

AGGRESSIVE CHILDREN'S MEMORY FOR ATTACHMENT RELEVANT
INFORMATION

A Dissertation

by

CLAIRE FUTAMASE COLLIE

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2004

Major Subject: Psychology

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ABSTRACT

Aggressive Children's Memory for Attachment Relevant Information.

(May 2004)

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This study examined a measure of children's memory for information from a story about a hypothetical mother and child, the Story Task, as a potential tool to delineate subtypes of aggressive children based on the pattern of information processing revealed through their Story Task performance. The Story Task scores of 263 second and third grade aggressive children were subjected to a cluster analytic procedure. Although four apparently distinct subgroups emerged from the cluster analysis (negative recall, low recall, defensive processing, and positive projection), validation analyses of these clusters against external variables failed to reveal significant group differences. Potential explanations for the failure to find meaningful subgroups of aggressive children and general limitations of the study are discussed.

DEDICATION

This project is dedicated to my husband Jay. Without his unfailing support, encouragement, and understanding this endeavor would not have been possible.

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There are a number of people who have supported me during my academic journey and as I complete this project, I would like to acknowledge several important contributions. First and foremost, I would like to thank Dr. Tim Cavell who has been my research advisor and mentor throughout my graduate studies. He provided me with support, guidance, and when needed, encouraged me to view new challenges as an opportunity for growth. I would also like to thank my committee members, Dr. Rob Heffer, Dr. Jeff Simpson, and Dr. Jan Hughes. They have been supportive, understanding, and have generously provided their time and expertise in helping me complete this project. In addition to serving on my committee, Dr. Hughes has also been a wonderful mentor and an unending source of support and encouragement. I would also like to thank Dr. Rob Heffer for his kind assistance in helping me with the various administrative tasks that I had to complete from North Carolina.

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my cheering section and who have provided a sympathetic ear when I needed one.

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INTRODUCTION

Childhood aggression is a highly stable behavioral phenomenon (e.g., Eron & Huesmann, 1990; Loeber, 1990; Olweus, 1979; Pettit, 1997) and is predictive of numerous dysfunctional adolescent and adult behaviors including delinquency, school dropout, drug abuse, unemployment, marital difficulties, antisocial behavior, and criminal recidivism (e.g., Eron & Huesmann, 1990; Haapasalo & Tremblay, 1994; Loeber, 1990; Loeber & Dishion, 1983; Patterson, DeBaryshe, & Ramsey, 1989; Pettit, 1997). In a study by White and colleagues, adolescent delinquency and aggressive behavior was predicted from problematic behavior exhibited by children as young as 3 years old (White, Moffitt, Earls, Robins, & Silva, 1990). The prognosis can be especially poor for children who begin to exhibit aggressive and antisocial behavior at a very young age. Moffitt (1993) observed that a small number of individuals are responsible for a majority of crimes and theorized that early antisocial behavior is predictive of the life-course and persistent pattern of aggressive and antisocial behavior exhibited by this highly antisocial minority. Similarly, Patterson and colleagues have described a pathway to delinquent behavior, called the early starter model, in which antisocial behavior develops at an early age in the home, usually among children 4 to 9 years old (Patterson, Capaldi, & Bank, 1991; Patterson et al., 1989). According to Patterson and colleagues (1989, 1991), these early starter children are at significantly greater risk for chronic adolescent antisocial behavior and for becoming persistently

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antisocial adults.

Empirical support exists suggesting that aggressive children are heterogeneous and vary significantly in terms of stability of aggressive behavior, outcome, and response to intervention (Edens, Cavell, & Hughes, 1999; Hinde, 1992; White, et al., 1990; see Edens, 1999 for a review). Of particular interest are the findings of Edens et al. (1999), who identified three subgroups of aggressive children that differed with respect to how their views of self compared with the views of other individuals within the children's social network.

Aggressive Children's Self-Systems

The self-systems of aggressive children have recently received increased attention (Edens, 1999; Edens et al., 1999; Hughes, Cavell, & Grossman, 1997). A number of theories have linked children's self-systems with the presence of aggressive behavior. These theories include psychodynamic, attachment, and social-cognitive theories (see Edens, 1999 for a review). The self-systems of aggressive children, as discussed in greater detail later, have implications for the development of psychopathology and negative outcomes.

According to social information processing theory, aggressive children selectively attend to and recall threatening social cues (Dodge & Frame, 1982 in Dodge & Schwartz, 1997). Aggressive children are more likely than non-aggressive children to base their interpretations of social cues upon schema-based information not present in the current social stimuli (Dodge & Tomlin, 1987 in Crick & Dodge, 1994). In addition, aggressive children are more likely than non-aggressive children to attribute

hostile intent to peers in the presence of ambiguous or benign stimuli, hypothetical vignettes, and in actual situations (Dodge, 1980 in Crick & Dodge, 1994; Dodge & Crick, 1990; and Dodge & Schwartz, 1997; Dodge, Pettit, McClaskey, & Brown, 1986; Steinberg & Dodge, 1983 in Crick & Dodge, 1994 and Dodge & Schwartz, 1997). According to social information processing theory, this hypervigilance to cues that signal a threat to the child's self-esteem and biased interpretation of ambiguous or benign social cues are associated with the tendency for children to behave in an aggressive manner.

Pettit (1997) noted that among older children, aggression has been theorized to occur in response to frustrations involving a child's self-esteem. But a question remains as to the precise nature of aggressive children's threatened self-systems. One long-held viewpoint suggested that aggression occurs as a defense mechanism against perceived threats to an already negative sense of self (e.g., Schneider & Leitenberg, 1989). However, more recent arguments have emerged suggesting that positive, rather than negative, self-systems may be more reliably associated with some forms of aggression (e.g., Baumeister, Smart, & Boden, 1996; Bleiberg, 1994). Baumeister et al. (1996) suggested that overly positive and inflated self-perceptions represent risk factors for violence and aggression when individuals find their falsely favorable self-perceptions challenged or threatened. Baumeister et al. (1996) proposed that under these conditions, such individuals might react to threats against their positive self-views with increased aggression and violence, thus avoiding being confronted with negative information leading to a downward revision of their self views. Research on

the self-systems of aggressive children has shown that aggressive children do tend to hold overly positive and poorly differentiated views of the self (Edens et al., 1999; Hughes et al., 1997). Hughes et al. (1997) demonstrated in their study that it was the presence of aggression, rather than peer rejection, that was associated with these inflated self-views.

The Parent-Child Relationship and the Self-System

Considerable literature supports a relation between parenting variables and aggressive behavior in children (e.g. Haapasalo & Tremblay, 1994; Patterson et al., 1989; Eron & Huesmann, 1990; Greenberg, Speltz, & DeKlyen, 1993). It appears that the parent-child relationship may be an important and influential component in the development of aggressive behavior. In a review article, Loeber and Dishion (1983) reported that parenting practices consistently emerged as a significant predictor of aggressive behavior. Research on parenting practices suggests that aggressive children experience more harsh and inconsistent discipline, more punishment, less positive involvement with parents, less warmth, less social coaching and teaching, less proactive guidance, more rejection and indifference, and less monitoring and supervision than do non-aggressive children (Haapasalo & Tremblay, 1994; Loeber, 1990; Loeber & Dishion, 1983; Patterson et al., 1989; Pettit, 1997; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989). Haapasalo & Tremblay (1994) found a correlation between aggressive behavior at early ages and poor parenting practices including poor supervision and high rates of punishment. Pettit (1997), however, qualified the empirical support for an association between harsh parenting practices

and children's aggressive behavior by noting that some studies have found this association only in poor quality relationships with presumably lower levels of parental identification among the children. Results from East's (1991) study examining the parent-child relationships of sixth graders suggested that the parent-child relationships of aggressive children, compared to those of sociable children, were less supportive and mothers of aggressive children were generally less satisfied with the relationship, while fathers of aggressive children rated the relationship as less warm and satisfying.

There are a number of theories that attempt to explain the association between parenting practices and childhood aggression. For example, Patterson and colleagues (Patterson, Reid, & Dishion, 1992) proposed a model, based on an operant learning and social interaction perspective, which outlines a causal relationship between poor parenting practices and childhood antisocial behavior. In this model known as coercion theory, childhood aggression is conceptualized as the consequence of reciprocal training within the parent-child relationship. Patterson and colleagues (1992) asserted that the family environment of aggressive children is coercive in quality, i.e., focused on one family member stopping another family member from being irritating or intrusive, and tends to be characterized by negative interactions such as threatening or nattering, as well as lacking in positive attention and warmth. According to coercion theory, the parent makes a demand on the child. The child fails to comply with the demand and resists in an aversive manner. The parent eventually withdraws the demand, thus providing negative reinforcement for the child's aversive behavior. The child then ceases his or her aversive behavior, which in turn provides

negative reinforcement to the parent for withdrawing the demand. Thus, a cycle of reinforcement is established, maintaining the child's coercive and aggressive behavior.

In addition to the literature supporting an association between parenting practices and aggressive behavior, there is also empirical evidence suggesting that the quality of the parent-child relationship is influential in the development of the child's self-system. According to previous research on children's social cognitive functioning, young children's self-concepts are strongly tied to their views of others and specifically, their perceptions of how they are viewed by others (Harter & Pike, 1984). Harter (1986) has suggested that a young child's relationship with his or her mother is highly central to their representation of self. Thus, there may be a significant link between parenting variables, children's self-systems, and aggressive behavior.

Attachment Theory and Aggressive Children's Self-Systems

Attachment theory (Ainsworth, 1969; Bowlby, 1980) may offer an explanation of how the parent-child relationship can be related to aggressive behavior through its influence on the development of the self-systems of aggressive children. According to Bowlby (1980) (for a review, see also Ainsworth, 1969), attachment behaviors are oriented towards achieving and maintaining proximity to a preferred individual. Initially, these behaviors occur within the context of the infant-caregiver relationship, but as the child develops and expands his or her social network, attachment experiences can also occur within other important relationships. Patterns of attachment behavior, therefore, develop across an individual's infancy, childhood, and adolescence. During early attachment experiences, an infant receives feedback from the caregiver's

reactions and responsiveness to his or her attachment behaviors, then subsequently modifies his or her behavior with the goal of establishing and maintaining proximity to the caregiver. As the child develops and continues to accumulate attachment experiences, he or she forms internal representations of him or herself, the attachment figure, and the relationship between them. These internal working models (which will be discussed in greater detail later) form a blueprint for future relationships and guide cognitive activities with rules for the appraisal of behaviors, thoughts, and emotions. It is through the mechanism of internal working models that early attachment experiences between an infant and caregiver exert influence over future relationships. According to Kobak (1999), as the child progresses developmentally, threats to the availability of attachment figures move beyond the realm of physical proximity to include verbal communication as well. Lack of open communication about negative affect or intimacy issues, as well as verbal threats of separation (e.g., an angry parent threatening to leave or send the child away), can lead to feelings of insecurity with respect to the attachment relationship on the part of the child.

