considered both inadequate anxiety and high anxiety at the same time in an attempt to understand aggression in children and adolescents. In addition, the relationship between attachment, anxiety, and inhibition has only just begun to be examined. The above results not only indicate a relationship between aggression, attachment, and anxiety, but also demonstrate the need for further research to clarify how these three factors relate with one another. The results from the few studies that have examined the relationship between inhibition, anxiety, and attachment also suggest that further research is warranted.

CHAPTER III

METHOD

Participants

Participants consisted of school-aged males and females between the ages of nine years zero months to seventeen years eleven months. They were chosen to participate, independently of the author, based on being identified as aggressive by their school or providing agency. For the purposes of this study, aggression was defined as violent behavior toward other people. It excluded self-injurious behaviors. In addition to being aggressive, many of the children have psychiatric diagnoses, have been diagnosed with a learning disability, and/or have been adjudicated delinquent by the court. Children with developmental delays such as autism or mental retardation were excluded from the study.

The children that were utilized in this study were placed in an alternative setting and were no longer able to be maintained in a less restrictive environment such as their home or public school. The sites that were utilized in this study fell into three basic categories: approved private schools, residential treatment facilities, and juvenile detention centers. Children were included from the three different types of sites in order to be able to generalize the findings to aggressive children who are being treated in a variety of more restrictive settings.

Children being taught at approved private schools are unable to function effectively within a less restrictive school environment. They typically come from public school settings where they were involved in special education either part-time or full-time. The students were removed from these less restrictive settings due to disruptive behaviors such as physical and verbal aggression against peers and teachers, truancy,

failure to complete school work, and/or general noncompliance within the school setting. In addition to behavioral problems, many of these children have learning difficulties, both of which affect their ability to complete academic work. Typically, there is a treatment component within approved private schools, in addition to the academic focus. An individualized treatment plan is created which includes goals and objectives based upon children's needs and behaviors. If children are aggressive, a goal or objective of their treatment plan is to identify and utilize alternative, more appropriate coping strategies, to manage their emotions. Referrals primarily come from the students' home schools. Approved private schools typically operate during standard school hours and the children go home or to other residential placements once the school day is complete. The primary goal is typically for the children to make enough progress on their goals in order to return to a less restrictive school environment.

Children residing in residential treatment facilities are unable to be maintained in a less restrictive home environment such as their family's home, foster care, or a standard group home. The majority of the children have psychiatric diagnoses, in addition to acting out behaviors. These acting out behaviors include running away from the home setting and physical and verbal aggression toward parental figures or guardians. In many cases, the parents are unable to care for their children due to their own mental health issues and/or involvement with drugs and alcohol. Children residing in a residential treatment facility attend various school settings based on individual need; some may attend an on-site school while others may be involved in special education in public school. These facilities provide 24-hour custodial care to the children, in addition to having a treatment component that includes individualized treatment plans. These

treatment plans include the goals and objectives that need to be accomplished before the children are able to return home or to another less restrictive environment. Referrals typically come from parents, home schools, or agency case managers.

Children residing in juvenile detention centers have typically been adjudicated delinquent and sentenced by a court of law due to committing a crime. These crimes include truancy, assault, selling and/or using illegal substances, and vandalism. These children attend school on grounds of the detention center. These detention centers also provide 24-hour custodial care to the children. Since the children in detention centers have been sentenced due to committing a crime, therapy or treatment may not be a primary purpose for their placement. These children are discharged to their home or other residential settings after they have completed the time that they have been sentenced.

Although they come from different settings, the children chosen for this study had physical aggression toward others identified as one of their primary issues. There are many reasons that are considered when placing a child and severity of difficulty is not the sole or even primary criteria. That is, a child may be placed in a facility if there is an opening rather than applying a decision tree to each case. Further, many of these children have resided in multiple settings, as such it is not possible to claim that these children are different enough to warrant comparison of separate groups.

Missing data will be handled through mean computation. If more than 40% of the data is missing, that data will be discarded. If any of the relevant YSR scales or Rorschach variables are unable to be calculated due to missing data, that data will also be discarded.

Power Analysis

To determine the number of subjects necessary to achieve adequate power, an apriori estimate of power was conducted using *G*Power 3.1.2* (Faul, Erdfelder, Lang, & Buchner, 2007). The power of a test is the likelihood that a significant difference will be found between groups if indeed a significant difference exists. Power greater than or equal to .80 is considered to be adequate with a medium effect size of .50 (Stevens, 2007).

According to *G*Power 3.1.2*, for an ANOVA with three groups, a sample size of 42 participants was needed in order to achieve a medium effect size of .50 with adequate power of .80 at an alpha level of .05. According to *G*Power 3.1.2*, for a t-test, a sample size of 102 participants with 51 participants in each of the two groups was needed in order to achieve a medium effect size of .50 with adequate power of .80 at an alpha level of .05. This study utilized a pre-existing data set that included the necessary assessment data for 64 subjects. The apriori estimate of needing 42 subjects for the ANOVA was met but the estimate of needing 102 participants for the t-test was not met.

Measures

The instruments utilized in this battery included standardized measures used to measure constructs of attachment and anxiety. A description of each measure utilized in this study and a rationale for its use are as follows.

Anxiety

High anxiety. Achenbach and Rescorla's (2001) Youth Self-Report (YSR) For Ages 11-18 of the Achenbach System of Empirically Based Assessment (ASEBA) was utilized to assess high anxiety. The YSR is a paper and pencil forced choice Likert scale

test that includes 112 questions. The YSR was normed with a group of 1,057 nonreferred children, 52% were boys and 48% were girls (Achenbach & Rescorla, 2001). Separate norms are provided for each gender.

Eight syndrome scales were developed through factor analysis of the items for ASEBA forms, including the YSR. In addition, scores for Total Problems, Internalizing, Externalizing, and DSM-Oriented Scales are included. For the DSM-oriented scales, psychiatrists and psychologists from nine cultures rated items from each ASEBA form based on how consistent they were with DSM-IV diagnoses. Items rated as “very consistent” at least 64% of the time were included in the DSM-Oriented Scale. The ASEBA syndrome scale related to anxiety is the Anxious/Depressed Scale. In order to assure that results were not confounded with depression, the Anxiety Problems DSM oriented scale was utilized as a measure of high anxiety in this study. This scale includes questions regarding whether the child demonstrates clinging behavior, has fears, is upset by separation, is nervous, fears school, is fearful in general, and worries.

The test-retest reliability coefficient on the Anxiety Problems scale of the YSR was .68 (Achenbach & Rescorla, 2001). Internal consistency for the problem scales of the YSR yield alphas that range between .71 and .95. The YSR also has good validity. In terms of content validity, the ASEBA scales and the Youth Self Report specifically produce scores that are significantly higher for referred children as compared to nonreferred children (Achenbach & Rescorla, 2001). In order to further assess for validity, the ASEBA scales, including the YSR, have been compared to other commonly used behavior checklists for children and adolescents. For example, reliability coefficients between .38 and .89 were produced when comparing the Achenbach scales to

the BASC (Behavior Assessment Scale for Children). In addition, many studies have found significant correlations between ASEBA scores and DSM diagnoses. In summary, the YSR indicates good validity and reliability.

For the purposes of this study, YSR Anxiety Problems T-scores at least one standard deviation above the mean (60 or above), were included in the high anxiety group.

Inadequate anxiety. The YSR does not include a specific scale that encompasses the concept of inadequate anxiety. There is support for utilizing the YSR to create constructs such as inadequate anxiety. For example, Achenbach, Dumenci, and Rescorla (2003) found that the ASEBA System, including the YSR, are able to effectively create psychopathological constructs that correlate to diagnoses from the DSM-IV-TR. Using Achenbach et al.'s methods, Morris, Altman, Paserba, Taormina, and Hughes (2007) created a YSR construct for inadequate anxiety by matching criteria defining callous/unemotional traits to questions from the YSR. YSR questions related to callous/unemotional traits that were chosen for the inadequate anxiety construct in the current study have been directly linked to inadequate anxiety (Frick et al., 1994). The inadequate anxiety traits and the corresponding five questions utilized from the YSR are as follows:

<u>Inadequate Anxiety Traits</u>	<u>YSR Items</u>
Lying	I lie or cheat & I am pretty honest
Conning/Manipulative	I like to be fair to others
Lack of guilt & Shallow affect	I don't feel guilty after doing something I shouldn't

Callous/lack of empathy

I tease others a lot

Each of these YSR items receives a score of a 0, 1, or 2. The range of possible sum of raw scores is from 0 to 15. Z-scores and T-scores were calculated for each subject. Subjects with a T-score at least one standard deviation above the mean (60 and above) were considered to have inadequate anxiety.

