

Abstract

GRANT, RAVEN L. Children's Attributions of Intent as They Relate to Peer Social Behavior. (Under the direction of Mary E. Haskett, PhD)

The primary purpose of this study was to further examine childhood aggression as it relates to the social cognitive process of social cue interpretation and peer interactions by replicating previous studies that have examined children's attributions of intent and their subsequent behavioral responses and also by expanding on previous studies by examining possible gender and age group differences in social information processing. Participants were a sub-sample of 98 children selected from a community sample of self-nominated families in a university project, "Parents and Children Together" (PACT). Findings indicated a link between hostile attributions and aggressive responses when these two constructs were measured at the same point in time using hypothetical situations. However, when the measures of social behavior followed the measure of hostile attributions by at least six months, it appeared that social behavior was unrelated to attributions of peer intent. With regard to gender differences, differences were found in observed aggression on the playground where boys engaged in significantly more aggressive behaviors than girls. No gender differences were found in children's intended aggression as measured by hypothetical peer problem situations or in the type of aggression (overt vs. relational), as reported by teachers. Age group differences were not found in the link between younger (5-6 year olds) and older (7-9 year olds) children's beliefs about their peer's intentions and their social behavior.

Children's Attributions of Intent as They Relate to Peer Social Behavior

by

Raven Lashaun Grant

A thesis submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the requirements of the Degree of
Master of Science

PSYCHOLOGY

Raleigh

2003

APPROVED BY:

Chair of Advisory Committee

Biography

Raven L. Grant was born June 26, 1977 in Ft. Hood, TX. She attended and graduated Sum Cum Laude from North Carolina State University with a Bachelors of Art degree in Psychology in May 1999. The following fall Raven returned to North Carolina State University to pursue graduate studies in School Psychology. She will graduate with a Master of Science in the summer of 2003 and then continue on in pursuit of a doctorate in School Psychology.

TABLE OF CONTENTS

LIST OF TABLES.....	iv
INTRODUCTION.....	1
LITERATURE REVIEW.....	3
Etiological Models of Aggression.....	3
Biological Model.....	3
Social Interactional Model.....	5
Social Information Processing Model.....	8
Encoding and Interpretation of Cues.....	9
Clarification of Goals and Response Access Construction.....	10
Response Decision and Behavioral Enactment.....	11
Attributions of Intent and Aggressive Behavior.....	13
Contextual Factors Affecting Attributions of Intent.....	15
Gender and the Expression of Aggression.....	22
Relational Aggression.....	22
Social Information Processing and Relational Aggression.....	26
STATEMENT OF THE PROBLEM.....	31
METHOD.....	34
Participants.....	34
Procedures.....	36
Instrumentation.....	37
Measure of Attributional Style.....	37
Measures of Peer Social Behavior	39
RESULTS.....	42
Link Between Attributional Style and Social Behavior.....	42
Gender Differences in Attributions and Social Behavior.....	43
Age Differences in Attributions and Social Behavior.....	44
DISCUSSION.....	45
Overview	45
Link Between Attributional Style and Social Behavior.....	46
Gender Differences in Attributions and Social Behavior.....	49
Age Differences in Attributions and Social Behavior.....	52
Summary and Directions for Future Research.....	53
REFERENCES.....	56
APPENDICES.....	61

List of Tables

Table 1 Description of Participant Characteristics..... 35

Table 2 Participants' Mean Scores (SD) on Measures for Total Sample and by Gender...44

Introduction

Childhood aggression has been studied extensively in the past and continues to be of interest today. This interest is due to the fact that childhood aggression often leads to peer rejection (Campbell, 1990; Parker & Asher, 1987), which is correlated with future social maladjustment (Parker & Asher, 1987). In addition, childhood aggression has been associated with other long term negative outcomes such as adult criminality, alcoholism, drug abuse, unemployment, divorce, and mental illness (see Loeber & Stouthamer-Loeber, 1998). In a longitudinal study conducted by Huesmann, Eron, Lefkowitz, and Walder (1984) it was found that children who were nominated as aggressive by their third-grade classmates committed more serious crimes, on average, than non-nominated peers 22 years later. Furthermore it was found that children who were at the top of the aggressiveness distribution of 8-year-olds were likely to be at the top of the aggressiveness distribution for 30-year-olds. This is consistent with the findings of a review conducted by Loeber and Hay (1997) who concluded that aggression was stable over time, but it was most stable for individuals who were initially classified as very low or very high in aggressive behavior.

There are a host of negative outcomes for children who display aggressive behavior. Of particular interest to the present investigation is the impact of aggression on peer relationships. Peer relationships provide a context for children to learn about “the rules of social exchange” such as role taking, sharing, empathy, conflict resolution, and control of aggression (Campbell, 1990). Through peer relationships children also learn foundations for moral reasoning. Peer relationships provide a forum by which children can discuss, debate, and negotiate their differing views with respect to various issues of conflict. This differs from the adult-child dyad in that participants in peer relationships have equal authority and

knowledge (Parker, Rubin, Price, & DeRosier, 1995). Therefore, “the morality of peer interactions is a morality of reciprocity and mutual respect” (Parker, Rubin, Price, & DeRosier, 1995).

Given the importance of peer relationships it is of concern to researchers and clinicians that peer relationships of aggressive children tend to suffer such that aggressive children are likely to be rejected by their peers (Crick, Casas, & Mosher, 1997; Crick, 1996). Peer rejection is especially problematic for aggressive children in that rejection by agemates might promote the child’s aggressiveness, creating a vicious cycle effect (Loeber & Hay, 1997). This cyclical effect might be due to an increase in frustration and a feeling of social incompetence by the aggressive child, who then reacts to the peer-rejection with increased aggression (Pettit, 1997).

Considering the immediate and long-term negative outcomes associated with childhood aggression it is imperative to understand the factors associated with aggression in order to reduce the risk of these outcomes. One area of cognitive functioning which has aided in understanding factors associated with aggression is social information processing. Through the examination of social information processing, researchers have been able to gain a better understanding of the “individual cognitive tasks that might be involved when a child is engaged in social interaction” (Crick & Dodge, 1994).

The purpose of the present study was to further examine childhood aggression as it related to the social cognitive process of social cue interpretation and peer interactions. Specifically this study concerned children’s attributions of intent and their subsequent behavioral responses. Also examined in this study were gender and age group differences with regard to children’s attributions of intent and behavioral responses. To this end it is

important to first review select models of aggression. Models aid us in broadening our understanding of children's social adjustment and in developing useful interventions. In the following section several models will be reviewed, ending with the model most relevant to the present study.

Literature Review

Etiological Models of Aggression

Biological Model

Biological models have been developed to aid in the understanding of aggression. Though most researchers agree that biological factors interact with the environment and experience in determining aggression, this section will only consider biological factors. The possible association between aggression and multiple biological factors, including heritability, neurotransmitters, hormones, and related disorders, has been examined in past research. Each of these factors will be discussed briefly.

The heritability of aggressive behavior has commonly been investigated using twin studies, which have rendered mixed findings. Some researchers report findings indicating a significant relation between genes and aggression while others have found little evidence of heritability (Baron & Richardson, 1994). Researchers have also examined possible connections between various neurotransmitters (e.g. serotonin, norepinephrine, and dopamine) and aggression with the primary focus being on the neurotransmitter serotonin (5-HT). Specifically, levels of serotonin functioning have been found to be inversely correlated with impulsive aggressive behavior (Ferris & Grisso, 1996).

Investigators have also examined the link between hormones and aggressive behavior. Of particular interest to many researchers has been the gonadal hormone,

testosterone. Researchers have found levels of testosterone to be related to sensation seeking, dominance, and assertiveness. That finding indicates there may be more of an indirect link between testosterone and aggression, with possible mediating variables such as sensation seeking and assertiveness. Bidirectional links have also been found between testosterone levels and aggressive behavior (Baron & Richardson, 1994). The link between testosterone levels and aggression in violent adults and antisocial youth has been confirmed by several studies (Christiansen, & Knusmann, 1987; Harris, Rushton, Hampson, & Jackson, 1996; Olweus, Mattsson, Schalling, & Low, 1980). However, research involving testosterone levels and aggression in children and adolescents has yielded inconsistent results (Susman, Granger, Murowchick, Ponirakis, & Worrall, 1996).

Additionally, the link between aggressive behavior and arousability as it relates to the adrenal hormone adrenaline, has been investigated. Studies suggest that highly aggressive individuals do not have typical responses to fear or anxiety when compared with nonaggressive individuals. Specifically the adrenaline level of aggressive individuals is relatively low and thus they appear to be “hyporesponsive.” In other words highly aggressive individuals seem to be less reactive or anxious than nonaggressive individuals (Baron & Richardson, 1994). Research has shown that psychopathic adults tend to be “hyporesponsive” to aversive stimuli, and under conditions of punishment they do not cease behavior readily (Dishion, French, & Patterson, 1995).

In an attempt to understand the biological factors associated with aggression, researchers have also investigated the link between aggression and related disorders. One such disorder is Attention Deficit Hyperactivity Disorder (ADHD). Advances in neuroimaging techniques over the past several decades have allowed researchers to obtain

more reliable measures of brain functioning. Specifically, researchers have been able to identify specific areas of the brain that show consistent abnormalities in people with ADHD. These areas include the frontal lobes, the basal ganglia, and the cerebellum (Hallahan & Kauffman, 2000). This is of interest to researchers investigating aggression because of the high comorbidity between ADHD and antisocial behavior. In fact, there is so much overlap between ADHD and conduct disorder that some researchers question whether or not the two disorders are separate (Dishion, French, & Patterson, 1995). In a review of the development and ecology of antisocial behavior Dishion, French, and Patterson (1995) cited studies in which children who showed signs of aggressiveness in combination with a diagnosis of ADHD were more likely to exhibit criminal behavior and had poorer outcomes later in life compared to children who showed signs of aggressiveness or ADHD alone.

Identification of biological markers of aggression is certainly important in understanding the etiology of violent behavior; however, biological models do not account for all of the variance in childhood aggression. Aggression is as complex as the individuals characterized by aggressive behavior and, as stated previously, biological factors do not operate in isolation. Environment also plays a significant role in the development of aggression. To this end the discussion is now turned to the social interactional model. This model places an emphasis on parent-child exchanges, and its proponents suggest that in order to change antisocial behavior one must first change the social interactions within which the behavior is inlaid.

Social Interactional Model

More than a decade of research by Patterson and his colleagues shows parent-child interactions involving antisocial children are marked by high rates of “coercive exchanges”

and negative reinforcement (Patterson, 1982). During these coercive exchanges parents make a demand, the child challenges and/or disregards the demand, the parent again makes the demand (i.e. “nattering”) that is again challenged and/or disregarded by the child. Finally the parent gives in, thereby negatively reinforcing the child’s noncompliant behavior. This type of coercive process becomes a mechanism by which the child learns to control parent-child situations and aversive behavior eventually becomes an automatic response.

Central to this process is the parents’ inconsistency with regard to consequences and limit setting. By negatively reinforcing the child’s coercive behavior a cycle might emerge in which the more uncontrollable and difficult the child appears to be to the parent the more frustrated the parent becomes, which in turn further inhibits the parent’s ability to set appropriate limits. The child is then again negatively reinforced and the more the child acts out the more control the child obtains. Furthermore, this coerciveness may carry over into other social settings such as the school, where interactions with teachers and peers show a similar pattern of coercive exchanges (Patterson, 1982).

Similar to Patterson’s model, Shaw and Bell (1993) have also proposed a model to aid in explaining the developmental course of antisocial behavior. Consisting of three stages, their model focuses on the mother-child interactions that take place from the child’s birth to 5 years of age. During the first stage, birth to 24 months, the model focuses on maternal responsiveness and its effects on subsequent mother-child interactions. At this stage infants are demanding and require extensive time, attention, and comfort. An unresponsive mother is unable to fulfill these demands and remains distant and indifferent to the needs of the infant. Subsequently the child avoids the mother out of fear of rejection, and positive interactions between the mother and the child decline. By 24 months, not only is the child more avoidant

but the child begins to develop a sense of independence and becomes more defiant and oppositional. The mother then must try to find a way to control what she sees as problem behaviors. This may lead the mother to use punitive measures in an attempt to control the child.