Insecure attachment classifications, particularly avoidant attachment, have been related to childhood aggression, pointing to a potential mechanism linking early childhood experiences within the parent-child relationship to the development of aggressive behavior (DeMulder, Denham, Schmidt, & Mitchell, 2000; Erickson, Sroufe, & Egeland, 1985; Greenberg & Speltz, 1988; Greenberg, Speltz, & DeKlyen, 1993; Lyons-Ruth, 1996; Lyons-Ruth, Alpern, & Repacholi, 1993; Renken, et al., 1989). For example, Renken et al. (1989) found that among elementary school age

boys, avoidant attachment classification at 18 months predicted aggressive and antisocial behavior at school age. More recently, researchers have demonstrated a link between aggression and the presence of a disorganized attachment classification in infancy. Disorganized attachment is characterized by the absence of a coherent and consistent strategy in organizing behavior when faced with the need for comfort and reassurance in stressful situations (Lyons-Ruth, 1996; Lyons-Ruth et al., 1993; Solomon, George, & DeJong, 1995; Van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999).

Greenberg and Speltz (1988) proposed an explanation for the association between poor parenting practices and childhood aggression based on attachment theory. In this model, conflicts arise out of developmental changes in the parent-child relationship during the preschool years. These conflicts are a result of the child becoming more able, as a result of his or her developmental progress, to recognize that he or she has different goals, plans, and emotions that are differentiated from those of his or her parent. During this stage of development, the child also begins to attempt to predict and infer intent about the behavior of his or her parent. The joint task for parents and children at this stage of their relationship becomes learning how to negotiate their different goals, plans, and desires for the relationship. The manner in which parents and children negotiate these conflicts and relationship structural changes may have considerable impact upon children's development of their representational models of themselves, significant others, and their environment. In addition, parents play a critical role in helping children develop the ability to self-regulate and tolerate

affect by being responsive to their children's affective states and helping them label and openly discuss their emotions.

According to Greenberg and Speltz (1988), parents of children with significant conduct disorder, including aggression, lack the ability to successfully negotiate joint goals and plans with their children and are unable to openly discuss and tolerate emotions. The children of parents who are over-controlling may display aggressive behavior in an attempt to gain control in the relationship. Children of parents who are overly permissive may become undersocialized and display aggressive behavior when parents attempt to set some form of limits. Conduct problems may also arise in the children of parents who are generally permissive, but are occasionally and unpredictably (from the child's point of view) punitive and authoritarian. These children may frequently find themselves violating family norms and rules because of a lack of consistent limit setting, leading to a harsh and punitive response from the parent. In all three cases, a lack of responsive caregiving is predictive of the child developing poor emotional control and maladaptive forms of interpersonal interactions.

These models are an illustration of Greenberg et al.'s (1993) assertion that it is unlikely that a main effects model is adequate to explain the association between insecure attachment and aggression. It was their contention that aggression is likely to have multiple determinants, with insecure attachment being one possible antecedent. They state that other factors which influence attachment processes are important to consider as well, including developmental processes, stressors, and parenting behavior beyond infancy.

The attachment histories of parents have been shown to influence their behavior toward their own children and have been hypothesized as one potential mechanism to explain the consistency among intergenerational patterns of attachment observed in some families (Bretherton, 1993). Although the exact mechanism of intergenerational transmission remains under investigation (Greenberg et al., 1993), research on the Adult Attachment Interview (AAI) (George, Kaplan, & Main, 1996) has been crucial in clarifying this question. Using an earlier version of the AAI, Main et al. (1985) demonstrated that the overall organization, rather than the specific content, of parents' recollections of their own attachment experiences within their families of origin were predictive of the parents' attachments with their own children. In the current classification system as described by Hesse (1999), parents labeled as "secure/autonomous" produced narratives that were coherent, emotionally open, detailed, and collaborative. It is important to note that among some of these parents, their childhood history included significantly negative attachment experiences. Regardless of the quality of the parents' reported early attachment experiences, the infants of these children were consistently classified as secure in the Strange Situation procedure. A second group of parents labeled "dismissing" tended to avoid answering many of the interview questions by saying "I don't know," minimized the effects of early attachment experiences on their subsequent development, and answered questions with globally positive statements that were either unsupported by corresponding memories or were contradicted by negative memories. The infants of these children were classified as avoidant during the Strange Situation procedure. A third, smaller

group of parents classified as “preoccupied” tended to discuss their attachment memories in an angry manner that at times inappropriately evolved into the present tense or discussions of the current relationship. These individuals frequently lost track of the interview questions and appeared to become lost in their recollections. At times, the individuals’ descriptions of their parents vacillated between positive and negative within the same sentence and these individuals occasionally digressed to unrelated topics or used excessively vague language. The infants of these parents were classified as ambivalent during the Strange Situation. In addition to these three primary classifications, a fourth group of parents labeled as “unresolved” tended to lapse into localized disorganization when discussing traumatic events, which included failure to monitor their reasoning and communication patterns. The infants of these parents have been classified as “disorganized” in the Strange Situation procedure. As reported by Hess (1999), a final group labeled “cannot classify” has been recently identified. These individuals produced narratives that were incoherent and contained many contradictory and incompatible linguistic patterns across the entire interview. This classification has not yet been psychometrically investigated. However, according to Hesse (1999), since Main et al.’s (1985) seminal investigation with the AAI, the results of that study have since been replicated across many samples. Hesse (1999) points out that rather than identifying individuals’ current attachment classification, the AAI instead appears to gauge an individual’s “state of mind with respect to attachment” (p.421).

Mental Representations of Self and Others

As introduced above, attachment theory posits that the relationship a child has with his or her caregiver will have implications for the child's self-system and future relationships through the formation of representational structures known as internal working models (e.g., Bowlby, 1980; Bretherton, 1985; Main et al., 1985). These internal working models contain representations of the self and the attachment figure within a relationship context and also subsume the affect associated with that relationship (Bowlby, 1980; Crittenden, 1990, 1994; Main et al., 1985). They include a child's expectations about the care and level of intimacy they will experience from others (Greenberg et al., 1993; Koback, 1999). As Main and colleagues (1985) noted, internal working models develop from a history of interactions between an infant and caregiver, rather than containing solely a representational picture of the caregiver themselves. Bretherton and Munholland (1999) argued that attachment-related conversations, as well as interactions, might influence the development of internal working models. Hesse (1999) implicated affect regulation and integration as a major factor in the differences in the organization of working models observed on the AAI. Main and colleagues (1985) conceptualized differences in internal working models as the key factor for observed differences in attachment organization patterns.

Internal working models aid in the appraisal of novel situations and guide behavior during those situations (Bowlby, 1980; Bretherton, 1985). Once internal working models develop and become organized, they are fairly resistant to change because they operate outside of conscious awareness (Bowlby, 1980; Bretherton, 1985;

Greenberg et al., 1993; Main et al. 1985). Resistance to change occurs in part because of the process of assimilation (cognitive representations of prior interactions biasing individuals' expectancies and potentially influencing the perception of current interactions), as well as the tendency for processing patterns to become automatic and less conscious over time (Bretherton & Munholland, 1999).

According to Greenberg and colleagues (1988, 1993), children's internal working models may undergo significant revision and change and may be influenced by developmentally driven changes in the parent-child relationship that occur between the infancy and preschool years, becoming increasingly specified and differentiated. One level of representation that may become differentiated as children progress developmentally is peer relationships. Cassidy, Kirsh, Scolton, and Parke (1996) investigated the association between attachment classification and children's representations of peer relationships. Children were asked to imagine themselves as the protagonist in a story in which a peer caused a negative event. Cassidy et al. (1996) found that the securely attached children typically held more positive representations of themselves and peers than did children with insecure, and especially avoidant, attachment patterns.

Defensive Exclusion and Inflation

Securely attached children are able to integrate both desirable and undesirable aspects of themselves (Crittenden, 1994). An important question is how aggressive children process and cope with information that may be threatening to their self-concept. Research has suggested that compared to non-aggressive children, aggressive

children are more likely to rate personal competence and relationship quality in an idealized fashion and to exhibit inflated self-competence, social acceptance, and relationship quality ratings, as compared to the reports of others (Hughes et al., 1997). For example, rejected-aggressive children overestimate their own competence when compared with peer estimates (Bukowski, Sippola, Verlan, & Newcomb, 1993; Patterson, Cohn, & Kao, 1989). Patterson, Kupersmidt, and Griesler (1990) compared the self-reports of rejected children to reports of their peers and found that rejected children who were also aggressive overestimated both their own behavioral competence and peer acceptance, whereas rejected but not aggressive children overestimated only their peer acceptance. Hymel, Bowker, and Woody (1993) found that average and unpopular/withdrawn children were fairly accurate about estimating their self-competence across academics, athletics, appearance and social competence when compared with peer ratings. Unpopular aggressive and unpopular aggressive-withdrawn children, however, were more likely to overestimate their competence across all four domains.

The results of a study by Lochman and Dodge (1994) suggested that besides denying negative information about the self and important relationships with others, aggressive boys may also defend against negative emotions which could lead them to feel vulnerable. The aggressive boys in Lochman and Dodge's (1994) study indicated they would feel happy in situations expected to elicit negative affect. In adolescent aggressive boys, this pattern of positive affect labeling co-occurred with unusually high self-reports of general self-worth and perceived social competence and this pattern

occurred in the most aggressive and violent boys. Edens et al. (1999) found evidence of three subgroups of aggressive children. In one subgroup, the aggressive children's reports of relationship quality were more positive than what was reported by the other individuals involved in the relationships. In the Edens et al. (1999) study, this particular subgroup of aggressive children had higher levels of parent and peer-rated aggression and delinquency than did the other subgroups.

Hughes, Cavell, and Grossman (1997) found that aggressive children reported more positive perceptions of their mothers than did non-aggressive children, a finding that is inconsistent with what previous research has revealed about the quality of parent-child relationships among aggressive children. Similarly, East (1991) found that aggressive and withdrawn sixth-grade children were, in general, less likely than prosocial children to agree with their parents about the quality of the parent-child relationship. The aggressive children tended to overestimate their mother's level of satisfaction with the parent-child relationship.

Research on maltreated children's representations of parent-child relationships suggest that aggressive children may share with maltreated children a similar, albeit less severe, background of harsh parenting practices. Therefore, research involving maltreated children's mental representations of self and other may have implications for understanding aggressive children's perceptions of relationships. Although maltreated children display more aggression, withdrawal, and avoidance than do non-maltreated children, maltreated children have a tendency to describe relationships in idealized and highly positive ways (McCrone, Egeland, Kalkoske, & Carlson, 1994).