Attachment

The Rorschach Inkblot Method variables of T and HRV were utilized to assess attachment in this study. In order to increase standardization, improve psychometric properties, and increase overall respectability and use of the Rorschach Inkblot Method in the clinical community, Exner (1974) developed a consistent scoring system that has undergone four revisions since the first edition. Exner's (2003) Comprehensive System for Children and Adolescents includes a standardization sample of 1390 children and adolescents aged five to 16. It includes control groups for age, gender, socioeconomic status, and IQ.

Numerous studies have been completed to test the Rorschach Inkblot Method for reliability and validity. The Rorschach Inkblot Method has consistently been found to be reliable and valid. Inter-rater reliability scores on many Rorschach Inkblot Method variables range from .85 to greater than .90 (Weiner, 1997). Meyer (1997) completed a meta-analysis of interrater reliability studies and reported a mean correlation coefficient of .86, which is considered to be in the excellent range. Exner reports test-retest reliability of at least .80 for 13 of the core variables (Rose et al., 2001). Even when nonpatient 8-year-old subjects were told to give different answers the second time, their test-retest correlations were very similar to the control group and the majority were above

.80 (Exner, 1980). In order to ascertain inter-rater reliability in this particular study, a school psychology graduate student and school psychology professor independently scored each of the Rorschach protocols. Inter-rater reliability of .94 was achieved which is considered to be excellent reliability.

Studies examining the validity of the Rorschach Inkblot Method demonstrate support as well (Atkinson, Quarrington, Alp, & Cyr, 1986; Hiller, Rosenthal, Bornstein, Berry, & Brunell-Neuleib, 1999; Weiner, 1996). Weiner (1996) reported that the Rorschach Inkblot Method has proven to be valid in terms of being able to track progress in therapy, assess developmental changes in children, and assess personality variables. Researchers such as Hiller et al. (1999), Meyer and Archer (2001), and Parker, Hanson, and Hunsley (1988) completed meta-analytic studies and found that the overall validity of the Rorschach Inkblot Method is comparable to the Minnesota Multiphasic Personality Inventory (MMPI). Meyer and Archer (2001) also found the Rorschach Inkblot Method's validity to be similar to IQ measures. Research supports the use of the Rorschach Inkblot Method in assessing aggressive youth, at least in part due to being unable to purposely portray oneself in a positive manner (Gacono & Meloy, 1991). The Texture (T) response and the Human Representational Variable (HRV) are the specific Rorschach Inkblot Method variables that were utilized to assess quality of attachment in this study.

The Texture (T) response as a measure of attachment. Historically, the Texture (T) response is the most commonly examined Rorschach Inkblot Method variable in assessing quality of attachment. T is coded when the examinee uses light and dark features or shading components of the inkblot to suggest texture or tactile qualities (Rose et al., 2001). The Rorschach Inkblot Method's ability to assess quality of

attachment through the T variable dates back to the 1950s when Breecher (1956) found that a low amount of T responses was correlated with a history of maternal rejection in people diagnosed with schizophrenia. A decreased amount of T responses has also been associated with losing a parent before the age of eight (Pierce, 1978) and being in multiple foster homes (Leura & Exner, 1976).

More recently, a decreased amount of T responses has been associated with the absence of a maternal figure at home (Weber et al., 1992). Cassella and Viglione (2009) recently completed a construct validation study of T responses in the context of modern attachment theory by comparing the number of T responses to results from two attachment questionnaires, the Relationship Questionnaire and the Relationship Scales Questionnaire. Results indicate that T is a valid measure of attachment and need for closeness with others; one T response was associated with secure attachment, more than one T response was associated with preoccupied attachment, and no T responses were associated with avoidant attachment. In their review of studies that utilize Rorschach Inkblot Method variables to assess certain personality dynamics, Gacono and Meloy (1997) state that “The Rorschach texture responses... provide a robust measure of affectional desire and dependency” (p. 47). This is directly related to attachment; people with quality attachment have the desire to be close with their attachment figures and are able to appropriately depend on others when in need (Bowlby, 1969).

T has been found to be a stable variable; a correlation of .91 was achieved at a one- year retest (Weiner, 1998). Normatively, people of all ages typically give one T response (Exner & Weiner, 1995; Weiner, 1998). People with poor attachment, on the other hand, often give “T-less protocols” (Exner & Weiner, 1995; Weiner, 1998). For the

purposes of this study, those without a T in their Rorschach Inkblot Method protocol were considered to have poor attachment. Those with one T in their protocol were considered to have more positive attachment.

The Human Representational Variable (HRV) as a measure of attachment.

While T is only one variable of the Rorschach Inkblot Method, the Human Representational Variable (HRV) incorporates a variety of variables to assess attachment. HRV was used as an assessment of attachment in addition to the number of T responses because it has been found that aggressive adolescents typically do not give any Texture responses during administration of the Rorschach Inkblot Method (Gacono & Meloy, 1994; Smith et al., 1997; Weber, et al., 1992). Therefore, using only the number of T responses may not be able to discriminate the groups. The HRV is the result of revisions to the Human Experience Variable (HEV). Perry and Vigione (1991) initially created the HEV to provide information about quality of interpersonal relationships and relatedness which were not specifically included in Exner's (1993) Comprehensive System but could be calculated from the standardized scores. The inter-rater reliability for HEV when scored by highly trained professionals was .97. In addition, the test-retest reliability of the HEV over 9 weeks was found to be .78 (Perry & Viglione, 1991). For the subjects that were able to be located 5 years later, test-retest reliability was found to be .68 (Perry & Viglione, 1991).

Burns and Viglione (1996) tested the validity of the HEV by using the Bell Object Relations Inventory (Bell, 1995). They found evidence for criterion validity and construct validity. The HEV results were related to the quality of interpersonal relatedness. In addition, the HEV made a unique contribution to the prediction of whether or not the

women, as well as their significant others, perceived them to have positive or negative interpersonal relationships. Reid (2000) also tested the validity of the HEV. This study examined the relationship between the adult attachment status of college students as measured by the Relationship Questionnaire (RQ: Bartholomew & Horowitz, 1991) and quality of attachment as indicated by variables of the Rorschach Inkblot Method that have been associated with attachment, including the Human Experience Variable (HEV) and Texture (T). She found that those with a secure attachment status had significantly lower HEV scores (lower scores representing better interpersonal relatedness). These studies are considered to validate the use of the HEV in measuring quality of attachment.

In order to increase the reliability and validity of the HEV, Viglione et al. (2003) made minor revisions to create the HRV. The HRV has improved psychometric properties, as well as an increased ability to discriminate between groups (Viglione et al., 2003). In a sample of Rorschach Inkblot Method protocols, the HRV scores were found to be highly correlated with HEV scores (correlation coefficients of .87 to .96), thus is also interpreted as a measure of quality of interpersonal relatedness (Viglione et al., 2003).

As described in Viglione et al. (2003), the following steps are taken to calculate the HRV:

1. Select all responses from the Rorschach Inkblot Method that contain either human content coding, the determinant M, or Cooperative Movement (COP) or Aggressive Movement (AG) Special Scores with an FM coding.
2. Assign either a Good or Poor to each of these human responses

through a classification algorithm that was created by Viglione et al. (2003) and is now a part of Exner's Comprehensive System (Exner, 2003). According to Viglione et al. (2003), a Good Human Representation (GHR) accurately perceives, realistic, logical, intact human representation with benign or cooperative interaction. A Poor Human Representation (PHR) is a distorted, unrealistic, imaginary, logical, damaged, or aggressive human representation.

3. Create the Good Human Response (GHR) to Poor Human Response (PHR) ratio by expressing the ratio of GHR to PHR responses (e.g., 4:2).
4. Calculate the Human Representational Variable using the following formula: $GHR - PHR = HRV$. Negative scores are associated with more impairment.