By 24 to 42 months stage two is beginning. Mother and child have developed a consistent form of interacting that is void of positive emotional attachment. Now the focus turns to “insistence,” the parent’s attempt to ensure that the child achieves developmentally appropriate milestones and goals. Regarding unresponsive mothers and avoidant children this “insistence” results in the same type of coercive exchanges discussed by Patterson (1982). Mothers also resort to inconsistent discipline which is often met with more resistance, defiance, and possibly aggression by the child.

Now approaching the third stage of the model, 42 months to 60 months, both mother and child have settled into a destructive pattern of interacting. At this point in the model the same type of negative interactional style that occurs between the mother and child spreads to other family members and settings outside the home. This is particularly problematic given the child’s likely entrance into the school system by the end of this stage. The types of behaviors that might be tolerated or ignored at home (e.g. talking back, fighting with others) are unacceptable in school and other settings. Even when brought to the parent’s attention, the child’s behavior remains unchanged because the pattern of interaction between the parent and child is firmly established.

Both Shaw and Bell (1993) and Patterson (1982) present models aimed at gaining a better understanding of deviant behavior in children. Their models focus on the social interactions of children, with particular emphasis on the role of the primary caregiver. Both

these social interactional models and the biological models of aggression discussed previously expand the growing fund of knowledge regarding the factors that contribute to children's engagement in aggressive behavior. However, there are still individual differences in response to a biological predisposition and ineffective discipline which are not accounted for by the social interactional or biological models of aggression. Therefore, an additional model will be presented which contends these individual differences might be attributed to a child's social cognitive functioning. With this in mind, the discussion is now turned to Crick and Dodge's (1994) social information-processing model.

Social Information-Processing Model

The social information-processing model of aggression is the model on which the proposed research is based. Proponents of this model suggest that children bring certain biological capabilities and certain knowledge structures with them to any given social situation. They then receive a set of cues from their environment regarding the situation, and their behavioral response is determined by the manner in which they process those cues (Crick & Dodge, 1994). The proposed steps of the model are as follows:

1. Encoding of external and internal cues.
2. Interpretation and mental representation of those cues.
3. Clarification or selection of a goal.
4. Response access or construction.
5. Response decision.
6. Behavioral enactment.

One major premise of this model is that children engage in multiple information processing activities simultaneously. Thus, a child may be interpreting cues associated with a

social situation while simultaneously constructing possible responses. Although processing does occur simultaneously, the mental steps a child takes from a particular stimulus to a particular behavioral response follows a linear sequence (Crick & Dodge, 1994). The steps of the social information-processing model will be discussed, with a particular focus on the initial step, encoding and interpretation of cues, which is the step most relevant to the present research. As each step is presented, research on group differences in processing between aggressive and nonaggressive children will be briefly reviewed.

Encoding and interpretation of cues. During the initial steps of processing social information children attend to cues associated with the social situation, encode those cues, and interpret those cues. This interpretation of cues may be affected by various mechanisms. One such mechanism is schemata, which are memory structures that provide a framework for organizing information in a way that facilitates interpretation of information as either “schema consistent” or “schema inconsistent.” The child then uses that interpretation in making decisions concerning how they will respond to the present social situation (Crick & Dodge, 1994). For example, in a study conducted by Dodge and Tomlin (1987) nonaggressive and aggressive children were presented with a hypothetical story involving a peer in which there was a negative outcome for the participant. In addition, eight “eyewitness testimonies” were provided. Children were asked to decide whether or not the peer acted with benign or hostile intent. Information also was solicited as to how and why the participant made his or her decision. Results indicated that aggressive children used self-schemas (e.g. their past experiences) significantly more often than did nonaggressive children in forming conclusions about the peer; they used significantly fewer of the eyewitness testimonies available to them.

Interpretation of social cues also might be affected by attributions of cause and intent. In making causal attributions children draw inferences as to the reason why certain events occurred (e.g. a child may need to infer why another child took his/her new crayons). A child may choose very different responses to social situations depending on the causal attributions made. For example, if Kim believes that another child took her new crayons because the other child wanted to borrow the orange crayon, Kim might decide to simply wait until the other child is finished and then retrieve her crayons. However, if Kim decides that the other child took her crayons because she enjoys eating crayons, Kim might seek authority aid and tell the teacher. On a different note, in making attributions of intent, a child must make inferences about another child's intentions during a particular social interaction. For example, Joey might be hit in the back with another child's paper airplane. Joey must decide if the act was done purposefully (e.g. with hostile intent) or by accident. Again, a child's response would differ depending on the attributions of intent made (Crick & Dodge, 1994). Attributions of intent are the primary focus of this research and the effect of these attributions on peer interactions will be discussed further in later sections of this paper.

Clarification of goals and response access or construction. Following interpretation of a social situation, children next need to clarify a goal. They must formulate, in their minds, the outcomes they wish to achieve in a given social situation. In the reformulated model it is hypothesized that children enter into various peer situations with a certain "goal orientation" which they may choose to keep as is, revise, or dismiss and come up with something new all together (Crick & Dodge, 1994). An example of a goal orientation would be wanting to fit in with the popular kids at school. Whatever the goal may be, once it has been clarified the next step is response access. Response access involves retrieving various behavioral responses

from long-term memory. These responses are ideas concerning possible ways of behaving in various social situations (e.g. how to go about approaching a group of popular kids and asking to join their club). In reviewing various research studies Crick and Dodge (1994) found that there seemed to be evidence to support the idea that aggressive children do not access as many responses as do nonaggressive children.

A specific example of biased response access was found in a study conducted by Asarnow and Callan (1985) using a sample of 60 fourth- and fifth- graders. Peer nominations were used to assess which children received negative evaluations (indicating more aggressive interactions). Each participant was presented with four peer problem situations and was asked what a child could do to solve each problem. Findings from this study suggested that children who received negative evaluations generated significantly fewer solutions and a higher number of aggressive solutions than did children who received positive evaluations.

Response decision and behavioral enactment. In the final stage of the social information-processing model children make a decision as to how they will respond to others involved in the situation. Children examine a variety of information in making this decision, including their feelings of self-efficacy in carrying out their chosen strategy and in the expected outcome. Research indicates that aggressive children feel confident in their ability to carry out antisocial acts but feel significantly less confident in their ability to carry out prosocial acts (Erdley & Asher, 1996; Crick & Werner 1998). In addition, it has been found that aggressive children tend to expect positive outcomes from aggressive responses, thus viewing violence more favorably than do nonaggressive children.

For example, Quiggle, Garber, Panak, and Dodge (1992) conducted a study involving 220 third through sixth grade boys and girls. Aggressive and nonaggressive

children were selected through peer and teacher nominations. Each child was read six hypothetical stories. They were then asked a series of questions including how they would respond in each situation and how they would evaluate their own response and other responses provided to them. Results indicated that aggressive children evaluated aggressive responses more favorably than did nonaggressive children and that aggressive children reported that they would be more likely to use aggressive responses. These findings support the social information model; if the child thinks a particular behavior will lead to their desired outcome then the behavior is likely to be enacted. After this evaluation process the child makes a decision and then enacts a behavior. Within the reformulated model, socially maladjusted children tend to choose aggressive or non-normative behaviors as their responses (Quiggle et. al., 1992; Dodge, Petit, McClaskey, & Brown, 1986; Asarnow & Callan, 1985).

In general, aggressive children differ from nonaggressive children at all phases of the social information-processing model. However, as stated previously, most important to the present study is how they differ with regard to their interpretation of social cues in interactions with peers. More specifically, research has demonstrated that aggressive children are more likely to attribute hostile intent to peers in the context of ambiguous situations (i.e. situations in which the peer's intent is not clear) than are their nonaggressive peers (Crick & Dodge, 1994; Crick, Grotpeter & Bigbee, 2002; Dodge, 1980; Dodge & Frame, 1982; Katsurada & Sugawara, 1998; Steinberg & Dodge, 1983). As an example, let us return to the hypothetical situation involving "Joey," who was hit in the back by an airplane. Research indicates that if Joey is an aggressive child and he is not certain that the other child hit him by accident, he will most likely determine that the child who threw the airplane purposefully

tried to hurt him. If, however, Joey is not an aggressive child, he will likely determine that the airplane was simply off course. The following section explores this phenomenon with respect to contextual factors that moderate the relation between aggression and hostile attributional biases. The following section explores this finding and the context within which it exists.

Attributions of Intent and Aggressive Behavior

One of the first researchers to demonstrate a link between attributions of intent and aggressive behavior was Dodge (1980), who conducted two studies using a sample of boys in grades 2, 4, and 6. Ninety children, 15 aggressive and 15 nonaggressive boys at each grade level, were selected for the study based on teacher ratings and peer nominations. In the first study, boys were randomly assigned to either a benign, hostile, or ambiguous condition, each involving a puzzle assembly task in which a negative outcome was experienced (i.e. destruction of the subject's puzzle while he was out of the room). Each child was led to believe, using "simulated live audio information," that this negative outcome was initiated by a peer in an adjoining room. Specifically, the child heard crashing sounds indicating their puzzle had been destroyed. They also heard a statement from the peer indicating either benign, hostile, or ambiguous intent. The participants were then given a chance to retaliate by destroying the peer's puzzle. Verbal and behavioral responses were video-recorded and coded according to seven categories: (a) disassembled one or more pieces of the other's puzzle, (b) expressed verbal hostility, (c) showed indirect hostility, (d) assembled one's own puzzle, (e) attempted a neutral communication with the other child, (f) made a positive verbal statement, and (g) helped assemble the other's puzzle. Behavior in categories (a), (b), and (c) were considered aggressive (Dodge, 1980).

Analysis of these data showed that both the aggressive and the nonaggressive boys reacted to the hostile condition with aggression, and reacted with almost no aggression to the benign condition. However, differences emerged when the reactions of aggressive and nonaggressive boys were compared in the ambiguous condition. Specifically, aggressive boys' mean aggression score in the ambiguous condition was significantly higher than nonaggressive boys' mean aggression score in the same condition (Dodge, 1980).

To further assess the relationship between type of condition and behavioral response, Dodge (1980) conducted a second study with the same sample. During this study the boys were presented with a hypothetical story involving a negative outcome for the participant, in which the intentions of the provocateur were ambiguous. Participants were then asked a series of four questions worded to elicit information regarding (a) the peer's intention, (b) the participant's behavioral response, (c) what the participant thought the peer would do after the negative outcome, and (d) whether or not the participant would trust the peer following the negative outcome and allow himself/herself to be placed in the same position again.

Results of this study indicated that aggressive boys attributed hostile intent to the peer's actions 50% more often than did nonaggressive boys. Also, aggressive boys were more likely than nonaggressive boys to predict that the peer would continue to act aggressively, and were less likely to trust the peer in the future. Furthermore, findings for this study showed that, in 60% of the cases in which the participant attributed hostile intent to the peer, they would choose to retaliate aggressively; participants would only choose to retaliate aggressively 26% of the time when they attributed benign intent. These findings supported the premise that young boys' attributions about the intention of the peer were highly predictive of their response to the peer (Dodge, 1980).

The link between hostile attributional bias and aggressive behavioral responding has also been found in other studies. Katsurada and Sugawara (1998) utilized a preschool sample of 50 children (ages 3.42 - 5.58 years) in examining this link. Each child's level of hostile/aggressive behavior was determined using teacher reports, and the presence of attributional bias was assessed using an intention identification task. This task consisted of 14 videotaped scenarios depicting typical preschool interactions (e.g. playing in the sandbox, building with blocks). All scenarios involved interactions between two children in which one of the children engaged in a harmful/destructive action with either hostile, accidental, or ambiguous intent. Outcomes for each scenario were somewhat negative. Upon viewing the scenarios, children were first asked what happened in the scenario. They were then questioned regarding the intent of the provocateur in the scenario. The proportion of unintentional cues misidentified as intentional cues was used as the hostile attributions score.

