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Adolescent Perceptions and Beliefs of Proactive-Reactive Aggression Explored Through the Social Information Processing Model of Aggression.

John Salaz

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**ADOLESCENT PERCEPTIONS AND BELIEFS OF
PROACTIVE-REACTIVE AGGRESSION EXPLORED
THROUGH THE SOCIAL INFORMATION PROCESSING
MODEL OF AGGRESSION**

by

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DISSERTATION

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Requirements for the Degree of

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ABSTRACT

Human aggression is a frequently studied aspect of human behavior. Although great strides have been made not one single theory can fully explain the complexity of aggression. The Social Information Processing model of aggression (Crick and Dodge, 1994) has served as a useful tool to examine differences amongst individuals. This model considers mechanisms through which every individual processes social information, ultimately leading towards behavior.

This study examined adolescent aggression through the Social Information Processing model. Participants consisted of 149 male and female students from a large urban school district in southwestern United States. Each participant was assessed with measures of attribution intent, quality of knowledge structures, and reactive-proactive

aggression. Correlational analyses revealed significant correlations between attribution intent and aggression, attribution intent and hostile knowledge structures, and attribution intent and proactive aggression. Between group analyses revealed a significant difference between genders on the proactive subscale of aggression only. Between group comparisons failed to reveal gender differences of attribution intent, quality of knowledge structures, proactive-reactive aggression combined, and reactive aggression. Between group comparisons also failed to reveal grade level differences between middle and high school participants on attribution intent, quality of knowledge structures, aggression proactive-reactive combined, proactive subscale and reactive subscale of aggression.

Results from this study are consistent with previous research linking attribution intent and aggression. Findings from this study also support findings that the quality of ones' knowledge structures may greatly influence social information processing. Contrary to previous studies, this study failed to support the belief that reactive aggression is specificity related to attribution intent. This study failed to reveal a significant correlation between attribution intent and the reactive aggression subtype. Gender analyses from this study revealed differences between males and females on the proactive subscale of aggression only.

Although this study is consistent with previous studies regarding attribution intent and the impact knowledge structures play during information processing, there does remain findings which require further examination. Findings from this study are in contradiction with previous studies regarding attribution intent and reactive aggression. Gender differences may also be examined in future studies due to the ambiguous findings in this study.

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Chapter 1

INTRODUCTION

Human aggression is a complex problem, whether aggressive acts are performed by an individual or by groups of people. Aggression has been a major concern for communities, society at large, and victims of aggressive assaults as well as for perpetrators themselves. Many resources are directed towards dealing with aggression in communities, prisons, and schools. Therefore, available resources become limited for areas such as education, mental health, and other community programs (Astor, Pitner, Benbenishty, & Meyer, 2002). The complexity associated with the development of aggressive behavior has made it challenging for public and private social institutions to adequately address the issue through treatment and prevention programs. Prisons are overcrowded with individuals serving time for some form of physical assault (Anson, & Hancock, 1992; Cox, Paulus, & McCain, 1984) requiring additional funding from government agencies that operate with limited funds to begin with. Schools and communities struggle, dealing with the aftermath of aggressive incidents and developing prevention programs to reduce the likelihood of aggressive occurrences proactively.

Over the decades, much emphasis has been placed on studying and understanding childhood aggression. Past and current research indicates that aggressive individuals show patterns of aggression early on in life (Bandura, 1963a; Berkowitz, L, 1963; Dodge, 1980; Huesmann, 1984). Understanding developmental factors of aggression for young children may contribute to methods that decrease the likelihood that an individual will become aggressive in the first place. Although research has provided gains in

understanding childhood aggression, there still remain knowledge gaps in understanding adolescent aggression. As adolescents face heightened social and personal challenges it is important to gain a better understanding of aggression during this already challenging phase in one's life.

Adolescence is a complex phase of development for both males and females. Biological, psychological, and social changes during this phase contribute to the complexity of understanding and treating adolescent aggression. Adolescence is a time of increased autonomy, self-exploration, and identity development (Erikson, 1963). With the increase in these responsibilities and challenges, adolescence can be a difficult time in a person's life. It is also considered the final stage of development before an individual enters adulthood (Erikson, 1963). Therefore, it is important to gain a better understanding of adolescent aggression. In doing so, effective interventions can be developed to address adolescent aggression before a person enters adulthood and moves beyond the safety net of family and schools.

Prior to discussing current trends in social information processing (SIP) in relation to adolescent aggression it is important to take a closer look at previous perspectives researchers have considered. The study of aggression has been a major focus in academic disciplines, which include evolutionary studies, behaviorism, developmental psychology, and cognitive psychology. Although researchers from each discipline have contributed much to the understanding of aggression, it is understood that not one basic theory can explain aggression completely. Researchers agree that there are many externalizing as well as internalizing factors that contribute to the development and

maintenance of aggressive behavior (Bandura, 1973; Berkowitz, 1993; Dodge, 1980; Huesmann, 1984).

Early explanations of aggression describe it as having evolutionary value through the process of natural selection. Natural selection and survival of the fittest are terms used by Charles Darwin (1968) and evolutionists to explain the processes driven by the goal to survive, reproduce, and pass genes. From an evolutionary perspective, aggression has many potential benefits. Those who are able to physically protect themselves have a higher likelihood of surviving and passing on their genes. In a world where one must fight for and secure resources, physical aggression becomes an invaluable tool.

Behaviorists have built upon evolutionary perspectives by describing aggression as being learned through the process of rewards and consequences. Behaviorist theories of human learning and behavior have contributed an enormous amount of understanding to the development of aggression. Therefore, it is important to consider behaviorists' perspectives. This view emphasizes that learning is achieved only through stimuli processed through the senses. Also it focuses entirely on what can be observed and objectively measured (Watson, 1913). A premise to this understanding is that aggression can be explained through the interactions that one has with their environment. The foundations of behaviorism were set forth by Ivan Pavlov's (1927) classical conditioning and B.F Skinner's (1938) operant conditioning models. Classical conditioning is defined as learning that occurs when a neutral stimulus is paired with a stimulus that leads to a reflexive response. Classical conditioning is a process in which unconditioned stimuli elicit unconditioned responses. Learning is believed to occur when a neutral stimulus is

associated with an unconditioned stimulus and therefore elicits the same response.

Operant conditioning is developed through the processes of reinforcement, punishments, and consequences. A reinforcer is a stimulus that increases the likelihood of a response.

There are two types of reinforcers, positive and negative (Pavlov, 1927).

The behaviorist perspective has contributed much to the understanding of the factors involved in the learning of aggressive behavior. Behaviorists have sought to identify the situations and payoffs that promote violence. Behaviorists argue that aggressive behavior can be reduced or eliminated by withdrawing the rewards that maintain it and by rewarding cooperative, friendly behavior instead (Ferster & Skinner, 1969; Skinner, 1969).

The behaviorist view specifies that all behavior including aggression is learned and serves a function. By following this logic, researchers have explored how this process can operate for an individual learning to enact aggressive responses to stimuli in their environment. Researchers have theorized that an individual may learn to become aggressive through the positive and negative reinforcement from their environment (Pavlov, 1927).

Although the behaviorist perspective has led towards positive results for the development of prevention and treatment, there still remains a gap in the understanding of aggression. Cognitive scientists argue that learning and behavior go far beyond one's interactions with their environment. The cognitive approach considers the internal working forces that every individual brings with them to each situation. These forces are believed to influence how a person may respond to situations in their environment (Bandura, 1986). A major influence in laying the foundations for cognitive psychology

was work conducted by Albert Bandura through Social Learning perspectives of behavior.

Albert Bandura's contributions to the development of social learning have added much to the understanding of human aggression. Bandura's greatest contributions derived from his interest in the effects that observational learning has on the development of human behavior along with aggression. According to observational learning, aggression can be learned when a child observes a peer, parent, or role model engage in an aggressive act (Bandura, 1965). When the aggressive behavior is observed as being "successful" the observer is more likely to model that behavior in the future (Bandura, 1965).

Another important contribution of Bandura's was introduction of the Self-efficacy concept. Self-efficacy is defined as the evaluation of one's abilities to engage in a certain behavior (Bandura, 1995). Influenced by one's self-efficacy, if a person believes they can effectively use aggression to accomplish a specific outcome, they are more likely to resort to aggression. On the other hand, if an individual believes they are incapable of using aggression to accomplish a specific outcome they are less likely to act aggressively.

As Bandura set the stage for cognitive considerations of human aggression, tremendous focus has been given to the development of the information processing (IP) model of learning. Human aggression is understood as being a learned behavior. This understanding has shifted attention to the contributing factors in which aggression is learned. The IP model is based on computer science fundamentals. The IP model views the brain as the hardware and the mind as the software in processing information. The basic model consists of sensory information, memory, and how they interact during the

process of learning (Newell, 1990). This model breaks memory down into three different stages, which include sensory memory, working memory (also termed short-term memory), and long-term memory. The model describes information as entering into sensory memory through the senses and being processed in working memory. Dependent upon processing in working memory the information is then categorized and stored in long-term memory. The SIP model, which is the basis of this study, builds upon the basic structure of the IP model.

The purpose of this study was to explore adolescent aggression through the Social Information Processing (SIP) model (Crick & Dodge, 1994), which was developed from the basic IP model of learning. The SIP model provides a framework for how individuals process social stimuli and in turn respond to that stimulus. Crick & Dodge (1994) describe social information as generally moving through 6 unique stages of processing leading to behavior enactment. The 1st and 2nd stage consists of cue encoding and cue interpretation. The 3rd stage consists of clarification of goals. The 4th and 5th stages consist of response access and response decision. The 6th stage is actual behavior enactment. The idea behind this model is that each and every individual generally processes social information through these 6 stages and uniquely bring with them both external and internal aspects that can influence how information is processed at each stage (Crick & Dodge, 1994). A focus of this study was to investigate steps 1 and 2 of the model in terms of attribution intent and its relation to aggression.

Previous research in attribution indicates that aggressive individuals are prone to encode and interpret ambiguous social situations as having a hostile intent at higher rates than non-aggressive individuals (Berkowitz, 1963; Dodge, 1980; Huesmann, 1984).

Research involving the SIP model also indicates that an individual's knowledge structures may play an important role on how social information is processed (Burks et al, 1999). Knowledge structures are defined as mental representations of regularities believed to exist in social situations and people's dispositions and behavior (Higgins, 1990; Murphy & Medin, 1985; Stromquest & Strauman, 1991). Previous research indicates that individuals with hostile knowledge structures tend to process social information as being hostile at a higher rate than non-aggressive individuals (Burks et al, 1999).

Additional areas addressed in this study explore the mechanisms that are associated with proactive versus reactive aggression within the SIP model. A dichotomy of aggression, which includes proactive and reactive subtypes, has been identified by psychologists along with social science researchers throughout the study of aggression (Bushman & Anderson, 2001). The rationale behind the dichotomy suggests that the driving forces between proactive versus reactive aggression may actually serve two separate purposes (Bushman & Anderson, 2001).

Reactive aggression is thought of as a response to a preceding provocation and usually is accompanied by anger (Dodge & Coie, 1987, Pulkkinen, 1996). Proactive aggression is typically described as unprovoked, thoughtful, and with little or no affect (Fite, Colder, Lochman, & Wells, 2008). This form of aggression is considered an acquired behavior believed to be controlled by external rewards. Previous research indicates that reactive aggression appears to be associated with the first 2 stages in the model, "encoding and interpretation of cues" while the 5th stage, "response decision" is uniquely related to proactive aggression (Dodge, 1991).

Research Questions

The purpose of this study is to investigate the relationships between adolescent perceptions and beliefs of aggression and social information processing. In this study Research Question 1 explores whether adolescents who endorse a higher number of items on the proactive, reactive or proactive-reactive combined scales of aggressive on the Reactive-Proactive Questionnaire (RPQ) will encode and interpret ambiguous social situations more hostile on the Children's Attribution Questionnaire (CAQ) than those endorsing a higher number of non-aggressive items on the RPQ. Each subject was asked to answer one open-ended question regarding 8 different situational vignettes. The question asked, "Why do you think this happened"? Each student's response to the open-ended question was coded as either hostile, non-hostile, or don't know.

Research Question 2 examines the role that individual knowledge structures play during social information processing. This study explores whether adolescents who endorse a higher number of hostile items on the Assessment of Schematic Typicality (AST) will display more biased patterns of aggressive social information processing than adolescents who endorsed a fewer number of hostile items on the AST. The AST measures each subject's tendencies in a paired-comparison, forced choice format to describe various categories in people in hostile vs. non-hostile terms (Barret, Abdi, Murphy, & Gallegahar, 1993; Medin & Shoben, 1988). This instrument consists of three series of 9-paired items that are presented to each subject that represent 3 domains. The domains are parents, peers at school, and teachers.

Research Question 3 investigates the differences in information processing between proactive and reactive aggression. It is suggested that reactive and proactive

aggression may be uniquely related to different steps in the social information-processing model. Previous research indicates that reactive aggression is related to encoding and interpretation where proactive aggression is related to response evaluation (Dodge, 1991). The instrument that will be used to measure aggression style will be the RPQ.

Research Question 4 examines gender and grade level differences on all 3 instruments. For the purpose of this study grade levels were divided between middle and high school students. Middle school included grades 6th to 8th while high school grades included 9th to 12th.

Chapter II

LITERATURE REVIEW

Throughout history, the study of aggression has been a primary focus amongst many respected academic disciplines. Although there have been many advances in understanding the functions and development of group and individual aggression, it currently remains a complex problem to address. Theories developed through many disciplines have contributed valuable and unique perspectives regarding the function and development of aggression. Many researchers agree that no single explanation alone can entirely explain it fully (Bandura, 1973; Berkowitz, 1993; Dodge, 1980; Huesmann, 1984).

The purpose of this study was to investigate adolescents' perceptions and beliefs of aggression through the social information-processing modal of aggression. The primary model that was examined was the Social Information Processing (SIP) model of aggression developed by Crick & Dodge (1994). Prior to discussing the major contributions of Crick & Dodge's (1994) model it is important to recognize influential research and models that have been developed in the past which contribute greatly to the current knowledge of aggression. In this chapter, previous theories and contributions will be discussed that have been significant in understanding aggression and the role they have played in setting the groundwork for the development of current theories in which this study is based.

Evolutionary Theories

Early psychological theorists sought to explain human aggression in terms of instinctual forces (Lorenz, 1963). Early theorists held the perspective that humans and other species are aggressive by nature in order to survive (Darwin, 1968). Throughout

history, humans have used aggression for many different purposes to secure resources ultimately in meeting the basic needs for survival and reproduction. As a species, humans have used different forms of aggression to defend themselves, attack others, and gain resources such as food and shelter. Evolutionary theorists describe aggression as part of the process of natural selection and survival of the fittest. According to the Darwinian Theory of Evolution, Natural Selection refers to the process by which certain traits make it more likely for an organism to survive and reproduce passing their genes on to future generations (Darwin, 1968). As part of the natural selection process the concept of Survival of the Fittest was termed as one of the tools that drive natural selection. Survival of the Fittest basically refers to the concept that the “strongest” survive within the respected environment (Darwin, 1968). In circumstances where there remain limited resources, survival of the fittest kicks in and those with the capability to secure resources are most likely to survive, while those who don’t die off.

Evolutionary explanations support the view that aggression has been an instrumental means of survival in regards to natural selection (Darwin, 1968). Evolutionists argue that primitive life conditions forced humans to rely on aggression in order to survive and pass on their genes. According to the survival of the fittest, aggression may benefit a species’ ability to gain and secure territories, as well as resources such as water food, and mating opportunities. The most evident form of aggression can also be observed between a predator and its prey. According to the notion of survival of the fittest, survivors were those who possessed strong aggressive tendencies for gaining and securing resources needed for survival.

Evolutionists also describe within-group and between-group aggression as serving many purposes that have a basis in breeding (Darwin, 1968). In order to insure the passage of one's genes on to the next generation one must be capable of protecting their offspring and securing their resources needed to survive. Within-group aggression is defined as aggression between members of a respected group. Within-group aggression is viewed as an instrument to prevent undesirable behaviors within a group, which would be threatening to group cohesiveness (Charlesworth, 1988, 1991, 1996). Examples may include an individual's behavior that may keep valuable resources unavailable to the rest of the group or behaviors that expose the group to potential risks. It may then become expected that within a group one must share resources or suffer the consequence of being the target of violence (Charlesworth, 1988, 1996).

Between-group aggression is also considered by evolutionists to hold survival value (Geist, 1978; Trivers, 1971). Aggression between groups has served as a means of securing reproduction of the species for that respected group (Abramovitch & Strayer, 1978; Chance, 1967). Between-group aggression is viewed as an avenue for a group or tribe to gain more resources and territory. For example, it may benefit a group to attack and take resources away from an outside group to meet the basic needs of the group or secure fertile land for farming and hunting. Fighting originating from struggles for dominance may come from the same motive since animals achieve very real benefits through winning superior status. Biologists have maintained that there actually are competitive reasons for what seems to be noncompetitive fighting (Charlesworth, 1988, 1991, 1996).

Although evolutionary perspectives of human aggression have provided great insight in understanding the survival factors associated with it, there still remain gaps in explaining aggressive behaviors that persist outside of its potential benefits. In a primitive society where resources are scarce, aggression makes a whole lot of evolutionary sense. In a more modern society where resources are not as scarce and can be accessed through many different avenues, human aggression continues to be a major problem in society. Aggression has also taken on many additional functions outside of what seem to be basic survival purposes. Schools and communities continue to struggle with the consequences, treatment and prevention of aggressive behavior. Evolutionary perspectives of aggression have served well in explaining the survival value of primitive civilizations, but they tend to have significant shortfalls in explaining aggression in our more complex modern civilization. As a result, researchers within the study of human behavior have attempted to gain a better understanding of the functions and development of aggression in modern society. The next section will explore the development of aggression as a result of learning through behavioral perspectives.

Behaviorist Theories of Aggression

The behaviorist view of human behavior arose from the attempt to develop a more scientific discipline by focusing primarily on observations of behavior (Watson, 1913). Early perspectives of aggression focused on instinctual and unconscious factors of human behavior, which are considered difficult to measure objectively. Behaviorists sought to validate psychology as a scientific discipline. In order to do so, it was thought that instinctual and unconscious motives of behavior were inadequate in explaining human aggression. As a result, behaviorists felt that focus should be placed on observable events

(Watson, 1913). A few of the most influential researchers during the behaviorist movement were John B. Watson, Edward Thorndike, Ivan Pavlov, and B.F. Skinner. The following section will discuss the contributions behaviorists have made to the study of human behavior and aggression.

John B. Watson (1913) argued that if psychology were ever to be as objective as physics, chemistry, and biology, it would have to give up its preoccupation with the mind and consciousness. Watson believed that psychologists should reject such terms as mental state, mind, or emotion in explaining human behavior. The basis of Watson's argument was that only actions and events that take place in the environment that can be observed and measured directly should account for human behavior (Watson, 1913). Watson's approach to the study of human behavior set the groundwork for Ivan Pavlov and B.F Skinner's later development of classical and operant conditioning.