In a study using projective measures, Stovall and Craig (1990) found that abused girls' conscious perceptions of self and others were positive, but their unconscious representations of self and others were highly disturbed. In contrast, non-abused girls from distressed homes had concordant conscious and unconscious self-perceptions. Dean, Malik, Richards, and Stringer (1986) reported that maltreated children idealized their parents and characterized themselves as deserving of harsh treatment. This idealization of the parent has been shown to be present in aggressive children as well (Hughes et al., 1997).

Attachment theory provides one potential explanation for the phenomenon of idealization and defensive exclusion of threatening information. Aggressive children, when they are the recipients of harsh parenting practices, may develop negative internal working models of attachment relationships and of the self as unworthy of care and love by the attachment figure (Cassidy, 1988; McCrone et al., 1994). These negative perceptions of the self and others require the use of defense mechanisms such as idealizing the attachment figure or the self in order to reduce accompanying distress. To this end, aggressive children who experience poor parenting practices may engage in defensive exclusion because of an inability to carry out effective regulation of their negative affect; that is, they may systematically exclude from awareness any incompatible or painful representations of a harsh or rejecting parent and the more negative aspects of the self (Bowlby, 1980; Bretherton, 1985, 1993; Bretherton, Ridgeway, & Cassidy, 1990; Crittenden, 1994). According to Crittenden (1994), highly defended children must also provide a satisfactory explanation for their less than

ideal behavior that allows them to protect their idealized self-image. As children become older, they become more adept at concealing undesirable behavior as well as creating acceptable explanations for this behavior. However, when this fails and the behavior is beyond explanation that would maintain an acceptable self, the only option remaining to the child is to deny the existence of this behavior to themselves as well as others. Bretherton and Munholland (1999) note that defensive processes are not necessarily unconscious. These processes can vary along a continuum of involuntary repression to deliberate suppression, as well as vary in their degree of success.

There has been increased interest in examining how internal working models are related to information processing interpretive biases. Cassidy (1988) used a puppet interview and story completion task to explore the self-representations of children's attachment relationships. In this study, children who were classified as avoidant tended to portray themselves as perfect and frequently avoided discussion of interpersonal relationships. Children classified as ambivalent did not display a marked response pattern, while secure children described themselves in a generally positive manner, but were also able to acknowledge aspects of themselves that were less than ideal. Main et al. (1985) assessed a sample of six year olds by asking them to draw a picture of their family. They found that in the family drawings, securely attached children depicted family members as close, but not overly so, with well-individuated figures that were not all smiling. In contrast, children classified as avoidant drew families with what Main et al. (1985) described as an "aura of falseness." That is, the children depicted much greater distance between members and all family members had

similar smiles. Children who were classified as disorganized/disoriented tended to draw pictures with bizarre features including incomplete objects or figures, strange marks that were added, and overly cheerful elements (e.g., hearts and rainbows) added to the picture without being clearly integrated into the rest of the picture. Bretherton, Ridgeway, and Cassidy (1990) used an attachment story completion task to examine the internal working models of a sample of three year olds. They found that the presence of coherent and affectively open responses to the story completion task successfully discriminated children who were classified as secure versus insecure during a separation-reunion procedure.

Greenberg and Speltz (1988) hypothesized that in parent-child relationships characterized by aggression and conduct disorder, there is often a lack of tolerance for negative affect. The message that his or her negative affect is “bad” is communicated to the child without any assistance provided in developing more appropriate means of emotional expression or affective self-regulation. Children in these types of relationships may develop maladaptive coping patterns that include the child learning to deny or repress his or her emotions and developing internal working models of self and other that are devoid of affective sharing and expression.

However initially effective, the reduction of emotional distress through defensive processing and the resulting false sense of self carry with them a high cost. Idealized and overly positive perceptions of the self and relationships with others may serve as a risk, rather than protective, factor among aggressive children. Defensive processes make negative representations less painful but may also prevent the child’s

integration of his or her self-perceptions with reality and interfere with the development of effective coping strategies (Bretherton, 1985, 1993; Bretherton et al., 1990; Crittenden, 1990, 1994). According to Kobak (1999), this defensive downplay and distortion of negative emotions on the part of the child arising out of disrupted attachment relationships may either be ignored or misinterpreted by non-responsive parents. Under conditions of extreme stress, the children's defensive regulatory mechanisms may break down, leading to the expression of attachment-related anger through aggressive and antisocial behaviors. Baumeister et al. (1996) proposed that an overly positive sense of self may be a risk factor for increased violence and aggression under conditions of perceived threat to self-esteem. Indeed, Hughes et al. (1997) found that inflated and idealized perceptions of the self and of relationship quality were associated with higher levels of aggression among aggressive children.

As described by Bretherton and Munholland (1999), research with the AAI has demonstrated that defensive processing interferes with the development of a coherent organization of working models and has ill effects on the transmission of attachment patterns to the next generation. In addition, according to Hughes et al. (1997), these poorly differentiated views of self and other could place aggressive children at risk for distorting their perceptions within relationships, which could interfere with healthy functioning within these relationships. In addition, defensive exclusion could deprive a child of opportunities to modify his or her behavior through corrective feedback provided by significant others and the rigid, falsely positive, and invulnerable sense of

self projected by the child may decrease the likelihood that others will engage him or her in accepting and supportive relationships (Hughes et al., 1997).

Attachment and Memory

According to attachment theory, internal working models formed from an individual's experiences within early attachment relationships are important in guiding cognitive activity involved in the processing of information (Crittenden, 1990; Main et al., 1985). Internal working models guide the direction and organization of attention and memory and provide rules that allow or restrict access to awareness of information about the self, the attachment figure, and the relationship between the two (Crittenden, 1990; Main, et al. 1985).

One aspect of information processing influenced by attachment history is memory. Three memory systems have been theorized to have relevance for internal working models and attachment theory (Crittenden, 1990, 1994). Crittenden (1990, 1994) summarized Tulving's (1979, 1985) conceptualization of three distinct memory systems and discussed how these memory systems might contain the representations that form children's internal working models. These memory systems are: (a) episodic, (b) semantic, and (c) procedural memory. Procedural memory, the earliest memory system to develop, refers to encoded representations of behavioral patterns that are reliably activated by specific situations or events, as well as the affect associated with these interactions (Crittenden, 1990, 1994). Based on repeated interactions with caregivers, an infant comes to expect certain patterns of behavior from him or herself and his or her caregiver. This memory system operates outside of

conscious awareness and represents functional organizations of behavior, rather than specific behaviors per se. For example, the securely attached child of a responsive parent might have the following representation in procedural memory, “When I indicate that I am distressed, my mother responds in ways that are comforting and soothing to me.”

The second memory system, semantic memory, has been described as containing information that is verbally encoded and free of context parameters (Crittenden, 1990, 1994). According to Bowlby (1980), parents are the source of early semantic memories for children by providing them with the language to describe themselves and others, as well as the meanings to assign to their representations. For example, a securely attached child might have the following associated semantic representations, “My mother loves and supports me” and “I am worthy of love and support.” Finally, episodic memory contains experiences organized with respect to chronology and may contain multiple types of information (e.g., visual, auditory, and temporal and spatial organization), as well as the affect associated with these experiences (Crittenden, 1990, 1994). These memories are autobiographical in nature and represent what we typically think of as memories. For example, a child’s episodic memory may contain experiences such as his or her first day of school and their parent’s supportive and appropriate response to the separation.

According to Tulving (1989 in Crittenden, 1990), memories in any of these memory systems may be distorted during either the encoding or retrieval phases. One form of distortion may take place as the process of defensive exclusion. According to

Bowlby (1980), certain attachment related information that is considered threatening might be excluded from conscious perception (the encoding phase). Bowlby (1973 in Bretherton, 1993) suggested that in the context of negative attachment relationships, a child might develop two incompatible internal working models. The first model portrays the parent in an idealized manner and any rejection on the part of the parent as being caused by the “badness” of the child. There is also a second, contradictory model of the parent as a disappointing and hated figure. Bowlby (1973, in Bretherton, 1993) posited that defensive exclusion of this second model from the child’s awareness leads to idealization of the parent.

Bowlby (1980) implicated the semantic and episodic memory systems as being important to the formation of internal working models. However, Crittenden (1990, 1994) posited that procedural memory, the earliest form of memory containing functional organization of behaviors and operating outside of conscious awareness, also has implications for internal working models. Defensive processing may restrict access to and disrupt communication between the three memory systems (Bretherton, 1993; Crittenden, 1990, 1994). According to Crittenden (1990), certain information may be encoded and stored, but remains inaccessible during the retrieval phase; thus, the negative working model continues to exist, but through the process of defensive exclusion remains totally inaccessible or only intermittently accessible at a conscious level (Bretherton & Munholland, 1999). This information that exists outside of conscious awareness, however, may still have an effect on the formation of current representations leading to inconsistent and discrepant working models within the

network of the self-system (Bretherton, 1993). Severe discrepancies among internal representations have been hypothesized to be associated with pathological outcomes (Bowlby, 1980). Bretherton (1993) conceptualizes insecurely attached individuals as having working models of the self and the attachment figure which may be inconsistent across memory systems and hierarchical levels, leading to no end of inconsistency, contradiction, confusion, and distortions in the processing of and behavior within attachment relationships.

Attachment Classification and Defensive Information Processing

It has been suggested that children who are securely attached will exhibit memory for both positive and negative information, whereas insecurely attached children will defend against negative information (Crittenden, 1994; Kirsh & Cassidy, 1997). Attachment theory suggests that securely attached individuals are more open to a range of emotions and related experiences and are thus less likely to distort or exclude threatening information from conscious awareness. Crittenden (1994) suggested that the three categories of attachment classifications map onto three different patterns of information processing. Securely attached individuals integrate both affect and cognition, utilizing information from all memory systems. Anxious-avoidant individuals tend to emphasize cognition and avoid affect by limiting awareness to procedural memory triggered by affective experiences, isolating affectively charged memories within unconscious episodic memory. They depend excessively on semantic memory derived from what they have been told by their parents, rather than integrating information from all three of these memory systems.

Finally, anxious-ambivalent individuals emphasize affect; minimize cognition; and utilize procedural and episodic, rather than semantic, models to guide their behavior. According to Crittenden (1994), securely attached children exhibit cognitive and affective flexibility through their ability to access all memory systems, are able to view themselves and others from multiple perspectives, and can incorporate and accept both desirable and less desirable facets of their self-concept.