Several factors were found to be predictors of children's hostile/aggressive scores. Findings indicated that children's hostile attribution scores significantly predicted teacher's hostile/aggressive scores. In addition, boys were reported to be more hostile/aggressive than were girls, and children with lower SES obtained higher scores on teacher-reported hostile/aggressive behavior than did children with higher SES. Although age was not a statistically significant predictor of teacher-rated hostile/aggressive scores there was a trend for younger children to be more aggressive than older children.

Contextual Factors Affecting Attributions of Intent

Additional studies have examined the relation between attributions of intent and aggressive behavior and the specific context within which this relationship exists. For example, Dodge and Newman (1987) selected 81 male students from public elementary

schools. Each student was categorized as aggressive or nonaggressive based on teacher ratings and peer nominations. As was done in Dodge's (1980) study, Dodge and Newman (1987) investigated whether or not aggressive children tended to make significantly more hostile attributions in ambiguous situations than did nonaggressive children. They also examined the context in which these attributions were made. It was hypothesized that aggressive boys would make more hostile attributions in ambiguous situations, particularly when their attributions were made quickly and relevant information was ignored.

Each participant was asked to participate in a detective game involving three tasks: (a) to listen to a story about a boy who might have committed a certain hostile act, (b) to collect information from peer testimonies to determine if the boy had committed the act, and (c) to decide whether or not the boy had committed the act. Participants were allowed to listen to as many as five available testimonies. The testimonies consisted of a mixture of statements that were either supportive of the boy's involvement, nonsupportive of the boy's involvement, or ambiguous about the boy's involvement. After playing the detective game six times participants were asked to freely recall as many sentences as they could remember from the testimonies they had heard.

It was found that although aggressive boys did tend to attribute hostile intent to peer's actions in ambiguous situations more often than did their nonaggressive counterparts, this phenomenon was dependent on the speed with which they responded and on their attention to relevant social cues. That is, when aggressive boys responded quickly, as measured by within-cell median splits on the total number of testimonies heard, and ignored relevant social cues (e.g. listening to fewer testimonies), they tended to make more hostile attributions than did nonaggressive boys. However, if aggressive boys did not respond quickly, and

utilized relevant social cues, there was no significant difference in their responses and those of nonaggressive boys (Dodge & Newman, 1987).

Further support for this phenomenon was found by Waas (1988) using peer-rejected and aggressive children. Waas (1988) selected 48 third-graders and 48 fifth-graders with an equal number of rejected high –aggressive, rejected low-aggressive, and nonrejected boys from each grade. Rejected and nonrejected groups were selected using peer nominations, and high and low aggressive participants were identified using the teacher-completed Social Behavioral Checklist. During data collection sessions participants were presented pictures of a hypothetical peer interacting with either the participant (representing “consistency” information) or another child in the class (representing “distinctiveness” information). Participants were then shown one of three “provoking-incident drawings” while simultaneously being read a description of the event depicted by the drawing. In each drawing the participant was depicted as experiencing a negative outcome and the provocateur’s intent was ambiguous. Participants were also shown an additional provoking-incident drawing, void of any description. The boys were then interviewed to elicit information regarding their perceptions of the presented situations. Information concerning their attributions of intent, as well as how they would respond to the various depicted situations was gathered. Also, each boy rated how certain he was about the attributions he made and how angry he would be in each situation (Waas, 1988).

Waas (1988) found that, in the absence of relevant social information, both high aggressive and low aggressive rejected children made more hostile attributions of intent when presented with ambiguous situations than did nonrejected children. Consistent with findings of Dodge and Newman (1987), this further emphasized the importance of slow

deliberate responding and utilizing all relevant information in making attributions. In addition, similar to Dodge (1980), Waas (1988) found that both high-aggressive and low-aggressive rejected participants chose to respond more aggressively than their nonrejected peers, in the absence of any social information about the provocateur.

Waas's (1988) study brings to light an additional factor that might play a role in attributional bias among aggressive children, that is whether or not the child is socially rejected by his or her peers. Significant differences were found between the intent attributions of rejected versus nonrejected boys, with rejected boys making significantly more hostile attributions than nonaggressive boys. No significant differences were found between the intent attributions of high-aggressive versus low-aggressive boys, however. This indicates that attributional bias may not be linked just to aggressiveness, as was found in previous research, but to rejected status as well.

Further emphasizing an expanded view of attributional bias and aggression in children, other researchers have investigated additional contextual factors that could influence the link between hostile attributional bias and aggressive children. One such study was conducted by Dodge and Somberg (1987), in which they took into account threats to self in investigating hostile attributional bias among aggressive children. Using a sample of boys (ages 8-10) from the third, fourth, and fifth grades, 32 rejected-aggressive and 33 nonrejected-aggressive participants were selected based on both peer nominations and teacher evaluations.

Participants were shown 12 televised short stories depicting two actors involved in a play activity in which one of the actors experienced a negative outcome. Intentions of the provocateur in the stories were depicted as either hostile, accidental, prosocial, or ambiguous.

Participants were asked two questions about each story. The first question required the child to make attributions of intent regarding the provocateur's behavior. Second, participants were asked to indicate which one of four ways they would respond (get mad at the peer, tell the teacher, ask the peer why it happened, or forget it and keep playing) if they themselves were in the situation depicted.

The first four stories represented a relaxed condition, in which the experimenter sat in the corner without disturbing the subject. Next the condition of threat was engineered, in which the experimenter turned off the television and told the participant he was going to get another boy to join the participant. The experimenter exited the room and via the microphone system played a tape of a conversation between the experimenter and "another boy". The participant was able to hear this conversation and heard the "other boy" make statements expressing his dislike for the experimenter and anyone he would have to work with (e.g. "If I go in there, I'm just going to get into a fight with that boy"). The experimenter then returned to the room where the participant was waiting and explained that another boy would join them soon, but in the meantime the subject was to view the remaining eight stories.

As expected, aggressive boys made more hostile attributions than did nonaggressive boys when the provocateur's intent was ambiguous. This finding held for both the relaxed condition and the condition of threat. In addition, the aggressive children made significantly more hostile attributions following threat than they did during the relaxed condition. No significant differences were found across conditions for the nonaggressive group. This suggested that aggressive boys were particularly susceptible to engaging in aggressive behaviors when aroused by potential provocation.

Sancilio, Plumer, and Hartup (1989) also investigated the context within which attributional bias and aggressive behavior might be linked. They explored the effect of a peer's status as either a friend or a nonfriend on aggressive and nonaggressive children's attributions of intent and behaviors. Their sample consisted of 38 third grade boys and 36 fifth grade boys. Aggressive and nonaggressive boys were identified based on teacher ratings and peer nominations. Friends and nonfriends were identified through peer nomination.

Participants were read stories in which the target child experienced an unpleasant outcome by an actor whose intent was ambiguous. In each story the target child was either the participant or a specific classmate. The actor was always a specific classmate, previously identified as either a friend, an aggressive nonfriend, or a nonaggressive nonfriend. Each possible combination of target and actor was used at least once, yielding nine different stories. After each story, participants were probed as to the intentions of the actor and what they predicted the target child would do next.

Findings of this study replicated and expanded those of previous research. Specifically, aggressive boys were more likely than their nonaggressive peers to attribute hostile intent to an actor's actions in situations of attributional ambiguity. This relationship existed regardless of the actor's status as friend or nonfriend. Additionally, aggressive boys attributed more hostile intent to the actor when they were the target. No significant differences were found between aggressive and nonaggressive boys when a classmate was the target. Aggressive boys were also significantly more likely than their nonaggressive peers to predict they would respond aggressively to the presented stories, regardless of whether the actor was a friend or nonfriend.

To summarize, several researchers have found that aggressive boys tend to attribute hostile intent to peers in situations in which peers' intentions are in fact ambiguous, and some have explored the context within which this relation between aggression and hostile attributions exists. As stated previously, findings suggest that aggressive boys who respond quickly and ignore relevant social cues are at particular risk for making hostile attributions. Also, boys who are rejected by their peers have been found to make significantly more hostile attributions than nonrejected boys. One study (Dodge & Somberg, 1987) also found that whether or not there was a perceived threat to the aggressive participant was related to their likelihood of making hostile attributions. Aggressive participants made significantly more hostile attributions following a threat than they did during a more relaxed social situation.

Aggression has been associated with both immediate and long-term negative outcomes for children, including peer rejection (Crick, Casas, & Mosther, 1997; Crick, 1996), adult criminality, alcoholism, drug abuse, unemployment, divorce, and mental illness (Loeber, & Strouthamer-Loeber, 1998). Considering the detrimental effects aggression might have on children and their future social adjustment it is imperative to understand the factors associated with aggression. By exploring the aforementioned factors and other issues associated with aggression and hostile attributions researchers may better understand what contributes to and/or maintains this relationship, thus better preparing them to develop effective interventions for aggressive children.

One such factor that is in need of further exploration, and is of relevance to the present study, concerns the relation between gender and aggression. Within the past decade researchers have begun to explore possible gender differences in the expression of aggression and in

social information processing as it relates to aggression. However, much work remains to be done in this area. Research concerning gender and aggression will be reviewed next.

Gender and the Expression of Aggression

For years, research has shown that men and boys are more often the perpetrators and recipients of aggression than are women and girls (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999; Hyde, 1984; Maccoby & Jacklin, 1980; Maccoby & Jacklin, 1974). However, recently investigators have begun to examine gender differences in the expression of specific types of aggressive acts. Crick and Grotpeter (1995) were among the first to investigate the manner in which boys and girls differed in their expressions of aggression. They hypothesized that since girls generally were concerned with relational issues (i.e. making friends) in their social interactions they would be more likely to exhibit aggressive behaviors that were consistent with those concerns. More specifically, they hypothesized that girls would tend to engage in relational aggression, defined as acts of aggression aimed at damaging peer relationships (i.e. spreading rumors about a peer). That type of aggression differs from the type usually exhibited by boys. Boys tend to be concerned with instrumental and physical dominance in their social interactions, leading them to engage in overt aggression (physical and/or verbal). The following section will discuss studies, in chronological order, that have explored these hypothesized differences in the expression of aggression.

Relational aggression. In a pioneering study, Crick and Grotpeter (1995) selected a sample of 491 elementary school children, including third, fourth, fifth, and sixth grade boys and girls. Peer nominations were used to assess relational aggression, overt aggression, prosocial behavior, and social isolation. Children were identified as aggressive if they were one standard deviation above the sample means for relational aggression, overt aggression, or

both relational and overt aggression. The remaining children were identified as nonaggressive. This resulted in four groups of children: (a) nonaggressive children, (b) overtly aggressive children, (c) relationally aggressive children, and (d) combined overtly and relationally aggressive children. The above mentioned peer nominations were also used to generate sociometric status groups of popular, average, neglected, rejected, and controversial children.

Factor analysis of children's peer nomination scores for social behavior provided evidence that relational aggression was a distinct construct, relatively independent of overt aggression. Moderate association was found between overt and relational aggression, but that is what would be expected of two constructs that purport to measure different forms of the same behavior. In addition, further analysis of these data revealed a significant gender difference in the type of aggressive behavior reported. Girls were reported to engage in significantly higher rates of relationally aggressive behaviors than were boys, and boys were reported to engage in significantly higher rates of overtly aggressive behaviors than were girls. Results from this study also indicated that, as had been found in studies concerned primarily with overt aggression, children who engaged in relational aggression were significantly more likely to be rejected by their peers.