Inhibition

Conners' Continuous Performance Test II (CPT II; Conners, 2002) was utilized to assess for inhibition in the exploratory analysis of the study. The CPT II is a computer-generated test that asks subjects aged 6 and older to hit a button when a predetermined stimulus is presented. The two primary measures of the CPT II are omissions and commissions. Omissions refer to the number of targets to which the individual does not respond. Commissions refer to the number of times that the individual responds to a nontarget. A high number of omissions has been related to increased behavioral inhibition while a high number of commissions has been related to decreased behavioral inhibition (Conners, 2002). It was standardized with a sample of 1,920 subjects including

104 cases of ADHD or ADD, 134 cases of ADHD comorbid with another diagnosis and 246 cases with some other clinical condition. A normative clinical sample was also obtained for an ADHD group and an adult neurologically impaired group.

The CPT II is widely used with medical and psychiatric patients to assess for attention disorders and other neurological dysfunction. Research has supported the use of the CPT II for both research and clinical purposes. Utilizing 520 cases, split-half reliability was examined using measures such as hit reaction time, commissions, omissions, and standard error (Conners, 2002). Scores ranged from .66 to .95, indicating good overall reliability. The reliability coefficient for commissions was .83 while the reliability coefficient for omissions was .94. Test-Retest reliability information was also obtained by examining 23 subjects, 10 nonclinical and 13 clinical. The average interval between administrations was approximately three months. Test-retest correlation coefficients obtained are considered to be highly satisfactory for most of the measures. Although scores ranged from .05 to .92, 8 out of the 14 measures were found to be above .60. The commissions subtest yielded a test-retest correlation of .65 while the omissions subtest yielded a .84.

Validity results showed significant differences between the ADHD groups and nonclinical groups, as well as between the ADHD groups and those with other diagnoses (Conners, 2002). The CPT II is effective in differentiating between clinical and non-clinical groups. In summary, both reliability and validity are considered acceptable for the CPT II.

Research Design

This study was quasi experimental and utilized a clinical community sample. Internal validity is considered to be high and results can be generalized to other aggressive children and adolescents who are in these types of restrictive settings. External validity may be compromised; the results may not represent all children and may not generalize to the population at large.

In the primary analysis of this study, the independent variable was type of anxiety. Initially, subjects were categorized into three groups, high anxiety, inadequate anxiety, and normal anxiety. High anxiety was assessed using the Anxiety Problems scale of the Youth Self-Report (YSR) of the Achenbach System of Empirically Based Assessment (ASEBA) (Achenbach & Rescorla, 2001). Scores of 60 and above were included in the High Anxiety group. Inadequate anxiety was assessed using an ASEBA YSR construct created to measure inadequate anxiety. T-scores at least one standard deviation above the mean were included in the Inadequate Anxiety group. Subjects whose scores on the Anxiety Problems scale and the Inadequate Anxiety Construct were below 60 were assigned to the Normal Anxiety group. Subjects who met the requirements for both groups and considered to have both inadequate anxiety and high anxiety were excluded.

Additional analyses were completed after combining the High Anxiety group and Inadequate Anxiety group into one Abnormal Anxiety group. The attachment of the Abnormal Anxiety group was compared to the attachment of the Normal Anxiety group.

The dependent variable in this study was quality of attachment as measured by T and HRV of the Inkblot Rorschach Method. Note, subjects that did not give a T response

were considered to have poor attachment while those with one T response were considered to have more positive attachment (Exner & Weiner, 1995). Negative scores on the HRV were associated with more impairment and poor attachment.

In addition, the plan was for inhibition to be examined as an independent variable in an exploratory analysis to determine the interaction and effects of anxiety and inhibition on attachment.

Procedures

Treatment facilities, approved private schools, and juvenile detention centers in Pittsburgh, Pennsylvania and surrounding areas were solicited for participation in this study through phone calls and letters. Once agreement to participate was obtained, the treatment facilities and schools took the lead in identifying students appropriate for the study and obtaining parental or guardian consent. The consent forms explained the purpose of the study, including that the results were utilized for a research project that focused on better understanding childhood aggression. The consent discussed anonymity and that the data from the study was demographic in nature and children were not personally identified as participants. Parents/guardians were assured that participation was voluntary and they or their child could choose to withdraw from the study at any time. In addition, testing did not affect their child's grades or course of treatment in any manner. The parents or guardians were offered to receive a summary of the study's results.

Once written consent was received by the parent or guardian, personnel from the participating site arranged for testing times. Children were tested at their alternative setting of residential treatment facility, approved private school, or juvenile detention

center. Identified staff from the school or facility introduced the experimenter to the student. The experimenter reviewed the assent form and explained informed consent and assent in child friendly language to the child. It was explained to the child in age appropriate terms that participation was voluntary and that he/she could choose to withdraw from testing at any time.

The testing battery was administered by a school psychology graduate student trained to administer the tests. The battery was administered according to standardized procedure for each particular measure. The average amount of time to administer the battery of tests was approximately two and a half hours. The battery was broken down into two sessions when necessary due to issues such as child request or attention span. The students were offered a candy bar as a reward for finishing the battery of tests.

Data Analysis

Research Question and Hypotheses

The research question for the current study was: Do aggressive children with high anxiety, inadequate anxiety, and normal anxiety differ in terms of their attachment? The hypothesis was that subjects with normal anxiety would have more positive attachment than subjects from the high anxiety and inadequate anxiety groups. An additional hypothesis was that subjects with high anxiety would have more positive attachment than those with inadequate anxiety.

Statistical Analyses

Since the dependent variable of quality of attachment was measured by two different Rorschach Inkblot Method variables, two different types of statistics were utilized.

Statistics for Texture (T). The Rorschach Inkblot Method variable Texture (T) is categorical; it is measured by the number of times that a texture response is given. Therefore, chi-square was utilized to compare the quality of attachment as measured by T between the anxiety groups. According to Gay and Airasian (2003), chi-square is a nonparametric test of significance. It is used when data are in the form of frequency counts such as in the measure of T. It compares group frequencies to see if an event occurs more frequently in one group than another. The chi square value increases as the difference between the observed and expected frequencies increases.

Because chi-square is a categorical, nonparametric test, there are no assumptions. An alpha level of .05 was utilized to determine significance.

Statistics for Human Representational Variable (HRV). The Human Representational Variable (HRV) is considered to be interval data because it is a score that is calculated by utilizing a number of different Rorschach Inkblot Method variables. Because there were three independent variable groups (high anxiety, inadequate anxiety, and normal anxiety), an Analysis of Variance (ANOVA) was utilized to compare the quality of attachment between the three groups as measured by HRV. The ANOVA was used to determine whether there was a significant difference between means at a predetermined probability level (Gay & Airasian, 2003). With the ANOVA, an F ratio is computed with group differences or variance between groups as the numerator and error or variance within groups as the denominator. If the treatment variance is adequately larger than the error variance, there is a significant F and the null hypothesis is rejected. In other words, the conclusion is that there is a true difference between independent variable groups on the dependent variable. The ANOVA is based on the following three

assumptions which were tested for in this study (Stevens, 2007). One is normality which states that the scores on the dependent variable are normally distributed in each group. Another is homogeneity of variance which states that the population variances are equal for the two groups. The last assumption is independence of observations which states that each subject's score on the dependent variable is not affected by other subjects in the same treatment group. An alpha level of .05 was utilized to determine significance.

The t-test was utilized to compare the quality of attachment as measured by HRV when the High Anxiety and Inadequate Anxiety groups were collapsed into one Abnormal Anxiety group and their attachment was compared to the Normal Anxiety group. The t-test determines whether the observed difference between the means of two independent samples (e.g., normal and abnormal anxiety) is sufficiently larger than would be expected by chance at a particular probability level (Gay & Airasian, 2003). It compares the mean difference observed with the difference expected by chance and creates the ratio of these two amounts. The numerator for a t-test is the difference between the sample means. The denominator is the chance difference that would be expected if the null hypothesis were true and the two mean of the two groups were not significantly different. This is also known as the "standard error of the difference between means" (Gay & Airasian, 2003). The denominator takes into account both sample size and group variance; smaller sample sizes and greater variation within groups is associated with an increased amount of random differences between groups. The t-test is based on the same three assumptions as the ANOVA and were tested for in this study: normality, homogeneity of variance, and independence of observations (Stevens, 2007). An alpha level of .05 was utilized to determine significance.