For example, Kirsh and Cassidy (1997) found that securely attached three and four-year-olds remembered positive information from stories with responsive themes and also remembered negative information from stories with themes of rejection. Mikulincer and Orbach (1995) found evidence among college students of an association between attachment history and defensiveness when the students processed negative or threatening information. The securely attached individuals reported experiencing moderate defensiveness and low anxiety and were able to recall memories associated with negative affect following a moderate latency period. These individuals also rated their dominant affect associated with these memories as moderately intense, but rated their secondary emotions as low in intensity. In contrast, anxious-ambivalent individuals described experiencing high levels of anxiety and low levels of defensiveness, could easily recall negative emotional memories, and rated both their dominant and secondary emotions during recall as being high in intensity. Lastly, avoidant individuals indicated they experienced moderately high levels of anxiety and high levels of defensiveness. They exhibited the longest latency period during recall of negative emotional memories, but rated both dominant and secondary associated

emotions as less intense than did secure and ambivalent individuals. Taken together, these results suggest that securely attached individuals were able to acknowledge and experience the negative affect associated with negative emotional memories, but did not allow this negative affect to spread to secondary associations. In contrast, anxious-ambivalent individuals reported widespread high intensity of negative affect and avoidant individuals reported lower levels of intensity of negative affect and general avoidance of both the negative memories and the affect associated with them.

Fraley, Garner, and Shaver (2000) conducted a study of adults' recall for information from an interview about attachment-related issues. The authors found that adults who were highly avoidant in their attachment styles recalled fewer details, regardless of whether they were asked to recall the details immediately after presentation of the interview or after a variety of delay periods between the presentation and recall tasks. An analysis of forgetting curves revealed that avoidant individuals did not forget the details at a different rate than less avoidant individuals; rather, they encoded fewer of these details from the outset. Fraley et al. (2000) described this reduced processing of emotional information by highly avoidant individuals as a preemptive defensive strategy.

Attachment Schematic Information Processing

As discussed above, attachment theory predicts that insecurely attached individuals may defensively process threatening information about the self through the use of defensive exclusion, thus eliminating it from conscious awareness (Bowlby, 1980). Several studies have also demonstrated support for an alternate process known

as attachment schematic information processing (Belsky, Spritz, & Crnic, 1996; Bernstein Miller, 1999; Bernstein Miller & Noiro, 1999). Through this process, information that is consistent with attachment beliefs is more accurately encoded and/or recalled than is information that is inconsistent with attachment beliefs (Collins & Read, 1994 in Bernstein Miller, 1999). In general, a secure attachment classification has been associated with recall of positive attachment-related information and an insecure attachment classification has been associated with recall of negative attachment-related information.

Bernstein Miller (1999) found that securely attached college students tended to recall joint activities from stories they read about friends, whereas fearfully attached individuals tended to recall friends' separate activities. These results were obtained without any procedures to prime attachment-schematic information processing. In another study by Bernstein Miller and Noiro (1999), activating attachment-related memories of a friendship in college students prior to presentation of a story about a friendship had differing effects on the recall of events from that story, depending on the individual's attachment classification. Anxious subjects recalled more negative events when either supportive or rejecting memories were activated. In contrast, securely attached individuals recalled positive information better when rejecting memories were activated. Neither dismissing nor preoccupied individuals displayed any greater processing of negative story events. The authors noted that as Simpson and Rholes (1994, in Bernstein Miller & Noiro, 1999) suggested, the attachment systems may have been more difficult to activate in securely attached individuals; thus, these

individuals required more threatening memories to activate attachment beliefs than did the anxious individuals. According to the authors, the dismissing individuals' failure to differentially process negative events from the story is consistent with the ability these individuals possess to repress negative relationship experiences (Bernstein Miller & Noiro, 1999). They also suggested that the failure of the preoccupied individuals to recall negative events more frequently might have been related to inconsistencies in their processing of relationship events (i.e., interpreting negative events in a positive manner) (Bernstein Miller & Noiro, 1999). In a study of three-year-olds, Belsky, Spritz, and Crnic's (1996) results were consistent with attachment schema-consistent information processing. Securely attached children remembered positive events from a puppet show more accurately than they remembered negative events, whereas children with insecure attachment histories remembered negative events with greater accuracy than they did with positive events.

Attention and encoding are critical components of memory. Kirsh and Cassidy (1997) found that among children three to four years of age, avoidant children looked away from pictures of a mother and child more frequently than did ambivalent or securely attached children. However, the results supported attachment schema-consistent attention biases only in the absence of threatening information. When the presence of anger was introduced into the stimuli, both securely and insecurely attached children looked at the pictures depicting anger.

The Current Study

Obtaining a more accurate understanding of aggressive children's self-systems and internal working models would greatly facilitate our understanding of the implications of the nature of the self-systems on aggressive children's adjustment in terms of current and future relationships as well as their behavioral adjustment. In a previous study, Collie, Cavell, Hughes, & Smith (1998) investigated the predictive validity of a projective measure of the child's perception of parent-child relationship quality, a modified version of the Roberts Apperception Test for Children (RAT-C, McArthur & Roberts, 1982). The predictive validity of the modified RAT-C was compared with that of three objective child self-report measures using both multiple regression and cluster analysis in a sample of highly aggressive second and third grade children. Projective measures, as their name suggests, are based on the principle of projection, a defense mechanism whereby unacceptable impulses, desires, and drives are externalized outside the self (Rabin, 1986; Rabin, 1981; Vane & Guarnaccia, 1989). The stimulus in a projective measure such as the RAT-C is ambiguous and allows the subject an infinite variety of possible responses. Because the subject is unaware of how his or her responses may be interpreted, projective techniques may make it possible to subvert the subject's defenses (Rabin, 1986; Rabin, 1981; Vane & Guarnaccia, 1989). For example, Brody & Carter (1982) found that children attributed more sadness, fear, and intense affect to protagonists in a story when the protagonist was an other rather than the self. They suggested the children may have been defensively projecting these emotions because they were painful and to protect their

conscious views of self. Collie and colleagues (1998) hypothesized that the projective nature of the modified RAT-C might circumvent aggressive children's defensive process of inflating reports of relationship quality and demonstrate predictive validity that would represent an improvement over the predictive validity of more objective measures.

The children's responses on the modified RAT-C were not correlated with their responses on the direct measures, but neither set of measures was predictive of the quality of a newly formed relationship with a mentor. Furthermore, although a cluster analysis suggested the presence of two clusters of aggressive children based on their responses on the modified RAT-C (one cluster expressing more themes of aggression, anxiety, depression, and punishment than the other), the validity and clinical utility of the cluster groupings was not supported by examination of group differences on measures of the mentor-child relationship quality or parent and teacher reports of problem behaviors. The authors noted that although psychometric studies with the RAT-C have demonstrated adequate reliability, its validity was somewhat questionable. In addition, the modifications made to the RAT-C for this study may have further reduced the validity of the measure.

The aim of the current study is to further the understanding of aggressive children's self-systems through examination of their memory for attachment relevant information. This study represents a continuation of previous efforts to examine the self-systems of aggressive children including the work of Hughes et al. (1997), Collie et al. (1998), and Edens et al. (1999). In particular, the goal of the current study is to

examine whether aggressive children differentially process and recall attachment-relevant information and to investigate the correlates of any differential processing patterns that are detected. The current study is also an attempt to investigate and shed light on the nature of the self-systems of aggressive children who report exceptionally positive estimations of their competence and acceptance within significant relationships. At present, if aggressive children report having high self-esteem, the question remains as to whether they really have a positive view of self, or whether they are defensively excluding negative and threatening information by inflating their reports of their competence and acceptance. Gaining a more accurate understanding of the self-systems of aggressive children and the process of defensive exclusion may lead to improved interventions targeting the self-systems of aggressive children, a highly at-risk population.

According to attachment theory, the processing of attachment related information is guided by an individual's internal working models and thus represents an aspect of a child's self-system (i.e., the views of self, especially the self in relation to others). Kobak (1999) commented that a major research challenge in attachment theory is to discover alternative means to assess older children's appraisals of the availability of their attachment figures. Rudolph, Hammen, and Burge's (1995) Story Task is a measure that assesses children's information processing and memory for attachment related information. Children are asked to recall information from a story about the interactions that occurred between a hypothetical mother and child. The Story Task assesses both actual recalled information (information that was contained in

the story) and projected information (“recalled” information that was not present in the story). According to Rudolph et al. (1995), the Story Task is an incidental recall measure that is based on the process of schematic information storage and retrieval. The material presented in the Story Task is designed to elicit attachment schemas.

This study will examine the performance of aggressive children on the Story Task to determine whether there are meaningful differences in the processing and recall of attachment relevant information among these children. In addition, this study will also investigate behavioral and functional correlates of any differential processing patterns that are detected. Prior research based on attachment theory supports more than one information processing style, i.e., defensive processing and attachment schematic processing. The empirical literature also suggests that aggressive children are a heterogeneous group (e.g., Edens et al., 1999; Hinde, 1992; White, et al., 1990). It is therefore possible that the Story Task may capture several patterns of information processing.

Although the Story Task has been examined in community samples of children, it has not yet been investigated in a sample of aggressive children. Without prior research with this population, it is difficult to make a single *a priori* prediction about which process the Story Task might measure in aggressive children. This study, therefore, should be considered exploratory in nature. A cluster analysis procedure will be used to examine whether there are subgroups of aggressive children that can be distinguished on the basis of their Story Task performance. This type of analysis is appropriate because of the exploratory nature of this study and because there is

empirical support for more than one potential processing pattern among aggressive children. As discussed earlier, previous research has demonstrated that aggressive children are a heterogeneous group. Examination of differences among aggressive children using analysis of variance (ANOVA) would require an *a priori* determination of the nature of the predicted subgroups. Without prior research regarding the performance of aggressive children on the Story Task, taking an *a priori* approach by predicting groups to be used in the subsequent analyses may obscure meaningful and clinically significant findings by failing to account for potentially important, but not previously predicted, differences among aggressive children. These unpredicted differences may emerge through the more data-driven approach of cluster analysis.

Prior research (e.g., Edens et al, 1999; Hughes et al., 1997) has demonstrated the presence of a defensive information processing style present among some aggressive children whereby the children exclude from conscious awareness negative and painful information about the self, including information about the self in relation to others. Compared with the reports of others, these children inflate their reports of their own competence and acceptance within significant relationships. The Story Task with its use of attachment related information may tap into the vulnerable self-systems of aggressive children and thus provide an opportunity to observe defensive information processing and a tendency to avoid negative affect among a sample of aggressive children. It is therefore expected that one group of children may exhibit a pattern of defensive exclusion in their responses to the Story Task, defensively excluding negative (i.e., threatening) information from their conscious responses, but

possibly producing negative projected material. Because the story is about a hypothetical mother and child and involves the recording of attachment-related information that children project onto the story as opposed to a direct assessment of the children's attachment representations, it is possible that the threatening nature of such an assessment may be lessened to a degree that would allow the Story Task to at least partially circumvent the children's defensive processes. If the Story Task is successful in subverting the defensive processes of aggressive children through the examination of the projected information produced by the children, it may allow clinicians and investigators to access a more accurate picture of the self-systems of aggressive children.