These findings have been partially replicated by other researchers. However, some discrepancies have been noted. For example, in a study conducted by Crick, Casas, and Mosher (1997) 65 preschoolers, ranging in age from 3.5 to 5.5 years old were assessed using peer nominations and teacher reports of relational aggression, overt aggression, and prosocial behavior. Factor analyses of children's peer nominations and teacher reports were first conducted to determine whether or not relational aggression represented a distinct construct

for preschool age children. These analyses indicated that relational aggression was a distinct construct, independent of overt aggression. Further analyses of overt and relational aggression revealed significant effects due to gender for teacher reports. Specifically, boys were reported as being significantly more overtly aggressive (based on mean overt aggression scores) than girls, and girls were reported as being significantly more relationally aggressive (based on mean relational aggression scores) than boys. However, analyses of peer reports did not yield significant gender effects.

Gender differences were also assessed for “extreme” groups of aggressive and nonaggressive children. Aggressive status was defined as a score one standard deviation above the mean for either overt or relational aggression or a combination of the two. Thus four groups resulted: (a) nonaggressive, (b) overtly aggressive, (c) relationally aggressive, and (d) relationally plus overtly aggressive.

Consistent with previous findings, teacher reports indicated a higher percentage of boys than girls in the extreme overtly aggressive group and in the combined relationally plus overtly aggressive group. Also, teacher reports indicated a higher percentage of girls than boys in the extreme relationally aggressive group. In contrast, group classifications based on peer nominations indicated a higher percentage of boys than girls in all three groups. This is partially inconsistent with the previous findings of Crick and Grotpeter (1995) using older children in which they utilized peer nominations and found that while boys primarily comprised the overtly aggressive and combined groups, the relationally aggressive group was primarily comprised primarily of girls. The reason(s) for this discrepancy with previous findings are unclear. However, the authors hypothesize that this possibly could be due to a lack of statistical power or to developmental differences in children’s usage and/or

understanding of aggression. For example, Crick, Casas, and Mosher (1997) reported that young children were likely to have fewer opportunities than older children to observe aggressive behaviors of opposite sex peers and therefore may be less aware of gender differences in aggression. Additional analyses also revealed that both relational and overt aggression in preschool children were significantly related to high levels of peer rejection.

Rys and Bear (1997) also examined the relation between gender and relational and overt aggression in a sample of 131 third graders and 135 sixth graders. Utilizing peer nominations and teacher reports to determine aggressive status Rys and Bear (1997) found that, in general, girls were *not* more relationally aggressive (based on mean scores of relational aggression) than were boys. However when children were classified into extreme groups (i.e. one standard deviation above the mean for overt, relational, or both overt and relational aggression) significant gender differences became apparent. Based on these extreme groups it was found that both the overtly aggressive group and the combined overtly/relationally aggressive group consisted primarily of boys. The relationally aggressive group consisted primarily of girls. Peer relationships were also assessed and findings suggested that peer reports of overt aggression but not of relational aggression were linked to peer rejection among boys. In contrast, peer reports of relational aggression were more strongly correlated with peer rejection among girls than were peer perceptions of overt aggression. Additionally, consistent with Crick and Grotpeter's (1995) study, relational aggression explained variance in peer rejection beyond that accounted for by overt aggression.

Although some inconsistencies in findings exist among the previously mentioned studies, several findings appear to be robust. First, relational aggression clearly has been

established as a distinct construct separate from overt aggression. Second, gender differences in rates of relational and overt aggression are noted fairly consistently, particularly when extreme groups are used. Third, the aforementioned studies emphasize the importance of relational aggression in children's social adjustment, given that relational aggression is associated with peer rejection, which has been found to be significantly related to future social maladjustment (Parker & Asher, 1997).

The studies reviewed herein provide a starting point for continued research into the relation between gender and aggression. Emphasis is placed on the importance of examining gender as it relates to aggression and subsequently variables that may have an effect on this relationship. Extensive research has been conducted examining multiple variables thought to effect the expression of aggression in boys. However, given the aforementioned gender differences in the expression of aggression, research is now needed to examine these same variables utilizing samples of girls. Of particular interest to the present study, is the examination of social information processing and its influence on the expression of relational aggression. Current research in this area will be presented next.

Social information processing and relational aggression. Currently, three published studies by the same researcher (Crick, 1995; Crick & Werner, 1998; Crick, Grotpeter, & Bigbee, 2002) have examined the association between social information processing and relational aggression. Crick and Werner (1998) investigated response decision processes in terms of relational and overt aggression. Their sample consisted of 578 boys and 588 girls ages 9 to 12. Peer nomination measures were used to assess overt and relational aggression. Children who scored one standard deviation above the mean for overt aggression were placed in the overtly aggressive group ($n = 174$) and children who scored one standard deviation

above the mean for relational aggression were placed in the relationally aggressive group ($n = 187$). Several stages of the social information processing model were measured.

Specifically, children's instrumental and relational outcome expectations, feelings of self-efficacy, response decisions, and response evaluations were assessed using a hypothetical-situation instrument. The instrument consisted of three stories involving instrumental conflict situations (e.g., being cut in front of in line) and three stories involving relational conflict situations (e.g., being gossiped about by peers).

Findings indicated that overtly aggressive boys and girls evaluated overtly aggressive behavior in more positive ways than did nonovertly aggressive boys and girls in instrumental provocation situations. However, neither relationally aggressive boys nor girls displayed social information processing biases in relational conflict situations. Surprisingly, children who engaged in gender-nonnormative aggression (overtly aggressive girls and relationally aggressive boys) did display response biases in the conflict situations, not usually associated with their method of aggression. Specifically, overtly aggressive girls evaluated overtly aggressive behaviors in positive ways in relational conflict situations and relationally aggressive boys evaluated relationally aggressive behaviors in positive ways in instrumental conflict situations.

Another study investigating social information processing and relational aggression was also conducted by Crick (1995). Not only did this study examine social information processing as it relates to relational aggression it also included measures of intent. It was hypothesized that relationally aggressive children would attribute hostile intent to peers in ambiguous situations involving social exclusion or social manipulation. Two hundred fifty-two third, fourth, fifth, and sixth graders were selected for this study (142 boys and 110

girls). Aggressive status was assessed using peer nomination, resulting in a relationally aggressive group (relational aggression scores more than half a standard deviation above the sample mean), a combined group (relational aggression and overt aggression scores more than half a standard deviation above the sample mean), and a nonaggressive group (relational and overt aggression scores less than half a standard deviation above the mean).

Each participant was presented with ten hypothetical stories in which the intent of the provocateur was ambiguous. Five stories showed instrumental provocation (i.e. a peer breaks a participant's pencil in the presence of the participant) and five stories showed relational provocation (i.e. the participant overhears two peers talking about sitting together at lunch, but has not been invited to join them). Following each story participants were asked to select one of four presented reasons why the peer(s) in the story did what they did. Two of the reasons indicated hostile intent and two of the reasons indicated benign intent. Children were then asked whether or not they thought the peer(s) intended to be mean or not mean, and how upset they would be if the events in the story really happened to them.

Results of this study indicated that the relationally aggressive children attributed hostile intent to the peer(s) in the relational provocation situation significantly more often than did the nonaggressive children. In contrast, children in the comorbid group attributed hostile intent to the peer(s) in the instrumental provocation situation significantly more than did the nonaggressive children, indicating that the comorbid group seemed to make attributions more in line with overtly aggressive children. Additionally, children in the relationally aggressive group reported that they would feel significantly more upset than their nonaggressive peers by the relational provocations. This study further supports the idea that relational and overt aggression are two distinct types of aggression which should be

examined separately. Also, this study provides evidence for the presence of social information processing deficits in children who display high rates of relationally aggressive behaviors, particularly in relational provocation situations.

More recently, Crick, Grotpeter, and Bigbee (2002) conducted two studies similar to Crick (1995) in which the authors examined social cue interpretation of relationally, physically, and nonaggressive children. In Study 1 the sample consisted of 825 third grade children (406 girls, 419 boys) and in Study 2 the sample consisted of 535 third to sixth grade children (264 boys, 271 girls). None of the participants from Study 1 participated in Study 2. The authors indicated that two separate samples were used due to the lack of relevant past research and the desire to evaluate generalizability across the two samples. In both studies children were identified as aggressive and nonaggressive using peer nominations. As in the previously mentioned studies, children who scored one standard deviation above the mean for overt aggression were placed in the overtly aggressive group and children who scored one standard deviation above the mean for relational aggression were placed in the relationally aggressive group. Intent attributions were assessed using a hypothetical situation instrument consisting of 10 provocation situations in which the intent of the provocateur was ambiguous. Children were then asked to choose, from four possible reasons, the most likely reason for the provocation and to decide whether or not the provocateur's intent was mean or not mean. Lastly, feelings of distress were assessed by asking participants to respond to two additional questions about each of the hypothetical situations. They were asked to rate, on a 3-point scale, how mad (e.g., 1 = not mad at all to 3 = very mad) as well as how upset (e.g., 1 = not upset at all to 3 = very upset) they would be if "the things in the story really happened to you."

Consistent with the findings of Crick (1995), results of these two studies indicated that relationally and physically aggressive groups of children demonstrated a hostile attributional bias. Additionally, those biases were found to be situation-specific with relationally aggressive children demonstrating bias in relational provocation situations and physically aggressive children demonstrating bias in instrumental provocation situations. Results also indicated that when compared to nonaggressive children, physically aggressive children were more likely to respond with anger and distress when presented with instrumental provocations and relationally aggressive children were more likely to feel negatively when presented with relational provocation situations. Also, girls found relational provocations to be significantly more distressing than did boys. No differences in emotional distress were found between boys and girls for instrumental provocations. This study adds to a growing body of research examining gender differences in the expression of relational and physical aggression and the role of social information processing and affect. However, research including girls in the study of social information processing and aggression is limited and there remains a need for further exploration in this area.

Research reviewed in this paper has laid a solid foundation of support for the social information processing model of aggressive behavior among boys. Findings indicate that aggressive boys differ from nonaggressive boys at each stage of the social information model. Aggressive boys tend to make hostile attributions in ambiguous situations, access fewer responses, have more confidence in their ability to carry out aggressive acts and tend to expect more positive outcomes for their aggression. However, after thoroughly reviewing the research in this area, a number of significant limitations are clear. One of the most profound limitations is in subject selection. That is, previous research has been restricted to samples

consisting primarily of boys in their late elementary years to early adolescence. More studies including girls and younger children are needed. Because there are important gender differences in the manifestation of aggression, it is important to explore the possibility of gender differences in social information processing as well. Furthermore, the degree to which the link between social behavior and attributions changes over time has not been adequately examined. Findings from past research might not be relevant to younger children or to girls; thus, intervention and prevention plans derived from past research might be less effective for those individuals. The current research was designed to fill a gap in research by exploring gender and age differences in the link between social behavior and attributions of intent.

Statement of the Problem

Research in the area of childhood aggression has grown and expanded rapidly over the past few decades. Researchers have investigated many different aspects of aggression and have paved the way to a better understanding of the cognitive mechanisms underlying aggression. More recently, particular attention has been given to gender differences in the expression of aggression, which further expands our knowledge base for development of intervention and prevention efforts. However, given the limited extant literature with regard to social information processing and aggression in girls, current etiological models of childhood aggression are likely to be gender-bound. The current research was designed to add to the small knowledge base on gender differences in social information processing and social behavior in an effort to extend the generalizability of research findings.

In addition to restriction of samples to primarily boys, past research in the area of social information processing has been based almost exclusively on children in their later elementary and adolescent years, thereby providing a limited understanding of the relation

between attributions of intent and social behavior in the earlier elementary years. The importance of understanding social cognitive factors associated with social behavior among younger children is underscored by research indicating that patterns of negative peer relationships often begin in early childhood and are stable over time (e.g., Reid, 1993). Early intervention and interruption of a negative developmental trajectory might be enhanced by knowledge of social cognitive factors associated with negative peer social behavior. To that end, a sample of children ranging in age from 5 to 9 years old from varying socioeconomic backgrounds was utilized in the present study, thereby increasing variability of the present sample when compared to previous samples.