Exploratory Analysis

When inhibition was added as a variable in an exploratory analysis, a 2 (inhibited versus uninhibited) X 2 (high anxiety versus inadequate anxiety) factorial analysis of variance (ANOVA) was computed with attachment as the dependent variable. An alpha level of .05 was utilized to determine significance.

CHAPTER IV

RESULTS

This study examined the attachment of aggressive children and adolescents with high anxiety, inadequate anxiety, and normal anxiety. It was hypothesized that subjects with normal anxiety would have more positive attachment than subjects with high anxiety and subjects with inadequate anxiety. It was also hypothesized that subjects with high anxiety would have more positive attachment than those with inadequate anxiety.

The independent variable in this study was anxiety (e.g., high, inadequate, and normal) as measured by the Youth Self Report Anxiety Problems scale and an inadequate anxiety construct devised from certain items of the Youth Self Report. A subject was placed in the High Anxiety group if their YSR Anxiety Problems scale T score was 60 or above. A subject was placed in the Inadequate Anxiety group if their T score on the Inadequate Anxiety Construct was 60 or above. Those with T scores below 60 on both the Anxiety Problems scale and the Inadequate Anxiety Construct were considered to have normal anxiety. The dependent variable in this study was attachment as measured by the number of Rorschach Texture (T) responses given and the Rorschach Human Representational Variable (HRV) score.

The results of the analyses for this study, described in chapter three, are presented in this chapter. First, the results of preliminary analyses are reported. These include results from the reliability analysis of the Inadequate Anxiety construct that was devised, as well as a correlation between the Anxiety Problems scale and the Inadequate Anxiety construct to assure that they are measuring difference constructs. Next, descriptive statistics for demographics are reported. Finally, results of the analyses utilized to answer

the research questions are reported.

Preliminary Statistical Analyses

Reliability Analysis

The Inadequate Anxiety Construct was devised from the following five items from the Youth Self Report (YSR; Achenbach & Resorla, 2001): “I lie or cheat,” “I am pretty honest,” “I like to be fair to others,” “I don’t feel guilty after doing things I shouldn’t,” and “I tease others a lot.” The scores on the two items stated in the positive (“I am pretty honest” and “I like to be fair to others”) were rescored before doing the analyses so that a zero was counted as a two and a two was counted as a zero. A reliability coefficient for the Inadequate Anxiety Construct was calculated based on the answers of the 61 subjects in this study and a Cronbach’s Alpha of .37 was achieved.

To further analyze the relationship between these items, an alpha factor analysis was computed. A factor analysis utilizes a correlation matrix to compute what groups or variables share variance (Stevens, 2007). Part of the factor analysis is a rotation of factors which assists in interpreting which factors are relevant. An oblique rotation was done in this case because the factors are not orthogonal or mutually dependent. Results from the factor analysis are reported in Table 1 and Table 2.

The pattern matrix in Table 1 indicates that three distinct components or factors resulted from the factor analysis. For the purposes of this study, the factors were labeled according to the YSR question(s) that loaded for each factor. One factor was labeled “Fair” and one factor was labeled “Honest.” “I lie or cheat” and “I tease others a lot” loaded together to form one factor that was labeled “Violates Rights” for the purposes of this study. A Cronbach Alpha of .50 was achieved when calculated with these two items.

Table 1

Pattern Matrix: Results of Factor Analysis of Inadequate Anxiety Construct

	Factor 1: Violates Rights	Factor 2: Fair	Factor 3: Honest
“I don’t feel guilty after doing something I shouldn’t”	.00	.19	-.12
“I lie or cheat”	.63	-.16	.11
“I tease others a lot”	.58	.20	-.11
“I am pretty honest”	.02	-.02	.54
“I like to be fair to others”	-.03	.58	.12

Table 2

Factor Correlation Matrix of Inadequate Anxiety Construct

	Factor 1: Violates Rights	Factor 2: Fair	Factor 3: Honest
Factor 1: Violates Rights	1	.23	.14
Factor 2: Fair	.23	1	.26
Factor 3: Honest	.14	.26	1

The factor correlation matrix in Table 2 indicates low correlation between factors and is further evidence that the Inadequate Anxiety construct devised was not one dimensional. These results regarding the Inadequate Anxiety Construct indicate that there was a substantial margin for error and differences between groups should be interpreted

with caution, especially considering that this construct was utilized to separate subjects into groups.

Correlational Analysis

In order to assure that the YSR Anxiety Problems scale and Inadequate Anxiety construct measure different constructs, a Pearson Correlation examining the relationship between the two scales was conducted. YSR results from the original 64 subjects that were assessed were utilized. A nonsignificant ($p=.12$) Pearson Correlation of .20 was the result, indicating that the YSR Anxiety Problems scale and Inadequate Anxiety Construct measure different constructs.

Distribution of Scores for Independent Variable of Anxiety

To examine the distribution of scores on the Anxiety Problems scale and the Inadequate Anxiety Construct, histograms were created. The Anxiety Problems scale histogram indicates a distribution of scores that would be expected due to Achenbach and Rescorla (2001) truncating Youth Self Report scores below 50; any score below 50 is reported as a T score of 50 (see Appendix 1). An examination of the Inadequate Anxiety Construct histogram indicates that the scores on this construct are normally distributed (see Appendix 2).

Descriptive Statistics

Sixty-four subjects were originally assessed for this study. Three of the subjects met the criteria for both the High Anxiety group and the Inadequate Anxiety group due to having a T score of 60 or above on the YSR Anxiety Problems scale, as well as the Inadequate Anxiety Construct. These three subjects were therefore not utilized in this study. Forty of the subjects were considered to have “normal” anxiety; their T-scores on

the YSR Anxiety Problems scale and the Inadequate Anxiety Construct were below 60 and in the average range. Twelve subjects were identified for the High Anxiety group; they scored below a T-score of 60 on the Inadequate Anxiety Construct and a 60 or above on the Anxiety Problems scale. Nine subjects were identified for the Inadequate Anxiety group; they scored below a T-score of 60 on the Anxiety Problems scale and a 60 or above on the Inadequate Anxiety Construct.

Demographic Statistics

The sample was made up of 80% males (n = 49) and 20% females (n = 12) ranging in age from 9 to 17. The average age was 14.6 years. Table 3 reports age and gender demographics for each of the three groups, as well as the total sample.

Table 3

Gender and Age Demographics for each Group

	Percent male	Percent female	Average age
Normals (n=40)	80 (n=32)	20 (n=8)	14.8
High anxiety group (n=12)	67 (n=8)	33 (n=4)	14.7
Inadequate Anxiety Group (n=9)	100 (n=9)	0 (n=0)	13.8
Total sample (n=61)	80 (n=49)	20 (n=12)	14.6

Descriptive Statistics for Independent Variable Grouping Results

As stated earlier, in order to meet the requirements for the Normals group subjects had to have a T score of less than 60 on the Anxiety Problems scale and Inadequate Anxiety Construct. In order to meet the requirements for the High Anxiety group,

subjects had to have a T score of 60 or above on the Anxiety Problems scale and a T score less than 60 on the Inadequate Anxiety construct. In order to meet the requirements for the Inadequate Anxiety group, subjects had to have a T- score of 60 or above on the Inadequate Anxiety Construct and a T score below 60 on the High Anxiety scale. Mean scores and standard deviations on the Anxiety Problems scale and Inadequate Anxiety Construct for each anxiety group are reported in Table 4.

Table 4

Means and Standard Deviations of Anxiety Problems Scale Scores and Inadequate Anxiety Construct Scores

	Anxiety problems scale	Inadequate anxiety construct
Normals (n=40)	52.9 (3.3)	47.0 (7.9)
High anxiety group (n=12)	67.4 (3.2)	47.6 (6.7)
Inadequate anxiety group (n=9)	53.8 (3.8)	64.0 (5.5)
Total sample (n=61)	55.9 (6.7)	49.6 (9.5)

Note. Mean scores are reported in T-scores, M=50, SD=10. Standard deviations are reported in parentheses.

Descriptive Statistics for Dependent Variable Results

Texture (T). The majority of subjects (n=40) gave zero T responses when administered the Rorschach, regardless of the group they were assigned to. Having zero T responses is typical of an aggressive population (Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992). Twenty-one subjects gave more than one T response. Table 5 reports frequency distributions for Texture responses for the entire sample.