In addition to this subgroup of aggressive children who defensively excluded threatening information, the empirical literature supporting attachment schematic information processing supports the prediction that two additional groups will emerge based on their Story Task performance (e.g., Belsky, Spritz, & Crnic, 1996; Bernstein Miller, 1999). One group will be a positive schema consistent processing group that will produce accurate recall of more positive information. The other group will be a negative schema consistent processing group that will produce greater accurate recall of negative information.

In order for the subgroups detected by cluster analysis to be considered meaningful, they must differ systematically on behavioral indices (other than the clustering variables) theorized to be related to differences between the observed clusters or groups. I predict that the groups identified through the cluster analysis will

differ on measures of inflation and idealization of self-reported competence and relationship quality, avoidance of negative affect, internalizing behavior, externalizing behavior, and psychopathic traits. Aggressive children who may fail to consciously process negative attachment-related information from the Story Task but who have negative, albeit subconscious, mental representations of attachment relationships may be expected to show traits that have been associated with the tendency to employ defensive exclusion. It is expected that these children will report overly positive and idealized perceptions of themselves and their relationships, as well as exhibit a greater risk for highly aggressive and externalizing behavior than children whose reports are more accurate (Edens et al, 1999; Hughes et al, 1997). Furthermore, defensive exclusion constitutes repression or a denial of painful and threatening information about the self that Lochman & Dodge (1994) found extended to negative and vulnerable affect among a sample of highly aggressive and violent adolescent boys. Finally, as Edens et al. (1999) pointed out, research indicating that highly aggressive children exhibit an exaggerated and overly positive self-view is consistent with the growing body of literature demonstrating that traits consistent with adult psychopathy are present in highly aggressive and conduct disordered children (see Edens et al., 1999 for a review). Indeed, an overly inflated sense of worth is one of the defining affective characteristics of psychopathy and may be related to the lack of empathy among psychopathic individuals.

Compared to the other two groups, it is predicted that the defensive processing group will display greater avoidance of negative affect on the Feelings Questionnaire;

will produce more inflated self-reports of competence and relationship quality (as compared to the reports of others); will have a greater number of scores reflecting an idealized perception of competence and acceptance; will be rated by others as more aggressive and displaying more externalizing behaviors; and will exhibit higher rates of callous and unemotional psychopathic traits. And consistent with the literature linking defensive information processing and peer rejection among aggressive children (e.g., Patterson, et al., 1990), it is predicted that the defensive processing group will also experience lower levels of peer acceptance.

Consistent with the literature regarding the cognitive processing of anxiously attached and preoccupied individuals and the theorized link between insecure attachment (especially preoccupied attachment) and internalizing disorders (e.g., Bernstein Miller, 1999; Bernstein Miller & Noiro, 1999; and Mikulincer & Orbach, 1995), it is also predicted that the negative schema processing group will exhibit greater levels of internalizing behaviors than the other groups.

METHOD

Subjects

Participants in this study were involved in a larger intervention program for aggressive children in a small city in the southwestern United States. Second and third grade teachers from 15 elementary schools nominated children from their classrooms who fit a behavioral description of a physically or relationally aggressive child. These nominations were confirmed and children were selected as eligible to participate in the study if their scores on the Aggressive Behavior subscale of Achenbach and Edelbrock's (1991b) Teacher Report Form were at least one standard deviation above the mean and their peer-rated aggression assessed through classroom-wide administrations of a sociometric procedure were also above the mean. Children could also qualify if either their TRF Aggressive Behavior subscale score or their peer-rated aggression score was at least two standard deviations above the mean. Based on these criteria, 318 aggressive children were found eligible to participate in the study. The average age of these children was 8.22 years. Of the 318 participants, 144 (45%) were African-American, 103 (32%) were Caucasian, 67 (21%) were of Hispanic descent, and one child (1%) was of Asian descent. Information about the ethnicity of one child was missing. In addition, 215 (68%) of the participants were male and 102 (32%) were female.

Measures

Story Task (Rudolph, Hammen, & Burge, 1995). The Story Task, developed by Rudolph et al. (1995), is an incidental recall measure that assesses storage and retrieval

of attachment relevant information. An interviewer reads the child a story depicting a variety of experiences that occur during a child's typical day with his or her mother. The gender of the child in the story is made consistent with the gender of the child being administered the Story Task. The story presents information to the child about a hypothetical mother in the form of five positive maternal attributes (e.g., loving, helpful, comforting) and five negative maternal attributes (e.g., grouchy, mean, unfair). These attributes are each described in the context of specific events. After hearing the story, the children are unexpectedly asked to recall the maternal descriptors. After a significant pause in generating responses, children are encouraged to try to remember as many adjectives as they can. A total response time of up to eight minutes is allowed. Responses are recorded verbatim and scored for the number of accurately recalled positive adjectives, the number of accurately recalled negative adjectives, and the total number of accurately recalled adjectives.

For the current study, an additional coding step that has been used more recently with the Story Task was included. Besides recording accurately recalled positive and negative maternal adjectives, children's responses to the Story Task were also coded for the presence of projected positive and negative responses (i.e., recall of adjectives that were not contained in the story). As discussed previously, the Story Task may possibly subvert the defensive processes intended to protect the self views of aggressive children by asking the children about information from a story about a hypothetical mother and child rather than directly asking the children about their relationships with their mothers. With the threat to sense of self that might arise from a

direct appraisal removed, the aggressive children might possibly project negative affect and thoughts about their own relationship with their mothers onto the characters in the Story Task.

In the current study, another procedure was added to the administration of the Story Task. This procedure was selected on the basis of findings from a study by Hughes, Worchel, Stanton, Stanton, and Hall (1990). Hughes et al. (1990) administered a story task to sixth grade children describing a typical day in the life of a teenage girl. The story contained 10 positive events and 10 negative events. After a free recall task, children were administered a recognition test in which the positive and negative events from the story (10 of each type) were listed, along with positive and negative distracter events (10 of each) that did not occur in the story. The children were asked to choose the events that actually occurred in the story. Hughes et al. (1990) found that depressed boys demonstrated lower recognition of negative story events and had more positive intrusions, i.e., recalling positive distracter events. Hughes and colleagues interpreted these findings as possibly reflecting denial and wishful thinking on the part of these children. The recognition test may add another dimension of cognitive processing to the incidental recall component of the Story Task. Recognition tasks require less retrieval effort than do recall tasks and generally show greater sensitivity to the influence of stored information (Ashcraft, 1994). For the current study, a forced choice recognition test was developed for the Story Task with a list of five positive and five negative events from the story, as well as five positive and five negative distracter events. The events were presented in a random order and each

event was read aloud. The child was then asked to indicate whether or not the event occurred in the story. Scores are derived for accurate recognition of positive events, accurate recall of negative events, total accurate recognition, recognition of positive intrusions, and recognition of negative intrusions (i.e., distracter events).

The Story Task has been psychometrically validated with populations of non-aggressive children. The validation samples included two community samples of elementary school children, including a sample that contained a significant subset of children with depressive symptoms. Rudolph et al. (1995) found that among seven to twelve-year-old children, internal cognitive representations of mother/family were significantly associated with the processing of social information on the Story Task. In their study, children who recalled a greater number of negative adjectives about the mother from the story also exhibited more negative global impressions of their families and predicted more negative outcomes from the mother-child interactions than did children who recalled a greater number of positive adjectives about the mother. In another study, Rudolph, Hammen, and Burge (1997) found that consistent with a negative schema theory of depression, depressed children demonstrated greater recall of negative maternal descriptors on the Story Task than did non-depressed children.

For the current study, inter-rater reliabilities of the coding of the actual and projected adjectives recalled were calculated. Cohen's Kappa for the 10 actual adjectives ranged from .64 to 1.0 among different pairs of raters, with perfect agreement obtained on the majority of items across all pairs of raters. Pearson's r 's,

calculated between pairs of raters for their coding of projected adjectives, ranged from .93 to 1.0.

Affect Questionnaire (Garrison & Stolberg). A version of the Affect Questionnaire (Garrison & Stolberg, 1983) was used to assess children's tendency to report feelings congruent with the affect depicted in various vignettes. During individual interviews, children were presented 18 vignettes depicting situations that were expected, based on the results of a pilot study with average children, to elicit feelings of happiness, sadness, or anger (six items each). After each vignette, children were instructed to distribute 10 chips across five jars labeled "Happy," "Sad," "Mad," "Afraid," and "Nothing" to indicate how they would feel in that situation. Children were instructed to use all 10 chips and were told they could place all their chips in one jar or distribute them across more than one jar. This format allowed children to report the intensity, as well as the content, of their feelings. Fifteen scores were derived, each representing a combination of vignette type and child's response. An additional 10 scores, representing each response to either sad or mad vignettes and across all vignettes were also derived, for a total of 25 scores.

In a previous study involving a subset of the current sample, Collie and colleagues (Collie, Erath, Hines, O'Brien, & Hughes, 2000) calculated coefficient alphas for each possible scale. Alpha values were low for scales with infrequent responses (e.g., sadness in response to happy vignettes). Coefficient alphas among the scales used in Collie et al.'s (2000) study ranged from .46 to .77. Following their methodology, the current study focuses on the tendency of children to respond to

negative events (sad or mad vignettes) by indicating they would feel happy in those situations. Because of the non-normal distribution of happy responses to sad or mad vignettes (skewness = 2.543, kurtosis = 7.709), a square root transformation was performed on this variable prior to data analysis. The variable representing denial of negative affect on the modified Affect Questionnaire is a count variable (i.e., represents the number of chips the child put in the jar labeled “happy” in response to sad or mad vignettes) and square root is considered an appropriate transformation method to use with this type of variable (Osborne, 2002). In Collie et al.’s (2000) study, the aggressive children were no less accurate than non-aggressive children in identifying the emotions expected to be elicited by the vignettes, but were nevertheless more likely than the non-aggressive children to indicate they would feel happy in situations that would be expected to elicit anger or sadness. Furthermore, this tendency to deny negative emotions on the modified Affect Questionnaire was associated with lower peer preference ratings for these children.

Network of Relationships Inventory (NRI) (Furman & Buhrmester, 1985). The NRI is a structured interview that asks children to rate individuals belonging to their social network (in this study, mother and teacher) on 11 types of social support or conflict. Each of the 11 scales contains three items that query about a specific indicator of support within the relationship (e.g., “How much do you tell this person everything?”). Items are rated on a five-point Likert-type scale. Support scores for a specific relationship were derived by summing across the following scales: communication, intimacy, instrumental aid, nurturance, affection, admiration, and

relative alliance. In addition to the overall support score, a conflict score was derived by combining (summing) the conflict and punishment scales. Buhrmester and Furman (1987) reported internal consistency reliabilities in the .80s for the NRI. The finding that children reported obtaining different types of social support from different persons in their social network provided support for the construct validity of this measure (Furman and Buhrmester, 1985). With the current sample, coefficient alphas for the support scales were .83 (mother) and .87 (teacher) and for the conflict scale, coefficient alphas were .67 (mother) and .68 (teacher).