In terms of measurement issues, previous studies generally have utilized peer, teacher, and/or self-reports of social behavior, but few researchers have directly observed participants' day-to-day interactions with peers. The present study thus incorporated some of the previously-used ratings, but direct observations of children's social behavior also were conducted. This multi-method approach to measurement represents an advantage over past research.

Finally, past research has been limited in that measures of social information processing and social behavior typically have been collected at the same point in time. By collecting two outcome measures six months following the assessment of attributional style, the present study provided information regarding the prediction of attributions of intent to concurrent *and* subsequent peer social behavior. Thus by utilizing methods employed in previous research and expanding on those methods the present study was designed to advance knowledge regarding childhood aggression as it related to attributions of intent, with the ultimate goal of aiding in the development of appropriate interventions. To this end, the

purpose of the present study was not only to examine childhood aggression as it relates to the social cognitive process of social cue interpretation, but also to examine possible gender and age differences with regard to social cue interpretation utilizing multiple outcome measures.

It was first hypothesized that there would be significant positive relations between the percentage of hostile attributions made in response to hypothetical peer problems and negative social behavior, as measured by (a) aggressive solutions generated for hypothetical peer problems (b) rate of negative social behavior on the playground, and (c) scores on the overt aggression scale of a teacher-report measure of social behavior. Also, it was hypothesized that More Aggressive participants (i.e., children who gave at least one aggressive solution to a peer conflict) would generate a significantly higher percentage of hostile attributions as compared to Nonaggressive participants (i.e., children who gave no aggressive solutions).

Regarding gender differences, it was hypothesized that there would be gender differences in hostile attributions, based on type of social problem. Based on past research, it was hypothesized that boys would generate a significantly higher percentage of hostile attributions than would girls on the overall measure of hostile attributions, and that girls would generate a significantly higher percentage of hostile attributions than would boys on hypothetical problems involving social exclusion. Gender differences in observed social behavior during playground observations, teacher reported social behavior and the percent of aggressive solutions generated by participants, were also of interest. More specifically, it was hypothesized that there would be gender differences in (a) percent of intervals engaged in negative social behavior on the playground, with boys engaging in a significantly higher percentage as compared to girls (b) the type (relational vs. overt) of aggressive behaviors

reported by teachers, with girls assigned significantly higher scores on relational aggression as compared to boys, and boys assigned significantly higher scores on overt aggression as compared to girls, and (c) the percent of aggressive solutions generated for hypothetical peer problems, with boys generating more aggressive solutions than girls.

In addition, due to the lack of an available empirical base of knowledge regarding the development of attributions of intent, the present study was designed to examine whether or not there was a change in the strength of the association between hostile attributional bias and negative social behavior with increasing age. Specifically, this study examined whether or not the correlation between hostile attributions and the number of aggressive solutions generated for hypothetical peer problems among 5 – 6 year old children would be significantly different from the correlation for 7 - 9 year old children.

Method

Participants

Participants were a sub-sample of 98 children selected from a community sample of self-nominated families in a university project, "Parents and Children Together" (PACT). This sub-sample was matched to an abusive sample examined by the PACT project. The sub-sample was comprised of a relatively equal number of boys (44%) and girls (56%). As for race, there were 29 Caucasians (30%), 66 African Americans (67%), and 3 individuals of other races (3%). Children's ages ranged from 60 months (5 years) to 108 months (9 years) of age, with an average of 85 months (7 years) ($SD = 16.4$) (see Table 1). Additionally, children came from families of a variety of socioeconomic statuses, with most children coming from working to middle class families. Participants were only chosen to participate in the present study if they had data available on all measures utilized in the present study, if

they had an above 75 as measured by the Kaufman Brief Intelligence Test, and if they did not have a documented history of abuse with the county department of child protective services at the time of data collection.

Table 1

Description of Participant Characteristics (N = 98)

	Number	Percent
Ethnicity		
African American	66	67
Caucasian	29	30
Other	3	3
Gender		
Male	43	44
Female	55	56
Grade in School		
Preschool or Kindergarten	34	35
First	20	20
Second	18	18
Third	21	21
Fourth	3	3
Fifth	2	2

Table 1 (continued)

Five Factor SES Level (Hollingshead)

I	13	15
II	24	29
III	18	22
IV	14	17
V	14	17

Procedures

Participants included in the present study were recruited by advertisements in child-related newsletters and distribution of flyers placed in day care centers, Head Start centers, laundry rooms, and grocery stores. Interested parents called the PACT office and were screened for participation. Each parent was required to have at least one child between the ages of 5 and 9 years old. Parents meeting that criterion then completed a psychosocial interview administered over the phone. At the conclusion of the phone interview, a data collection session was scheduled for the parent(s) and their child(ren). Transportation and/or childcare were provided to families who needed these services in order to participate.

Upon arriving at the PACT clinic, parents were given a more detailed description of the PACT project and an opportunity to ask questions. At that time parents were assured of confidentiality and asked to sign a consent form giving permission for their family to participate in the project. Parents also gave permission for their children's teachers to complete the Social Behavior Scale (SBS) and for a school-based observation of their

children's social adjustment to be conducted approximately six months following the clinic assessment.

Trained undergraduate assistants conducted the data collection in the clinic and at each child's school. In the clinic assessment, parents and children completed a series of measures assessing intellectual functioning and social cognitive and emotional factors. Assessment in the clinic took about three and one-half hours and was supervised by a graduate student. Numerous assessment instruments were used to assess each family, only some of which were used in this research. Each participating parent was paid \$75 for their participation in PACT and was given a booklet of resources and the opportunity to return for feedback. To insure confidentiality of data, each family was assigned an identification number and assessment data were stored in locked filing cabinets in the clinic.

Approximately six months later, each child was observed during unstructured play on the school playground. Also at this time the child's teacher was asked to complete the Social Behavior Scale (SBS). Teachers had to have known the participant at least six weeks, and in the event that the child had more than one teacher, the scale was given to the teacher who best knew the participant.

Instrumentation

Measure of Attributional Style

Child Attributions Questionnaire (CAQ). This questionnaire was used as a measure of the child's view of peer intentions in ambiguous provocation situations as represented in eight hypothetical vignettes. Originally titled "Home Interview with Children," this measure was developed by researchers of the Fast Track Project (Conduct Disorder Prevention Research Group, 1994) to assess children's attributional style for peer intent. The measure consists of

eight vignettes describing peer social problem situations (see Appendix A). Four problems relate to exclusion by peers and four relate to a physical conflict. Each vignette was designed to depict a peer interaction in which the participant was asked to pretend that he/she was the protagonist in the described interaction. For example, one item stated, "Pretend you see some kids playing on the playground. You would really like to play with them, so you go over and ask one of them if you can play. They say no." The participant was asked to (a) state why the antagonist child in the vignette did what he or she did and (b) report what they would do about the child's behavior. For purposes of the current study, the participant's answer to the first question served as the measure of attributional style. Responses to the second question served as a measure of social behavior, which is discussed in detail in a subsequent section.

To administer the CAQ, each of the eight vignettes was read aloud and test administration was audio taped for later coding. Each of the child's responses to the attribution question (i.e. why the child in the vignette did what they did) were coded by trained undergraduate research staff as either Hostile (e.g. "he was being mean"), Nonhostile (e.g. "it was an accident"), or Don't know (when participant was unable to generate a reason for the child's behavior). Because eight participants did not respond to at least one item, the number of hostile responses was then summed and divided by the total number of items completed (out of 8 possible items), indicating the percentage of hostile attributions made by the child.

Internal consistency of the Children's Attribution Questionnaire was assessed by the test developers using Chronbach's alpha. Reliability for items assessing attributions was .80 (Conduct Disorders Prevention Research Group, 1994). Inter-rater reliability of coding was assessed using the Pearson Product-Moment correlation for a subsample of 35 child

participants in the PACT project and was found to be .87 for the full measure, .88 for the Exclusion problems, and .76 for the Physical problems. Adequate validity has been established in numerous studies (e.g., Dodge, Bates, & Pettit, 1990) and use of hypothetical problem vignettes is the standard method for evaluating attributions.

Measures of Peer Social Behavior

One measure of peer social behavior (i.e., the CAQ) was administered at the same point in time as the measure of attributional style. Two additional measures of peer social behavior were administered (i.e., the SBS) or collected (i.e., playground observations) six months following administration of the measure of attributional style.

Children's Attributions Questionnaire (CAQ). As discussed previously, the CAQ was used as a measure of both attributional style and of peer social behavior. For the measure of peer social behavior, participants' responses to the "action" question on the CAQ (i.e., what they would do in response to the problem situation) were coded by trained undergraduate research assistants. Specifically, each response was coded (see Appendix B) as belonging to one of five categories: (a) Passive (e.g. giving up); (b) Information (e.g. asking why), (c) Solution Focused (e.g. finding an alternative); (d) Assertive (e.g. commanding); (e) Aggression (e.g. threatening, hitting); or (f) Can't be Scored. The number of responses in each category were then summed and divided by the total number of responses. For purposes of the current study, the percentage of Aggressive responses served as the measure of self-reported social behavior.

Social Behavior Scale (SBS). The SBS is a teacher report measure of child social adjustment (see Appendix C) developed by the PACT researchers using three published, empirically-supported measures of social behavior. The SBS consists of 39 items describing

typical social behavior of young children. Each item is rated by teachers using a 5-point scale, ranging from 1 (never true) to 5 (almost always true), indicating the degree to which the statement describes the participant. The SBS yields mean raw scores on seven factors related to social adjustment. Scores on only two of those factors were included in the present study. The two SBS factors used in this study, Overt Aggression (7 items), and Relational Aggression (7 items) were for the most part developed by Crick, Casas, and Mosher (1997) as part of their Preschool Social Behavior Scale - Teacher Form (PSBS-T). Two additional items were taken from the Children's Social Behavior Scale - Teacher Form (CSBS-T) (Crick, 1996) which is a grade school version of the Preschool Social Behavior Scale - Teacher Form. This was done to make the scales more relevant to the age group being assessed in the present study.

The Overt Aggression Scale was designed to gather information regarding the child's involvement in negative verbal and/or physical behaviors in which threats were made to other children or physical harm was done them or their property. Examples of items from this scale include, "This child verbally threatens to hit or beat up other children" and "This child ruins other peers' things when s/he is upset." Items included in the Relational Aggression Scale describe the child's use of more indirect forms of aggression primarily directed at harming peer relationships. Examples include, "This child tries to get others to dislike peers" and "This child tells others not to play with or be a peer's friend."

With regard to reliability and validity of this measure, factor analysis provided strong support for the 7-factor structure of the SBS. Also, Chronbach's alphas for the two scales used in this study, Relational and Overt Aggression, were found to be .92 and .91 respectively indicating that SBS scales were internally consistent (Haskett & Willoughby,

2002). In support of the validity of the SBS, scores on the CSBS-T and PSBS-T have been found to relate significantly to peer reports of social behaviors (Crick, 1996; Crick et. al., 1997)).

Playground Observations of Social Behavior. Observations occurred during each child's regularly scheduled recess period on the school playground and lasted approximately 30 minutes. These observations began after the children were given approximately three minutes of playtime to “warm-up.” Observers were trained to 80% reliability in utilizing a modified behavioral coding system to code observed behaviors (Haskett & Kistner, 1991). The 15-second interval coding system involved observation of each child for 10 seconds, followed by five seconds during which time the observer recorded the occurrence of any of the four target behaviors. There were four observation/recording intervals in each minute, for a total of 120 intervals in the 30-minute observation session.