Edward Thorndike (1911) was also interested in the study of observable mechanisms in the learning process. Thorndike termed this process as the Law of Effect. Thorndike's (1911) view was that behavior is shaped by its consequences. Therefore if a consequence is satisfying the behavior will be more likely to occur in the future, if the consequence is unsatisfying, the behavior will be less likely to occur in the future. Thorndike's assertions were later demonstrated through the process of classical conditioning (Pavlov, 1927) and operant conditioning (Skinner, 1938).

Through the development of classical conditioning, Ivan Pavlov set the stage for taking into account an organism's natural response to its environment. He demonstrated that many automatic or involuntary behaviors, such as salivating with the sight of food, are learned responses to specific changes or stimuli in one's environment (Pavlov, 1927).

Through classical conditioning Pavlov indicates a key component in learning can be understood when a neutral stimulus is paired with a stimulus that leads to a reflexive response (Pavlov, 1927). Classical conditioning is built on the foundation that learning is driven by the forces of unconditioned stimuli and unconditioned responses. Pavlov (1927) defines an unconditioned stimuli as a presentation of a stimulus that evokes a reflexive UR. Pavlov (1927) defines an unconditioned response as the reflexive response to a specific US. An example often used in describing an unconditioned stimuli and its unconditioned response is given by an infant's reflexive response of suckling to her mother's breast nipple. In this example, the US is the mother's nipple and the unconditioned response is the infant's suckling of the mother's breast nipple. This is considered to be a "first order" form of classical conditioning.

Pavlov (1927) also went on to demonstrate that a neutral stimulus could also evoke a UR when paired with a conditioned stimulus. If learning has occurred during this process, the neutral stimulus by itself produces a response similar to the reflexive response. The neutral stimulus is then considered a conditioned stimulus, and the response it elicits is called a conditioned response unconditioned response. In considering the example above, it is possible to introduce a neutral stimulus. If the mother introduces a neutral stimulus such as stroking the infant's forehead while the infant is suckling on the mother's nipple, if learning occurs, the stroking of the forehead will too be associated with the suckling of the mother's breast nipple. In this case, we would know that the infant has been "classically conditioned" because stroking of the forehead outside the feeding situation conditioned stimulus results in the infant's suckling conditioned response.

Influenced by the work done by Pavlov, B.F. Skinner extended the behavior approach by introducing important modifications that can also impact learning. Skinner's main contributions to the study of human learning are based on his explanations of learning through operant conditioning. The basic understanding of operant conditioning indicates that consequences from an organism's interactions with its environment will influence the likelihood that a specific or similar behavior will be repeated (Skinner, 1938). Operant conditioning, which is based on classical conditioning, is considered to be a second order form of learning. As in classical conditioning the US and UR are described as being involuntary automatic responses to one's environment (Skinner, 1938).

In operant conditioning, consequences are contingent on the prior appearance of some response, often a very discrete and concrete behavior, such as the "handshake" of a trained dog (Skinner, 1938). The basics of operant learning indicate that if occurrence B is contingent on occurrence A, the occurrence of B depends on the prior occurrence of A (Holland & Skinner, 1961). Three different components are considered relevant factors of operant conditioning. These components include positive reinforcement, negative reinforcement, and punishment. The behavior that constitutes the operation on the environment is often called an operant.

Reinforcement occurs when some event is contingent on the prior performance of some response. The response then changes the likelihood of the occurrence on future occasions. Reinforcement is a term often used in reference to a stimulus that is presented such as an event as a consequence of a response (Skinner, 1938). Positive reinforcement is a process whereby some event, usually a stimulus, increases the likelihood of a

response in which the presentation of the event is contingent. An example of positive reinforcement would be when a child engages in on-task behavior at school and the teacher then gives the child a tangible reward. In order for something to be considered a reinforcer, it must be something the child is willing to work for. Positive reinforcement typically takes the form of verbal praise, stickers, extra time in a certain activity, or free time. The child is given something that is likely to encourage future engagement in a targeted behavior.

A negative reinforcer is described as the removal of an unpleasant stimulus or circumstance. For instance, driving to work in the middle of rush hour is typically an unpleasant experience for most people. If rush hour typically occurs between 7:00 a.m. and 8:00 a.m. traveling to work during this time would be an unpleasant experience. If people leave their houses at 6:00 a.m. thereby avoiding rush hour traffic, it can be considered a pleasant experience. These peoples' awareness of the difference might then change their time of travel to 6:00 a.m. to avoid the unpleasantness of driving during rush hour. "Rush hour traffic" in this example is considered the negative reinforcer. Changing time of travel is the result of attempting to avoid a negative experience. Doing so therefore decreases the likelihood of traveling during rush hour, thus serving as negative reinforcement.

The behaviorist perspective has contributed much to the understanding of the factors involved in the learning of aggressive behavior. Behaviorists have sought to identify the situations and payoffs that promote violence. Behaviorists argue that aggressive behavior can be reduced or eliminated by withdrawing the rewards that maintain it and by rewarding cooperative, friendly behavior instead (Fester & Skinner,

1997; Skinner, 1969). This has led researchers to investigate methods that would identify the function of aggressive behavior and to develop methods that teach pro-social replacement behaviors, which serve the same if not similar functions. By following the logic behind operant conditioning, researchers have explored how this process can operate for an individual learning to enact aggressive responses to stimuli in their environment. As described earlier, operant conditioning is driven by reinforcement of both positive and negative and consequences. Consequently, researchers have theorized that an individual may learn to become aggressive through the positive and negative reinforcement from their environment.

Research studies conducted by Conger, Neppl, Kim, & Scaramella, (2003) indicate that environmental factors an individual may be exposed to may actually reinforce the use of aggression. This study explored community effects on the reinforcement of aggression. In some cultures aggression has been used as a tool for survival and meeting the families' immediate needs. In a gang culture, an individual may actually be rewarded for displaying aggressive tendencies towards opposing gang members. In this case it may be more rewarding for an individual to engage in aggressive behavior than not (Conger et al., 2003).

In the previous example given regarding within-group aggression an individual threatening to group cohesiveness can quickly learn to associate those behaviors with negative consequences. For example, in the case when an individual hoards resources from the group, if group members respond with aggression towards that individual, the individual will learn to associate the behavior of hoarding with the consequence of being physically attacked. In the evolutionary process of understanding human behavior,

behaviorism has helped explain in objective terms behaviors that were once considered instinctual. Victims of physical abuse and violence exposure may also be reinforced to display aggressive behavior. In a culture where one may be physically threatened, being able to respond with aggression may not only serve as an immediate reward but may also deter others from inflicting aggression upon that person (Scerbo & Kolko 1995).

As discussed in the preceding section the behaviorist perspective has contributed tremendously to the understanding of human behavior and aggression. Behavior modification approaches have been and are currently used widely in school and community programs to address problematic behaviors of its members. Eventually, it became apparent to most psychologists and those studying human behavior that behavioral principles were not the only principles of learning. It is evident that individuals also learn through observation, imitation, by insight, and by thinking about what goes on around them (Bandura, 1973). This has led to the outgrowth of the social learning theory (today often called cognitive social learning theory).

Social learning theory combines elements of classic behaviorism with research on thinking and consciousness (Bandura, 1977). Social learning theory has also set the foundation for the currently prevalent theory of social information processing which is the primary focus of this study. In gaining a better grasp of the social information-processing model of human learning and behavior it is important to investigate the major premises that this theory is based on. The following section will discuss early contributions and models of social cognition theories.

Social Learning Theories

The Social-learning theory describes behavior as learned and maintained through cognitive processes such as observation, imitation of others, and positive feedback (Bandura, 1977). The social-learning theory emerged from behaviorism during the 1960's and may be considered the most comprehensive method in explaining human behavior. In the 1960's Albert Bandura argued that learning in social situations goes beyond what Skinner and other learning theorists described (Bandura, Dorothea, & Ross, 1963a). Bandura (1963) argued that in social settings individuals learn a great deal through cognitive processes such as observation and imitation. Bandura argued that if actions were determined by external rewards and punishments only, people would behave like weathervanes, constantly shifting direction in regards to whatever momentary influence happened to impinge on them (1963).

The social-learning theory is based on how one interprets events and how competent one feels in responding to those events taking place in their environment (Bandura, 1977). These interpretations and evaluations of competence are what social-learning theorists regard as the driving factors of conscious or unconscious decision-making leading towards a behavior. Bandura (1977, 1991) explained that interpretations of environmental events could be influenced through internal and external factors. Internal factors may include physiological, emotional, and past experiences. External factors may consist of environmental components such as people present, location, and circumstantial factors (Bandura, 1973). Internalizing and externalizing factors in social learning are a primary focus of this study and will be discussed in greater depth in the section pertaining to the social information-processing model (Crick & Dodge, 1994). In

the following section Bandura's concept of self-efficacy (Bandura, 1995) will be discussed in regards to learning and behavior.

Bandura (1995) defines self-efficacy as the confidence one has on enacting a behavior. Contingent upon an individual's confidence level, this may determine the probability whether an individual will enact a certain behavior (Bandura, 1995). Bandura describes self-efficacy as the references one makes regarding beliefs that he or she is capable of producing desired results, such as mastering new skills and reaching goals (Bandura, 1995). Self-efficacy develops through the process of evaluation of ongoing performance in terms of personal standards and goals. Self-efficacy is typically achieved by reflecting on one's general abilities and reaching conclusions such as, "I'm good at making friends" or "I'm poor at math". These general judgments are referred to as self-efficacy appraisals (Bandura, 1995). Once these appraisals are made they can then influence future behavioral responses. In general when people believe they are good at a task, they tend to work on that task with more confidence and persistence despite temporary setbacks (Bandura, 1995). In general when people doubt their abilities, they tend to work less enthusiastically and are more likely to give up when challenges arise (Bandura, 1995).

Bandura indicates that self-efficacy appraisals are based on different sources of information (Bandura, 1995). Actual performance is considered to be the most influential source of information. When a person experiences repeatedly successes, self-efficacy increases. When a person experiences repeated failures, self-efficacy drops. Self-efficacy appraisals can also be influenced by indirect experiences (Bandura, 1995). If one sees others succeed at a task, one might gather that they too can accomplish it. This

is especially true if one believes the model as having similar abilities as they do. Bandura (1977) expanded the idea of indirect learning through the theory of observational learning.

Observational learning is defined as the process in which an individual learns new behavior by observing the behavior of a model rather than through direct experience (Bandura, 1977). Bandura (1977) along with many other social-learning theorists' regard observational learning has having a powerful effect on behavior. Observational learning is a type of learning that occurs as a function of observing, retaining, and replicating novel behavior executed by others (Bandura, 1977). Although observational learning can take place at any stage in life, it is thought to be of greater importance during childhood, particularly as authority becomes important (Bandura, 1977). There are many factors that contribute to how effective observational learning will be. Studies indicate that models perceived to be similar to one or hold similar capabilities tend to be the best role models (Bandura, 1977). An individual's parents initially serve as the primary models for most children. Children tend to observe their parents' behavior and responses to certain situations and refer to those responses when confronted with similar situations.

In the 1970's Bandura refined his ideas on observational learning and demonstrated the powerful effects models have on human behavior. During this reformation Bandura identified four basic cognitive components that are important factors in the process of observational learning. Bandura identified these factors as attention processes, retention processes, motor reproduction processes, reinforcement and motivation (Bandura, 1977). With consideration of these processes, Bandura explained that not all individuals might react in similar ways to similar environmental factors.

Behavior enacted heavily relies on the capabilities of the individual with each of these processes. Initially an individual must be capable of attending to the information at hand. Attention may also vary from individual to individual. One person might pay attention to some aspects of the environment, while another person may pay attention to other factors. Similar processes may also be true in regards to retention. The ability to retain information can vary from individual to individual as well as the information that is actually retained. Bandura also stressed the importance of motor reproduction. In order for an individual to engage in a certain behavior, they must be able to physically achieve it. Last, Bandura pointed out that what might serve as reinforcement for one individual may not for another. This was one of the most important factors that led Bandura in the direction of studying individual differences to environmental stimuli. Motivation also may vary from individual to individual thus indicating that a motivated individual is more likely to engage in a certain behavior than one that is not.

Considering the impact that observational learning and self-efficacy have on learning and behavior, Bandura sought out to explore human aggression through these processes. The following section will discuss Bandura's important contributions to the understanding of human aggression in regards to observational learning and self-efficacy.

Observational Learning and Self-efficacy Factors of Aggression

With consideration of previous theories of aggression, Bandura sought to investigate human aggression as related to observational learning and self-efficacy. Bandura established through his social learning theory that aggression is learned within one's environment. Although Bandura stressed the importance of cognitive factors in children's learning, he did acknowledge that operant conditioning does have a role in the

development of aggression (Bandura, 1973). Parents along with other socializing agents such as family members, peers, and school staff can reinforce desirable or undesirable behavior (Bandura, 1977). This typically happens by rewarding children when they engage in socially appropriate behavior and punishing children when they engage in undesirable social behavior. Bandura also points out through observational learning that these socializing mediators also teach children a great deal by the kinds of models they themselves present (Bandura, 1977).

Bandura (1977) specifies when children observe an aggressive model and notice when they are reinforced they too will imitate accordingly (Bandura, 1961). Studies on observational learning have shown that imitation is most likely to occur when influential people in one's life are the ones being modeled (Bandura, 1965; Berkowitz, 1993; Deutsch & Gerard, 1955). These people could be parents, relatives, community leaders, and television heroes. Many studies regarding violent media and its effect on individual aggression indicate that children repeatedly exposed to violent programming have higher rates of aggressive tendencies compared to their peers (Anderson et al., 2003; Comstock & Scharrer, 2001).

One of Bandura's most significant studies regarding observational learning and aggression was the Bobo doll experiment (Bandura, 1961). In this experiment children viewed a film of an adult physically attacking a Bobo doll. Bandura then set up three different alternative endings. Children within Group A were exposed to the adult "only" hitting the doll. Children within Group B were exposed to the adult receiving a reward for hitting the doll. Children in Group C were exposed to the adult receiving punishment for hitting the doll. After viewing the film, Bandura gave each subject the same doll.

The each child's interaction with the doll was then observed. Individuals within Group A and B were observed imitating the aggressive behavior towards the doll. Individuals Group C was observed as displaying significantly less aggression towards the doll. Bandura concluded that in the instance that a child observes a model being rewarded for aggressive behavior they too are more likely to engage in similar behavior. When a child observed a model being punished for an aggressive act they were less likely to imitate that behavior (Bandura, 1961).

These findings have become powerful examples regarding the effect that role models have on internal working processes of aggression. Follow-up studies have yielded similar findings. For instance research conducted by Anderson et al. (2003) and Comstock & Sharrer (2001) looked at violence in the media, computers, and video games. These findings too indicate that models, which are perceived as influential in the community also, tend to elicit a greater influence on an individual's learning. Families throughout our society can attest to the influence that popular figures through the media have on their children. This findings indicate that if one can learn to be aggressive one can also learn to respond with appropriate pro-social ways by appropriate methods.

Bandura's studies also indicate that aggression can be a byproduct of one's immediate neighborhood and social economic status. Bandura's (1977) studies provide empirical evidence that individuals living in high crime rate areas are more likely to act violently than those who dwell in low-crime areas. This assumption is also supported by Shaw & McKay's (1942) theory of social disorganization. Shaw & McKay (1942) indicate that a neighborhood surrounded by culture of conflict, decay and insufficient organizations was a major cause of criminality (Shichor & Bartollas, 1990). Along with

neighborhoods and lifestyles researchers also consider cultural and tradition as potential factors associated with aggression. These factors are generally referred to as social conditioning.

Social conditioning is thought to be acquired through tradition within one's culture, which is handed down from previous generations. A study by Rahman & Huq (2005) indicates that individuals from low social economic communities have a higher rate of aggressive responses than their peers. Vygotsky's (1978) socio cultural theory investigates the cultural context of people's lives. The socio cultural theory focuses on how values, beliefs, customs, and skills of a social group are transmitted to the next generation. According to Vygotsky (1978) social interaction in particular, cooperative dialogues with more knowledgeable members of society is necessary for children to acquire the ways of thinking and behaving that make up a community's culture. Vygotsky's theory has been especially influential in the study of cognitive development. As children go through typical developmental stages they may develop aggressive tendencies through their cultural norms, teachings, and expectations.

As demonstrated in the previous sections, aggression is a complex behavior that serves many different functions both beneficial and detrimental to society. Evolutionary perspectives indicate that aggression has served a critical role in survival and ensuring one's gene pool is passed on. Behaviorists' perspectives indicate that aggression is learned through rewards and punishments within one's environment. Social learning theorists indicate that rewards and punishments are powerful factors in learned aggression but expanded these ideas to include the internal working models that each and every individual bring with them into any social situation. These learning working

models consist of an individual's process of thinking, interpreting, and decision-making. A major advantage of the social learning theories is that they include an explanation for individual differences and maintenance of aggressive behavior. The following sections will focus on the basic foundations of Social Information Processing and the contributions this knowledge has had on the understanding of social information processing factors of aggression.

Information Processing Model

The purpose of this study is to investigate adolescent aggression through the Social Information Processing model (SIP) (Crick & Dodge, 1994). In gaining a comprehensive understanding of the model it is important to acknowledge the roots in which it has been developed. Within the following sections the Information Processing model of learning will be discussed along with contributing factors related to the study of aggression.

As psychology has been perceived as a valid science, much progress has been made in following the scientific method in explaining human behavior. Early theories of human behavior focused on instinctual, unconscious, and externalizing factors as main drivers of human behavior. As psychology research has progressed an important shift has been made towards the study of cognitive aspects of behavior. Unlike previous explanations of human behavior, cognitive psychology stresses the importance of internal working states such as beliefs, desires, and motivation (Neisser, 1976). These internal working states are described as cognitions. Cognition refers to the processing by which sensory input is transformed, reduced, elaborated, stored, recovered, and then used (Newell, 1990). Given such a definition it is apparent that cognition is involved in

everything a human being will ever do (Newell, 1990). With such a strong claim on behavior, cognitive psychology has become the leading framework used in understanding human learning and behavior.

In the past few decades research has focused a great deal of attention on the role cognition plays on psychopathology and problematic behavior. A primary theory that has emerged is the Information Processing model of learning. The Information Processing model was developed throughout the 1970's and 1980's with the idea that cognition could be described as fundamentally computational in nature (Klahr & MacWhinney, 1997). This model borrows ideas and assumptions from computer science with the mind represented as software and the brain represented as hardware. Cognitive theorists describe solutions to problems as taking the form of algorithmic rules. These rules are often described as being implicitly learned and may not be understood or conscious to an individual. It is often the case that not all individuals are aware or understand their own patterns of information processing (Flavell, 1995).

The information processing theory of learning has shed a tremendous amount of light on how information is perceived, analyzed, and how this process affects thoughts and actions. This theory describes the factors and steps involved which influence an individual's action responses in learning and social situations. This model helps explain the development of schemas, which are also referred to as knowledge structures. Schemas or knowledge structures are perceptions and beliefs about the world that each and every one makes reference to and thus influence thinking, problem solving and behavior enactment (Klahr & MacWhinney, 1997). Schemas will be referred as knowledge structures throughout this literature review.