In order to facilitate comparisons between the children's report and the report of significant others in their relationship network, the NRI was modified for the current study to allow administration of this questionnaire to parents and teachers in a parallel version. Alpha coefficients for these parallel forms of the NRI support scales were .86 (mother version) and .91 (teacher version) and alpha coefficients for the conflict scales were .81 (mother version) and .86 (teacher version).

The Self Perception Profile for Children (Harter) (Harter, 1985). The Harter assesses self-perceptions of competence and acceptance in children between the ages of eight and twelve. The subscales of the Harter measure perceived cognitive competence, athletic competence, physical appearance, peer social acceptance, and behavioral conduct, as well as an overall global self-worth rating. The scale has had good internal consistency and predictive validity (Harter, 1986). In the current sample, coefficient alphas ranged from .61 to .74. To facilitate comparison between self and other reports, the Harter was modified for the current study to allow additional

administration of the items to the children's teachers and parents in a parallel version. With the current sample, overall coefficient alphas of these parallel forms were .66 (mother version) and .82 (teacher version).

Classmates Scale of the Social Support Appraisals Scale (SSAS) (Dubow & Ullman, 1989). The SSAS is a 41-item Likert-type measure that assesses children's appraisals of social support received from various individuals within their social network (families, teachers, friends, and classmates). In this study, only the Classmates subscale (items 23-31) was administered. These items assess the degree to which the child perceives him or herself to be liked by and feels close to his or her classmates. Item ratings range from 1=never to 5=always. Reported internal consistency reliabilities for the SSAS range from .92 to .96 (Dubow, Tisak, Causey, Hrysko, & Reid, 1991). With the current sample, the alpha coefficient was .76. This measure was included to assess an additional domain of social relationships, peer relationships, and to allow a comparison with peers' reports of the children's acceptance in order to assess for the presence of inflation within this domain.

Kaufman-Brief Intelligence Test (K-BIT) (Kaufman & Kaufman, 1990). The K-BIT is a screening measure that estimates cognitive abilities. The manual reports evidence of excellent internal consistency, test-retest reliability, and internal and external validity. For the current study, the Vocabulary subtest of the K-BIT was included to assess whether performance on the Story Task was significantly predicted by subjects' verbal cognitive abilities.

Child Behavior Checklist (CBCL) (Achenbach & Edelbrock, 1991a). The CBCL is a widely-used instrument that assesses parents' reports of problem behaviors in children ages 4 to 18. The CBCL consists of 113 items rated on a 3-point scale (ranging from 0 = not true to 2 = very true or often true). Included among the scales is the broad-band Externalizing scale made up of the narrow-band scales of Aggressive Behavior and Delinquent Behavior, as well as the broad-band Internalizing scale consisting of the narrow-band scales of Withdrawn, Somatic Complaints, and Anxious/Depressed. The CBCL manual reports evidence of excellent internal consistency, reliability, and validity. Standardized raw scores from the broad band Externalizing and Internalizing scales were used in this study.

Teacher Report Form (TRF) (Achenbach & Edelbrock, 1991b). The TRF is a widely-used measure that assesses teachers' reports of problem behaviors in children ages 4 to 18 and includes the same domains assessed by the CBCL. The TRF manual reports evidence of excellent internal consistency, reliability, and validity. Standardized raw scores of the broad band Externalizing and Internalizing scales were used in this study.

Antisocial Processes Screening Device (APSD) (Frick & Hare, 2002). Scores from the Callous/Unemotional (C/U) subscale of the APSD (Frick & Hare, 2002) were used as a measure of callous and unemotional traits. The APSD, which had previously been called the Psychopathy Screening Device, is a 20-item behavioral rating scale completed by the child's parent and teacher. The APSD was developed to assess early indicators of psychopathic traits and is intended to extend the adult Psychopathy

Checklist - Revised (Hare, 1991) downward to the assessment of these traits among children. The C/U subscale consists of six items rated on a 3-point scale (0 = not at all true, 1 = sometimes true, and 2 = definitely true). These items were selected to assess the interpersonal and affective components of psychopathy including the absence of guilt or empathy and a restricted range of emotions. Wootton, Frick, Shelton, and Silverthorn (1997) reported a coefficient alpha of .78 for the C/U scale from the Psychopathy Screening Device based on combined parent and teacher report. With the current sample, coefficient alphas were .56 (mother version) and .71 (teacher version). Consistent with methodology used by Wootton and colleagues (1997), parent and teacher ratings were combined at the item level, then summed to create an overall score. According to Frick and colleagues (Frick, O'Brien, Wootton, & McBurnett, 1994), this scoring procedure mirrors the methodology of combining sources of information used in the screening of psychopathic traits among adults. In a previous study of the current sample (Oxford, Cavell, & Hughes, 2003), the observed coefficient alpha for the combined C/U subscale was .81. In addition to this scale that was scored in a dichotomous manner, Oxford et al. (2003) also created a continuous C/U score using a newly revised set of items. Cronbach's alpha for this continuous C/U scale was .80. Oxford and colleagues (2003) found that although the dichotomous C/U scale failed to moderate the relationship between poor parenting practices and children's externalizing behavior, the continuous C/U scale based on the new revision of the C/U items did moderate this association. The association between poor parenting and children's externalizing behavior was significant only among children who exhibited

lower levels of callous and unemotional traits. For the current study, only the continuous C/U scale scores will be used.

Sociometric Procedure. Classroom-wide sociometric procedures were administered and scored according to procedures outlined in Coie, Dodge, and Coppotelli (1982). Children were asked to nominate three children they “liked most.” To avoid asking children to nominate children they “liked least,” children were asked to rate all their classmates on a five-point Likert-type scale with respect to how much they liked to play with each child. The rating scale ranged from 1 = “I don’t like to” to 5 = “I like to a lot.” A rating of 1 was treated as a “like least” nomination. The “like most” and “like least” scores were standardized within classrooms. Children’s sociometric classifications and social preference scores were calculated according to procedures detailed in Coie et al. (1982). Using the revised class play methodology developed by Masten, Morison, and Pellegrini (1985), the children were also asked to nominate classmates who fit behavioral descriptions of children who were physically aggressive, relationally aggressive, shy and withdrawn, smart, athletic, a good leader, cooperative, and often in conflict with the teacher.

Calculation of Behavioral Indices. Based on the correlations among the variables reflecting internalizing and externalizing behaviors obtained from different sources (mother, teacher, and peer), as well as theoretical associations among these variables, internalizing and externalizing behavior composites were created. The externalizing behavior composite was formed by combining standardized scores from the TRF Externalizing broadband scale, the CBCL Externalizing broadband scale, and

the relational and physical aggression nomination scores from the peer sociometric procedure. The internalizing behavior composite was created by combining standardized scores from the TRF Internalizing broadband scale, the CBCL Internalizing broadband scale, and the behavioral nomination of shy and withdrawn from the sociometric peer procedure.

Calculation of Inflation Indices. In order to estimate subjects' tendency to describe themselves and their relationships with others in an overly positive and inflated manner, discrepancy scores were calculated between the subjects' self-reports and the reports of other individuals with whom the subjects had significant relationships (mother, teacher, peers). Two of the self-report measures administered to subjects in the current study, the NRI (Furman & Buhrmester, 1985) and the Harter (Harter, 1985), were also administered in parallel form to the subjects' mothers and teachers. In addition, subjects completed the Classmates scale of the SSAS (Dubow & Ullman, 1989), indicating how they perceived the quality of their peer relationships. The subjects' peers, in turn, provided ratings of social preference for the subjects during administration of the sociometric procedure. These parallel sources of information allowed for a direct comparison between the subjects' self-reports of their perceived competence, social acceptance, and relationship support and the observations of significant others about the subjects and their relationship.

The following six inflation indices were calculated: overall competence, peer acceptance, maternal support, teacher support, maternal conflict, and teacher conflict. Based on the pattern of correlations between each of the various inflation indices

calculated for the individual competence scales of the Harter and the inflation index calculated for the overall Total Competence scale of the Harter (r 's ranging from .54 to .70, p 's < .01), a decision was made to use the inflation index for the overall Total Competence scale score, rather than each of the individual competence scales inflation indices. Following the methodology established in Meehan's (1999) study, the inflation indices were computed by subtracting the standardized score of the report of the other individual (mother, teacher, peer) from the corresponding standardized score of the child's report. In the case of the Harter Total Competence score, the corresponding mother and teacher scores were combined prior to inflation calculation, resulting in a single competence inflation index.

A principal components factor analysis with a varimax rotation was performed on the six inflation indices. Four of the indices (overall competence, peer acceptance, maternal support, and teacher support) loaded onto one factor, while teacher and maternal conflict loaded onto a separate factor. Because of this factor loading pattern, a decision was made to drop the conflict indices and combine the remaining four indices (overall competence, peer acceptance, maternal support, and teacher support) into a single inflation composite.

Calculation of Idealization Scores. To further the goal of examining aggressive children's tendency to distort their self-perceptions, idealization scores were created representing the proportion of scales (among all scales of the Harter and NRI with responses) to which subjects provided maximal or perfect ratings. Following the methodology established by Hughes et al. (1997), two idealization scores were created,

a self-idealization score and an other-idealization score. The self-idealization score was computed as the proportion of individual Harter scales (with the exception of the Total Competence scale) on which the child rated a perfect score. The other-idealization score was computed as the proportion of SSAS Classmates Scale and individual NRI support scales (for relationships with the mother and the teacher) on which the child rated a perfect score. Because these two indices were significantly correlated ($r = .15, p = .01$), they were combined to form a single idealization index which represents the total proportion of Harter and NRI scales with perfect scores.

Procedure

All measures completed by the subjects were administered by trained undergraduate and graduate research assistants as part of a larger assessment during two one-hour individual interviews conducted at the children's schools. Sociometric questionnaires were administered at the schools in classroom-wide administrations conducted by a trained graduate research assistant with assistance from the teacher and if needed, additional undergraduate research assistants. During the sociometric procedure, children were assured of the anonymity of their responses and procedures were implemented to minimize discussion among the children about their responses to the questionnaires. Teacher measures were collected as part of a larger assessment packet mailed directly to the teachers and parent measures were collected as part of a larger assessment conducted by trained graduate student case managers during their initial home visits with the families involved in the project.