Target behaviors assessed during these observations were Engagement, Negative Behavior, Rough Play, and Aggression. Engagement was defined as positive/neutral verbal or physical behavior directed towards another peer or group of peers with the purpose of engaging the peer in interaction or continuing the interaction begun by a peer (e.g. offer to help, laughing with another child). Behaviors considered Negative were any negative verbal (e.g., commanding) or gestural behaviors (e.g., shaking fist) directed to another child, or saying negative things about another child (e.g. name calling). Rough Play behaviors were those that involved physical contact with a peer that was rough and negative but not of sufficient strength to be considered aggressive (e.g. rough tumbling down hill together; holding onto a child's clothes). Lastly, behaviors in which the participant engaged in physical contact with a peer or object constituting an attack with clear potential to harm were

considered Aggression (e.g. hitting, destroying property). Taking something belonging to another child was also coded as aggressive. Due to low rates and limited variability of Aggression, a composite score including the percent of intervals in which the child engaged in *any* of three negative behaviors (Negative, Rough Play, and Aggression) was used as the measure of observed negative social behavior in the present study.

Inter-observer reliability data were collected during 34% of the observation sessions conducted for the proposed study, and a Pearson Product-Moment correlation was calculated on those data to assess inter-rater reliability of the coding system. Inter-rater reliability for the composite score to be utilized in the proposed research was .97; the validity of this coding system is supported in research showing that scores obtained from this system are related to teacher reports of social behavior and peer ratings of likability (Haskett & Kistner, 1991).

Results

Links Between Attributional Style and Social Behavior

The degree of association between children's hostile attributions and negative social behavior was examined using correlational analyses. It should be noted that variations in the number of participants included in analyses due to missing data. Analyses indicated that there was a significant correlation in the expected direction. Specifically, there was a significant positive relation between the percent of hostile attributions and the percent of aggressive solutions generated on the CAQ, $r(89) = .409, p < .01$. There were no significant relationships in the predicted direction between percent of hostile attributions and subsequent negative social behavior on the playground $r(69) = .056$, nor between percent of hostile attributions and subsequent teacher-reported overt aggression, $r(69) = -.046$.

To further assess links between children's hostile attributions and negative social behavior participants were classified into one of two groups based on solutions generated in response to peer social conflict. More Aggressive children ($n = 29$) were those who generated at least one aggressive solution on the CAQ, and Nonaggressive children ($n = 60$) were those who did not generate any aggressive solutions. Then group differences in percent of hostile attributions was assessed using a t-test. As predicted, significant group differences were found. More Aggressive participants obtained a higher mean score ($M = .79$, $SD = .15$) on the measure of hostile attributions compared to the mean score for Nonaggressive participants ($M = .55$, $SD = .24$) $t(87) = 14.9$, $p < .01$.

Gender Differences in Attributions and Social Behavior

Gender differences on the measure of attributions (i.e., CAQ attributions of intent question) and gender differences on the three measures of social behavior (i.e., SBS, behavior on the playground, CAQ behavioral response question) were examined next (see Table 2). First, gender differences in the percent of hostile attributions made overall and gender differences based on type of hypothetical social problem (i.e., exclusion vs. physical) were assessed. There were no significant gender differences overall $t(89) = 1.05$ nor were there significant gender differences found in percent of hostile attributions for exclusion problems $t(89) = .173$. Next, gender differences in social behavior were examined. Significant gender differences were found in negative social behavior on the playground, with boys ($M = .12$, $SD = .11$) engaging in a significantly higher percentage of intervals of Negative Behavior compared to girls ($M = .08$, $SD = .08$) $t(75) = 2.03$, $p < .05$. However, there were no significant gender differences in aggressive behaviors (Relational or Overt) reported by teachers [M (girls) = 1.74, $SD = .74$; M (boys) = 1.65, $SD = .85$] $t(74) = -.49$ and

[M (girls) = 1.45, SD = .58; M (boys) = 1.75, SD = .82] t (74) = 1.87 respectively.

Furthermore, there were no statistically significant gender differences found in the percent of aggressive solutions generated on the hypothetical social problems measure [M (girls) = .07, SD = .15; M (boys) = .11, SD = .18] t (91) = 1.08.

Table 2

Participants Mean Scores (SD) on Measures for Total Sample and by Gender

	Total Sample	Boys	Girls	t value
Attributions				
CAQ % Hostile	0.62 (0.25)	0.65 (0.27)	0.59 (0.23)	1.05
CAQ % Hostile Exclusion	0.67(0.26)	0.67 (0.28)	0.66 (0.25)	0.17
CAQ % Hostile Physical	0.55(0.32)	0.60 (0.34)	0.51 (0.31)	1.27
Social Behavior				
CAQ % Aggr. Solutions	0.08 (.16)	0.11 (.18)	0.07 (.15)	1.08
SBS Relational Aggr.	1.70 (.79)	1.65 (.85)	1.74 (.74)	-0.50
SBS Overt Aggr.	1.56 (.71)	1.75 (.82)	1.45 (.58)	1.87
Playground Negative Beh.	0.10 (.10)	0.12 (.11)	0.08 (.08)	2.03*

* $p < .05$

Age Differences in Attributions and Social Behavior

A question of interest was examined in the present research study with regard to whether or not there would be an increase of the strength of the association between hostile

attributional bias and social behavior with increasing age. More specifically, the strength of the correlation between percent hostile attributions and the number of aggressive solutions generated for hypothetical peer problems among 5-6 year olds (mean age = 71.1 months) ($n = 49$) ($r = .36$) and the strength of the same correlation among 7-9 year olds (mean age = 99.0 months) ($n = 49$) ($r = .48$) was assessed for differences. A significant difference in the correlations for the two age groups was not found. However, the difference was in the expected direction. Both correlations were significant for their group ($r = .48, p < .01$ for 5-6 year olds ; $r = .36, p = .01$ for 7-9 year olds).

Discussion

Overview

The primary purpose of this study was to examine childhood aggression and the relation between the social cognitive process of social cue interpretation and peer interactions by replicating previous studies that have examined children's attributions of intent and their subsequent behavioral responses and also by expanding on previous studies by examining gender and age group differences in social information processing. Specifically, social information processing and social behavior of both boys and girls ages 5 to 9 were examined. Multiple measures of children's social behavior were utilized in the present study, including a direct observation of children's day-to-day interactions with peers. Direct observation measures are lacking in past research. In addition, previous studies have typically collected measures of social information processing and social behavior at the same point in time. In the present study two outcome measures were collected six months following the assessment of social information processing, which resulted in a more stringent assessment of the link between hostile attributions and aggressive behavior. The following sections will provide a

discussion of obtained results and interpretation of the present study and directions for future research.

Links Between Attributional Style and Social Behavior

Based on findings from past research which indicated that aggressive children were more likely than nonaggressive children to feel that their peers were “out to get them” even when their peer’s intent was unclear (Crick & Dodge, 1996; Steinberg & Dodge, 1983; Dodge & Frame, 1982, Dodge, 1980), it was expected that a relationship would be found between children’s perceptions of intent when faced with peer related social problems and children’s social behavior. Indeed, results indicated that when children thought their peers had malicious intentions toward them they were more likely to report that they would respond in a negative manner. This finding is consistent with past research based on concurrent assessment of attributions and behavior. However, when children’s perceptions of their peer’s intent were examined in relation to their behavior on the playground and their teacher’s reports of visible aggression six months following the assessment of attributions, no relationship was found. The latter results were somewhat surprising and thus warrant further discussion.

One possible explanation for the nonsignificant relations between attributions and subsequent social behavior could be related to the data collection procedure. In past research, measures of perceived intent and aggression were measured at the same point in time. In the current study, both the measure of negative social behavior on the playground and the measure of teacher reported overt aggression were administered six months after the measure of perceived intent in order to examine the link between these constructs more stringently. Given that in the present study perceptions of intent were related to measures of aggressive

responses on the same measure, which was administered at the same time, it may be that the link between perceptions of intent and negative social behavior is time sensitive. Therefore while children's perceptions of a peer's intent seem to be predictive of how they would react in a specific situation at the same point in time these perceptions may not be predictive of future behavior in a different situation, at least for children aged 5 to 9 years old.

An additional explanation for the lack of a relationship between children's perceptions of intent and their aggressive behavior could be the manner in which negative social behavior was defined in the current research. First, negative social behavior on the playground was defined using a composite score based on the percent of intervals in which a child engaged in any of three categories of negative behaviors, including Negative Behavior, Rough Play, and Aggression. This more global, inclusive definition was chosen due to the low rates and limited variability of the Aggression category alone. However, the decision to utilize this composite method may have resulted in the inclusion of less serious acts of aggression than have been subsumed under the category of aggressive behavior in previous studies. Similarly, teacher reported overt aggression, as measured by the Social Behavior Scale, also included multiple forms of aggression. A recent meta-analysis of studies that examined the link between children's perceptions of intent and aggressive behavior conducted by Orobio de Castro, Veerman, Koops, Bosch, and Monshouwer (2002) suggested a significant amount of variation in effect sizes, ranging from $r = -.29$ to $r = .65$, among the examined studies. These authors suggested that a considerable proportion of the variation in effect sizes was likely due to differences in the assessment of aggressive behavior. The authors further stated, "research into the kinds of aggressive behavior to which hostile attribution of intent is specifically related is clearly needed." Crick and Dodge (1996)

conducted a study in which they examined reactive (hostile) aggression and proactive (instrumental) aggression in relation to social information processing. In this study they found that reactively aggressive children, but not proactively aggressive children, were significantly more likely than were nonaggressive children to think that a peer intended them harm when intent was unclear. This is relevant to the current research in that neither the playground observation nor teacher reports of aggression distinguished between these different types of aggression. In summary, a lack of significant findings may be due to the failure in the current research to distinguish between these identified subtypes of aggression.

Next, the same question was examined by placing children into groups based on the percent of aggressive solutions they generated to hypothetical peer problems. Past research on social information processing has tended to explore differences in processing between relatively nonaggressive children and extremely aggressive children. Although the present sample contained few extremely aggressive children (based on responses to CAQ), differences were examined between children who reported no aggression and those who reported aggression. It was expected that relatively aggressive children would be more likely to think a peer was out to get them when compared to nonaggressive children. That hypothesis was supported. Relatively aggressive children were more likely than were nonaggressive children to indicate that the peer in the hypothetical problem acted with hostile intent. This finding is consistent with past research and suggests that, when classified into groups, more aggressive children exhibited more social information processing difficulties when compared to nonaggressive children. Also, given the assumption that children identified as relatively aggressive in the current study were less aggressive than the extreme

groups utilized in past research, yet differences were still found, the current findings speak to the robustness of the attributions-social behavior link.

Gender Differences in Attributions and Social Behavior

Intriguing research has emerged in the past decade that suggests that girls might engage in aggression at a rate similar to that of boys, but that girls' aggression takes a different form from that of boys. Specifically, relatively new research indicates girls are more likely than boys to engage in aggressive acts aimed at damaging peer relations (Crick & Grotpeter, 1995; Crick et. al. 1997). That research has garnered a great deal of attention in the media and research communities, but there are reports (Rys & Bear, 1997) that do not replicate gender differences in relational aggression. Although there are a growing number of studies that address gender differences in overt and relational aggression, there are relatively few studies designed to examine whether gender differences in the expression of aggression extend to parallel gender differences in social information processing. The present study sought to continue the exploration of gender differences and aggression as they relate to social information processing through both the replication and expansion of previous studies. First, analyses were conducted to assess gender differences in the degree to which children generated aggressive solutions when faced with provoking peer related social problems. Analyses failed to yield significant gender differences in intended aggression in hypothetical peer problem situations. However, consistent with previous findings, the present study did find gender differences between girls' and boys' rate of observed negative behavior and aggression on the playground, with boys engaging in more aggressive acts than girls. Thus, while no gender differences were found in children's self-reports of whether or not they would respond to problem situations aggressively, differences were found when children

were observed on the playground. It may be that children's assessment of what they *would* do in a given situation differs from what they *actually* do when faced with real social situations. These findings highlight the importance of using multimethod assessment when examining the link between social information-processing and social behavior.