Table 5

Frequency Distribution – Number of Rorschach Texture (T) Responses

# Responses	N	Percentage of sample
0	40	66
1	12	20
2	7	11
3	0	0
4	2	3
Total	61	100

Human Representational Variable (HRV). Box and whisker plots identified two outliers when Rorschach HRV scores were examined. One subject from the High Anxiety group had an HRV score of 13. One subject from the Normal Anxiety group had an HRV score of -11. Statistical results regarding HRV will be reported with and without these outliers. With these outliers, the range of HRV scores was -11 to 13 with a mean of .62. Without these outliers, the range of HRV scores was -7 to 7 with a mean of .61. While including outliers resulted in a wider range of scores, the mean was basically the same as when outliers were not included. Table 6 reports frequency distributions for HRV scores. The two outliers are identified as such in the table.

Table 6

Frequency Distribution – Rorschach Human Representational Variable (HRV) Scores

HRV score	N
-11 (outlier)	1
-7	1
-4	1
-2	8
-1	9
0	13
1	9
2	5
3	5
4	4
5	3
7	1
13 (outlier)	1
Total	61

Statistical Analyses for Research Question/Hypotheses

The following sections report the results of the tests of assumptions and main analyses to answer the research question of whether the attachment of aggressive children and adolescents with high anxiety, inadequate anxiety, and normal anxiety differ from one another. It was hypothesized that subjects with normal anxiety would have more

positive attachment than subjects from the high anxiety and inadequate anxiety groups. It was also hypothesized that subjects in the high anxiety group would have more positive attachment than those in the inadequate anxiety group.

Human Representational Variable (HRV) as Dependent Variable

HRV results of three anxiety groups: high, inadequate, and normal. Table 7 reports HRV group means and standard deviations for the three anxiety groups. The outlier in the Normals group and the Inadequate Anxiety group are included. Table 8 reports HRV group means and standard deviations without the two outliers.

Table 7

Rorschach HRV Results with Two Outliers included

	Mean	Standard deviation
Normals (n=40)	.70	3.00
High anxiety (n=12)	.92	4.78
Inadequate anxiety (n=9)	-.11	1.83
Total (n=61)	.58	3.19

Table 8

Rorschach HRV Results without the Two Outliers included

	Mean	Standard deviation
Normals (n=39)	1.00	2.35
High anxiety (n=11)	-.18	3.03
Inadequate anxiety (n=9)	-.11	1.83
Total (n=59)	.61	2.44

To determine whether the HRV scores of the three groups were significantly different, a One Way Analysis of Variance (ANOVA) was run. An ANOVA has three assumptions: normality, homogeneity of variance, and independence of observations. To test for normality and assure that the HRV scores were normally distributed, a histogram was examined. The scores were found to be normally distributed (see Appendix 3). In order to test for homogeneity of variance, a Levene's Test was completed. The Levene's Test is an inferential statistic used to assess the equality of variances in groups. A nonsignificant Levene's Test indicates that population variances are equal. In order to test for the equal variance assumption, a Levene's test was run. The Levene's Test was nonsignificant ($F= 1.7, p = .19$); the population variances for the High Anxiety, Inadequate Anxiety, and Normals groups were found to be equal. The last assumption, independence of observations, was met as well; each subject's HRV score was not affected by other subjects in that group. Therefore, all assumptions were met.

Two ANOVAs were completed, one with the two outliers and one without the two outliers. In both cases, there were no significant differences between the three anxiety groups in regards to HRV scores. A nonsignificant F score was obtained ($F(2, 60) = .28, p=.75$) when the two outliers were included, as well as when they were not included ($F(2,58) = 1.49, p=.23$).

Power and effect size are often utilized to complement the information that inferential statistics provide. The power of a statistical test is the probability that the test will reject a false null hypothesis and not make a Type II error. In other words, the power of a test is the likelihood that a significant difference will be found between groups if indeed a significant difference exists. Typically, .80 is considered to be adequate power

to detect an actual significant difference. Effect size is a measure of the strength of the relationship between two variables without making a statement as to whether this relationship actually exists in the population. Partial Eta Squared is often utilized to calculate the effect size in ANOVA studies (Brown, 2007). Partial Eta Squared is defined as the ratio of variance accounted for by an effect and that effect plus the error variance. In other words, it is the proportion of the total variance accounted for by the designated variable (Brown, 2008).

Results of these ANOVAs yielded Partial Eta Squared effect sizes of .01 when outliers were included and .05 when they were not included. Power was low in each case; .09 when outliers were included and .3 when they were not included.

HRV results of two anxiety groups: abnormal and normal. To further examine the relationship between anxiety and attachment in this aggressive population, the two anxiety groups (High Anxiety and Inadequate Anxiety) were grouped into one Abnormal Anxiety group. The HRV scores of this Abnormal Anxiety group were compared to the HRV scores of the Normal Anxiety group utilizing a t-test. The two outliers were not included in this analysis. As with the ANOVA, the t-test has three assumptions: normality, homogeneity of variance, and independence of observations. To test for normality and assure that the HRV scores were normally distributed, the HRV histogram was examined. The scores were found to be normally distributed (see Appendix 3). In order to test for homogeneity of variance, a Levene's Test was completed utilizing the HRV scores of the Abnormal Anxiety and Normal Anxiety groups. The Levene's Test was nonsignificant ($F = .03$, $p = .87$); the population variances are equal for these two groups. The last assumption, independence of observations, was met as well. Therefore,

all assumptions were met.

Table 9 reports HRV group means and standard deviations for the Abnormal Anxiety and Normal Anxiety groups. Results of the t-test indicated no significant difference between the Normal group and the Abnormal Anxiety group ($t(57) = -1.74, p = .09$) although results of this calculation did yield a medium Cohen's (d) effect size of .47 with power of .52. If there were more power (e.g., more total subjects in the sample) there would have been a better probability of finding significant differences at the $p < .05$ level.

Table 9

Rorschach HRV Results of Normal and Abnormal Anxiety Groups

	Mean	Standard deviation
Normals (n=39)	1.00	2.35
Abnormal anxiety (n=20)	-.15	2.50
Total (n=59)	.61	2.44

Texture (T) as Dependent Variable

The results from analyses using Texture (T) as the dependent variable will now be discussed. To test for normality and assure that the Texture scores were normally distributed, a histogram for each was examined. The distribution of scores for T is what would be expected for this low incidence assessment (see Appendix 4).

The frequency of each number of T responses given in each group is reported in Table 10. As can be seen, the majority of subjects (66%) had zero T responses which is typical of an aggressive population (Gacono & Meloy, 1994; Smith et al., 1997; Weber et

al., 1992). The differences in percentages of subjects giving zero T responses between groups were as expected. The inadequate anxiety group had the highest percentage of zero T responses (89%) and the normal anxiety group had the lowest percentage of zero responses (60%). In addition, no subjects in the inadequate anxiety group gave one T response.

Table 10

Number and Percentage of Rorschach Texture (T) Responses for Groups

	T=0	T=1	T=2	T=3	T=4
High Anxiety (n=12)	8 (67%)	3 (25%)	0 (0%)	0 (0%)	1 (8%)
Inadequate Anxiety (n=9)	8 (89%)	0 (0%)	1 (11%)	0 (0%)	0 (0%)
Normals (n=40)	24 (60%)	9 (23%)	6 (15%)	0 (0%)	1 (2%)
Total (n=61)	40 (66%)	12 (20%)	7 (11%)	0 (0%)	2 (3%)

Note. Percentages in parentheses refer to the percentage of subjects within each group that gave the number of T responses designated in each column.

In order to compare the frequency of Texture (T) responses among anxiety groups, Chi Squared Test of Association analyses were conducted. The chi square statistic was used because T, or the number of Rorschach Texture responses given, is categorical.

Four chi square analyses were computed to address this study's research question of whether aggressive children with high anxiety, inadequate anxiety, and normal anxiety differ in terms of their attachment. Specifically, the chi square analyses examined how these groups compared to one another in terms of the frequency of Texture responses given.

Texture (T) results of inadequate anxiety and high anxiety groups. In order to test one of the study's hypotheses that subjects in the high anxiety group would have more indications of positive attachment than those in the inadequate anxiety group, a chi square was conducted examining the T responses of these two groups. The number of subjects giving zero T responses, indicating poor attachment, was compared to the number of subjects giving one T response, indicating positive attachment. Table 11 displays the cells utilized in this chi square, in addition to the number of observed subjects in each cell.