RESULTS

In these analyses, I examined whether aggressive children could be reliably classified into subgroups according to the pattern of their responses on the Story Task. The presence of distinct subgroups would suggest that different processing patterns for attachment related information exist among subgroups of aggressive children. Cluster analysis was the data analytic method used to examine this question. As discussed previously, cluster analysis appears to be an appropriate method based upon the exploratory nature of this study. The resulting clusters were first described in terms of performance on the Story Task free recall variables. Next and prior to validation, the clusters were examined to determine whether they differed significantly on any potentially confounding variables such as demographic variables or verbal cognitive abilities. The clusters were then validated through the use of a second clustering method, as well as validated on a number of external variables through the use of univariate analyses of variance (ANOVAs) and multiple regression.

Story Task Performance Cluster Analysis

I originally intended to use scores collected from both the original free recall and additional cued recall Story Task procedures in the cluster analysis. However, upon further examination of the variables representing recall performance on each of the two procedures, a decision was made to include in the cluster analysis only the free recall variables, which represented recall of: (a) negative adjectives from the story, (b) positive adjectives from the story, (c) negative projected adjectives, and (d) positive projected adjectives. Examination of a principal components factor analysis with a

varimax rotation performed on the free and cued recall variables, as well as examination of the bivariate correlations, suggested that the two types of variables might have been measuring different constructs. The observed factor loading patterns suggested that the cued recall items may have tapped into memory capacity, rather than the emotional valence of the items. As further support of this interpretation, all four of the cued recall scores were significantly correlated with a variable estimating subjects' verbal cognitive abilities, the Vocabulary subtest score from the K-BIT (r 's ranged from $-.20$ to $.32$, p 's $< .01$). In contrast, among the free recall variables, only recall of negative adjectives from the story was modestly correlated with K-BIT Vocabulary scores ($r = .17$, $p < .05$).

Based on the availability of complete Story Task data, a subset of 263 children was selected for the cluster analysis from the original sample of eligible subjects. Using the SAS statistical software package (Version 8.01, SAS Institute, 1999), the four free recall variables were used in the initial cluster analysis using Ward's minimum variance method utilizing squared Euclidian distances as the distance measure. Consistent with other studies in which cluster analysis was used (i.e., Edens, et al., 1999, Meehan, 1999), the cubic clustering criterion, pseudo F statistic, and pseudo t^2 statistic were used to determine the optimal cluster solution which best fit the data. These statistics suggested either a four-cluster or two-cluster solution (see Table 1). The cluster solutions were then examined visually with a plot of two canonical variables made up of the four Story Task free recall variables, yielding further support

for a four-cluster solution based upon graphical confirmation of the separation between and homogeneity within the clusters.

Table 1

Statistical Tests to Determine the Optimal Cluster Solution (Ward's Method)

Number of Clusters	Pseudo F	Pseudo t^2	Cubic Clustering Criterion
10	66.7	16.9	-.90
9	67.8	22.6	-1.3
8	68.0	46.2	-2.3
7	67.6	22.5	-3.5
6	67.8	48.8	-4.6
5	68.9	31.4	-5.7
4	69.5	30.0	-4.9
3	66.6	82.1	-5.0
2	70.1	42.4	-3.1
1	.	70.1	0.00

In order to assess the stability of this cluster solution, a second cluster analysis was performed on the data using the average linkage method. According to Borgen and Barnett (1987), Ward's method and average linkage are typically recommended as the best of the various clustering methods. Inspection of the cubic clustering criterion, pseudo F , and pseudo t^2 statistics generated by the average linkage method (see Table 2), also suggested a four-cluster solution. The presence of similar cluster solutions produced by both Ward's and the average linkage methods provides support for cross-method stability of the four clusters (Borgen & Barnett, 1987).

Although only some of the hypothesized clusters emerged, Ward's method suggested the presence of four clusters that appear to comprise conceptually different groups. The first cluster ($n = 53$), the negative recall group, is made up of aggressive children who accurately recalled the most negative adjectives from the story, as compared to the other clusters. These children also accurately recalled a substantial number of positive adjectives from the story but on average, they recalled more negative than positive adjectives. These children produced relatively few projected adjectives and included 20% of the overall sample. The second cluster ($n = 80$), the low recall group, recalled the fewest positive or negative adjectives from the story and produced relatively few projected adjectives. This cluster included 30% of the sample. The third cluster ($n = 36$), the defensive processing cluster, recalled substantially more positive than negative adjectives from the story and produced the most projected negative adjectives, as compared with the other clusters. These children, on average,

produced more negative than positive projected adjectives and comprised 14% of the original sample.

Table 2

Statistical Tests to Determine the Optimal Cluster Solution (Average Linkage Method)

Number of Clusters	Pseudo F	Pseudo t^2	Cubic Clustering Criterion
10	40.4	2.5	-12
9	41.6	17.8	-12
8	30.7	63.3	-19
7	34.1	10.2	-17
6	35.7	24.1	-17
5	26.3	51.8	-23
4	33.9	3.7	-17
3	21.1	50.6	-18
2	5.7	35.6	-16
1	.	5.7	0.00

The fourth cluster ($n = 94$), the positive projection group, included aggressive children who recalled a balanced number of positive and negative adjectives from the story, but produced the largest number of positive projected adjectives. These children produced more positive than negative projected adjectives and included 36% of the sample. Table 3 provides the cluster means and standard deviations of the four Story Task free recall variables.

The demographic characteristics of the four clusters are provided in Table 4. Chi square analyses or analysis of variance (ANOVA) were performed to determine whether the clusters differed significantly on any demographic characteristics. Chi square analysis was not significant for gender [$X^2(3, 263) = 7.39, n.s.$]. The small number of Asian children ($n = 1$) would have resulted in small cell sizes (i.e., < 5) and results that would not have been reliable for the chi square analysis examining ethnicity. Therefore, the single Asian child was excluded from this analysis. Chi square analysis was not significant for ethnicity [$X^2(6, 260) = 2.41, n.s.$].

Table 3

Means and Standard Deviations of the Clustering Variables

Variable	Negative Recall (<i>n</i> = 53)	Low Recall (<i>n</i> = 80)	Defensive Processing (<i>n</i> = 36)	Positive Projection (<i>n</i> = 94)
Positive Adjectives				
Recalled	0.60 (.96)	-0.45 (.62)	0.65 (.81)	-0.21 (1.07)
Negative Adjectives				
Recalled	1.11 (.87)	-0.44 (.70)	-0.20 (.82)	-0.17 (.91)
Positive Projected				
Adjectives	-0.70 (.20)	-0.73 (0)	-0.003 (.89)	1.02 (.84)
Negative Projected				
Adjectives	-0.57 (.33)	-0.49 (.46)	1.86 (.87)	0.03 (.75)

Note. Values are Mean (*SD*) of standardized variables.

In addition to examining cluster differences in the proportions of gender and ethnicity classifications, I also examined whether the clusters differed significantly on an estimate of SES based on the mothers' level of education and occupation. These

two variables were highly correlated ($r = .45, p < .001$) and were combined to form a composite that served as an estimate of SES. Results of an ANOVA with this variable was significant [$F(3, 189) = 2.67, p = .049$], revealing group differences among clusters on the SES estimate variable. Post hoc Tukey's t -tests revealed that the children in the positive projection cluster had mothers with significantly lower education and occupation scores than the mothers of the children in the low recall group. None of the other comparisons were significant. The mother's occupation and education composite variable, however, was not significantly correlated with any of the dependent variables used in this study. Therefore, I will not control for this variable in the subsequent analyses. I also investigated whether the clusters differed significantly on a measure of verbal cognitive ability. An ANOVA conducted on the Vocabulary subtest score from the K-BIT was not significant [$F(3, 186) = 1.33, n.s.$], suggesting that the groups were not significantly different from each other in terms of verbal cognitive abilities.

Table 4

Demographic Characteristics of the Four Clusters Generated by Ward's Method

Variable	Negative Recall (<i>n</i> = 53)	Low Recall (<i>n</i> = 80)	Defensive Processing (<i>n</i> = 36)	Positive Projection (<i>n</i> = 94)
<i>Age</i>				
Mean (<i>SD</i>)	8.30 (.57)	8.08 (.61)	8.26 (.86)	8.27 (.69)
<i>Ethnicity*</i>				
African-American	20 (38%)	38 (47%)	17 (47%)	46 (49%)
Caucasian	20 (38%)	23 (29%)	12 (33%)	29 (31%)
Hispanic	12 (23%)	19 (24%)	7 (20%)	18 (19%)
Asian	0	0	0	1 (1%)
<i>Gender</i>				
Male	32 (60%)	61 (76%)	19 (53%)	60 (64%)
Female	21 (40%)	19 (24%)	17 (47%)	34 (36%)

**Note.* Ethnicity data was missing for one child in the negative recall cluster.

Validation of the Cluster Solution on External Variables

After demonstrating the stability of the four-cluster solution through cross-validation with the average linkage clustering method, the next stage of data analysis

consisted of further examination of the validity of the cluster solution against external variables on which the clusters were hypothesized to be significantly different. Means and standard deviations of the standardized external variables are presented by cluster group in Table 5.

Table 5

Means and Standard Deviations of the External Variables Presented by Cluster Group

Variable	Negative Recall (<i>n</i> = 53)	Low Recall (<i>n</i> = 80)	Defensive Processing (<i>n</i> = 36)	Positive Projection (<i>n</i> = 94)
Denial of Negative Affect	-.13 (.96)	.05 (1.21)	-.17 (.86)	-.04 (.91)
Inflation Scores	.23 (.91)	-.06 (1.08)	.05 (.85)	-.16 (.87)
Idealization Scores	-.20 (.81)	.35 (1.13)	.05 (1.04)	-.02 (1.08)
Internalizing Behavior	.05 (.75)	.01 (.59)	.16 (.59)	.08 (.57)
Externalizing Behavior	-.13 (.63)	-.06 (.53)	.12 (.54)	.05 (.67)
Callous/Unemotional	-.12 (.98)	.07 (1.03)	.32 (.90)	.01 (.87)
Social Preference	-.68 (.87)	-.53 (1.01)	-.77 (.96)	-.72 (.89)

Note. *Values are Mean (SD) of standardized variables.*

A decision was made to examine the validation variables singly, rather than as a set through multivariate analyses of variance (MANOVAs) for the following reasons: (a) examination of the data revealed small effect sizes and because multivariate analyses are less powerful than univariate tests due to the potential for multicollinearity among the dependent variables, the MANOVAs may not have been able to detect such small effect sizes and (b) the exploratory nature of the analyses in the current study make it difficult to predict whether the clusters would differ on sets of the variables and what the nature of those sets would be. Therefore, the clusters were validated with a series of univariate analyses of variance (ANOVAs). A Bonferroni correction was applied to the significance level to control for potentially inflated Type I error rate resulting from multiple univariate analyses. Applying the formula, the corrected alpha level is $p < .007$.

ANOVAs were conducted to test for significant cluster differences on the following variables: inflation composite, idealization composite, denial of negative affect on the modified Affect Questionnaire, social preference ratings from the sociometric procedure, internalizing behavior composite, externalizing behavior composite, and the continuous C/U scale. After applying a Bonferroni correction to the alpha level ($p < .007$), none of these univariate tests were significant. That is, none of the clusters were significantly different from the others on any of these variables.