The Information Processing model divides memory components into three stages referred to as sensory, working, and long-term memory. Sensory memory is the initial stage where information is scanned through the senses. Sensory memory is described as having a limited capacity and is held for a short period of time. Studies suggest that sensory memory is held for durations of between 1 to 2 seconds (Baddeley, 1999). Once information is processed through sensory memory, it is retained for further processing in working memory.

Working memory, also referred to as “short-term” memory has been labeled as working memory due to its presumed function is the step in which information is processed. Working memory also has a limited capacity. Studies suggest that working memory typically holds plus or minus 7 chunks of information at a given time (Miller, 1956). More current studies within the field of neuropsychology indicate a shorter amount of chunks estimating around 4 (Cowan, 2001). An important aspect of working memory is conscious attention given to stimuli. Studies indicate the higher focused attention given to information during working memory will increase the likelihood of the information being processed and remembered for later retrieval (Cowan, 2001). Working memory is described as performing the function of processing information for meaning and possible long-term storage. A function of working memory is to encode information and coordinate incoming information with information that already exists within the system. This process takes place by linking new information to stored information that is retrieved from long-term memory. This stored information also referred to as schemas or knowledge structures will be a key component in this study and is described in greater detail in following sections.

Working memory is described as the central executive functioning role in the model. The central executive functioning is described as the conscious and reflective component of working memory (Baddeley, 1999). The central executive function directs the flow of information and links incoming information with stored information. This process is guided by strategies an individual has developed to organize incoming information. These strategies typically include rehearsal and encoding. Typical effective strategies include, encoding the information as mental images, mnemonics, and labeling.

Long-term memory is the third stage within the model. Long-term memory is where information is stored, usually in an inactive form, and is available for future retrieval (Case, 1998; Kail, 2003). Stored information is readily available for future use depending on the effectiveness of strategies for retrieval. Problems related to memory are typically explained as problems with retrieval as opposed to the loss of the information (Kail, 2003). Information within long-term memory is generally categorized based on content. Similar to a library system, information is stored according to similar perceived functions and features of new information. It is important to point out that an individual's perception of new information in relation to stored information is a major factor in how an individual categorizes the new information (Kail, 2003). This is considered a key element in this study and will be discussed in greater length in the following sections. For example, a young child may have a schema of "Cars" in long-term memory. The category of "Cars" for this child might include (tires, takes you places, is covered, and requires gas to go). New information may be the presentation of an airplane. The child may ignore certain aspects of the airplane such as (flies, carries more people, travels at high speeds) and categorize it in the "Cars" category of long-term

memory. Although cars and airplanes do share similar functions, the ability to fly typically places an airplane in a whole different category than “Cars”.

Within long-term memory re-categorization can occur with the linking of new information that may move a prior knowledge structures into a different category. For instance, in the previous example, once a child has developed new knowledge structures of objects that fly, such as helicopters, jets, spaceships, etc. the child then will re-categorize the airplane into a more appropriate category.

This process basically takes place in the following form. During the processing in working memory, knowledge structures with similar functions stored in long-term memory are referred to for making better sense of the new information. If the new information is found to not fit nicely into pre-existing knowledge structures, an individual will then proceed by linking the new information to a similar knowledge structure already stored in long-term memory (Crick & Dodge, 1994) based on specific aspects of the new information. Once the new connections are made, the new information makes its way back to long-term memory and is categorized based on its new characteristics.

Once information is categorized and stored in long term memory it is referred to as a schema or knowledge structure. Knowledge structures are specific mental structures organized for making sense of ones experience and ones environment (Sparrow, 1999). According to Piaget’s theory of cognitive development there are two main processes for developmental changes in schemas or knowledge structures (Piaget, 1964b). These processes occur through adaptation and organization (Piaget, 1970). Adaptation is the process of developing schemas through direct interaction with the environment. During adaptation assimilation and accommodation are processes used in developing schemas.

Assimilation refers to the process of using current schemas to interpret the external world. Accommodation refers to when one creates new schemas or adjusts old ones after noticing that current way of thinking does not capture the environment completely, as in the cars airplane example given earlier. Schemas also change through a process of organization. This process takes place internally, apart from direct contact with the environment. Once an individual forms new schemas or knowledge structures, they are rearranged linked with other schemas or knowledge structures to create a strongly interconnected cognitive system (Piaget, 1970).

As the Information Processing model of human learning emerged, social scientists became interested in ways humans process social situations and the impact this process has on human behavior. For the purpose of this study, the focus will turn to the theory of Social Cognition, the processing of social information, and ultimately the influence these processes have on behavior enactment.

Social Information Processing

The focus of this section is Crick & Dodge's (1994) Social Information Processing (SIP) model, its theoretical basis, and its effectiveness in explaining aggressive behavior. A unique feature of Social Cognition theory is that it takes into account one's perceptions of social events as important factors related to information processing. These perceptions are believed to explain the probability of one's response patterns in social situations. Social cognition is broadly defined as the way people make sense of and respond to their social world (Fiske & Taylor, 1991). As discussed in previous sections, social cognition derived from the idea that not only external factors contribute to learning and behavior, but internal processes can also impact how an

external stimulus is perceived. Two of the leading researchers in the field of Social Cognition and explaining its role in human behavior are Crick & Dodge (1994). Crick & Dodge's work focuses on the unique stages that all individuals, at all times, refer to during social situations and how they process social information.

Crick & Dodge's (1994) model is theoretically based on Huesmann's (1988) integrated model of Social Information Processing. Huesmann (1988) believed in gaining a better understanding of learned aggression along with its maintenance, such that research must examine the operations of the information processing system. This must be observed in the presence of environmental circumstances (Huesmann, 1988). Through Huesmann's model, it is proposed that social behavior is controlled by "programs" or "scripts" that an individual learns both implicitly and explicitly early in life through interaction with one's environment. Scripts provide the information regarding what events might occur in the environment, how one might respond to those events, and what the outcomes of the response are likely to be (Huesmann, 1988). These "programs" or "scripts" are then used as guidelines for future behavior and problem solving.

Huesmann's model suggests that an individual initially encounters a social problem and will then evaluate the environmental cues associated with the presenting problem. Next, the individual will search memory scripts to guide their behavioral response. Once scripts are identified, an individual will evaluate those scripts in regards to the current circumstances. If one's evaluations are found incompatible, one will return to the "searching of scripts" process until a script is found to be compatible with the

current situation. Once the script is viewed as acceptable the individual will then behave in accordance with the script (Huesmann, 1988).

Huesmann (1988) proposed three different stages in which individual differences may occur throughout this process. The interpretation of a social event takes place during the social event. Huesmann suggests that dependent upon an individual's learning history different individuals can make different interpretations regarding the same social event. Huesmann also suggests that the content of memory scripts and the method one goes about to search for them can also vary amongst individuals. This too can contribute to individual differences in behavior enactment. Evaluation of the actual script brought out from long-term memory can also differ between individuals and this may help explain individual differences in patterns of aggressive behavior (Huesmann, 1988).

An important factor Huesmann (1988) considers is the preexisting emotional state one brings with them into each social situation. An emotional state may consist of psychological arousal and can include cognitive components as well (Husemann, 1988). According to this assumption both psychological arousal and cognitive components are heavily influenced by an individual's past history of learning. An example may be a case in which a child is exposed to aggression between parents during a conflict. The observation of this aggressive interaction may lead towards a child's biased perception of hostility when confronted with a problematic social situation. The child may then be influenced to respond with anger and aggression during times of their own perceived conflicts. The scripts available for this child may consist of greater hostility than for a child that has experienced more socially appropriate ways to respond to social conflicts. The child exposed to aggression may also be at a higher risk of evaluating hostile

responses as more acceptable than individual's that haven't been exposed to aggression. These assumptions are also consistent with Bandura's (1977) theory of observational learning.

Huesmann (1988) also identifies emotional states as potential factors contributing to steady patterns of aggression. Emotional states tend to persist over time. Emotional states an individual is currently experiencing may be unrelated to the situation at hand. This emotional state can then impact one's response to this new circumstance even though the state they are in has nothing to do with the upcoming situation. For example, an individual may encounter a social situation with an emotional state that is non-related to the current situation. This emotional state can then impact one's attention to specific cues associated with the current situation. Cues that represent or are consistent with one's current emotional state are given greater attention even though other cues may be available. The cues' one gives more attention to during this process can ultimately lead toward a response decision and behavior enactment based on biased limited situational information (Huesmann, 1988).

One limitation to Huesmann's (1988) model is that it suggests cognitive processes occur in a simple, organized, and sequential manner (Dodge, 1986). However, in situations where there is a social conflict, thinking is believed to be complex, fast, and automatic (Crick & Dodge, 1994). Researchers such as Crick & Dodge (1994) describe these internal processes as occurring rapidly, bi-directionally and at times in a non-linear fashion. In reaction to these limitations Crick & Dodge ultimately expanded on Huesmann's model. In doing so, Crick & Dodge suggest that social information processing occurs cyclically and bi-directionally and that there are multiple feedback

loops that occur in processing social information. The follow section will focus on Crick & Dodge's (1994) SIP model of aggression.

Crick and Dodge's Social Information Processing Model (SIP)

While expanding on Huesmann's (1988) model, Crick and Dodge (1980, 1994) identified attribution intent and general knowledge structures as important factors impacting SIP. Crick & Dodge's (1994) model is based on how people perceive social situations, interpret situations, make judgments about other people's intents/motives, and make decisions regarding potential responses in current social situations (Crick & Dodge, 1994; Dodge, Pettit, McClaskey, & Brown, 1986).

Attribution intent is defined as the intent an individual constructs regarding others in social situations (Dodge et al, 1986). Studies have shown that an individual's knowledge structures can also have a significant influence on the encoding and interpretation stage. Knowledge structures are broadly defined as internal mental representations (Higgins, 1990; Murphy & Medin, 1985; Stromquest & Strauman, 1991). These views are typically referred to as "social schemas" by social psychologists and internal working models by attachment theorists (Bowlby, 1988; Burks, Laird, Dodge, Pettit, & Bates, 1999). For the purpose of this study, the term "knowledge structure" will be used in reference to social schemas. Knowledge structures in turn provide a framework for organizing new information in a way that enables interpretation of this information as either being "schema consistent" or "schema inconsistent". The following sections will focus on Crick & Dodge's (1994) SIP model, attribution intent, and knowledge structure factors of aggression.

The SIP model outlined by Dodge (1986) indicates that behavioral response to social situations follow a set of sequential information processing steps that are generally outside an individual's conscious awareness except in highly novel or complex situations. Based on this perspective, researchers sought to explore the unknown factors in processing that can lead toward maladaptive or problematic behavior enactment. Based on earlier theories, researchers have hypothesized that maladaptive or problematic behavior may be based on inaccurate or bias interpretations of situations taking place throughout social information processing (Bandura, 1977; Crick & Dodge, 1994; Dodge, Pettit, McClaskey, & Brown, 1986). Although, researchers agree there is no one casual factor that can totally explain the development and maintenance of aggression this model provides a highly comprehensive way for explaining individual differences in aggression. It has become widely understood that individual's will act with severe aggression when there are multiple predisposing situational instigators and multiple predisposing individual characteristics involved in their decision making (Dodge, 1980). Crick & Dodge's (1994) model is designed to account for a majority of these characteristics that are believed to be involved in the development and maintenance of aggression.

With greater understanding of social information processing, researchers have directed their attention on the social psychological processes that operate amongst all individuals at all times. If researchers can identify the unknown factors, they will gain a greater understanding as to how certain individuals become aggressive while some do not. These factors can help explain how situational aspects interact with individual predispositions to increase or decrease aggressive behavioral tendencies (Berkwietz,

1993; Dodge, 1980; Huesmann, 1984). As a result great attention has been placed on social information processing in regards to aggression.

A key feature of Crick & Dodge's (1994) model is its description of 6 steps/stages that each individual goes through while processing social information. Crick & Dodge (1990) indicate that individuals can process information simultaneously, although information does go through a process of stages before an individual engages in a behavioral enactment. This model also takes into account that during times of extreme emotion or crisis an individual may enact a behavior response without going through the entire process (Crick & Dodge, 1990). This basic assumption is the decision to enact a behavior is influenced consciously and/or unconsciously by internal and/or external factors throughout the different stages. Dependent upon how information is processed at each unique stage, a ripple effect can occur throughout the remaining stages of processing ultimately impacting behavior enactment.

The 6 stages of social information processing identified in Crick & Dodge's (1994) model are as follows. 1). Encoding social cues in the environment. 2). Forming a mental representation and interpretation of those cues. 3). Clarification of goals. 4). Response access or construction. 5). Response decision. 6). Behavior enactment. An assumption of the model is that information processing at each different stage can have a significant factor on the last stage of behavior enactment. Research in this area suggests that maladaptive or biased processing during encoding and interpretation can lead towards maladaptive behavior that occurs during in the sixth stage (Crick & Dodge, 1994; Dodge et al, 1986).

Encoding and interpretation of social cues takes place in the first two stages of the model. During these initial 2 stages, an individual encodes and interprets cues present in their environment. Information is processed through the senses and held for a brief period of time in sensory memory. Crick & Dodge (1994) indicate that not all individuals encode and interpret information alike. Evidence from previous studies indicates individuals may differ in regards to the amount of attention given and/or ignored during specific aspects of a social situation (Crick & Dodge, 1994; Dodge et al, 1986; Huesmann, 1988). Research focusing on the first 2 stages indicates the manner in which an individual encodes and interprets social cues can have a major influence on how that information is processed throughout the entire model ultimately impacting behavior enactment (Crick & Dodge, 1994; Dodge et al, 1986).

Many of these studies identify attribution intent as playing a significant role during encoding and interpretation (Dodge et al., 1997; Dodge & Coie, 1987). Upon encoding and interpretation of social information an individual will refer to these interpretations along each stage ultimately influencing decision making regarding possible responses to specific events (Crick & Dodge, 1994). During circumstances when incoming information is ambiguous or inconsistent with one's existing knowledge structures, one will use stored knowledge structures to facilitate and "fill-in" the missing information until a good enough representation is constructed (Burks et al, 1999). Once the incoming information is linked to an existing knowledge structure, the individual continues through the processing of information.

The 3rd stage in the SIP model illustrates how the clarification of goals takes place. In this stage one is guided by perceptions, beliefs and understandings stored in

long-term memory regarding similar past experiences. This guidance leads to clarification and selection of action goals for the situation (Crick & Doge, 1994). For example, if James realizes his pencil is missing and sees Roger with it, James can either attribute Roger's possession of the pencil as intentional or accidental. Goal clarification in this example would be James' reasoning, "I'll just use another pencil and get my work done", or "I'm going to show Roger that he can't take my pencil without my permission". According to the SIP model, the goal James chooses will have a direct influence on the actions James chooses to reach this goal. Clearly, if James chooses to use another pencil he and Roger can continue on without confrontation. If James chooses to confront Roger in a hostile manner, this can obviously lead to an escalated situation.

The Crick & Dodge (1994) model suggests that James' attribution of intent will greatly impact the goals he chooses to achieve. If James interprets Roger's intent as provocative in nature this will most likely lead toward hostile goal selection. If James interprets Roger's intent as a mistake or non-threatening, his goal selection will likely be more subtle. In this example it is clear that James' attribution intent can have a major influence on how he approaches Roger and the consequences thereafter.

The 4th stage in the model illustrates how response access takes place. Response access is when an individual generates possible responses to a situation. This process involves retrieving various behavioral responses that are stored as long-term memory. These responses consist of ideas regarding possible ways of behaving in various social situations (e.g. how to go about asking for one's pencil back, or physically taking the pencil back.). Study findings indicate that aggressive children do not access as many responses as do non-aggressive children; the responses they tend to access are typically

maladaptive or hostile in nature (Dodge, 1980; Dodge, Bates, & Pettit, 1990; Dodge & Newman, 1981). An important factor in response access stage is the actual possible responses that an individual can choose from. An assumption regarding response access is that individuals who haven't had the opportunities to experience many different positive approaches during conflicts will generate fewer positive options.

Response decision takes place during the 5th stage of the model. Response decision consists of an individual's evaluation of their possible responses to an event. The evaluations of these responses are theorized to be affected by an individual's self-efficacy (Bandura, 1992). Self-efficacy in regards to performance of possible responses and the expected outcomes can be an important factor during response decision. In the previous example, James might formulate the response that he will, "punch-out" Roger for taking his pencil. James then evaluates whether he is capable of following through with this response. "I would punch him out but he is a lot bigger and stronger than I am." Or, "if I do punch him out I'm going to be in trouble at school and home." If James feels he cannot follow through with a certain response then he will search for possible responses he feels he is capable of following through with. In this stage self-efficacy can play a major role on response commitment. Previous research indicates that aggressive children feel more confident in their ability to carry out antisocial acts but feel significantly less confident in their ability to carry out pro-social acts (Crick & Werner 1998; Erdley & Asher, 1996). 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. In the 6th and final stage of the model an

individual enacts the chosen behavior while outcomes are then processed back through the model in a revolving cycle.

Encoding and Interpretation of Social Cues in Relation to Aggression

As previously discussed the social information-processing model provides a comprehensive description regarding development and maintenance of social behavior. The previous section serves as an introduction to the model with a description of how information is processed at each stage. In this study the first two stages, encoding and interpretation of social cues will be investigated in relation to aggression. A second focus is to investigate the role that knowledge structures have on the two initial stages. The proceeding sections will focus on specific studies that have explored the first 2 stages and their contributions to current research.

Significant features of Crick & Dodge's (1994) SIP model are its considerations of unique differences each individual brings with them into every social situation. Empirically-based studies have produced outcomes in support of theories which indicate individual differences can greatly influence the processing of social information (Dodge, 1980; Dodge, Bates, & Pettit, 1990; Dodge & Newman, 1981). Studies in this area have demonstrated that aggressive versus non-aggressive individuals differ at almost all unique stages in the model. Findings indicate aggressive children show greater patterns than non-aggressive children for searching for fewer social cues along with referring to hostile knowledge structures (Burks et al, 1999; Dodge, 1986; Dodge & Newman, 1981). This takes place prior to making attributions about another's intent during the encoding and interpretation process (Dodge, 1986; Dodge & Newman, 1981; Finch & Montgomery, 1973; Milich & Dodge, 1984). While evidence supporting these theories has grown,

focus has shifted towards exploration of the specific factors responsible for explaining these differences among individuals. Studies have yielded findings in support of theories indicating aggressive children focus more on aggressive cues in the environment and have a difficult time turning their attention away from aggressive cues than non-aggressive children (Dodge, 1986; Dodge & Newman, 1981). The following section will go into depth regarding some of the major investigations in support of these findings.

The frustration-aggression model (Berkowitz, 1963, 1977; Dollard, Doob, Miller, Mowrer & Sears, 1939) describes aggression as a hostile, angry reaction to perceived frustration. This concept is consistent along the lines of attribution theory. Attributions are a person's explanations for events in their social environment (Curry & Craighead, 1990). Attributions are believed to guide one's use of social information to understand casual explanations for events. Curry & Craighead (1990) indicate it is generally believed that attributions have developed from the need for humans to better understand, predict, and control their environment. Previous exploration regarding causal attribution has led to the understanding that motivational factors both implicit and explicit function as driving forces for the causal analysis of events (Dodge, 1980; Dodge & Frame, 1982).