Also of interest in this study was whether or not there were gender differences in the type (overt vs. relational) of aggressive behaviors reported by teachers. The bulk of prior research indicated that girls tended to engage in higher rates of aggressive acts aimed at damaging peer relationships than boys, and boys tended to engage in higher rates of physically aggressive behaviors than girls (Crick & Grotpeter, 1995). Given some discrepancies across studies, however, this research was designed to determine whether prior research showing the aforementioned gender differences would be replicated. No differences in type of aggression were found in the present study, even though the SBS used in the current research was based on measures used in Crick's studies. Rys and Bear (1997) also failed to find that girls, in general, were more relationally aggressive than boys based on means and standard deviations for both peer and teacher report measures of relational aggression. It was not until they classified children into extreme groups (e.g., 1 *SD* above the mean) that differences were noted, with the relationally aggressive group consisting primarily of girls. It may be that gender differences become more noticeable as the severity of the behaviors increase.

Next, with regard to gender differences, an examination of children's overall perceptions of peer intent as well as perceptions of intent as they related to the type of peer social problem presented were examined. The present study investigated whether or not girls would be more likely to report that their peers purposely acted to harm them than would boys

in situations where they were excluded from participating in an activity and whether boys would be more likely to report that their peers purposely acted to harm them than would girls on the overall measure of perceptions of intent. Inconsistent with Crick's (1995) findings, no gender differences were found based on situation type. Methodological differences could account for these differences in findings. In the present study, aggression was measured using children's self-reports of intended aggression in response to hypothetical problems. However, in Crick's (1995) investigation, aggression was assessed using peer nominations. Again, children's assessment of what they would do in a given situation may differ from what they actually do in real social situations. Also, Crick's measure of aggression was designed to delineate between groups of relationally aggressive, combined overtly/relationally aggressive and overtly aggressive groups. The present study did not utilize this classification system. Instead, relational aggression and overt aggression were defined on a continuum. As was noted with gender differences in relational aggression, gender differences with respect to situation type may be related to the severity of children's aggressive behavior.

Additionally, in the present study no significant differences between boys and girls in their overall perceptions of intent were noted, although differences were in the predicted direction. If, as has been found in previous studies, perceptions of intent depend in part on the type of aggression a child predominately uses and the type of situation, the measures used in the present study may have lacked the specificity needed to more thoroughly assess gender differences. Also, in studies that have found significant gender differences sample sizes have been significantly larger than the sample size of the present study (e.g., Crick's 1995 sample included 142 boys and 110 girls).

Age Differences in Attributions and Social Behavior

The age at which children's attributions of peer intent become relatively stable and reliably predict children's responses to peer conflict remains an empirical question. It seems clear from prior research based on children in middle childhood, however, that the link is fairly well established by late elementary school. Gaining an understanding of the development of the association between attributions and social behavior has important implications for prevention efforts. If the structure for hostile attributions begins to stabilize and be predictive of social behavior in early childhood, then that would be the point at which intensive prevention efforts should be focused. One purpose of the current research was to determine whether there was evidence of stabilization in the link between attributions and behavior within the early childhood years (i.e., from ages 5-6 to ages 7-9). While little research exists examining developmental changes in social information processing there has been a significant amount of research conducted examining children's general cognitive development. Relevant to the current area of research, studies have found an increase in young children's basic capacities (e.g., working memory capacity) and knowledge base, both of which are likely to influence children's attributions (Pettit, Polaha, & Mize, 2001). Thus, it is important to not only examine the relationships between social information processing and behavior but also the development of these relationships during early childhood. In the present study, no significant difference was found between the strength of the attributions/social behavior link for relatively younger and older children. Although the relation between attributions and social behavior for older children was not significantly stronger than the relation between attributions and social behavior for younger children, both relations were significant for their respective groups. Thus it is possible that stabilization of

the link had occurred prior to the age of the younger group of children in this study, but that it continues to stabilize somewhat overtime.

Summary and Directions for Future Research

One strength of the present study was the use of multiple measures of social behavior, including a direct observation measure. This approach might lead to more generalizable findings than approaches involving measures administered in a laboratory setting. In assessing the link between hostile attributions and social behavior, discrepancies across measures emerged. Specifically, a link was found between hostile attributions and aggressive responses when these two constructs were measured at the same point in time using hypothetical situations. However, when the measures of social behavior followed the measure of hostile attributions by at least six months, it appeared that social behavior was unrelated to attributions of peer intent. Future research should consider further examining the conditions under which the relationship between hostile attributions and aggressive behavior exists. Also, given that few studies have conducted direct observations as measures of aggressive behavior, more studies are needed to examine the effects of varying outcome measures of aggressive behavior on the relationship between hostile attributions and aggression.

Future research also should explore more thoroughly gender differences in aggression as well as gender differences in the link between social information processing and aggression. In the present study, no gender differences were found in children's intended aggression in hypothetical peer problem situations. However differences were found in observed aggression on the playground. In addition, no gender differences in type of aggression (overt vs. relational), as reported by teachers, were found. Differences in findings

across measures emphasize the importance of utilizing multimethod assessment of social behavior. Also, due to the limited amount of research and discrepancies in findings across studies that have been conducted in this area to date, there continues to be a need for studies examining whether or not relational aggression is more prevalent for girls than it is for boys.

A limited number of studies have examined gender differences in the link between attributions of intent and social behavior depending on the type provocation situation. In the present study boys' and girls' attributions of intent were very similar regardless of whether the hypothetical conflict involved physical harm or social exclusion. Work examining these differences is relatively new and if future research finds there is a link between social information processing and relational aggression this is an area that will deserve further attention. Particular attention should be given to the conditions under which this relation exists (e.g., social exclusion versus physical confrontation) to allow for the development of more specific and appropriate interventions for both boys and girls.

Age group differences were not found in the link between younger and older children's beliefs about their peer's intentions and their social behavior. However, because cognitive processes change throughout development, future research should more thoroughly examine the development of hostile attributions of intent. Much research has been conducted on the developmental course of aggression, with primary emphasis being placed on the development of overt aggression among males. However, the development of hostile attribution structures and the impact of attributions on behavior have been neglected. It is important to examine this relation from a developmental perspective so that interventions can be implemented at the point at which attributional style becomes relevant to social behavior. While the present study did not find significant developmental differences in the link

between younger and older children's attributions of intent and social behavior in this study, findings should be interpreted with caution. As discussed previously, the present study may not have included the developmental time period when the change in the link between attributions and social behavior manifests. Longitudinal studies are needed.

In closing, focusing on the aforementioned points in future research will lead to a more thorough understanding of social information processing and aggressive behavior as they relate to children's gender and age. Research in this area is important so that we may gain a more accurate understanding of childhood aggression and its correlates. The results of this study provide information and lead to some questions about the possible contexts within which the relation between social information processing and social behavior is discernable (e.g., when measured concurrently vs. time lagged; when behavior predicted by child vs. directly observed; age; gender) emphasizing the need for continued research. Subsequently, we will be better equipped to intervene with children and perhaps even prevent the emergence of negative social behaviors.

References

- Asarnow, J. R., & Callan, J. W. (1985). Boys with peer adjustment problems: Social cognitive processes. *Journal of Consulting and Clinical Psychology, 53*, 80-87.
- Campbell, S. B. (1990). *Behavior Problems in Preschool Children*. New York: The Guilford Press.
- Christiansen, K., & Knusmann, R. (1987). Androgen levels and components of aggressive behavior in men. *Hormones and Behavior, 21*, 170-180.
- Crick, N. R. (1995). Relational aggression: The role of intent attributions, feelings of distress, and provocation type. *Development and Psychopathology, 7*, 313-322.
- Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. *Child Development, 67*, 2317-2327.
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74-101.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*, 710-722.
- Crick, N. R., & Werner, N. E. (1998). Response decision processes in relational and overt aggression. *Child Development, 69*, 1630-1639.
- Crick, N. R., Casas, J. F., and Mosher, M. (1997). Relational and overt aggression in preschool. *Developmental Psychology, 33*, 579-588.

- Dishion, T. J., French, D. C., & Patterson, G. R. (1995). The development and ecology of antisocial behavior. In D. Cicchetti & D.J. Cohen (Eds.), *Developmental Psychopathology Volume 2: Risk, disorder, and adaptation* (pp. 421-471). New York: John Wiley & Sons, Inc.
- Dodge, K. A. (1980). Social cognition and children's aggressive behavior. *Child Development*, 51, 162-170.
- Dodge, K. A., & Frame, C. L. (1982). Social cognitive biases and deficits in aggressive boys. *Child Development*, 53, 620-635.
- Dodge, K. A., & Newman, J. P. (1981). Biased decision-making processes in aggressive boys. *Journal of Abnormal Psychology*, 90, 375-379.
- Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science*, 250, 1678-1683.
- Dodge, K. A., Pettit, G. S., McClaskey, C. L., & Brown, M. M. (1986). Social competence in children. *Monographs of the Society for Research in Child Development*, 51 (2, Serial No. 213).
- Erdley, C. A., & Asher, S. A. (1996). Children's social goals and self-efficacy perceptions as influences on their responses to ambiguous provocation. *Child Development*, 67, 1329-1344.
- Ferris, C. F. (1996). Serotonin diminishes aggression by suppressing the activity of the vasopressin system. In C.F. Ferris & T. Grisso (Eds.), Understanding aggressive behavior in children. *Annals of the New York Academy of Sciences*, Vol. 794 (pp. 98-103). New York: New York Academy of Sciences.

- Hallahan, D. P., & Kauffman, J. M. (2000). *Exceptional learners* (pp. 213-214). Boston: Allyn and Bacon.
- Harris, J. A., Rushton, J. D., Hampson, E., & Jackson, D. N. (1996). Salivary testosterone and self-report aggressive and prosocial characteristics in men and women. *Aggressive Behavior, 22*, 321-331.
- Haskett, M. E., & Kistner, J. A. (1991). Social interactions and peer perceptions of young physically abused children. *Child Development, 62*, 979-990.
- Haskett, M. E., & Willoughby, M. (2002). [Psychometric Properties of Social Behavior Scale]. Unpublished raw data.
- Huesmann, L. R., Eron, L. D., Lefkowitz, M. M., & Walder, L. O. (1984). Stability of aggression over time and generations. *Developmental Psychology, 20*, 1120-1134.
- Hyde, J. S. (1984). How large are gender differences in aggression? A developmental meta-analysis. *Developmental Psychology, 20*, 722-736.
- Katsurada, E., & Sugawara, A. I. (1998). The relationship between hostile attributional bias and aggressive behavior in preschoolers. *Early Childhood Research Quarterly, 13*, 623-636.
- Leadbeater, B. J., Kuperminc, G. P., Blatt, S. J., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology, 35*, 1268-1282.
- Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology, 48*, 371-410.

- Loeber, R., & Stouthamer-Loeber, M. (1998). Development of juvenile aggression and violence: Some common misconceptions and controversies. *American Psychologist*, 53, 242-259.
- Maccoby, E. E., & Jacklin, C. N. (1974). *The psychology of sex differences*. Stanford, California: Stanford University Press.
- Maccoby, E. E., & Jacklin, C. N. (1980). Sex differences in aggression: A rejoinder and reprise. *Child Development*, 51, 964-980.
- Olweus, D., Mattsson, A., Schalling, D., & Low, H. (1980). Testosterone, aggression, physical and personality dimensions on normal adolescent males. *Psychosomatic Medicine*, 42, 253-269.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin*, 102, 357-389.
- Parker, J. G., Rubin, K. H., Price, J. M., & DeRosier, M. E. (1995). The development and ecology of antisocial behavior. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental Psychopathology Volume 2: Risk, Disorder, and Adaptation* (pp. 96-161). New York: John Wiley & Sons, Inc.
- Pettit, G. S. (1997). The developmental course of violence and aggression, mechanisms of family and peer influence. *Anger, Aggression, and Violence*, 20, 283-299.
- Pettit, G. S., Polaha, J. A., Mize, J. (2001). Perceptual and attributional processes in aggression and conduct problems. In J. Hill, B. Maughan (Ed.) *Conduct disorders in childhood and adolescence* (pp. 292-319). United Kingdom: Cambridge University Press.