Because a number of the external variables were correlated with the demographic variables of gender and ethnicity, the associations between cluster membership and the external variables were also examined with a series of multiple

regression analyses controlling for the effects of gender and ethnicity. The results of these analyses are displayed in Tables 6, 7, and 8. Dummy coded variables representing the children's gender, ethnicity, and cluster membership status were created. For each external variable, the dummy coded gender and ethnicity variables were entered together in the first step of the regression equation, followed by the dummy coded cluster membership variables. After controlling for the effects of gender and ethnicity, none of the external variables had a significant proportion of the variance explained by the cluster membership.

Table 6

Hierarchical Regression Analyses with Cluster Membership Predicting Denial of Negative Affect, Inflation Scores, and Idealization Scores

	<u>Denial of Negative Affect</u>				<u>Inflation Scores</u>				<u>Idealization Scores</u>							
	B	SE	β	ΔR^2	F(ΔR^2)	B	SE	β	ΔR^2	F(ΔR^2)	B	SE	β	ΔR^2	F(ΔR^2)	
Step 1 (Dummy Coded)																
Hispanic	.03	.18	.01			-.46	.19	-.19*			.01	.16	.00			
African-American	-.05	.15	-.03			-.31	.15	-.15*			.20	.14	.10			
Male	.06	.14	.03	.00	0.16	-.02	.14	-.01	.03	2.45	.21	.13	.10	.02	1.69	
Step 2 (Dummy Coded)																
Cluster 1	-.08	.18	-.03			.25	.18	.10			-.15	.17	-.05			
Cluster 2	.07	.16	.03			.17	.17	.08			.33	.15	.14*			
Cluster 3	-.23	.20	-.08	.01	0.70	.09	.22	.03	.01	0.73	.06	.19	.02	.03	2.43	

* $p < .05$

Table 7

Hierarchical Regression Analyses with Cluster Membership Predicting Internalizing Behavior and Externalizing Behavior

	<u>Internalizing Behavior</u>				<u>Externalizing Behavior</u>					
	B	SE B	β	ΔR^2	F(ΔR^2)	B	SE B	β	ΔR^2	F(ΔR^2)
Step 1 (Dummy Coded)										
Hispanic	-.34	.11	-.20**			-.22	.11	-.13*		
African-American	-.39	.09	-.27***			-.02	.09	-.02		
Male	-.18	.08	-.18*	.07	8.10***	.21	.09	.13*	.03	3.39*
Step 2 (Dummy Coded)										
Cluster 1	-.10	.11	-.05			-.27	.12	-.14*		
Cluster 2	.09	.10	.05			-.04	.10	-.02		
Cluster 3	.12	.13	.05	.01	1.07	.02	.14	.01	.02	1.96

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

Table 8

Hierarchical Regression Analyses with Cluster Membership Predicting Callous/Unemotional Traits and Social Preference Scores

	<u>Callous/Unemotional Traits</u>				<u>Social Preference</u>			
	B	SE B	β	ΔR^2 F(ΔR^2)	B	SE B	β	ΔR^2 F(ΔR^2)
Step 1 (Dummy Coded)								
Hispanic	.37	.17	.15*		.51	.15	.22**	
African-American	.22	.14	.11		.27	.12	.15*	
Male	.05	.13	.02	1.69	.07	.1	.03	4.18**
Step 2 (Dummy Coded)								
Cluster 1	-.28	.17	-0.11		.09	.16	.04	
Cluster 2	.07	.14	.03		.04	.13	.02	
Cluster 3	-.31	.20	-.10	.02 1.99	.16	.18	.05	.00 0.31

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

CONCLUSION

The aim of the current study was to advance the understanding of aggressive children's self-systems through examination of their memory for attachment relevant information. In particular, I examined whether aggressive children differentially processed and recalled attachment-relevant information and whether any differential processing patterns would point to the existence of distinct subtypes of aggressive children. Based on the literature regarding attachment theory, information processing, and memory (e.g., Bernstein Miller, 1999; Bretherton et al., 1990; Kirsch & Cassidy, 1997; Main et al., 1985), I predicted that three subgroups of aggressive children would emerge from a cluster analyses of their responses to a story task designed to activate children's internal working models. The three predicted subgroups were a defensive processing group, a positive schema consistent processing group, and a negative schema consistent processing group. Using the cluster analytic procedure, I determined that the Story Task data delineated four distinct clusters of aggressive children. Because cluster analysis will always produce groups of subjects, the clusters must be validated before they can be considered meaningful. Although the observed four-cluster solution was stable across clustering methods, follow-up analyses failed to support the validity of the four-cluster solution on any of the external variables chosen for their theoretical relevance to the hypothesized groups, even after controlling for the effects of potentially confounding demographic variables.

There are a several factors that may be related to the failure to find meaningful subgroups of aggressive children based on their Story Task performance. The Story

Task has not been previously validated on a sample of aggressive children. Rudolph and colleagues (1995, 1997) demonstrated the validity of the Story Task with community samples of children including a substantial subset of depressed children, but they had not validated the measure with a group of children exhibiting externalizing forms of behavior problems. Because of this lack of prior information about aggressive children's performance on the Story Task, the current study must be considered exploratory and the hypotheses, although based on attachment literature and the literature about aggressive children, were tentative in nature. The data from the present study suggests that the Story Task did not perform as predicted among a sample of aggressive children.

The Story Task was designed to be an indirect appraisal of children's attachment based schemas or internal working models. The story concerns a hypothetical mother and child and the subject being administered the Story Task is not asked to provide any information or make any direct judgments about the relationship with his or her own mother. Presumably, however, the children's responses to the Story Task are influenced by their internal working models, which theoretically should be activated by the nature of the story. For aggressive children, a story about a hypothetical mother and child may have been too impersonal and distal to successfully activate attachment schemas during the processing of information from the story. For example, one hypothesis of the current study was that the Story Task might circumvent the aggressive children's defensive processes through the recording of the projected adjectives (i.e., adjectives falsely recalled by the children). Although it appeared that

the children in one of the clusters correctly recalled more positive than negative adjectives but produced the largest number of projected negative adjectives, this subgroup of children failed to demonstrate higher levels of defensive information processing on other measures than the children in the other clusters. Perhaps for these aggressive children, the processing of information about the hypothetical mother and child from the Story Task was too impersonal to activate the children's attachment schemas. They may have simply viewed the task as a story that did not concern them followed by an impersonal test of their memory skills. On the measures used to create the inflation and idealization composites used in the validation analyses, the children were asked about their own competence and relationships with significant others in their social networks, which may have been more threatening to their sense of self and therefore, more likely to trigger defensive information processing.

With the cluster analysis used in the current study, only two of the predicted subgroups emerged based on Story Task performance, the groups labeled negative recall and defensive processing. There were two groups that were not predicted, the low recall group and the positive projection group. The predictions about the subgroups as well as selection of the validation variables were based on the attachment literature and empirical studies with aggressive children. It is possible that the subgroups identified by the cluster analysis may differ significantly on other variables that were not examined in the current study.

In addition, the sample of aggressive children included in the study was restricted in range of severity of aggression. The inclusion criteria required that the

children be either two standard deviations above the mean on teacher and/or peer ratings of aggression or at least one standard deviation above the mean on teacher ratings of aggression and above the classroom mean on peer ratings of aggression. This inclusion criterion ensured that the sample included only children exhibiting very high levels of overt or relational aggression. This restricted range of aggressive behavior may have potentially hampered my ability to find distinctive and meaningful subgroups among my subjects.

Furthermore, an assumption was made that the false recall of adjectives that were not present in the story represented a projection of subconscious and presumably repressed threatening information. In retrospect, however, it is possible that this misremembered information could have come from a variety of sources (e.g., a recently read story with similar themes or a recent discussion) and may simply represent faulty memory, rather than information that is being defended against but maintained in the subconscious.

Rudolph et al.'s previous studies with the Story Task (1995, 1997) did not include the recording and scoring of projected adjectives. This was a procedure that was added after the initial development and validation of the measure. In the original studies with the Story Task, Rudolph and colleagues classified children based on: (a) the negativity of their maternal schemas (calculated as a proportion score representing the number of negative adjectives recalled divided by the total number of recalled adjectives) (1997) and (b) whether the children were in a positive schema group (recalled a greater number of positive than negative adjectives or recalled an equal

number of positive and negative adjectives) or a negative schema group (those who recalled more negative than positive adjectives) (1995).

In order to examine the question of whether group differences will emerge with these original classification methods, proportion scores representing the negativity of maternal schemas as well as a score that classified subjects into either a positive schema group or a negative schema group were created. Correlations between the maternal schema negativity proportion score and each of the external variables were examined and none were significant. Next, following the data analytic method used earlier to validate the cluster groups against external variables, the associations between the external variables and membership in either the positive or the negative schema groups were examined with a series of multiple regression analyses controlling for the effects of gender and ethnicity. After controlling for the effects of gender and ethnicity, none of the external variables had a significant proportion of the variance explained by the Story Task schema group membership.

In addition to these issues, there are other limitations to the study. I did not include any direct measures of the children's attachment classifications; therefore, had any interpretations been made based on attachment theory explanations, the absence of a direct appraisal of the children's attachment classification would have rendered these interpretations tentative in nature and in need of direct testing. In this study, I also relied on the report of the children and their mothers, teachers, and peers. Although this multi-source method of assessment is preferable to relying solely on the self-report

of the children, without collecting any observational data I can not be absolutely certain that the data was free from reporting biases.

In spite of the failure to find support for my hypotheses, I believe that striving to achieve an understanding of the self systems of aggressive children is a worthwhile and important goal. A more accurate understanding of aggressive children's self-systems and internal working models may help to further elucidate the impact of the nature of aggressive children's self-systems on their present and future relationships and behavioral adjustment. Hughes et al. (1997), Edens et al. (1999), and Meehan (1999) examined aggressive children's reports of information important to the self system by comparing the children's reports of their competence and relationship quality with the reports of others. Future studies seeking alternative methods of directly investigating and clarifying the nature of the self-systems of aggressive children who report exceptionally positive estimations of their competence and acceptance remains an important pursuit. At present, if aggressive children report having a highly positive view of self, the true nature of their self systems remains somewhat unclear. Do these children truly have a positive view of self (in spite of negative perceptions by others) as Baumeister et al. (1996) suggested, or are they defensively excluding negative and threatening information by inflating reports of their own competence and acceptance while their core (and potentially subconscious) sense of self remains negative? Future studies that strive to achieve a more accurate understanding of the self-systems of aggressive children and the process of defensive

exclusion may lead to improved interventions targeting the self-systems of aggressive children, a highly at-risk population.

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