Attribution intent has been demonstrated to impact interpretations of social cues one has regarding cause and intent. It is believed the potential responses one chooses can be greatly impacted by one's beliefs regarding any situation. Berkowitz (1977) further extended this view in suggesting an individual must attribute hostile intent to an ambiguous circumstance for it to serve as an aggressive cue. This interpretation then facilitates an aggressive reaction. An important assumption is that not every individual will attribute similar intent to similar situations. Findings from previous studies indicate

hostile attributions regarding ambiguous or non-hostile intent may be related to the tendency for one to blame externalizing factors for problematic events. Research indicates that this can be one of the mechanisms responsible for the maintenance of aggressive responses over time (Dodge et al., 1997; Fondacaro & Heller, 1990; Schwartz et al., 1998; Waas, 1988).

In a circumstance when one perceives another's intentions as hostile, the probability of a hostile response towards that peer is dramatically increased (Dodge, 1980). Within this model, it is strongly suggested a child's cognitive development is linked with the child's ability to interpret social cues. A socially immature individual may not possess the appropriate skills for making accurate interpretations in certain social situations (Dodge, 1980). This is likely to increase the probability of a maladaptive or problematic response. This factor is vital in the understanding of social information processing.

Cue distortion is also considered a cognitive factor associated with the misinterpretation of non-hostile intentions as hostile. This view suggests that an individual is likely to distort another's intentions based on their own expectations of the intentions of others (Dodge & Newmann, 1981). For example, when a person expects a peer to behave in a hostile or intimidating manner, an individual is likely to interpret a peer's intent as hostile immediately despite proper analysis. Previous studies also indicate that in circumstances in which the intent during social interaction is ambiguous, aggressive individuals are more likely to misperceive and judge the intention as hostile (Dodge, 1980; Dodge & Frame, 1982). This may lead to an aggressive behavior response

based on individual biases. Therefore during the response decision stage one justifies the need for an aggressive response.

The process of making an inaccurate attribution based on the expectation of others is referred to as complementary apperceptive projection (Murray, 1933). To demonstrate this Murray developed a game entitled “Murder”. During this game children were exposed to hostile violent scenarios. Shortly after the exposure, Murray presented the children with photographs of people. After being exposed to the hostile scenario, Murray found that the children rated the photographs as more malicious than they did before the game (Murray, 1933). Findings similar to Murray’s have led toward gaining a greater understanding of the mechanisms involved in social information processing.

Although these patterns in similar studies have arisen, researchers continue to have questions why these patterns emerge in the first place. A study conducted by Dodge in the early 1980’s set out to investigate these patterns of behavior (Dodge, 1980). Dodge’s initial studies eventually led toward the development of the social information-processing model of aggression. Results of these prior studies help set the foundations for the current social information-processing model (Crick & Dodge, 1994).

Dodge (1980) developed a study to examine social cognition and children’s aggressive behavior. Participants in this study included non-aggressive and aggressive boys from grades 2, 4, and 6. All boys in this study were exposed to a frustrating negative situation which was instigated by an unknown peer. The situation was presented as having a hostile intent, a kind intent, or an ambiguous intent. An outcome of this study showed aggressive boys did not display any failure to incorporate intent cues into their behavioral reactions to the negative consequences. Meaning that when the intent of the

situation was hostile both aggressive and non-aggressive boys rated those scenarios as hostile (Dodge, 1980). In regards to the hostile scenarios, Dodge's (1980) findings show that non-aggressive and aggressive boys both responded with more aggression in the hostile condition compared to the kind condition. Only for the ambiguous scenarios, Dodge's (1980) findings showed that non-aggressive and aggressive boys differed. Aggressive boys responded as if the peer acted with a hostile intent. The non-aggressive boys responded as if the peer acted with a kind intent (Dodge, 1980). These findings are consistent with the hypothesis that aggressive children interpret ambiguous intent in social situations as hostile at a higher rate than non-aggressive children. Dodge concluded that this is so because the aggressive boy's believed that the act had hostile intentions.

Dodge's (1980) findings are also supported by a second study (Dodge & Newman, 1981). This study set out to explore the biased decision making processes in aggressive boys. The purpose was to investigate two aspects of cognitive processing that might be related to bias attribution intent. This study took into account the speed of decision-making and selective recall of potential hostile cues. Dodge and Newman (1981) developed an experiment that included non-aggressive and aggressive boys at three different age levels. All boys participated in a detective game in which the purpose was collecting evidence to decide whether or not a peer had acted with benevolence or hostility. The results of this study indicate that aggressive boys overall scored higher on identifying benevolence and hostile attributions than non-aggressive boys (Dodge & Newmann, 1981). One significant outcome of this experiment was that aggressive boys were prone to respond more quickly than non-aggressive boys in all areas. In relation to the quick responses Dodge & Newman (1981) revealed that the aggressive boy's answers

identified hostility rather than benevolence at a high rate than when they took more time to make their response (Dodge & Newmann, 1981). Dodge & Newmann also found that aggressive boys focused less attention to social cues than did non-aggressive boys (1981). They also found that biases occurred when the cues suggested a peer's intent was accidental (Dodge, 1986; Dodge et al., 1984). As a result, Dodge and Newman tentatively concluded that training aggressive boys to respond more slowly to situations and identify more social cues, might lead toward fewer hostile intent interpretations and reduce aggressive behavior enactment.

Together the outcomes of Dodge's & Newmann's (1981) study indicate that aggressive boys tend to respond more quickly in ambiguous situations therefore indicating they spend less time searching for more cues. These findings suggest that aggressive boys focus immediately on the hostile attributes of an ambiguous situation and interpret that information before validating the true intent of the situation. These findings also indicate children's biases are more apparent when the intent of others is ambiguous or not meant to be kind (Dodge & Newmann, 1981). The following section will take a closer look at attribution intent and the characteristics that contribute to the understanding of its role in encoding and interpretation of social cues.

Attribution Intent Theory

As evidence grows in support of the hypothesis indicating that attribution intent plays an important factor in aggressive behavior, it is appropriate to explore attribution theory in greater depth. Leading pioneers in the study of attribution theory are Heider (1958), Jones & Harris (1967). The theory emerged as a framework to explain how individuals attribute causes to events. Bernard Wiener (1974) expanded on attribution

theory by describing three unique elements of the attribution intent. These elements consist of locus of causation, stability, and controllability. Locus refers to location of the cause as either internal or external. Stability is whether the cause is likely to stay the same in the near future or change. Controllability is whether a person can control the cause or not. Curry & Craighead (1990) point out these three factors as fundamental features of attribution intent. Curry & Craighead (1990) suggest attribution intent can be classified as possessing internal/external, stable/unstable, and global/specific components (Curry & Craighead, 1990).

An internal attribution style is also referred to as an individual's locus of control. Locus of control is whether an individual blames themselves or external factors for either a positive or negative event. An example may be in failing a test. If one fails an exam one might attribute different factors to the failure outcome. An internal explanation for failing would occur when one blames the lack of individual "smarts" for failing. An external attribution style occurs when one blames an event on something that is outside of one-self. An example of external attribution intent is described when an individual blames the exam maker or the noise in the next room for their failure.

A stable attribution style is described as an individual's interpretation of either internal or external events as happening consistent throughout their life (Curry & Craighead, 1990). Prior studies indicate that individuals with an external attribution style who perceive hostile occurrences as stable tend to maintain aggression over a long period of time (Curry & Craighead, 1990). An unstable attribution style is described when an individual fluctuates between internal and external attributions over time. Global attribution style is described as one's perception that all people have the potential to be

threatening at any time. An example may be when an adolescent experiences physical abuse from an adult, as a result will perceive all adults as being possible abusers. A specific attribution style is described as a situation happening because of specific circumstances. An example is when one experiences physical abuse from a parent but only perceives the parent as threatening rather than all adults.

In addition to attribution intent, research also indicates that aggressive children tend to value aggressive responses more than non-aggressive children (Dodge, Price, Newmann, 1990). These findings are consistent with the hypothesis that aggressive individuals perceive aggression as an appropriate and legitimate response to perceived hostility. One factor that researchers identify as contributing to this behavior is an individual's confidence in their ability to use aggression. Outcomes of many studies indicate that aggressive individuals are more confident in their ability to use aggressive responses, and less confident in their ability to inhibit aggression than nonaggressive children (Dodge et al., 1997; Dodge & Coie, 1987). As discussed in the previous section regarding self-efficacy theory (Bandura, 1994) individuals who consider themselves good at a certain behavior, are more likely to repeat that behavior in future instances. Individuals who have confidence in their aggression tend to expect aggression to be more effective in obtaining rewards, decreasing aversive treatment from others, and bringing about more positive self-evaluations (Dodge et al., 1997; Dodge & Coie, 1987). These findings not only validate the social learning theory of aggressive development, but they also explain the processes in which aggressive development occurs.

In summarizing the important factors discussed in this literature review it is important to bring the evidence all together to gain a clear picture of what the outcomes

of the research suggest. Overall, the trend in the literature indicates that attribution intent processes differ significantly between aggressive and non-aggressive individuals. As attribution patterns have shown to be consistent over time, this can help explain the maintenance of aggression in aggressive individuals. The literature on attribution intent indicates individuals who maintain an external/stable attribution style are more likely to encode and interpret ambiguous social problems as being threatening even when they are not.

With the advances in understanding aggressive patterns that show consistency between aggressive individuals, interventions can be developed that focus on attribution intent. As a result, it is important for researchers to identify the factors that contribute to the maintenance of hostile attribution styles. Research suggests that individuals' knowledge structures are a key factor in guiding attribution intent. Another aim of this study is to investigate the role that knowledge structures play in the maintenance of aggressive behavior. In the following section research regarding knowledge structures within the social information processing model and the relationship with aggression will be covered.

Knowledge Structures

With greater understanding of SIP differences between aggressive versus non-aggressive children, research has focused on investigating the factors that contribute to these differences. A major feature of information processing is the method of referring to information stored in long-term memory to interpret incoming information. Previous studies indicate that the quality of knowledge structures in long-term memory can greatly influence one's interpretation and evaluation of new information (Burks et al, 1999).

Through these findings attention has been placed on the influence knowledge structures have on aggression. The following section will discuss knowledge structure development along with previous research supporting this assumption.

Jean Piaget through his theory of cognitive development initially set the foundation for studying internal working models of thinking. One of Piaget's greatest contributions in the study of cognitive psychology is the concept of "schemas". Schemas are described as organizing patterns of thought and ideas that guide one in making sense of their environment (Piaget, 1964b). These organized patterns are described as developing through the process of one's interaction with their environment through several stages. Schemas describe how ideas and impressions one experiences in the environment are represented in the brain and how they are categorized (Burks et al, 1999). Schemas are considered general knowledge about a given concept or stimulus (Burks et al, 1999). The features of schemas contain the attributes of a concept and the relationship amongst other attributes. Throughout the literature cognitive scientists refer to social schemas as knowledge structures (Burks et al, 1999). For the purpose of this literature review the term knowledge structures will be used in reference to social schemas.

Contrary to prior beliefs, cognitive scientists and neuroscientists have turned away from the idea that memory is stored as exact copies of the original experience (Fiske & Taylor, 1991). It has become widely accepted that knowledge structures and long-term memory are actually stored in an abstract form represented as guidelines of an actual event (Fiske & Taylor, 1991). An important aspect in regards to knowledge structure development is the belief that one actively constructs their social reality.

An article by Fiske & Taylor (1991) discusses the formation of knowledge structures as taking on an algebraic and configurable model while cognitive psychologists indicate that formation lies in memory development. Fiske & Taylor's findings suggest that the acquisition of knowledge structures follow a certain process, and that social knowledge structures are developed by early social experiences in a child's life. Previous studies indicate that early exposure to maladaptive experiences can have a dramatic effect on the quality of one's knowledge structures (Bandura, 1991). Early theories of human learning also provide an understanding of the processes involved in knowledge structure development. Behaviorist and social learning theories both offer important contributions to this understanding. Through reinforcement and punishment, behaviorists suggest that individuals develop knowledge about cause and effect. The knowledge one acquires regarding certain situational events provides a way for one to gain better understanding of their environment and predict certain outcomes in novel or specific situations.

Bandura's (1977) social learning theory also provides a framework for understanding knowledge structure development. Bandura (1977) stressed that observational learning and modeling both have a powerful effect on the observer's learning and behavior enactment. Wiess, Dodge, Bates, & Pettie (1992) also suggest that observational learning is believed to contribute to the development and quality of ones' knowledge. Cognitive scientists are now exploring in depth the process in which knowledge structures develop along with identifying the processes that account for Bandura's and others findings.

Cognitive research in the past decade has focused much attention on the manner in which information is categorized in memory. Researchers have begun to focus on how

the categorizing of new information with stored information may be a key in understanding the maintenance and formation of maladaptive knowledge structures (Burks et al, 1999). Findings indicate possession of hostile knowledge structures consistently influence incoming new information resulting in the maintenance of aggression over time (Burks et al, 1999). A key factor of SIP is that a person refers to stored information when taking in and making sense of new information. Since no two social situations are identical an individual has to make sense of the new information in regards to how similar it is to stored knowledge structures. The nature of this process is considered ambiguous, therefore increasing the complexity of accurately associating ambiguous information with appropriate knowledge structures. In circumstances when one has less knowledge structures in long-term memory one has less prior knowledge to refer to. In this case, one may pay more attention to the familiar aspects of the new information that is most consistent with their currently stored hostile knowledge structures. These findings suggest that aggressive individuals categorize new information as hostile based on limited information, even though the information may not be hostile at all.

These hostile knowledge structures are believed to continuously influence the categorization of new information reinforcing the hostile knowledge structure, while repeating itself through a cycle. These maladaptive knowledge structures then influence self-efficacy and identity development. Not only do children begin to perceive themselves as hostile and aggressive, they also refer to these structures while formulating a behavior response.

As researchers have made gains in understanding how knowledge structures influence the processing of new information, it is important to understand how individuals develop these hostile knowledge structures. A common understanding is that early exposure to violence and aggression contribute to the development of hostile knowledge structures (Bandura, 1961). Although this makes sense in regards to some individuals, it does not account for everyone. There does exist a significant amount of people who do not become aggressive although they have been exposed to such experiences in childhood. Zelli, Cervone, & Huesman, (1996) suggest it may not only be early exposure to aggression that fosters hostile knowledge structures, but more importantly it is how the individual processes those experiences. This provides a more specific focus on this process than earlier theories suggested. This basic premise indicates that individuals who attend to and interpret early violent social experiences in a hostile biased manner are more likely to develop hostile knowledge structures (Zelli, Cervone, & Huesman, 1996).

However, researchers believe that individuals who experience violence and aggression in early childhood, but do not process these experiences in a hostile manner, may not develop hostile or maladaptive knowledge structures (Bandura, 1973; Berkowitz, 1977; Cornell, Peterson, & Richards, 1999; Quiggle, Garber, Panak, & Dodge, 1992). This may account for factors of individual differences where early experiences can in fact mean two different things to two different individuals.

Another consideration in explaining aggression versus non-aggression differences is people with hostile knowledge structures may unconsciously or consciously seek out antisocial peers (Crick & Dodge, 1996; Price & Dodge, 1989; Waschbusch et al., 1998).

Aggressive individuals may like or relate better with antisocial peers and attract to them as a result of holding similar hostile knowledge structures. Once these relationships are formed, these individuals then engage in more antisocial behaviors resulting in reinforcement and solidifying their current hostile course of reality.

Three mechanisms that are believed to contribute to antisocial peer influences are as follows. 1) Facilitation where individuals learn deviant behaviors by directly being taught by their antisocial friends or from modeling deviant behavior. 2) Gratification in that deviant behavior is widely accepted and expected and these individuals become rewarded and reinforced by their antisocial peer group. 3) Limiting effectiveness of controls where deviant peers can function to place limits on the extent to which personal and social controls inhibit the engagement in deviant behaviors (Burks et al, 1999). It is then understood that knowledge structures, which lead one to deviant peers, are also likely to lead one ultimately to engage in more externalizing problematic behavior. These mechanisms also have roots in behaviorism and social learning theory. Modeling and reinforcement are both aspects of these mechanisms and are believed to facilitate the maintenance of aggressive behavior over time.

During the encoding and interpretation stage research findings provide support for the hypothesis that, aggressive individuals with hostile knowledge structures encode and interpret social cues in a more hostile manner compared to non-aggressive individuals (Burks et al, 1999). Although studies do provide support for this, there still remain gaps in understanding the factors involved. It is believed the way that knowledge structures influence information processing is an important factor in the “response decision” stage. This has led to re-conceptualizing the SIP model along with the belief that aggressive

behavior may in fact be the result of chronically hostile knowledge structures (Burks et al, 1999). Including knowledge structures as a critical component of information processing has provided a possible explanation for the maintenance of aggression over time.

In support of this hypothesis, a study conducted by Burks et al. (1999) hypothesized that children who possess more hostile knowledge structures would display more biased patterns of aggressive SIP than children whose knowledge structures were less hostile. A second hypothesis indicated that children who possessed more hostile knowledge structures would behave in chronically aggressive ways over time. A third hypothesis indicated that development of hostile knowledge structures and hostile patterns of SIP contributed to the stability of aggressive behavior along with partially mediating the relation between early and later aggressive behavior (Burks et al., 1999).

Burks et al. (1999) conducted a longitudinal study with 585 boys and girls who were followed from kindergarten through 8th grade. The research data collection began the summer prior to students entering kindergarten. Data on the children was collected by administering the Achenbach (2001) Home and School Behavior Assessment during kindergarten and during 8th grade. During 8th grade the researchers also collected data regarding the subjects' social cognitions. To measure social cognitions, researchers presented the subjects with a total of 9 vignettes. The vignettes consisted of various social challenges that included situations with ambiguous provocation, mild peer rejection, and authority confrontation. This measure provided information regarding subject's hostile intent, what each subject said he/she would do in each scenario, and the means he/she described in achieving their stated goals.

The instrument used for measuring subject knowledge structures was the Sentence Completion Task and the Assessment of Schemata Typicality AST. The researchers choose 14 sentences that represented four domains of mother, father, peers, and school authority figures. On the Sentence Completion Task a calculated single score that was the proportion of responses that were hostile in nature relative to the total responses was conducted. The four scores were then averaged and each subject was given a single sentence completion score.

The AST is a measure designed to asses children's tendencies in a hostile or non-hostile manner. The assessment consists of a paired comparison forced format. There are a series of nine paired responses that address the domains of parents, peers at school, and school personal. Researchers calculated each domain and calculated a single AST score.

Results from this study support the three hypotheses the researchers set out to explore. Findings showed children who have more hostile knowledge structures are more likely to process social information in a hostile manner. The outcomes also support children who have more hostile knowledge structures and who process social information as more hostile are more likely to display externalizing behavior issues. An interesting finding in this study is that when the two different components were evaluated simultaneously, only knowledge structures continued to predict externalizing problems (Burks et al, 1999). Due to these findings, the researchers concluded there is variance shared by knowledge structures and externalizing problems that is not shared by social information processing (Burks et al, 1999). Last, the third hypothesis was consistent with prior hypothesis that social cognitions partially mediate the stability between early

and later externalizing problems. Overall, the findings of this study highlight the significant importance of including knowledge structures in the theories of social information processing due to the presumed importance they have in explaining the maintenance of aggression overtime.