Table 11

Chi Square Cells – Frequency of Texture (T) responses for High Anxiety and Inadequate Anxiety Groups

	High anxiety	Inadequate anxiety
T = 0	8	8
T = 1	3	0

There was not a significant difference in the number of T responses given by the inadequate anxiety and high anxiety groups, $\chi^2 (1) = 2.6, p = .11$. The effect size for this analysis was a Pearson Correlation (r) of .37.

Texture (T) results of normal anxiety and inadequate anxiety groups. In order to test the study's hypothesis that subjects with normal anxiety would have more positive attachment than subjects with inadequate anxiety, a second chi square was conducted that examined the T responses of subjects in the Normal group versus those in the Inadequate Anxiety group. Again, the number of subjects giving zero T responses was compared to

the number of subjects giving one T response. Table 12 displays the cells utilized in this chi square, in addition to the number of observed subjects in each cell.

Table 12

Chi Square Cells – Frequency of Texture (T) responses for Normal and Inadequate Anxiety Groups

	Normals	Inadequate anxiety
T = 0	24	8
T = 1	9	0

There was not a significant difference in the number of T responses given by the normal anxiety group and the inadequate anxiety group, $\chi^2 (1) = 2.8, p = .09$. The effect size for this analysis was a Pearson Correlation (r) of .26.

Texture (T) results of normal anxiety and high anxiety groups. The third chi square tested the study’s hypothesis that subjects with normal anxiety would have more positive attachment than subjects with high anxiety. The T responses of subjects in the Normal group were compared to those in the High Anxiety group. For this chi square analysis, the number of subjects giving one T response was compared to the number of subjects giving 0 or greater than one T response. Because anxiety has been related to more than one T response (e.g., Cassella & Viglione, 2009), those with T responses greater than one were also included as an indication of poor attachment in this analysis. Table 13 displays the cells utilized in this chi square, in addition to the number of observed subjects in each cell.

Table 13

Chi Square Cells – Frequency of Texture (T) responses for Normal and High Anxiety Groups

	Normals	High anxiety
T ≠ 1	31	9
T = 1	9	3

There was not a significant difference in the number of T responses given by the Normal Anxiety and High Anxiety groups, $\chi^2 (1) = .03$, $p = .86$. The effect size for this analysis was a Pearson Correlation (r) of $-.02$.

Texture (T) results of abnormal anxiety and normal anxiety groups. As was done with HRV, the High Anxiety group and the Inadequate Anxiety group were collapsed into one group in order to compare the attachment of those with normal anxiety and those with abnormal anxiety. The final chi square analysis tested the study's hypothesis that subjects with normal anxiety would have more positive attachment than subjects with abnormal anxiety. The number of subjects giving one T response was compared to the number of subjects giving 0 or greater than one T response. Table 14 displays the cells utilized in this chi square, in addition to the number of observed subjects in each cell.

Table 14

Chi Square Cells – Frequency of Texture (T) responses for Normal and Abnormal Anxiety Groups

	Normals	Abnormal anxiety
T ≠ 1	31	18
T = 1	9	3

There was not a significant difference in the number of T responses given by the Normal Anxiety and Abnormal Anxiety groups, $\chi^2 (1) = .59, p = .44$. The effect size for this analysis was a Pearson Correlation (r) of .10.

Exploratory Analysis

As outlined in chapter three, inhibition was added as a variable to do an exploratory analysis utilizing a 2 (inhibited versus uninhibited) X 2 (high anxiety versus inadequate anxiety) factorial analysis of variance (ANOVA). The ANOVA was not able to be run due to cell sizes not meeting minimum requirements.

CHAPTER V

DISCUSSION

The goal of the current study was to determine if there are differences in the attachment patterns of aggressive children with different anxiety patterns. Specifically, this study examined whether aggressive children and adolescents with high anxiety have more positive attachment than aggressive children and adolescents with inadequate anxiety. It also examined whether those with normal anxiety have more positive attachment than those with abnormal anxiety. All children in the sample were identified as aggressive, were removed from their home school district due to the need for intensive treatments, and aggression was a primary behavior targeted for intervention. Self-report data, collected from Achenbach's Youth Self Report (YSR) data was used to measure anxiety and Rorschach data was utilized to measure current attachment. This chapter will include a brief review of results, a discussion of the implications of the results and their connection to current literature, limitations of the study, and recommendations for future research.

Review of results

All youth in the sample collected were considered aggressive and were receiving treatment for their aggressive behaviors. YSR data was used to separate the youth into high, average, and inadequate anxiety groups. Variables from the Rorschach (e.g., Human Representation Variable (HRV), Texture (T)) were used to measure current attachment for each youth. The attachment patterns of youth with high anxiety, inadequate anxiety, and average anxiety were then compared. Significant differences in attachment were not found between the high, average, or inadequate anxiety groups;

these results held even when comparisons with and without outliers were examined. Effect sizes were small in each case. Further, neither HRV nor T comparisons resulted in significant differences. It should be noted, however, that the differences in percentages of subjects giving zero T responses between groups were as expected. The inadequate anxiety group had the highest percentage of zero T responses (89%) and the normal anxiety group had the lowest percentage of zero responses (60%). In addition, no subjects in the inadequate anxiety group gave one T response. This is typical of people with inadequate anxiety (Weber et al., 1992).

In order to further examine the relationship between problematic anxiety and attachment in this aggressive population, the High Anxiety and Inadequate Anxiety groups were combined into one Abnormal Anxiety group. This group's attachment was compared to the within normal limits or average anxiety group's attachment. No significant differences were found between the two groups when Texture (T) was utilized as the attachment variable. However, when the Human Representational Variable (HRV) was examined, the difference between the two groups approached significance ($p=.09$) with a medium effect size. Effect size (d) is a measure of the standardized difference between two means. This medium effect size demonstrates that the HRV scores of the Normal Anxiety group were higher, but not significantly, than the HRV scores of the Abnormal Anxiety group. This is an indication that those with average amounts of anxiety had more indications of positive attachment than those with abnormal anxiety. As stated in the results section, if there was more power (e.g., more total subjects in the sample) there would be a better probability of finding significant differences at the $p < .05$ level. Indeed, the distribution of scores on the attachment variables and anxiety variables

indicated normal distribution, even with this clinical population. Unfortunately, the results of the current study do not allow strong conclusions and does not help to clarify the findings in the current literature.

Conclusions

In the literature, the relationship between poor attachment and aggression has been well documented (Allen et al., 1998; Gacono & Meloy, 1994; Meesters & Muris, 2002; Simons et al., 2001; Smallbone & Dadds, 2001; Solomon et al., 1995,). However, the relationship between anxiety and aggression is not as clear; high anxiety has been related to both decreased aggression (e.g., Raine et al., 1995; Sanson et al., 1996; Walker et al., 1991) as well as increased aggression (e.g., Kashani et al., 1991; Krueger et al., 1994; Roza et al., 2003) and inadequate anxiety has been related to increased aggression (e.g., Gacono & Meloy, 1994; Shaw et al., 2003; Weber et al., 1992).

The study of the relationship between anxiety and attachment is a relatively new set of literature. Researchers such as Allen et al. (1998), Schore (2001), and Thompson (2001) extend Bowlby's (1969; 1973) theory that when caregivers are unable to effectively meet the needs of their children, poor attachment is the result. They theorize that when poor attachment occurs, children are less likely to develop adequate emotional regulation and have an increased likelihood of developing symptoms of high anxiety. Kehle et al. (2007) relates this theory to the act of aggression and theorize that the anticipation of rejection and the pain associated with rejection leads to high anxiety which in turn is associated with impulsive, aggressive responses. Researchers examining the relationship between current anxiety and attachment have found a relationship between insecure attachment and increased anxiety symptoms in at-risk preschoolers

(Shamir-Essakow, 2005) and non-clinical children (Roelofs et al., 2006). Allen et al. (1998) studied moderately at-risk adolescents and found that those with secure attachment had less indications of anxiety, as well as fewer externalizing behaviors such as aggression.