- Quiggle, N. L., Garber, J., Panak, W. F., & Dodge, K. A. (1992). Social information processing in aggressive and depressed children. *Child Development, 63*, 1305-1320.
- Reid, J. B. (1993). Prevention of conduct disorder before and after school entry: Relating interventions to developmental findings. *Development and Psychopathology, 5*, 243-262.
- Rys, G. S., & Bear, G. G. (1997). Relational aggression and peer relations: Gender and developmental issues. *Merrill-Palmer Quarterly, 43*, 87-106.
- Sancilio, M. F., Plumert, J. M., & Hartup, W. W. (1989). Friendship and aggressiveness as determinants of conflict outcomes in middle childhood. *Developmental Psychology, 25*, 812-819.
- Shaw, D. S., & Bell, R. Q. (1993). Developmental theories of parental contributors to antisocial behavior. *Journal of Abnormal Child Psychology, 21*, 493-518.
- Steinberg, M. S., & Dodge, K. A. (1983). Attributional bias in aggressive adolescent boys and girls. *Journal of Social and Clinical Psychology, 1*, 312-321.
- Susman, E. J., Granger, D., Murowchick, E., Ponirakis, A., Worrall, B. K. (1996). Gonadal and adrenal hormones: Developmental transitions and aggressive behavior. In C.F. Ferris & T. Grisso (Eds.), *Understanding aggressive behavior in children. Anals of the New York Academy of Sciences, Vol. 794* (pp. 98-103). New York: New York Academy of Sciences.
- Waas, G. A. (1988). Social attributional biases of peer-rejected and aggressive children. *Child Development, 59*, 969-975.

Appendix A

ID# _____ Date: _____

Interviewer: _____

Scorer: _____

CHILD ATTRIBUTIONS QUESTIONNAIRE (CAQ)

- A. Pretend that you are standing on the playground playing catch with a kid named Todd/Jessica. You throw the ball to Todd/Jessica and he/she catches it. You turn around, and the next thing you realize Todd/Jessica has thrown the ball and hit you in the middle of your back. The ball hits you hard, and it hurts a lot.

1. Why do you think Todd/Jessica hit you in the back?

1 Nonhostile

2 Hostile

3 Don't know

2. What would you do about Todd/Jessica after he/she hit you?

- B. Pretend you see some kids playing on the playground. You would really like to play with them, so you go over and ask one of them, a kid named Alan/Leah, if you can play. Alan/Leah says no.

3. Why do you think Alan/Leah said no?

1 Nonhostile

2 Hostile

3 Don't know

4. What would you do about Alan/Leah after he/she said no?

- C. Pretend you are walking to school and you're wearing brand new sneakers. You really like your new sneakers and this is the first day you have worn them. Suddenly, you are bumped from behind by the kid named John/Lisa. You stumble into a mud puddle and your new sneakers get muddy.

5. Why do you think John/Lisa bumped you?

1 Nonhostile

2 Hostile

3 Don't know

6. What would you do about John/Lisa after he/she bumped you?

D. Pretend you are a new kid in school and you would really like to make friends. At lunch time, you see some kids you would like to sit with and you go over to their table. You ask if you can sit with them and a kid named Carl/Carolyn says no.

7. Why do you think Carl/Carolyn said no?

1 Nonhostile

2 Hostile

3 Don't know

8. What would you do about Carl/Carolyn after he/she said no?

E. Pretend you go to the first meeting of a club you want to join. You would like to make friends with the other kids in the club. You walk up to some of the other kids and say "Hi!", but they don't say anything back.

9. Why do you think the other kids didn't answer you?

1 Nonhostile

2 Hostile

3 Don't know

10. What would you do about the other kids after they didn't answer you?

- F. Pretend you are walking down the hallway at school. You're carrying your books in your arm and talking to a friend. Suddenly, a kid named Brett/Devon bumps you from behind. You stumble and fall and your books go flying across the floor. The other kids in the hall start laughing.

11. Why do you think Brett/Devon bumped into you?

1 Nonhostile

2 Hostile

3 Don't know

12. What would you do about Brett/Devon after he/she bumped into you?

- G. Pretend it is your first day at school. You don't know a lot of the other kids and you would like to make friends with them. You see some kids playing a rope game so you walk up and say "Hi!" but no one answers you.

13. Why do you think the other kids didn't answer you?

1 Nonhostile

2 Hostile

3 Don't know

14. What would you do about the other kids after they didn't answer you?

- H. Pretend you and your class went on a field trip to the zoo. You stop to buy a coke. Suddenly, a kid named Al/Robin bumps your arm and spills your coke all over your shirt. The coke is cold, and your shirt is all wet.

15. Why do you think Al/Robin bumped into you?

1 Nonhostile

2 Hostile

3 Don't know

16. What would you do about Al/Robin after he/she bumped into you?

Appendix B

CAQ Scoring Categories

PASSIVE/No Direct Personal Interaction with Antagonist

1. Emotion – No Action
I'd be sad, mad etc.
I'd just cry
2. Give Up
Walk away
Wait
Nothing
Ignore
Not play with them
3. Authority Aid
Tell teacher, parent, principal, etc.
Have teacher make them say sorry

INFORMATION (Requesting or Receiving)

4. Problem Identification
You pushed me
Did you mean to hit me
You ran into me
You got my shoes muddy
5. Ask Why
Say why did you push me
Say why can't I join
Ask why

SOLUTION FOCUSED

6. Find Alternatives
Try another club that's not full
Go play with someone else
Move to another table
Play by myself
7. Fix the Problem
Clean my shoes, shirt
Ask teacher if she had another shirt
8. Persistence/Negotiation
Wait till they were done and ask again
Ask again
Say please
Say it louder
Say can I play another time

ASSERTIVE/Direct contact with antagonist

9. Seek Restitution
Ask them to say sorry
Tell her to say excuse me
10. Command
Don't hit me again
Answer me
That hurt, please stop
11. Assertiveness/Do it anyway
Play with them anyway
Sit with them anyway
Just start jumping

AGGRESSION (verbal, relational or physical)

12. Warning/Threat
If you bump into me one more time I'll tell the teacher
Say I'm going to tell on you
If you do it again I'll hit you
13. Relational Aggression
Stop being their friend
Not invite them to my party
Tell everyone that they are mean
14. Aggression
Hit, punch, kick
Spill drink on them
Get their shoes muddy
Yell in their ears, "Are you deaf"

CAN'T BE SCORED

15. Item not administered
16. No response or I don't know

CAQ Coding & Summary Sheet

PHYSICAL CONTACT VIGNETTES

Vignette A Question 2

Response 1 _____

Response 2 _____

Response 3 _____

Vignette C Question 6

Response 1 _____

Response 2 _____

Response 3 _____

Vignette F Question 12

Response 1 _____

Response 2 _____

Response 3 _____

Vignette H Question 16

Response 1 _____

Response 2 _____

Response 3 _____

EXCLUSION VIGNETTES

Vignette B Question 4

Response 1 _____

Response 2 _____

Response 3 _____

Vignette D Question 8

Response 1 _____

Response 2 _____

Response 3 _____

Vignette E Question 10

Response 1 _____

Response 2 _____

Response 3 _____

Vignette G Question 14

Response 1 _____

Response 2 _____

Response 3 _____

CAQ SUMMARY

Total Items Responded to: _____/8

Total Responses made: _____

Circle each novel category used then write # of repeats above:

Total Physical Novel Response Categories Utilized: _____

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Total Exclusion Novel Response Categories Utilized: _____

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Total CAQ Novel Response Categories Utilized: _____

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Total by Category	Physical	Exclusion	Total
Passive (1 – 3)	_____	_____	_____
Information (4 – 5)	_____	_____	_____
Solution Focused (6 – 8)	_____	_____	_____
Assertive (9 – 11)	_____	_____	_____
Aggression (12 – 14)	_____	_____	_____
Cannot be scored (15 – 16)	_____	_____	_____

Appendix C

Social Behavior Scale

Child's Name/ID: _____ Teacher's Name: _____
 Date form completed: _____ How long have you known this student? _____

Using the 5 – point scale below, please indicate the degree to which each statement describes this child. Then place the completed scale in the envelope provided and mail back to Dr. Mary Haskett. Thank you.

1 = Never true 2 = Rarely true 3 = Sometimes true 4 = Often true 5 = Almost always true

1. This child is good at sharing and taking turns.	1	2	3	4	5
2. This child tells a peer that s/he won't play with that peer or be that peer's friend unless s/he does what this child asks.	1	2	3	4	5
3. This child is a solitary child.	1	2	3	4	5
4. This child hurts other children by pinching them.	1	2	3	4	5
5. This child tries to get others to dislike certain peers by telling lies about the peers to others.	1	2	3	4	5
6. This child likes to play alone.	1	2	3	4	5
7. This child is ignored by peers.	1	2	3	4	5
8. This child verbally threatens to hit or beat up other children	1	2	3	4	5
9. This child ruins other peer's things when s/he is upset.	1	2	3	4	5
10. Peers say mean things to this child at school.	1	2	3	4	5
11. This child pushes or shoves other children.	1	2	3	4	5
12. This child prefers to play alone	1	2	3	4	5
13. This child verbally threatens to physically harm a peer in order to get what they want.	1	2	3	4	5
14. This child tells others not to play with or be a peer's friend.	1	2	3	4	5
15. This child is helpful to peers.	1	2	3	4	5

16. This child is not chosen as a playmate.	1	2	3	4	5
17. When mad at a peer, this child keeps that peer from being in the play group.	1	2	3	4	5
18. Peers avoid this child	1	2	3	4	5
19. This child tries to cheer up peers when they are sad or upset about something.	1	2	3	4	5
20. This child tries to dominate or bully peers.	1	2	3	4	5
21. This child doesn't have much fun.	1	2	3	4	5
22. This child is ridiculed or picked on by peers.	1	2	3	4	5
23. This child doesn't smile much.	1	2	3	4	5
24. Peers refuse to let this child play.	1	2	3	4	5
25. This child keeps peers at a distance.	1	2	3	4	5
26. This child kicks or hits others.	1	2	3	4	5
27. This child avoids peers.	1	2	3	4	5
28. This child is kind to peers.	1	2	3	4	5
29. This child tries to get others to dislike a peer.	1	2	3	4	5
30. This child is not liked much.	1	2	3	4	5
31. This child is exclude from peers' activities.	1	2	3	4	5
32. Peers say bad things about this child to other kids at school.	1	2	3	4	5
33. This child withdraws from peer activities.	1	2	3	4	5
34. This child tells a peer they won't be invited to their birthday party unless s/he does what the child wants	1	2	3	4	5
35. This child gets hit or bullied at school.	1	2	3	4	5
36. This child looks sad.	1	2	3	4	5
37. This child verbally threatens to keep a peer out of the play group if the peer doesn't do what the child asks.	1	2	3	4	5

38. This child says or des nice things for other kids.	1	2	3	4	5
39. Please rate this child's <u>overall academic performance</u> this year.	A	B	C	D	F

		SUM	MEAN
PRO	1: __, 15: __, 19: __, 28: __, 38: __	____/5	_____
RA	2: __, 5: __, 14: __, 17: __, 29: __, 34: __, 37: __	____/7	_____
OVT	4: __, 8: __, 9: __, 11: __, 13: __, 20: __, 26: __	____/7	_____
ASC	3: __, 6: __, 12: __, 25: __, 27: __, 33: __	____/6	_____
EXL	7: __, 16 __, 18: __, 22: __, 24: __, 30: __, 31: __	____/7	_____
DP	21: __, 23: __, 36: __	____/3	_____
VIT	10: __, 32: __, 35: __	____/3	_____