Another important study by Bradshaw & Garbarino (2004) examined the association between knowledge structures, information processing, and aggression. A second aim of the study was to examine the influence of community violence exposure and social rejection by parents and peers on aggression during adolescence. The findings are consistent with the findings of Burks et al. (1999). Bradshaw & Garbarino (2004) found that negative knowledge structures were accountable for biases in peer-rejection and biased information processing. Together these findings support the current evidence which indicates knowledge structures impact interpretation and encoding of social cues and count for the persistence of aggression over time (Burks et al, 1999).

Reflecting back on the evidence supporting the importance of knowledge structures in SIP has shown promising results. There still remains some ambiguity on the exact role that knowledge structures play on aggressive enactment and maintenance of aggression. The second aim of this study is to investigate the role that knowledge structures have in relation to attribution intent and proactive versus reactive aggression. Previous research indicates that in relation to proactive versus reactive aggression, knowledge structures can have a different effect on the two subtypes of aggression (Dodge & Coie, 1987). The following section will discuss the dichotomy of proactive and reactive aggression and the social information processes that contribute to the development each subtype of aggression.

Proactive and Reactive Aggression

Throughout the study of human behavior, researchers have faced several challenges in defining aggression. Early efforts have been considered inaccurate or incomplete in describing the different forms in which aggression often manifests (Dodge, 1991). A dichotomy of aggression that includes proactive and reactive subtypes has been identified by psychologists along with social science researchers throughout the study of aggression (Bushman & Anderson, 2001). In gaining a better understanding of the different subtypes of aggression this may help shed light on the mechanisms responsible for the development of each unique form. Ultimately social scientists hope to gain a better understanding of the unique types of aggression in order to develop more effective prevention and treatment plans to address such issues.

Proactive and reactive types of aggression have been used interchangeably in past literature, although researchers believe each has unique important features (Dodge, 1991). The rationale behind the dichotomy suggests the driving forces between proactive versus reactive aggression may actually serve two separate purposes (Bushman & Anderson, 2001). Previous research findings have provided evidence in support of the aggression dichotomy (Barratt, Stanford, Felthous, & Kent, 1997; Bushman & Anderson, 2001; Dodge, 1991; Hartup, 1974; Price & Dodge, 1989; Raine et al., 2006). Researchers agree that the terms are broadly defined, but the dichotomy has been beneficial in understanding the motives behind aggressive behavior. The distinctions between each subtype describe reactive aggression as hostile, affective, and retaliatory in nature. Proactive aggression is described as instrumental, predatory, or goal-oriented.

Reactive aggression is thought of as a response to a preceding provocation and usually is accompanied by anger (Dodge & Coie, 1987; Pulkkinen, 1996). Reactive

aggression is described by Dodge (1991) as having a goal of defending one's self or harming others as a response. Researchers also refer to this type of aggression as impulsive aggression. Impulsive aggression is typically described as thoughtless reactive, fast, and without considerations of consequences. This type of aggression is thought as occurring in reaction to some perceived provocation.

Proactive aggression is typically described as occurring without provocation, is thoughtful, and has little or no affect (Fite, Colder, Lochman, & Wells, 2008). This form of aggression is considered an acquired behavior, thought to be controlled by external rewards. It is considered instrumental, organized, or cold-blooded. Instrumental aggression is generally described as an intentional means of achieving a goal along with harming the victim. Instrumental aggression is described as being proactive, resulting from conscious decision making. It is thoughtful, and deliberative rather than impulsive (Hartup, 1974). Previous research regarding differences between proactive and reactive aggression indicate that proactive aggression seems to be highly associated with delinquency (Fite et al., 2008), while reactive aggression has little or no relation with delinquency (Brendgen, Vitaro, Tremblay, & Lavoie, 2001; Raine, et al., 2006). This is an important assumption especially in developing preventative and treatment programs for aggressive individuals.

Personological and Situational Factors of Aggression

Two addition factors that can influence proactive and reactive aggression are personological and situational factors. Personological factors are described as the knowledge structures an individual brings with them to any current situation. These factors may include attitudes, beliefs, expectations and behavioral tendencies. Situational

factors are features of the present situation that increase or inhibit aggression. This type of aggression may be triggered by insults, uncomfortable temperature, or presence of a weapon. These may be described as immediate contributory factors because both are present in the current situation. According to the SIP model described earlier, it is hypothesized that personological and situational factors impact the 4th stage response access and the 5th stage response decision (Crick & Dodge, 1994).

Although the dichotomy has gained support through empirical studies, some researchers indicate that significant shortfalls exist. Opponents of the dichotomy indicate a significant problem is that it fails to include aggressive acts based on multiple motives (Bushman & Anderson, 2001; Geen, 1995). Previous research indicates that both types of aggression can contain both hostile and instrumental components (Bushman & Anderson, 2001; Geen, 1995). These separate types have been the bases researchers have used to explain the dichotomy in the first place. Bushman & Anderson, (2001) and Geen, (1995) suggest that both the same motives can drive both types of aggression. According to Bushman and Anderson (2001) the aggression dichotomy was useful in the past, but may have outlived its usefulness and causes difficulties in understanding human aggression.

In trying to determine the usefulness of this dichotomy, researchers have sought to explore this through Crick & Dodge's (1994) SIP model of aggression. Previous studies reveal that reactive and proactive aggression appears to be influenced during different stages of the model. These findings indicate each subtype is actually driven by separate factors. Reactive aggression initially appears to be linked with the first 2 stages encoding of cues and interpretation of cues. Proactive aggression appears to be linked

with the 5th stage of the model response decision (Crick & Dodge, 1994; Burks et al, 1999).

A study conducted by De-Castro, Koops, Berman, & Basch (2005) found specific relations with reactive and proactive aggression. They found that reactive aggression was uniquely related with hostile intent attribution, less attribution of sadness, own anger, and aggressive-response generation. Within the same study it was found that proactive aggression was uniquely related with approval of aggressive responses.

These findings are consistent with the frustration-aggression model (Berkowitz, 1963; Dollard, Doob, Miller, Mowrer, & Sears, 1939). Reactive aggression has been described as a hostile angry reaction to perceived frustration. (Dodge, 1980; Dodge & Frame, 1982; Fitzgerald & Asher, 1987; Guerra & Slaby, 1989; Nasby, Hayden, & DePaulo, 1980) indicate children who interpret a peer's behavior as intentionally harmful to the self, seem to use aggression to serve as a retaliation or defense against the peer. This type of aggressive act is reactive in nature indicating that when one misinterprets or misunderstands an ambiguous provocational situation they attribute malicious intent to the peer aggressors more often than other children. For individuals who interpret a situation as being potentially harmful to themselves, it increases the likelihood that they will respond with reactive aggression. This reaction can be understood as self-defense or reaction to a perceived threat.

The 5th stage of the SIP model is described as the response decision stage. During response decision an individual evaluates possible behavioral responses to a particular situation according to several criteria. Evaluation is based on outcome expectations, emotional expectations, and affective nature of relationship with peers, and empathic

responsiveness (Dodge, Murphey, & Buchsbaum, 1984). An individual's self-efficacy is also an important factor during the response decision stage. Research suggests that during this stage of SIP obtaining desired goals is considered. Processes during this stage naturally lead themselves to proactive aggression considerations in meeting one's goals.

In a study by Dodge, Murphey, & Buchsbaum (1984) subjects were presented with videotapes of provocation and were asked to interpret the aggressor's intent. Participants were also asked to generate a behavioral response to each provocation. The situations were presented as hostile, accidental, or pro-social. In this study, when intent was interpreted as hostile in nature, children were more likely to generate aggressive behavioral responses to the situation. In sum, the findings suggest that aggressive retaliations are often prompted by an interpretation that another person has provoked the subject with hostile intent. The function of this type of aggressive behavior is believed to relieve the perceived threat, not to achieve some internally generated goal. This aggressive behavior is thus interpreted as reactive rather than proactive.

Adolescent Development

The purpose of this study is to explore adolescent aggression through the SIP model of aggression. Adolescence is considered a phase in life when aggression tends to escalate as it becomes more solidified in an individual's behavior patterns (Fontaine, Burks, & Dodge, 2002). Due to the high rates of adolescent aggression it is important to gain a better understanding of the contributing factors associated with this. Prior to discussing current trends in adolescent aggression it is important to discuss the developmental components during this phase of life along with developmental challenges adolescents face. In addition to developmental factors previously discussed in this

literature review, adolescence is a time in one's life when great physical, social, and emotional changes take place. These additional challenges may be a factor in increasing aggression in already aggressive individuals.

Adolescence is considered the developmental stage between childhood and adulthood. Adolescence involves major transitional changes in both male and females in physical, physiological, and mental development. Adolescence is described as occurring in three different stages. 1). Early adolescence a period of rapid pubertal change (11-12 to 14 years). 2). Middle adolescence pubertal changes are now nearly complete (14 to 16 years). 3). Late adolescence the young person achieves full adult appearance and anticipates adult roles (16 to 18 years).

Key factors that influence these changes include biological, social, and psychological factors. The biological changes during adolescence are events that contribute to growth in body size and sexual maturity during puberty (Delemarre-van de Waal, van Coeverden, & Rotteveel, 2001). These biological changes are observed as the characteristics of puberty that occur in both males and females. Puberty marks the greatest sexual differentiation between boys and girls since prenatal life. During puberty increased levels of hormones foster changes in body size and sexual maturity in both genders. Hormones associated with these changes are growth hormones and thyroxine. Growth hormones consist of androgen and estrogen and are present in both males and females. The hormone estrogen is more prevalent in females as androgens are more prevalent in males (Delemarre-van de Waal, 2001). For males the process of puberty involves the release of larger amounts of androgen testosterone from the testes. This increased release leads to muscle growth, body and facial hair. In females, estrogen is

released and is associated with maturity of the breasts, uterus, vagina, and regulation of the menstrual cycle (Delemarre-van el al, 2001).

Along with biological changes come changes in brain development. Brain-imaging research has shown rapid changes in the cerebral cortex, and more specifically in the frontal lobes during adolescence. The frontal lobes are considered the area of the brain responsible for governing thought and action (Karpati et al., 2002). During adolescence, pruning of unused synapses in the cerebral cortex and myelination of stimulated neural fibers accelerate. These solidified connections are believed to strengthen communication between various brain regions (Karpati et al., 2002). These changes contribute to the expanded attainment and rapid communication between these areas of the brain and contribute to notable changes in cognitive development (Keating, 2004).

An important brain change that occurs during adolescence is that neurons become more sensitive to environmental stimuli. As a result, adolescents experience an increase release of excitatory neurotransmitters (Nolen-Hoeksema, 2002). Characteristics of increased sensitivity include heightened reaction to stressful events and increase intensity to pleasurable stimuli. Some researchers believe these changes can explain adolescents drive for novel experiences and risk taking (Nolen-Hoeksema, 2002). It is also believed that increases in neurotransmitter activity may be a contributing factor involved in adolescents' increased vulnerability to certain disorders, such as depression, eating disturbances and aggressive behavior (Nolen-Hoeksema, 2002).

Additional characteristics of adolescent development are emotional and social behavioral changes. Adolescents generally report more negative moods and frequent

mood changes than those in childhood (Larson & Ham, 1993). Although it is believed that hormonal changes are responsible for an increase in mood swings, researchers have linked these occurrences to actual negative events in an adolescent's life (Larson & Ham, 1993). Negative moods and frequent changes in mood may actually be linked to the dynamics of day-to-day living experiences during adolescence. Adolescents typically experience increased difficulties with their parents, disciplinary actions at school, breaking up with a boyfriend or girlfriend, and problems with peers. Parent and child relationships during adolescence also tend to become more problematic. As adolescents strive for increased autonomy, struggle with exploration of identity, and cope with increase in demanding social and academics frustration increases. As this occurs, adolescence can become less reliant on their parents and seek guidance from their peer group or close friends.

Another concept frequently used to describe the social challenges in adolescence is the storm-and-stress concept developed from the work of Margaret Mead (1928). Mead was considered one of the pioneering researchers on adolescence and offered an alternative view from traditional understandings. This view suggests that an adolescent's social environment is highly if not fully responsible for the range of teenage experiences. These experiences may include erratic and agitation to calm and stress-free. Mead's research included observational data from the pacific islands of Samoa (Mead, 1928). Mead noticed that due to their relaxed social relationships and openness toward sexuality, adolescence is one of the "most pleasant times an individual will ever know" (Mead, 1928). As a result, research has focused more specific attention to the social and cultural influences during adolescence.

One of the most noticeable aspects of adolescence for parents and teachers is the increase in moodiness adolescent's display. Cognitive, emotional, and attitude changes often take place during this phase of development. These changes are considered significant factors contributing to the rise in conflict during adolescence. Because adolescents are experiencing various strong cognitive and physical changes for the first time in their lives they start to view their friends and peer groups as more important and influential than their parents-guardians (Laursen, Coy, & Collins, 1998). This typically contributes to the increase of parent child conflicts.

A major feature during adolescence is the search for a unique identity. Erik Erickson (1963) recognized adolescence as a stage when one experiences major personality changes. Erickson referred to this personality change as "identity versus role confusion". During this stage an individual is concerned with who they are, what they value, and what direction in life they will pursue (Erickson, 1963). The search for one's identity typically includes evaluations regarding interpersonal relationships, community involvement, group membership, political, and religious ideas.

Social scientists consider four different stages of identity exploration an individual may experience during adolescence. 1). Identity achievement, 2). Identity moratorium, 3). Identity foreclosure, and 4). Identity diffusion. Identity achievement occurs when an individual has already explored options values and beliefs and has committed to self-chosen values and goals. Identity moratorium occurs when an individual is currently exploring and gathering information and trying out different activities in search of finding values and goals to guide their life. At this stage no commitment has yet been made. Identity foreclosure occurs when an individual commits

themselves to certain values, beliefs, and goals but has done so without any exploration. Identity foreclosure occurs when an individual accepts values, beliefs, and goals that are usually determined by an authority figure in their life such as parents, teachers, religious leaders, or political leaders. Identity diffusion occurs when an individual lacks clear direction. At this stage individuals are neither exploring nor committed to any values, beliefs, or goals. At this stage individuals typically find the task too threatening and overwhelming to engage in.

Jean Piaget's theory of cognitive development has also shed light on some of the changes that occur during adolescence. Piaget suggested that adolescence is a stage of psychological breakthrough in a person's life when cognitive development is rapid. During these rapid changes one's thoughts, ideas and concepts develop and in turn greatly influence one's future life by playing a major role in character and personality formation (Piaget, 1964b). Piaget recognized factors during this stage as responsible for significant increases in cognitive abilities (Piaget, 1964b). Piaget referred to this stage as the "formal operational stage". During this stage Piaget described an individual's thoughts as beginning to take more of an abstract form. With increases in abstract thinking Piaget (1964b) explained an individual is able to think and reason with a wider perspective.

Piaget described one of the main changes of cognition during this stage as becoming capable of hypothetical-deductive reasoning. Hypothetical-deductive reasoning refers to the ability that when faced with a problem, one can break the problem down systematically and come to a solution based on the specific factors of the problem (Piaget, 1964b). Piaget describes the features of this process as typically starting with a

hypothesis or prediction about variables that might affect an outcome. Next, an individual is to deduce logical, testable inferences from that hypothesis, systematically isolating and combining variables to see which inferences are confirmed in the real world (Piaget, 1964a).

Piaget identified another important cognitive advancement as the ability of “propositional thought”. Propositional thought is described as the evaluation of logical propositions (verbal statements) without referring to real-world circumstances (Piaget, 1964a). In a study concerning propositional thought, Osherson & Markman, (1975) set up an experiment using poker chips. The subjects were then asked to state whether a sentence was true or false. They were given two propositions, “either the chip in my hand is green or it is not green” and “The chip in my hand is green and it is not green”. The subjects who entered propositional thought were able to state with statement was true and which was false.

Along with biological brain development come changes that contribute to cognitive improvements in the areas of attention, planning, capacity to integrate information, and self-regulation. These changes are key to information processing and enable the adolescent to process information more efficiently. During adolescence, attention generally improves. Adolescents become more capable of selecting, focusing on relevant information, and better adapting to changed demands of tasks. Adolescents also experience marked increases in inhibition. Adolescents are able to improve on identifying irrelevant stimuli and have well-learned responses in situations where they are inappropriate. This advancement also supports gains in attention and reasoning.

Adolescents also become better at using strategies that help improve storage,

representation, and retrieval of information from long-term memory. With the improved ability in executive functioning one's knowledge base increases easing the use of strategies. These advances pave the way for the process known as metacognition. Metacognition refers to the awareness involved in thought (Flavell Green & Flavell, 1995). During adolescence, awareness of thought expands, leading to new insights into effective strategies for acquiring information and solving problems. An increase in metacognition greatly influences self-efficacy as discussed in Bandura's social learning theory. As individuals become more aware of their cognitive abilities they then make judgments on their abilities. When one is able to identify specific deficit's this can lead the decision of improving on those weaknesses. Cognitive self-regulation also improves making better moment-to-moment monitoring, evaluation, and redirection of thinking. Lastly, there is an increase in speed of thinking and processing capacity. As a result, more information can be held at once in working memory and combined into increasingly complex, efficient representations into long-term memory.

Along with cognitive advances come consequences of cognitive changes. These consequences can include negative thoughts of self-consciousness and self-focusing. As adolescents are able to reflect on their own thoughts egocentrism arises, in which adolescents again have difficulty distinguishing their own and others' perspectives. Followers of Piaget describe two distortions of the relation between self and other. The first is the concept of the imaginary audience. This is the belief that they are the focus of everyone's attention and concern (Elkind & Bowen, 1979). As a result they become extremely self-conscious, often going to great lengths to avoid embarrassment or to impress others. A second cognitive distortion is the personal fable. This is the distortion

in which one is so sure that others are observing and thinking about them. A result is one develops an inflated opinion of their own importance. During this stage is when one begins to believe they are extremely special and unique compared to others.

As a result of all these changes that go on during adolescence, it becomes a time in a person's life that greatly challenges social and emotional wellbeing. As many individuals adjust accordingly and confront these challenges with effective problem solving and coping skills it can be a time of great personal growth. On the other hand, for individuals who have poor problem solving and coping skills it can be a time of great frustration and confusion. Most researchers agree that aggressive individuals possess on average poorer problem solving and coping skills than non-aggressive individuals. Therefore the greater challenges that are faced during adolescence can exacerbate aggressive behavior in aggressive individuals. With the additional challenges that most everyone faces during adolescents it is important to explore the impact this has on aggression in order to gain a better understanding for preventive and treatment measure. The next section will discuss the characteristics associated with aggressive adolescents.