When we consider longitudinal work, these researchers have found that poor attachment in younger years is related to increased anxiety in adolescence (Bosquet & Egeland, 2006; Dailaire & Weinraub, 2007; Warren et al., 1997). These studies emphasize the developmental nature of anxiety in which factors such as poor attachment contribute to the development of high anxiety. In their attempt to understand the relationship between attachment and anxiety, these studies focused on high anxiety.

Other researchers have focused on inadequate anxiety when studying the relationship between attachment and anxiety. Meloy (2001) theorizes that when caregivers are unable to meet the needs of the children and poor attachment occurs, inadequate anxiety is often the result. These children, who eventually grow into adults, lack the internal anxiety that results in concern and forethought regarding how particular actions will affect others. When examining attachment and anxiety in clinical adolescents and adults, researchers have found that subjects diagnosed with disorders related to aggression demonstrated decreased anxiety and decreased attachment (e.g., Gacono & Meloy, 1991; Gacono & Meloy, 1994; Weber et al., 1992). They did not however, examine how attachment and anxiety inter-related with one another. No published study has considered both high anxiety and inadequate anxiety when researching the relationship between these variables.

This study attempted to extend this literature in two ways: one, by examining the

relationship between current anxiety and attachment in a group of aggressive children and adolescents and two, by considering inadequate anxiety and high anxiety in the same study. Unfortunately, the number of subjects was small and a significant difference in attachment was not found between the High Anxiety group and the Inadequate Anxiety group. When Texture (T) was used as the attachment variable, the majority of subjects gave zero T responses which is typical of an aggressive population (Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992) and is indicative of a low need, interest, or attachment with others. Although the difference was not significant, the Inadequate Anxiety group gave the lowest percentage of T responses with only one subject giving more than zero T responses. This is consistent with previous studies that have included inadequate anxiety and attachment as variables (e.g., Weber et al., 1992).

The most promising outcome of this study occurred when the High Anxiety and Inadequate Anxiety groups were combined to form one Abnormal Anxiety group. When their attachment, as measured by the Human Representation Variable, was compared to the attachment of the Normal Anxiety group, a medium effect size was achieved (although the differences between the groups were not significant). These results indicate that the Abnormal Anxiety group had more indications of poor attachment than the Average Anxiety. These results are consistent with other research that has found a relationship between abnormal anxiety and attachment, when the study focused on high anxiety (Allen et al., 1998; Roelofs et al., 2006; Shamir-Essakow, 2005), as well as when the focus was on inadequate anxiety (Gacono & Meloy, 1991; Gacono & Meloy, 1994; Weber et al., 1992).

Limitations

The primary limitation of this study was its sample size which limited the power and increased the likelihood of a Type II error (failing to detect a difference between groups when there in fact is one). Having more subjects would assist in determining whether there is a significant difference in attachment between those with inadequate anxiety and those with high anxiety, as well as between those with abnormal anxiety and those with average anxiety. Two factors have an impact on the ability to detect differences in attachment in this population. One, it has been found that aggressive populations give less T responses in general (Gacono & Meloy, 1994; Smith et al., 1997; Weber et al., 1992). Two, as a population, aggressive children and adolescents tend to have more indications of poor attachment (e.g., Allen et al., 1998, Greenberg et al., 1997; Simons et al., 2001). Therefore, when this population is grouped according to their anxiety, more subjects are needed to determine whether there are true differences in attachment.

Another primary limitation was the large age range that spanned from 9 years of age to 17 years of age. Attachment and anxiety are developmental in nature and can manifest differently as children mature and life experiences occur. For example, symptoms of anxiety in a nine year old can look much different than anxious symptoms in a seventeen year old. A smaller age range would have increased the homogeneity within groups. Other limitations include the following. There were only four girls identified for the high anxiety group and no girls in the inadequate anxiety group. With the already small sample size, however, the study was unable to focus on only males. Further, the current sample (with a small number of girls) is consistent with typical

treatment facility rosters, and as such we did not want to leave them out. In addition, the sample was made up of child and adolescent subjects in treatment for aggression in programs within Southwestern Pennsylvania and results may not generalize to a more diverse group.

Finally, it is important to mention that reliability of the inadequate anxiety construct resulted in a Cronbach's alpha of only .37. This meant that there was a substantial margin for error and differences between groups would have to be interpreted with caution, especially considering that this construct was utilized to separate subjects into groups. Inadequate and/or very low levels of behavior-regulating anxiety should be an independent focus of future research.

Recommendations for Future Research

Although the current study was unable to detect attachment differences between the high anxiety and inadequate anxiety group, it is suspected that this is at least in part due to the small sample size. Although poor attachment has been related to both high anxiety and inadequate anxiety, the two types of anxiety manifest much differently (Ialongo et al., 1996; Lahey et al., 2003) and further research is warranted to understand the difference between the two. There is limited research that considers both high anxiety and inadequate anxiety when studying the relationship between attachment and anxiety. In fact, this study was the first to compare the attachment of those with inadequate anxiety to those with high anxiety. Therefore, there continues to be a need for clarification.

Based on the current study's limitations reported above, future research should focus on the use of a less diverse clinical sample that is more similar in age and should

consider male and female samples separately. Although a clinical sample of aggressive children and adolescents was utilized, both males and females were included and the age range was fairly large. Since the trajectory of attachment and anxiety is developmental in nature, focusing on either children or adolescents of similar ages or of one gender may yield results that provide more clarity.

An emerging set of literature has begun to study the relationship between anxiety, attachment, and inhibition (e.g., Muris & Meesters, 2002; Shamir-Essakow, 2005, vanBrakel et al., 2006). Although a relationship is indicated, it is not yet clear how these three interrelate with one another. Unfortunately, the sample size in this study was too small to examine the relationship between these three variables. Further examination of the relationship of these three variables is also warranted.

An additional area of consideration is in clarifying the assessment of inadequate anxiety. Exner and Weiner (1995) have used the Rorschach shading (Y) variable to indicate the presence of anxiety, yet they also consider the Y response to be more related to situational as compared to trait types of anxiety. In addition, Gacono & Meloy (1991) found that Y responses and anxiety levels were not consistently related. However, there are no standardized assessment measures that clarify state versus trait anxiety and how that may or may not be related to inadequate anxiety specifically. This study attempted to create a construct by choosing YSR questions that have been related to inadequate anxiety, but the Cronbach's Alpha indicated low reliability. These results may have been due to the small sample size, or that only the responses of aggressive subjects were being considered or a yet unknown explanation. However, despite the low reliability of the YSR inadequate anxiety construct, the distribution of scores was normally distributed. In

addition, factor analysis of this construct indicated clean, distinct factors. This makes the concept of devising an assessment for inadequate anxiety promising. Future research with the goal of creating an assessment that measures inadequate anxiety is a great need.