Adolescence and Aggression Current Trends

Aggression and violence among people between the ages of 11 and 19 has become a significant public health problem (U.S. Department of Justice, Bureau of Justice Statistics, 1997). Adolescent aggression involves behaviors ranging from physical fighting to more severe forms of physical assault that can result in serious injury or death. As discussed throughout this literature review there is no single cause of aggression among adolescents. Many risk factors have been found to increase the likelihood of aggression during adolescence making it a complex problem to address. As

previously discussed, individual factors which include a history of early aggression in childhood, exposure to family or neighborhood aggression, poor relations with parents, drug and alcohol use, association with delinquent peers, gang membership, poor school performance, and residing in a poor community with less economic opportunities all influence the likelihood of individual aggression.

Adolescence is a critical time during personality and identity development. As adolescents enter the phase of exploration and questioning of their current values and beliefs, this can serve as a prime time to guide them away from maladaptive reasoning and behavior. Although ones' early experiences greatly influence future development findings have shown over the last few decades that the human brain is a lot more plastic than originally believed (Baars & Gage, 2010). Therefore it is important to gain a better understanding of adolescent aggression and develop methods to curb this behavior in individuals before it solidifies.

Research has revealed that aggressive individuals show similar characteristic factors and patterns of aggression. Researchers have identified specific inhibitory mechanisms that contribute to an increase in aggressive responses. These mechanisms include perceived responsibility, guilt, perspective taking, moral development, defense mechanisms, and fantasy. These factors are all considered to be aspects of cognitive functioning that are believed to directly impact social information processing.

An adolescent's perceived responsibility for engaging in an aggressive act can greatly influence the likelihood of repeating that behavior. An adolescent's perception of the spread of responsibility for aggressive behavior can influence one's expectancies for receiving negative consequences from others. In the instance an individual believes

aggression is typical of their peer group one may consider themselves less responsible for enacting such behavior. This lack of responsibility or perception that aggression is the norm is believed to lead towards a lack of personal guilt.

Guilt is described as an integral factor one refers to as a reference to guide future behavior based on consequences, perceptions, and judgments of past behavior. Enacting or imagining a behavior that may induce a sense of guilt typically leads an individual away from engaging in such behavior. The likelihood of aggression can be increased for individuals who are less prone to feeling guilt for engaging in such behaviors.

Perspective-taking in adolescence has also been considered a contributing factor for the maintenance of aggressive behavior. It is believed that an adolescent's understanding of others' cognitive and emotional intent can influence aggression during social interactions (Urbain & Kendall 1980). Poor perspective taking is associated with egocentrism and an inability to completely differentiate one's own perceptions and emotional states from those of others (Urbain & Kendall 1980). In a study of delinquent males between the ages of 13 and 17 Rotenberg (1974) found aggressive subjects had poorer empathetic role taking than non-aggressive peers. An interesting finding showed no such significant difference existed for cognitive role taking. These findings also are interpreted as validation for the factor that lack of guilt may play an important role on aggression.

Moral and ego development during adolescence has also been of great interest in the study of adolescent aggression. Studies have found that juvenile delinquents tend to have lower levels of moral development than their peers. These at risk subjects showed patterns of exhibiting pre-conventional efforts of moral development in regards to avoid

the punishments of authority figures (Veneziano, & Veneziano, 1988). During the pre-conventional stage of moral development (Kohlberg, 1976) an individual is believed to be obedience and punishment oriented. A major concern during this stage is avoiding punishment. This stage is also consistent with the egocentrism that is typically associated with adolescence. In the pre-conventional stage an individual is concerned with “what’s in it for me”? This selfish attitude has been associated with an increase in antisocial and aggressive behaviors.

Defense mechanisms during adolescence are also believed to play an important role regarding aggression. An adolescent’s ability to exercise cognitive self-regulation over impulsive behavior appears to impact the accuracy of making self-evaluations of personal defenses along with accurately appraising the defenses and underlying motives that affect the behavior of others. Defense understanding is considered another interpersonal cognitive process that is closely associated with social perspective taking and with the ability to accurately appraise threats. In a situation where an individual does not hold positive beliefs about themselves aggression can typically be used as a way to hold their ground or gain perceived respect.

Fantasy is also considered a cognitive function and is believed to play a role in the development of aggression. A study conducted by Young (1976) found fantasy and imagination as having an influence on aggression. These studies indicate that highly aggressive adolescent inpatients in a psychiatric unit reported significantly more hostile daydreams than did lower aggressive adolescents. Lasser (1957) found that preadolescent boys with mothers who discouraged aggression had significant negative correlations between overt aggression and fantasy, while boys whose mothers were less

concerned about aggression had hostile TAT themes that were directly related to their frequency of aggressive behaviors.

As discussed in previous sections, empirical evidence indicates adolescent aggressive acts seem to occur in response to perceptions and understanding one has regarding threatening or frustrating events. Researchers identify this misperception of thinking as paratoxic distortions (Nasby, Hayden, and DePaulo, 1980). Paratoxic distortions occur when an individual develops a distorted meaning of another's intentions or behavior that may not be accurate and is based on one's personal biases. Nasby, Hayden, and DePaulo (1980) suggest that aggressive adolescents' have developed generalized paratoxic distortions that lead them toward consistently assuming hostility in real-world and laboratory settings. Replication studies conducted with latency-age children also support these findings and found aggressive boys selectively attend to hostile cues and over attribute hostility from their peers in ambiguous situations, especially when they respond quickly and impulsively (Dodge 1980; Dodge & Newman 1981).

The results of Nasby (1980) are also consistent with Young's (1976) findings that highly aggressive male adolescents possessed perceptual thoughts of hostility and rapidly perceived aggressive cues in social situations and continuously ruminated about hostility. Using the Repression-Sensitization Scale of Byrne, Barry, and Nelson (1963) with residential patients, Young found aggressive adolescents generally accepted hostility in themselves and in others. These adolescents were "over ready" to perceive rather than ignore hostility in themselves and in others. In situations that typically induce arousal such as fear and excitement aggressive boys made self-attributions that others were

actually angry despite evidence suggesting otherwise. The tendency to misperceive an interpersonal threat or provocation when in fact it is not can lead to escalating characteristic cycles of aggression for the individual.

Another factor considered influential in the development and maintenance of aggression is the counter-aggression concept (Lochman & Dodge, 1988). Counter-aggression is described as the aggressive feedback one may receive after responding with aggression in the first place. For instance, if person A misperceives person B's behavior as hostile, A is likely to respond to B with aggression. This can lead B to respond to A's aggressive response with aggression of B's own. The aggressive response from B will then keep this interaction in an "aggressive state", therefore, reinforcing A's initial perception that this interaction was hostile to begin with even if this was not the case. Along with this perspective Dodge and Newman (1981) explain aggressive boys tend to be in a state of "perceptual readiness," in which they quickly and reflexively make attributions about others' hostility because of their own preexisting expectancies.

When an adolescent's initial impulses and reflexive responses are inhibited after being anger-aroused, the individual's subsequent cognitive mediation or thinking about how to respond is composed of problem-solving and further inhibitory mechanisms. During anger arousal, problem solving consists of a series of partially sequential and related cognitive processing steps that are directed toward coping with the perceived provocations, threats, and frustrations. In a study comparing adolescent psychiatric inpatients to normal controls, Platt, Spivack, Altman, Altman, & Peizer (1974) found that disturbed adolescents generated fewer alternative solutions to verbally presented problems and had more deficient means-end thinking. Richard and Dodge speculated

from these results that when an aggressive child's initial effort to cope with a problem is thwarted, he or she then selects from poorer reservoirs of prosocial and effective alternatives. Aggressive children also may have a lower frustration tolerance when faced with obstacles on their initial efforts.

Because of their high drive levels and their distorted appraisals and perceptions of their environment and its consequences, aggressive adolescents may fail to develop objective expectations for the occurrence of consequences in various situations, and thus maintain defective problem-solving skills. The inability to delay immediate gratification of needs, such as the release of hostile and angry impulses through physical aggression, reflects an inability to consider the objective, long-term, negative consequences for these acts. From their reactance theory, Nezelek & Brehm (1975) found that older adolescents experienced a decrease in their hostility when an option for expressing aggression was made available to them. This decrease in hostility occurred before overt aggression could actually be performed.

Statement of the Problem

One aspect that researchers can agree upon is that aggression is a complex behavior that is driven by many different mechanisms. Although great strides have been made in defining and understanding the development of aggressive behavior there still remain ambiguities in this area. The study of aggression has been a major focus in almost every domain in psychology, sociology, anthropology and medicine. Early theories view aggression as playing a major role in survival of the fittest and natural selection (Darwin, 1968). Evolutionary theories view aggression as a tool for gathering resources and protection of group members to enhance the opportunity to reproduce and

pass on ones genes. Although aggression is viewed as a valuable survival strategy for evolutionary purposes most researchers agree that the development and maintenance of aggression goes a lot further than that.

Behaviorists argue that aggression as a learned behavior response in one's immediate environment (Watson, Rayner, & Rosalie, 1920). Behaviorist perspectives suggest the development of aggression is learned through reinforcement and modeling. This view stresses the importance a stimulus has on behavior both before and after the behavior occurs. This perspective indicates that if aggressive behavior is reinforced it will become a vital option for future enactment (Fester & Skinner, 1997; Skinner, 1969). Bandura's (1976) observational learning model explains that aggression is learned through imitation of others in ones' environment. When a model is perceived as holding prestige this perception has a strong impact on imitation. Although behaviorists viewed aggression as being affected by external forces, Bandura (1976) demonstrated that through observational learning and self-efficacy internal forces do play a major role on aggressive enactment.

Cognitive psychologists view the workings of the mind as being similar to a computer's hardware and software, with the brain functioning as the hardware and the mind the software. The information-processing model of human learning describes learning through a process of memory components. Sensory memory, working memory and long-term memory are the key components in this model. This model highlights the importance of attention and strategies in learning. A major shift has moved towards understanding not just learning, but behavior through the information-processing model. As a result the development of the social information-processing model was developed.

With the social information processing model gaining popularity researchers have used it as a tool for explaining behavior, most importantly aggressive behavior. Crick and Dodge's (1994) model of social information has become a widely used approach for studying aggression. This model consists of six steps or stages that information is processed through. A summary of the model is as follows: Step 1). Encoding of external and internal cues. Step 2). Interpretation and mental representation of those cues. Step 3). Clarification or selection of a goal. Step 4). Response access or construction. Step 5). Response decision. Step 6). Behavioral enactment.

The purpose of this study is to explore adolescent perceptions and beliefs of aggression through Crick & Dodge's (1994) social information processing model. As demonstrated throughout this literature review researchers have compiled a tremendous amount of empirical evidence that supports the hypothesis that non-aggressive and aggressive individuals differ in almost all stages in the SIP model (Crick & Dodge, 1996). The trend in the literature indicates that aggressive individuals tend to encode and interpret ambiguous social situations as having hostile intent at a higher rate when compared to non-aggressive individuals (Berkowitz, 1977; Crick & Dodge, 1994; Huesmann, 1988).

It has also been demonstrated throughout this literature review that the quality of an individual's knowledge structures can help explain the maintenance of aggression overtime (Burks et al, 1999; Fiske & Taylor, 1991). Researchers are beginning to compile empirical evidence supporting the hypothesis that hostile knowledge structures increase the likelihood that an individual will encode, interpret, and ultimately respond in ambiguous social situations in an aggressive manner. Last, it has been demonstrated that

the two different subtypes of aggression, proactive versus reactive serve two different functions and are processed in different respective stages in the SIP model. Research suggests that reactive aggression is a factor regarding encoding and interpretation (Dodge, 1991b; Orobio De Castro, et al., 2005). Although there is limited research to support the following hypothesis, it is suggested that proactive aggression is highly related to the decision evaluation and decision making in the model (Dodge, 1991b; Orobio De Castro, et al., 2005).

In this study research Question 1 explores whether adolescents who endorse a higher number of items on the proactive, reactive or proactive-reactive combined scales of aggressive on the RPQ will encode and interpret ambiguous social situations more hostile on the CRQ than those endorsing a higher number of non-aggressive items on the RPQ. Each subject was asked to answer one open-ended question regarding eight different situational vignettes. The question asked, “Why do you think this happened”? Each student’s response to the open-ended question was coded as either hostile, non-hostile, or don’t know.

Research Question 2 examines the role that individual knowledge structures play during social information processing. This study explores whether adolescents who endorse a higher number of hostile items on the Assessment of Schematic Typicality (AST) will display more biased patterns of aggressive social information processing than adolescents who endorsed a fewer number of hostile items on the AST. The AST measures each subject’s tendencies in a paired-comparison, forced choice format to describe various categories in people in hostile vs. non-hostile terms (Barret, Abdi, Murphy, & Gallegahar, 1993; Medin & Shoben, 1988). This instrument consists of three

series of 9-paired items that are presented to each subject that represent 3 domains. The domains are parents, peers at school, and teachers.

Research Question 3 investigates the differences in information processing between proactive and reactive aggression. It is suggested that reactive and proactive aggression may be uniquely related to different steps in the social information-processing model. Previous research indicates that reactive aggression is related to encoding and interpretation where proactive aggression is related to response evaluation (Dodge, 1991). The instrument that will be used to measure aggression style will be the Reactive-Proactive Questionnaire (RPQ).

Research Question 4 examines gender and grade level differences on all 3 instruments. For the purpose of this study grade levels were divided between middle and high school students. Middle school included grades 6th to 8th while high school grades included 9th to 12th.

Chapter III

METHODS

This chapter will describe the procedures and methods used to explore each research question of this study. Recruitment of participants took place in middle and high schools in a large urban school district in the southwestern United States. Approval was sought and received from the Public Schools Superintendent's District office. Prior to presenting this study to each school site, approval was sought and given from two high schools and one middle school site administrator. Once approval was granted from each school site administrator, a day and time was scheduled for introduction of the study to students and recruitment of participants. A total of 149 students from general education classes participated which included both middle and high school grades. Primary statistical analyses included a number of bivariate correlations and ANOVA between group comparisons.

Procedures

Participants. Upon approval from the University of New Mexico Institutional Review Board (IRB) contact was made with each school site administrator for obtaining permission to recruit participants. A total of 149 students participated in this study the following frequency distribution is included in (Table 1). This study examined potential differences between male and female participants. Therefore, each participant was asked to indicate his or her gender. To examine grade level comparisons, participants were asked to indicate their grade level. For the purpose of this study grade analysis consisted of middle versus high school students. Middle school students included participants from

grades 6th to 8th, while high school students included grades 9th to 12th. Students were also asked to indicate their age along with their ethnicity.

Table 1: Frequency Distributions.

Characteristics	Frequency	Percent
Gender		
Male	72	48.3
Female	77	51.7
Race/Ethnicity		
American Indian	8	5.4
Asian	4	2.7
African American	8	5.4
Hispanic	59	39.6
White	69	46.3
Other	1	.7
Grade		
Middle	58	38.9
High	91	61.1

Initially, all students attending all high schools and middle schools within the school district were eligible to participate. As part of the agreement with the school district it was established that participant recruitment must only include general education classes. Although recruitment was limited to general education classes this did not exclude special education students or English language learners who may be enrolled in general education classes.

In the process of school selection all middle and high school administrators were contacted by email and phone to inquire whether they would be interested in allowing their school site to participate. Three school site administrators agreed to allow recruitment at their sites that included two high schools and one middle school. Following approval from each school site administrator, in collaboration with the primary investigator it was determined each site administrator would recruit interested teachers within their site. It was also determined that recruitment and administration of the

questionnaires would require two separate classroom visits. The purpose of the first visit was designated for verbally introducing the study, which included a description of what participation would consist of, and dissemination of assent/consent forms for interested students (Appendix I). The second classroom visit was designated for administration of the questionnaires (Appendix II) for students with permission obtained to participate through assent/consent forms.

During this process students were informed that in order to participate they must return the assent/consent form, which were to be signed by their parents for those under 18 years of age and signed by those who were 18 or older. The assent/consent form indicated a due date for returning two weeks from the dissemination date. All students were asked to return the assent/consent form to a designated box which was kept in a secure location with each student's respective classroom teacher whether they agreed to participate or not. The purpose for asking all students to return their form was to minimize any potential for classroom teachers or peers to identify any students who planned to participate by turning in their form.

The assent/consent form included a description of the study, possible risk factors associated with participation, primary investigator contact information, IRB contact information, procedures, and the possible benefits of the study. It was also explicitly stated that participation is completely voluntary and there will be no negative consequences for choosing not to participate. The assent/consent form also included details of confidentiality procedures and reassurance there would not be any identifying information on any of the questionnaires. The assent/consent form contained an

explanation indicating the potential for results to be included in publication in a professional related journal.

Upon receiving parent/guardian assent/consent forms signed and returned to each student's designated classroom teacher, the primary investigator gathered and analyzed each for proper signatures. A list of students with permission to participate was developed for each classroom. After lists of participants were developed; the dates, times, and settings were agreed upon between each site administrator and the primary investigator for the administration of the questionnaires.

Administration of the Questionnaires. On the day of administration, a cross reference was conducted by each classroom teacher and the primary investigator ensuring all participants who would be handed a questionnaire packet were on the list of approved participants. After all participants were verified, each was given a packet which included a demographics survey, Children's Attribution Questionnaire (CAQ), Assessment of Schematic Typicality (AST), and Reactive-Proactive Questionnaire (RPQ). At each school site, the surveys were administered in a typical classroom setting. The average class size consisted of 10-15 students. At the beginning of the administration, verbal directions were given to the entire class of participants. Instructions were also included in each packet for each separate questionnaire. The participants were given the opportunity to ask any questions during the administration of questionnaires. Participants took approximately 45 minutes to complete the packet. Participants were encouraged to complete all items on all questionnaires. Upon completion participants were asked to place their completed packets in a secure box placed in the back of each classroom when

the session was completed. The materials in the box were then placed in a secure confidential location.

Instrumentation. Data collection for this study was accomplished by administering four separate self-report questionnaires. Each participant completed a demographics questionnaire, which asked for gender, age, grade and ethnicity (Appendix B). To assess for attribution intent, participants completed the CAQ (Conduct disorder prevention research group, 1994) (Appendix B). To assess knowledge structures, participants completed the AST (Barret, Abdi, Murphy, & Gallegahar, 1993; Medin & Shoben, 1988) (Appendix C). To assess reactive and proactive aggression participants completed the RPQ (Brown, Atkins, Osborne, Milnamow, 1996) (Appendix D).

Child Attributions Questionnaire (CAQ). The CAQ is an instrument designed by researchers at the Fast Track Project (Conduct disorder prevention research group, 1994). This instrument was originally developed for use with younger children by Dodge and Frame (1982) and has been modified and used with adolescent populations. The CAQ took approximately 15 to 20 minutes to complete. The CAQ consisted of eight vignettes, which included social challenging situations of ambiguous provocation. Four of the vignettes described situations of exclusion by peers and four vignettes described physical conflict by peers. An example statement of an exclusion situation asks, “Pretend you are a new student in school and you would really like to make friends. At lunchtime, you see some students you would like to sit with and you go over to their table. You ask if you can sit with them and a student named Dean says no”. An example statement of physical conflict asks, “Pretend you and your class went on a field trip to the zoo. You stop to buy a coke. Suddenly, a kid named Al bumps your arm and spills your coke all

over your shirt. The coke is cold, and your shirt is all wet”. To identify the attribution of intent, participants were asked one open-ended question regarding each situation, “Why do you think this happened?”. Participant responses were coded as (0 = non-hostile, 1 = hostile, or 2 = don’t know).

Assessment of Schematic Typicality. The AST was used to assess participant’s knowledge structures as non-hostile versus hostile. This instrument provided a measure of subject’s tendencies in a paired-comparison, forced choice format to describe various categories in people in hostile vs. non-hostile terms (Barret, Abdi, Murphy, & Gallegahar, 1993; Medin & Shoben, 1988). It is important to note that the AST was not developed to serve as an accurate measure of an individual’s actual social circumstances. It is designed to measure an individual’s particular schema for their actual social circumstances (Burks et al., 1999). Since the focus of this study is on adolescent’s beliefs and perceptions, an accurate account of their social circumstances will not be assessed. In this study it is important to gain perceptions whether they represent an accurate description or not.

The AST consisted of three series of nine paired items, which represent three separate domains. The domains included parents, peers at school, and teachers. The AST took 10 to 15 minutes to complete. A question in reference to the peer domain asks, “Of the items in each row below, which is more typical of the kids at your school? Friendly or mean”? A question in reference to the parent domain asks, “Of the items, in each row below, which is more typical of your parents”? “Understanding or self-centered”? A question in reference to the teacher domain asks, “Of these two items, which is more typical of your teachers? Mean or friendly?” For all twenty-seven paired

comparisons on all three domains a rating of (0 = non-hostile, 1 = hostile) was coded based on each response.

Reactive Proactive Questionnaire (RPQ). The RPQ was developed by Brown, Atkins, Osborne, Milnamon, (1996) based on Crick & Dodge's (1984) theory on the differences between proactive versus reactive aggression. The RPQ consisted of 23 items with 12 items (2, 4, 6, 9, 10, 12, 15, 17, 18, 20, 21, 23) assessing proactive aggression and 11 items (1, 3, 5, 7, 8, 11, 13, 14, 16, 19, 22) assessing reactive aggression. Items on the RPQ reflect either verbal or psychological aggression and include motivation and situational context for the aggression. Subjects were asked to endorse items using a 3-point scale of (0 = never, 1 = sometimes, 2 = often). A sample question representing verbal aggression pertaining to reactive aggression includes, "Yelled at others when they have annoyed you". A sample question representing physical aggression pertaining to proactive aggression includes, "Used physical force to get others to do what you want". Each question is written at an 8 year-old reading level and has been widely used with children and adolescent populations. The RPQ took 5-10 minutes for administration. The RPQ measured four possible domains, reactive aggressive, proactive aggressive, reactive-proactive combined and non-aggressive.

Method of Analysis

Demographics. The demographic variables grade, age, gender, and ethnicity were described using frequencies. For the purpose of middle versus high school comparisons each participant was grouped according to their current grade level. Participants in grades 6th through 8th were grouped in middle school while participants in grades 9th through 12th were grouped in high school.

Scoring of Questionnaires. After all of the questionnaire packets were gathered, the primary investigator along with three trained research assistants began standardized scoring. All three trained assistants were state licensed professional teachers. Scoring of the CAQ and AST was completed by three trained raters. Scoring of the RPQ was done using the computer software program Statistical Package for the Social Sciences version 12 (SPSS).

Items on the CAQ were coded as 0 = non-hostile, 1 = hostile. Items on the AST were coded as 0 = non-hostile, 1 = hostile. Items on the PRQ were coded 0 = never, 1 = sometimes, 2 = often. Once all questions on each questionnaire were coded and scored the data were entered into SPSS for further analysis.

Chapter IV

RESULTS

The purpose of this study was to explore adolescents' perceptions and beliefs of aggression through Crick & Dodge's (1994) social information processing model. This model describes aggression as learned through a series of cognitive processes. This study explores social information processing differences between adolescents with non-aggressive and aggressive beliefs and perceptions regarding social situations. This study also explores social information processing differences between adolescents that endorse items that place them as possessing reactive aggressive beliefs and perceptions versus proactive aggressive beliefs and perceptions. Gender and grade level analyses were also conducted in relation to the Children's Attribution Questionnaire (CAQ), Assessment of Schemata Typically (AST), and Reactive-Proactive Questionnaire (RPQ).

Research Questions. Research Question 1 explores the expectancy that adolescents who endorse a higher number of items on the proactive, reactive or proactive-reactive combined scales of aggressive on the RPQ (Rain, 2006) will encode and interpret ambiguous social situations more hostile than those endorsing a higher number of non-aggressive items on the RPQ.

Research Question 2 examines the role that individual knowledge structures play during social information processing. This study explores whether adolescents who endorse a higher number of hostile items on the Assessment AST will display more biased patterns of aggressive social information processing than adolescents who endorsed a fewer number of hostile items on the AST.

Research Question 3 examines the differences in social information processing between proactive and reactive aggression. It is suggested that reactive and proactive aggression may be uniquely related to different steps in the social information-processing model. Previous research indicates that reactive aggression is related to encoding and interpretation where proactive aggression is related to response evaluation (Dodge, 1991b; Orobio De Castro, et al., 2005).

Research Question 4 examines gender differences on all three instruments. In addition grade level comparisons were made between middle and high school students.

Examination of the Data

Internal Consistency. The initial statistical procedures that took place were an examination of internal consistency for each measurement and a check for normality. Reliability coefficients for each scale score in this study were calculated using Cronbach's alpha. Normality of the distribution was assessed for each instrument by examining the skewness of distribution of each instrument along with interpretation of the kurtosis of the distribution. On completion of correlational and between group analyses the effect size was conducted for each comparisons following Cohen's (1988) guidelines.

Items on the CAQ were coded by three trained raters. Once all three raters coded all 8 responses on the CAQ inter-rater reliability was examined. In this study, reliability was determined across the three raters by comparing 5 randomly selected items from the CAQ. For attribution intent on the CAQ the inter-rater agreement between all three raters was 100% (i.e. all three scorers agreed 100% of the time). Cronbach's alpha for the CAQ in this study was calculated as ($\alpha = .59$), indicating low reliability. Due to the low

reliability for the CAQ all correlations regarding this instrument were disattenuated using the following equation ($r^*_{xy} = r_{xy} / \sqrt{r_{xx}r_{yy}}$) (Osborne, 2003). The reliability coefficients are represented by r_{xx} and r_{yy} , while r_{xy} is the observed correlation and r^*_{xy} is the disattenuated correlation. Although the disattenuation process has been utilized for many years, there have been some concerns with regard to this technique (Charles, 2005). For example, disattenuated correlations greater than ($\alpha = 1.0$) may sometimes be obtained. According to Charles (2005), one possible explanation for this result is that reliability coefficients are often underestimated, decreasing the denominator of the disattenuation equation and inflating the disattenuation correlation coefficient.

Disattenuated correlations are listed in parentheses below in the observed correlations (Table 2). For the purpose of comparisons correlations with and without the adjusted disattenuation coefficient will be reported. It is important to note that in past studies, internal consistency of the CAQ has been assessed by the test developers using Cronbach's alpha. Past studies report the CAQ has having alpha ratings typically between the ranges ($\alpha = .70$ to $\alpha = .90$) (Dodge, et al., 1995). Test developers with the research team working with the (Conduct Disorders Prevention Research Group, 1994) report a reliability alpha of ($\alpha = .80$).

Cronbach's alpha on the AST was calculated as ($\alpha = .81$). This is considered an adequate reliability coefficient. On the RPQ the alpha is calculated as ($\alpha = .76$). This is also considered adequate reliability. Both subscales of the RPQ were calculated as having adequate reliability. The proactive subscale of the RPQ was calculated as ($\alpha = .76$) while the reactive subscale of the RPQ was calculated as ($\alpha = .99$). All Cronbach's alphas is presented in (Table 2).

Assumptions for Normality. The statistical procedure to check kurtosis was used to investigate whether each instrument represents a typical distribution along the bell-curve. Kurtosis is used to measure the peak or the flatness of a distribution. A negative kurtosis value indicates a distribution more peaked than normal. A positive kurtosis represents a shape flatter than normal (Seier & Bonett, 2003). Kurtosis scores within the range ± 2.0 typically represent a normal distribution. All instruments used in this study fall within an adequate distribution. All kurtosis coefficients are presented in (Table 2). A skewness analysis was conducted by examining histograms for each measurement. Each histogram appeared to represent a normal distribution of data.

Table 2

Means, Standard Deviations, Reliability and Correlation Coefficients (disattenuated Correlation Coefficients in Parentheses)

	M	SD	RL	Kurtosis	CAQ	AST
CAQ	3.97	1.72	.59	-.95	1	
AST	8.45	4.65	.81	-.50	.44** (.63)	1
RPQ	10.03	5.52	.76	1.36	.16** (.24)	.36**
PRO	2.73	2.66	.76	1.48	.16** (.24)	.40**
REC	7.19	3.51	.79	.38	.11 (.17)	.23**

**Correlation is significant at $p < .05$

Notes: MN = Mean; SD =Standard Deviation; RL= Reliability; CAQ = Children’s Attribution Questionnaire; AST = Assessment of Schema Typicality; RPQ = Reactive-Proactive Questionnaire; PRO = Proactive subscale of RPQ; REC = Reactive subscale of RPQ.

Correlation Analysis. All bivariate correlation analysis were conducted using the Pearson Product-Moment correlation coefficient. All correlation coefficients along with the adjusted disattenuation coefficients are presented in (Table 2).

Prior to conducting the correlation analyses Type I and Type II error probabilities were considered. A Type I error is described as rejection of the null hypothesis when it is true. To reduce the probability of making a Type I error researchers typically use a ($p < .01$) value for significance testing. A Type II error is described as failure to reject the null hypothesis of no differences when there is in fact, a difference. Researchers typically use a $p < .05$ to reduce the probability of making a Type II error. In this study the reduction of a Type II error will be considered important. Since differences in the constructs examined in this study can lead to the development of treatment and prevention programs it would be more problematic to fail to reject the null hypothesis of no differences when it is actually true. Therefore a $p < .05$ value was used for all significance testing. To address the magnitude of each correlation a power analysis method defined by Cohen (1988) was used to determine effect size.

Four of the five correlations in this study were found to be positively significant at $p < .05$. The only correlation that was found not significant was between the reactive aggression subscale of the RPQ and attribution intent on the CAQ. Although four of the five correlations for each research question were found to be significant, the effect size ranged from the low to moderate range. The results of each correlation are presented in (Table 2) and are described in greater detail in the following sections with respect to each research question.

Research Question 1 examined steps 1 and 2 of Crick & Dodge's (1994) social information processing model of aggression. It was hypothesized that adolescents with higher scores on the proactive, reactive, or proactive-reactive combined types of aggression on the RPQ will encode and interpret ambiguous situations with higher hostile

attribution intent on the CAQ than adolescence with lower scores. The correlation in regards to this question was supported at the $p < .05$ level. The results of this correlation indicate that participants who interpreted higher rates of hostility intent on the CAQ also endorsed higher items of aggression on the PRQ. These results are consistent with previous research that examines the relationship between attribution intent and patterns of aggression (Dodge, 1986; Dodge & Newman, 1981; Crick & Dodge, Crick & Dodge, 1996).

Research Question 2 examined the role that individual knowledge structures play during social information processing. It was hypothesized that adolescents with higher endorsed hostile knowledge structures will display more biased patterns of aggressive social information processing than adolescents whose knowledge structures are less hostile. A positive correlation between the AST and CAQ is supported at the $p < .05$ level. The results of this correlation indicate that participants who interpreted higher rates of hostility on the CAQ also endorsed a higher number of hostile items as measured on the AST. These results are consistent with previous research conducted (Burks et al, 1999), which indicates that children with hostile knowledge structure patterns interpret ambiguous social situations with increased hostility.

Research Question 3 examined the association in social information processing between proactive and reactive aggression. It was hypothesized that reactive and proactive aggression may be uniquely related to different steps in the social information-processing model. Previous research indicates that reactive aggression is related to encoding and interpretation where proactive aggression is related to response evaluation (Dodge, 1991b; Orobio De Castro, et al., 2005). This hypothesis is disconfirmed as the

results indicate no correlation at the $p < .05$ level between the CAQ and reactive subscale of the RPQ. In this study there was not a correlation between the CAQ and reactive subscale of the RPQ. These findings contradict previous research that indicates that reactive aggression is related to encoding and interpretation (Dodge, 1991b; Orobio De Castro, et al., 2005).

Results from this study do indicate a positive correlation at the $p < .05$ level between the CAQ and proactive subscale of the RPQ. This finding also goes against previous research which indicates that proactive aggression seems to be related to response evaluation rather than interpretation and encoding of social situations (Dodge, 1991b; Orobio De Castro, et al., 2005).

In regards to proactive and reactive aggression, interesting findings emerged that warrant further exploration. Findings yielded a significant correlation between the AST and RPQ at the $p < .05$ level. Findings yielded a significant correlation between the AST and Proactive subset of the RPQ at the $p < .05$ level. Findings yielded a positive correlation at the $p < .05$ level between the AST and reactive subscale.

This study examined gender differences for each instrument. An analysis of variance (ANOVA) was conducted to analyze gender differences on each instrument. To address the magnitude of each ANOVA the power analysis method defined by Cohen (1988) was used to determine effect size. For the purpose of this study a $p < .05$ level of significance was used in order to reduce the potential of making a type II error. After adjusting for family-wise error amongst all comparisons, the critical value of F used for significance testing was 6.81.

Research Question 4 hypothesized that males will endorse significantly higher responses of hostility on all scales than females. An ANOVA revealed a significant difference between males and females on the Proactive subscale of the RPQ only (Table 3). In this study males endorsed a greater number of items on the proactive subscale of the RPQ than females. These findings are consistent with previous research indicating that males tend to display greater signs of proactive aggression than females (Archer, 2004; Maccoby & Jacklin, 1980). Further ANOVA analysis revealed no significant difference between males and females on the AST, CAQ, RPQ, or on the reactive subscale of the RPQ. (Table 3) displays all information obtained by the ANOVA analysis for each instrument.

An ANOVA was conducted to analyze grade level differences on each instrument. For the purpose of this study, an alpha of .05 was used in order to reduce the potential of making a Type II error. After adjusting for family-wise error among all comparisons the critical F value used for significance testing between middle and high school students 6.81. ANOVA analysis revealed no significant difference between middle and high school students on any of the three instruments. In regards to all measurements in this study there were no significant differences between middle and high school participants. All information from each ANOVA analysis is displayed in (Table 3).

Table 3: Descriptive statistics and ANOVA results for gender and grade levels.

	Males	Females	ANOVA		Middle	High	ANOVA
	M (SD)	M (SD)	Result		School	School	Result
	M (SD)	M (SD)	(F(1,XX))		M (SD)	M (SD)	
CAQ	3.77 (1.7)	1.95 (2.4)	F = 1.91 p = .16 d = .22 df = 1		4.11 (1.7)	3.89 (1.7)	F = .58 p = .44 d = .12 df = 1
AST	8.59 (5.0)	8.32 (4.2)	F = .11 P = .73 d = .05 df = 1		8.38 (4.1)	8.50 (4.9)	F = .02 p = .88 d = .23 df = 1
PRQ	11.7 (5.9)	8.95 (4.9)	F = 6.21 P = .01 d = .40 df = 1		9.09 (6.1)	10.6 (5.0)	F = 2.74 p = .27 d = .30 df = 1
REC	11.1 (5.9)	8.95 (4.9)	F = 2.92 P = .09 d = .29 df = 1		6.68 (3.7)	7.51 (3.3)	F = 2.01 p = .23 d = .25 df = 1
PRO	3.02 (2.8)	1.77 (2.3)	F = 8.60* P = .004 d = .54 df = 1		1.95 (2.4)	2.64 (2.7)	F = 2.44 p = .26 d = .25 df = 1

* Statistically Significant at $\alpha = 0.05$

Summary

This study examined the relationship between attribution intent and aggressive tendencies between the CAQ and RPQ for adolescent participants. As expected significant positive correlations were found in support of the hypothesis stated. Research Question 1 explored whether adolescents who endorse a higher number of items on the proactive, reactive or proactive-reactive combined scales of aggressive on the RPQ (Rain, 2006) will encode and interpret ambiguous social situations more hostile than those endorsing a higher number of non-aggressive items on the RPQ. It was hypothesized that participants who indicate a higher number of hostile on the CAQ will also endorse a higher number of aggressive acts on the RPQ. Bivariate correlation analysis revealed support for the stated hypothesis.

Research Question 2 examines the role that individual knowledge structures play during social information processing. This study explores the hypothesis that adolescents who endorse a higher number of hostile items on the Assessment AST will display more biased patterns of aggressive social information processing than adolescents who endorsed a fewer number of hostile items on the AST. Bivariate correlation analysis revealed support for the stated hypothesis.

Research Question 3 examines the differences in social information processing between proactive and reactive aggression. It was hypothesized that reactive and proactive aggression may be uniquely related to different steps in the social information-processing model. Previous research indicates that reactive aggression is related to encoding and interpretation where proactive aggression is related to response evaluation (Dodge, 1991b; Orobio De Castro, et al., 2005). Bivariate correlation analysis did not support the stated hypothesis. However, a correlational analysis did reveal a significant

correlation between attribution intent and proactive aggression. These latter findings are inconsistent with prior research results. Proactive aggression has been associated with response decision as opposed to interpretation and encoding.

Research Question 4 examines gender and grade level differences on all three instruments. It was hypothesized that males will endorse significantly higher responses of hostility on all scales. ANOVA analysis revealed support of this hypothesis in regards to the Proactive subscale of the RPQ only. No significant differences between genders were found on the CAQ, AST, RPQ, or reactive subscale.

In addition grade level comparisons were made between middle and high school students. No significant differences between grade levels were found on the CAQ, AST, RPQ, reactive subscale, or proactive subscale.

Chapter V

DISCUSSION

As progress has been made towards understanding factors of aggression, communities, schools, and families have continued to work towards reducing the problematic consequences of such behavior. Although aggression is a multifaceted aspect of human behavior, the Social Information Processing model (SIP) proposed by Crick & Dodge (1994) has shed a tremendous amount of light on the understanding of individual aggression. Through this increase in understanding, preventative and treatment programs are being developed to curb individual and group aggressive acts.

Decades of research regarding aggression provide a clear understanding that aggression is learned early in a child's life. As young children struggle through typical developmental stages they are constantly learning and internalizing both unconsciously and consciously specific features of their environment. As a result, children can be greatly influenced by internalizing maladaptive perceptions and referring to maladaptive strategies to survive in their particular environment. These internalized maladaptive perceptions and strategies often follow a child into adolescence and become an intricate aspect of their social reality.

Adolescence is considered a phase in one's life where major exploration and identity formation takes place. As adolescents are engaged in identity exploration, this sensitive phase in one's life can also be a time for the growth of pro-social behavior and breaking patterns of aggressive and maladaptive thinking. As is revealed through Crick & Dodge's (1994) SIP model of aggression, the processes that guide one's thinking, perceptions and beliefs, along with past experiences can contribute greatly to one's

behavioral response to social circumstances. As this understanding continues to grow intervention strategies can be developed and modified to teach aggressive adolescents pro-social patterns of behavior and thinking when confronted with potentially hostile circumstances.