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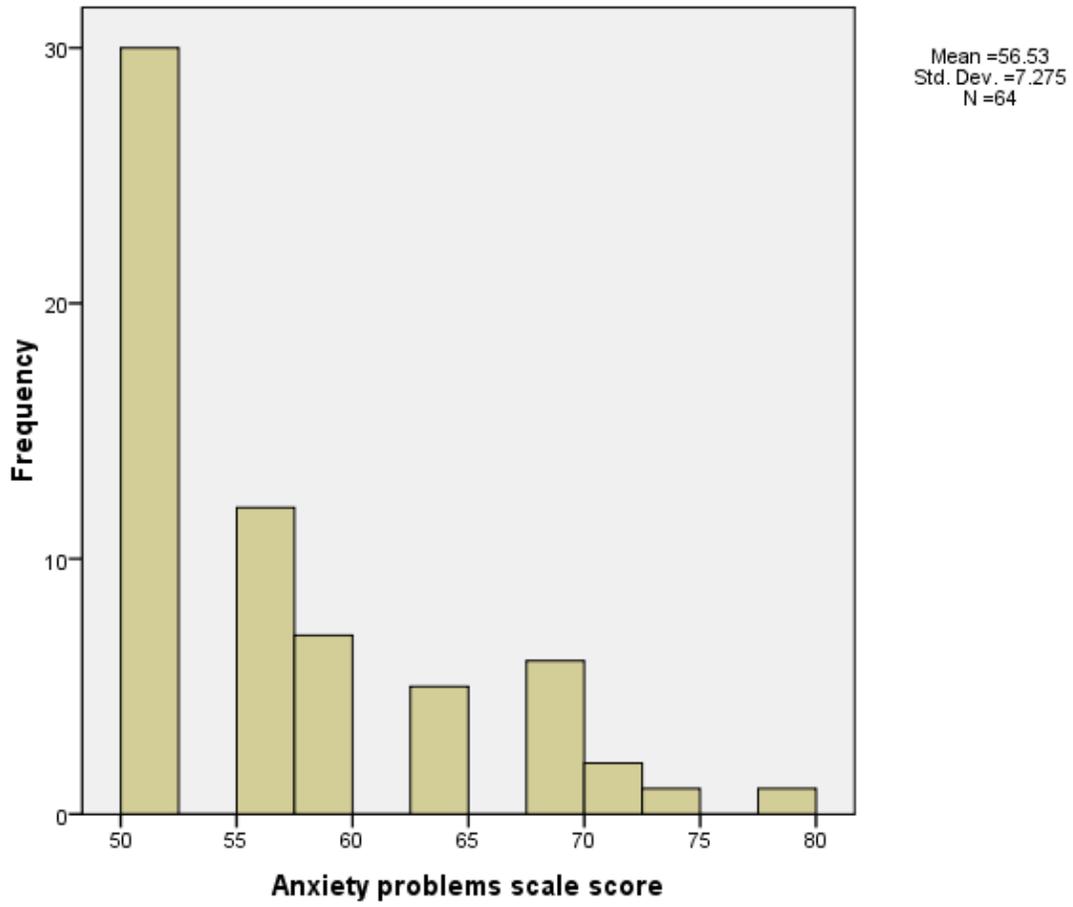
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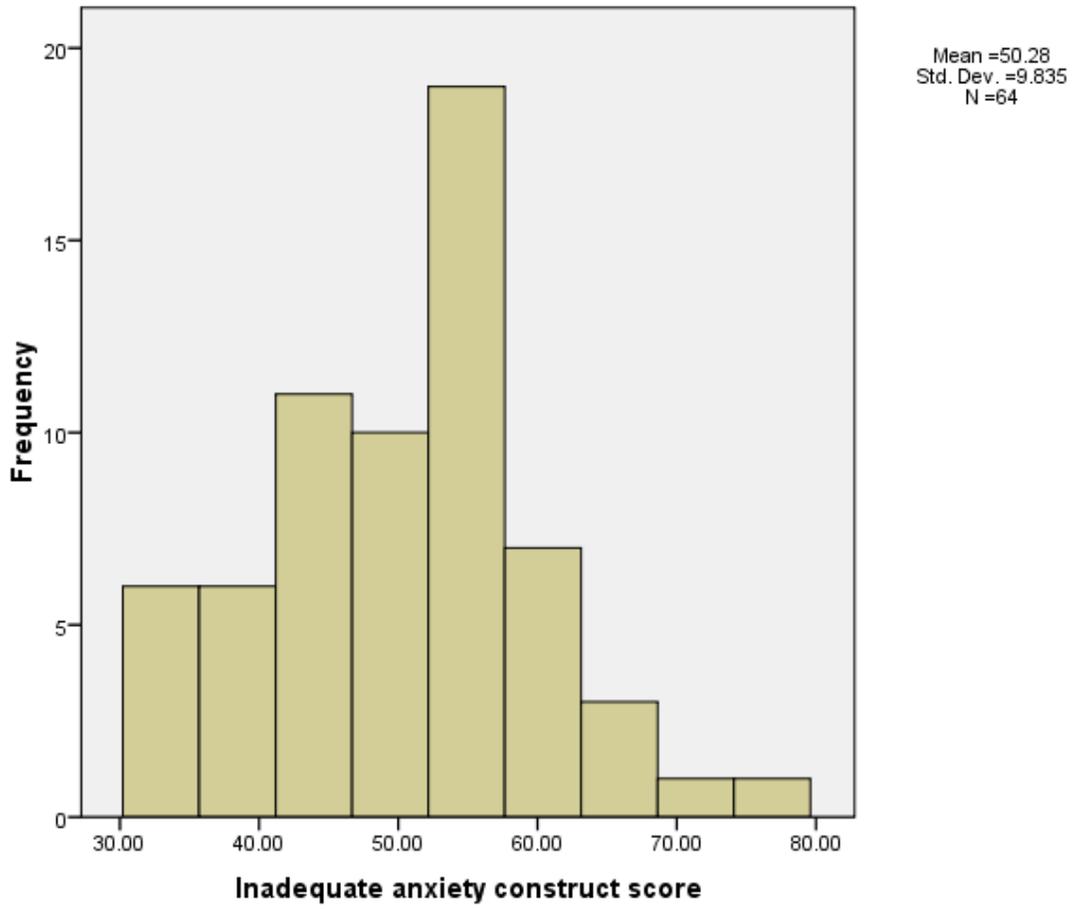
Appendix 1

Histogram of Anxiety Problems Scale T Scores



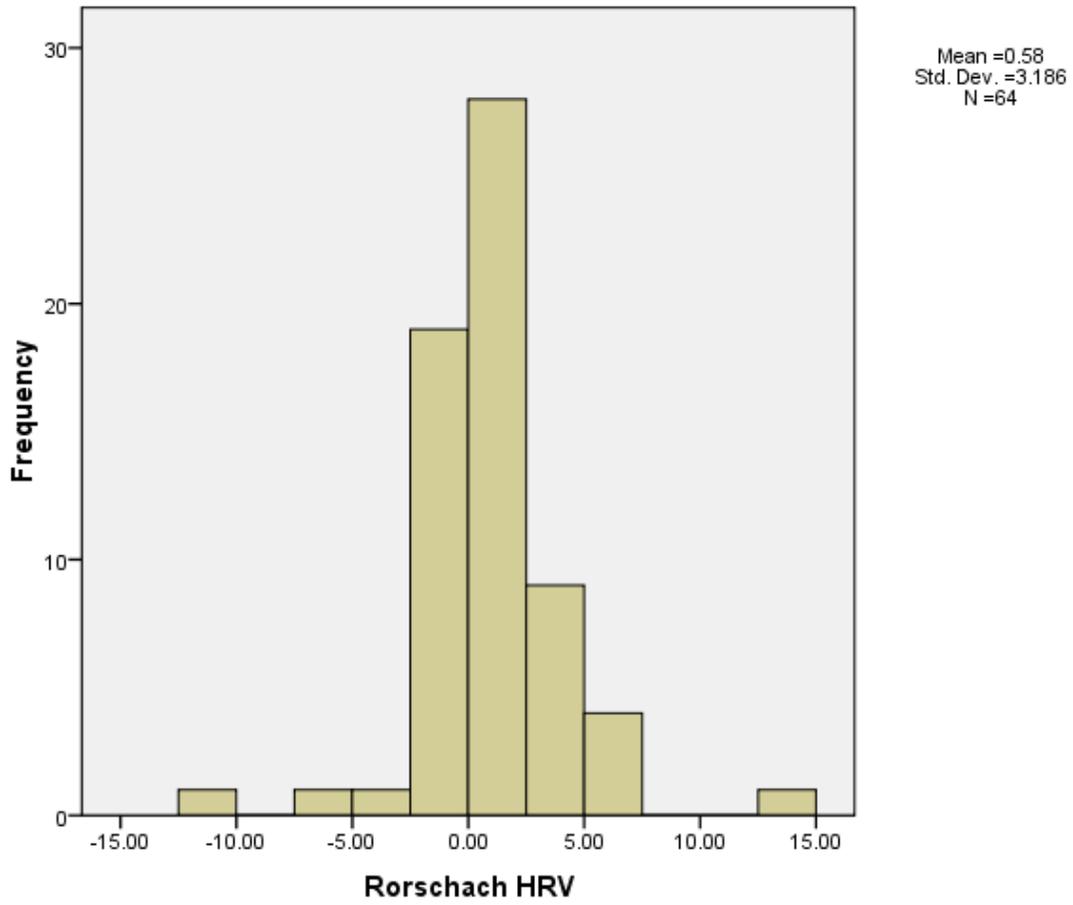
Appendix 2

Histogram of Inadequate Anxiety Construct T Scores



Appendix 3

Histogram of Rorschach Human Representational Variable (HRV) Scores



Appendix 4

Histogram of the Frequency of Rorschach Texture (T) Responses