The focus of this study was to examine SIP behavioral patterns of aggressive adolescents to better understand the mechanisms that place an individual at-risk for aggressive enactment. The specific stages of the model explored in this study are encoding and interpretation of incoming social information. These stages are conceptualized as the place where attribution intent is determined either unconsciously or consciously by an individual. In circumstances when incoming social information is ambiguous or inconsistent with an individual's current knowledge structures, it is believed an individual will facilitate a process either consciously or unconsciously until a good enough representation of the information is constructed (Burks et al, 1999). This study also examines the impact that knowledge structures have on encoding and interpretation of ambiguous social situations.

Throughout the study of aggression, a dichotomy has existed between proactive versus reactive aggression (Bushman & Anderson, 2001). Previous studies have been developed to explore these distinctive forms of aggression through the SIP model. Some of these studies have revealed that there appears to be a difference in information processing patterns between the two (Dodge, 1991b; Orobio De Castro, et al., 2005). Results from previous research indicate reactive aggression may be associated with encoding and interpretation processes (Dodge, 1991b; Orobio De Castro, et al., 2005). Previous studies indicate individuals who interpret and encode ambiguous social

information as hostile tend to respond in those circumstances with higher rates of reactive forms of aggression. This study also examined proactive and reactive aggression in relation to the SIP model. The following sections discuss interpretations and implications regarding the findings in this study.

Current Study Findings Interpretations

Research Question 1 examined the hypothesis that adolescents who display higher patterns of aggression as measured by the RPQ will encode and interpret ambiguous social situations on the CAQ more hostile than adolescents with lower patterns of aggression. Results from this study revealed a positive relationship between hostile attribution intent and endorsed patterns of aggression. Participants that attributed higher rates of hostility of social ambiguous situations also endorsed higher rates of aggressive patterns of behavior. These results are consistent and add validation to previous studies, which have found a positive relationship between hostile attribution and aggression (Crick & Dodge, Crick & Dodge, 1996; Dodge, 1986; Dodge & Newman, 1981).

In this study attribution intent was measured by the CAQ. An example statement of ambiguous physical conflict states, “Pretend you and your class went on a field trip to the zoo. You stop to buy a coke. Suddenly, a kid named Al bumps your arm and spills your coke all over your shirt. The coke is cold, and your shirt is all wet”. To identify each participant’s attribution of intent, they were asked one open-ended question regarding each situation, “Why do you think this happened”? An example of a hostile response taken from one of the participant’s questionnaires states, “Al bumped into me because he is a jerk and wanted to see me with coke all over my cloth.” Increased aggressive responses as illustrated by the example on the CAQ indicated a participant’s

attribution intent as leaning towards a hostile nature. Aggressive pattern tendencies were measured by the RPQ. Participants rated higher on aggression by endorsing that they “Often” engaged in behaviors such as “Used physical force to get others to do what you want”. Increased Responses of “Often” on the RPQ resulted in participant’s higher engagement of aggression.

Research Question 2 examined the role that knowledge structures play during SIP. It was hypothesized that adolescents with higher endorsed hostile knowledge structures as measured on the AST, will encode and interpret ambiguous social situations with more hostility than adolescents whose knowledge structures are less hostile. Results from this study revealed a positive relationship between hostile knowledge structures and hostile attribution of ambiguous social situations. The results of this study are consistent and add validation to previous research findings, which have found a positive relationship between hostile attribution intent and hostile knowledge structures.

Participant’s quality of knowledge structures was measured with the AST. The AST contains three domains, which include parents, peers at school, and teachers. A question taken from the AST asks, “Of the items in each row below, which is more typical of the kids at your school”? “Friendly or mean”? An example of a hostile response would be the endorsement of “Mean” versus “Friendly”. Participants with increased endorsed hostility across each domain were considered to possess higher levels of hostile knowledge structures.

Research Question 3 examined social information processing patterns in relation to proactive versus reactive aggression. It was hypothesized that reactive and proactive aggression may be uniquely related to different steps in the SIP model. It was

hypothesized that reactive aggression is related to encoding and interpretation while proactive aggression is related to response evaluation. Therefore, proactive aggression will not yield a positive relationship with attribution intent.

The results of this study did not reveal a relationship between attribution intent and reactive aggression. The results of this study are inconsistent with previous research that indicates hostile attribution intent as having a positive relationship with reactive aggression (Crick & Dodge, 1988). However, results from this study did reveal a positive relationship between attribution intent and proactive aggression. Participants with higher ratings of hostile attribution intent also displayed higher ratings of proactive patterns of aggression as measured by the RPQ. A sample question representing aggression pertaining to reactive aggression includes, “Yelled at others when they have annoyed you”. A sample question representing physical aggression pertaining to proactive aggression includes, “Used physical force to get others to do what you want”. Responses, which constituted as hostile included endorsed “sometimes or often” responses to the statements throughout the RPQ.

Although the main research questions in this study did not include a specific hypothesis predicting a relationship between hostile knowledge structures and aggressive patterns of behavior, there were additional findings noteworthy of being mentioned. The findings did reveal a positive relationship between hostile knowledge structures and aggression. These findings revealed that adolescents with higher levels of hostile knowledge structures also endorsed higher patterns of aggression as measured by the RPQ. Results also revealed a positive relationship between hostile knowledge structures on the proactive subscale of the RPQ and the reactive subscale of the RPQ.

Research Question 4 examines potential differences between participant's gender and grade level on attribution intent, knowledge structures, and reactive versus proactive aggression. It was hypothesized that males would yield higher ratings of hostile aggressive patterns than females on all scales. Results of this study reveal a significant difference between males and females in regards to proactive aggression only. Males displayed higher patterns of proactive aggression than females. These findings are consistent with the stated hypothesis and previous research regarding gender differences of aggression. Males tend to display forms of proactive aggression at higher rates than females (Archer, 2004).

Statistical analyses revealed no significant differences between males and females on attribution intent, knowledge structures, reactive aggression, and reactive-proactive combined.

This study also examined potential differences between middle and high school students. Middle school students include students in 6th to 8th grade. High school students were from 9th to 12th grades. No significant findings were found between middle and high school students regarding attribution intent, knowledge structures, or patterns of aggression.

Conclusions/Implications

Attribution Intent. Overall, findings from this study add to the validation of the hypothesis that adolescents who perceive ambiguous social situations as hostile also display higher patterns of aggression. A common interpretation of these findings suggests that aggressive children tend to focus more on aggressive cues in the environment and have a difficult time turning their attention away from aggressive cues

than nonaggressive children (Dodge, 1986; Dodge & Newman, 1981). According to this view, aggressive individuals tend to make distortions regarding others' intentions based on their expectations of the intentions of others (Dodge & Newmann, 1981). When one expects others to act in a threatening manner, one tends to seek out cues in which are consistent with this belief therefore validating their bias assumption. Along these lines it would be reasonable to hypothesize that these patterns of cue distortions may help account for some of the mechanisms that contribute to the maintenance of individual aggression over time.

A factor believed to impact cue distortion may lie in the locus of control one maintains regarding social situations. Outcomes from previous studies indicate that blaming externalizing factors for problem situations has been found to impact the maintenance of aggression overtime (Dodge et al., 1997; Fondacaro & Heller, 1990; Schwartz et al., 1998; Waas, 1988). Aggressive individuals tend to perceive a lack of control over their environment. As a result this may lead to a perpetual bias that leads one towards being on the defense. Belief in lack of control may induce anxiety during situations of uncertainty leading towards a readiness for taking a defensive stance. During this perpetual state of readiness, potential hostile cues are amplified and fixated on which then take the form of cue distortion.

An important factor to consider in this study lies in the structure of the CAQ. Items on the CAQ represent ambiguous social situations rather than obvious non-hostile or hostile circumstances. A previous study conducted by Dodge (1980) found that non-aggressive and aggressive boys differed on attribution intent only in regards to ambiguous social situations. Dodge (1980) found that during ambiguous social

situations, aggressive boys responded as if the peer acted with a hostile intent while the non-aggressive boys responded as if the peer acted with a kind intent. During obvious non-threatening circumstances or clear threatening circumstances, no differences were found between aggressive versus non-aggressive boys. Along these lines it would be reasonable to hypothesize that in circumstances of uncertainty, an aggressive individual typically resorts back to what one is accustomed too in determining appropriate responses for the perceived circumstances. These findings may suggest that aggressive individuals tend to maintain a loaded bias towards aggression and unless social circumstances are rather obvious an aggressive individual will refer back to their default bias perceptual states.

Knowledge structures. Knowledge structures are described as organizing patterns of thoughts and ideas that guide one in making sense of one's environment (Piaget, 1964a). Knowledge structures are considered to serve cognitive functions based on one's past experiences leading towards one's knowledge about the world. Knowledge structures are considered tools used for predicting and understanding specific circumstances in one's environment. Results from previous studies indicate that the quality of one's knowledge structures can greatly impact one's beliefs and perceptions of one's social environment (Burks et al, 1999).

Based on the understanding of knowledge structure development and the role they play during information processing it is extremely important to include these constructs in any theory of social behavior. Findings from this study along with similar studies provide strong support that factors responsible for the maintenance of aggression over time are more than impulsive quick responses to social stimuli. These findings have

shown that hostile knowledge structures may serve as the looming elements that follow an individual throughout their lives, which can greatly increase the potential for aggression. These findings indicate that social information processing does not take place only during real time events. Knowledge structures appear to be the packaged history of experiences and beliefs that each and every individual bring with them into any novel or typical social situation.

Implications from this study along with similar studies may provide an avenue to explore the factors involved in explaining the maintenance of aggression over time. While adolescents with higher levels of aggressive patterns have been found to interpret and encode ambiguous social situations as more hostile, the quality of one's knowledge structures may act as the mechanisms contributing to the maintenance of aggressive behavioral patterns. The development of ones' knowledge structures are understood to form through one's interactions and information received from ones' environment. These expectations then become internalized and are later referred to while constructing one's social reality.

Proactive-Reactive Aggression. In regards to proactive aggression and interpretation of social cues, findings from this study indicate there may actually be a stronger association with proactive aggression than previously thought. As interpretation and encoding social cues is typically considered a quick response, there may be unconscious processing taking place, which may be impacting this stage. As proactive aggression has been shown to be associated with hostile knowledge structures, these knowledge structures may actually be an avenue that proactive types of aggression move through.

Evidence from this study to support this can be seen through the positive relationship between hostile knowledge structures and proactive aggression. These findings may indicate that knowledge structures may have a greater influence on the entire SIP model, rather than only specific stages.

Gender analyses. Across the board the results of this study suggest that gender by itself may not be as highly influential in the maintenance of behavior as previous findings suggest. In terms of SIP an individual's processing patterns seem to be more influential in regards to the maintenance of aggressive behavior patterns as opposed to gender. Patterns in past and current research typically characterize males as displaying and thinking in terms of aggression at higher rates than females. In the case of this study it may be that both genders in actuality share similar patterns of social information processing in regards to the scales used for assessment. Although these findings are suggestive they may provide an avenue to further study gender differences in regards to the SIP model of aggression.

One explanation of not producing significant differences between genders as predicted by the hypothesis may have to do with individual knowledge structures. Knowledge structures are described as being developed from ones' environment and social interactions, males and females may differ in what they are exposed to throughout their lives. It may be the case that the quality of knowledge structures between males and females may have an important role in gender influences of aggression. As males are typically expected to stand up for themselves or have greater social pressures they may carry proactive aggressive tendencies more than females even though males and females may have similar hostile knowledge structures. This may indicate that they did not

necessarily interpret or encode ambiguous social situations any different or have different knowledge structures, but it may indicate that males may perceive themselves as being more proactive or actually do hold more proactive patterns than females. These findings are consistent with previous research, which indicate that male adolescents typically display patterns of proactive aggression at a higher rate than females.

A feature that separates this study from other similar studies is in the nature of the instruments used to measure the specific attributes. The instruments used in this study rely on individual self-reports regarding their perceptions and beliefs in regards to aggressive tendencies. Previous studies in which this one is based typically use teacher, peer, discipline records and parent interviews as factors for distinguishing aggressive versus non-aggressive subjects. Although, there are many benefits to these approaches, they are vulnerable to rater subjectivity and rater preconceived biases. A distinctive feature of the RPQ is that it is based on self-disclosure and provides information regarding an individual's beliefs and internal cognitions in regards to aggression.

Typical instruments used to rate aggression include assessments such as the Behavior Assessment System for Children, Second Edition (BASC-2) and the Achenbach (CBCL). Although these measures are considered valid, reliable, and norm based and provide useful information in diagnostics for the purpose of exploring internal cognition they may expose various limitations. The nature of such instruments carries with them any biases, beliefs, and perceptions of the individual completing the assessment. The rater's own knowledge structures may actually influence the ratings they give. In such cases, the individual may be labeled as aggressive due to rater biases. In this study interest lies on the internal working models of the individual, therefore rater bias and

perceptions may actually skew of the results. In this study, it is not necessary for an individual to actually be perceived as aggressive. Significance lies on each participant's beliefs and perceptions in respect to aggression.

Treatment Considerations. Understanding the factors involved in maintenance of aggression can provide an advantage for developing programs to reduce the potential of aggressive acts. As young children interact with their environment the experiences they encounter at home, school, and out in the community may be a leading contributing factor to the knowledge structures one develops throughout their childhood. School often serves as a factor that can greatly influence a child's perception of the world. With this knowledge school professionals may be able to identify potential aggressive students and develop programs that confront one's biased knowledge structures of the world. Programs such as Positive Behavioral Support (PBS) and Positive Action provide natural pathways on the deliverance of such prevention and intervention strategies. As these programs grow more popular and funding is provided to maintain them, information from studies such as this can influence the quality and development of each program.

Understanding the individual influences regarding aggression and knowledge structures can also be used in the development of Functional Behavioral Assessments (FBA) and Behavioral Intervention Plans (BIP's) at the school level. These interventions are designed to focus on an individual's unique function of their behavior. In understanding an individual's social information processing patterns, school teams can develop more adequate FBA's and BIP's based on these patterns.

Better understanding of individual aggression can also be used to influence counseling and therapy goals for individuals and groups. The cognitive approach to

behavior modification in the past decade has gained great popularity in the mental health profession and in education. The ability to adequately assess one's social information processing patterns can be a very useful tool in increasing the effectiveness counseling and therapy. Helping clients gain insight into one's cognitive processing patterns can lead to a more adequate and individualized approach in the counseling experience.

Limitations

An identified limitation of this study may be its generalization to the general population of adolescents. Although some of the results of this study are consistent with previous similar studies there does exist the possibility that these results only pertain to the population of subjects that participated.

Like all research designs involving human participants, subjects must agree and be willing to participate. Since the nature of this study focuses on beliefs and perceptions, potential subjects with suspicious patterns of thinking may opt not to participate in the first place. The nature of this study was to examine perceptions and beliefs regarding aggression. Potential subjects with preconceived biases towards distrust may feel threatened to participate in such study. Therefore these results may be limited to subjects who are willing and feel comfortable answering such questions.

An important identifiable limitation of this study may be due to the nature of each instrument. All three instruments were completed by self-report. Self-report surveys are naturally vulnerable to level of the rater's willingness to answer in a truthful manner. Therefore, rater honesty will be considered a potential limitation to the results. Another self-report issue in this study is that participants may on paper indicate they would respond with certain behaviors but in real life situations they may actually respond

differently. In general it is easier to endorse hostility on paper as opposed to real life situations.

The RPQ asks participants to rate whether they have engaged in specific aggressive behaviors “never, sometimes, or often”. An important consideration is that participant responses to these questions may be subjective and influenced by individual exaggerations or bias beliefs. Unlike an external rater, individuals acted as a rater of themselves. Therefore, an individual with typical aggressive tendencies may endorse higher ratings than would be warranted.

A limitation may also be considered in relation to the AST. The AST attempts to measure how an individual perceives their teachers, peers, and parents. An individual may actually have a legitimate reason for endorsing hostile responses across all three domains. An individual’s interactions with teachers, peers, or parents may actually consist of hostility. In such circumstances an individual may actually be endorsing a fair description of others, not only a personal bias. Based on real life circumstances an individual may endorse above average hostile items on the AST. This same individual might then endorse lower hostilely intent on the CAQ regardless of the quality of their knowledge structures. In this example their knowledge structures are a fair representation of their world, which may not have, produced a bias towards interpreting ambiguous social situations as hostile. In other words they may not believe that all circumstances are hostile in themselves. An individual may be aware that their peers or parents are typically hostile, but at the same time understand that this quality only represents this particular individual.

A low internal consistency rating on the CAQ may also add to the limitations of this study. Since a major focus of this study dealt with attribution intent the inconsistency of the CAQ may have skewed to results of tested correlations and group comparison. Future studies may consider alternative methods in measuring attribution intent.

Future Research

For future considerations regarding knowledge structures and SIP, the AST can be used along with additional measures to gain information regarding an individual's actual real life social circumstances. While serving the purpose in this study, the AST can also be used to explore relationships between perceived hostile social circumstances versus real life hostile social circumstances. In circumstances in which ones' peers, parents, or teachers are truly hostile, future research can explore this impact on social information processing? This question can be explored by conducting similar studies.

Although these findings are suggestive, they may provide an avenue to further study gender differences in regards to the SIP model of aggression. The findings from this study did not yield significant differences on all but the proactive subscale of aggression. Since males are typically more aggressive than females, bigger differences were expected in this study. Although results from this study are inconsistent with previous beliefs regarding gender differences, this topic may warrant further exploration through the SIP model of aggression. One suggested approach can be to look more closely at aggression and the quality of knowledge structures between males and females.

Self-efficacy is believed to play a major role in shaping one's confidence to engage in any specific behavior. Since self-efficacy is a process cognitive in nature it

may be beneficial to develop studies to examine the components of self-efficacy in regards to the SIP model. This could add to the understanding of cognitive functions on aggression.

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Appendix I

The University of New Mexico IRB Consent and Assent to Participate in Research

Adolescent Perceptions and Beliefs of Proactive-Reactive Aggression Explored Through the Social Information Processing Model of Aggression.

Please return this form to your teacher by this date: _____.

Purpose and General Information

You are being asked to participate in a research study that is being done by Insert Princiipal Investigator, who is the Principal Investigator, and is Insert one co-investigator or state "his/her associates". This research is being done to study adolescent views and beliefs of different types of aggression. You are being asked to participate because insert reason. We hope to have between # of subjects locally students take part in this study at the University of New Mexico. This form is for students under the age of 18 years **AND** the parents/legal guardians of these students. This form is **ALSO** for students 18 years of age and older. At the bottom of this form, there is a designated signature area for students under the age of 18, their parents/legal guardians, and students 18 or over. Insert the name of the Sponsor that is funding the study, if applicable.

This form will explain the study to you, including the possible risks as well as the possible benefits of participating. This is so you can make a choice about whether or not to participate in this study. Please read this consent/assent form carefully. Ask the investigators or study staff to explain any words or information that you do not clearly understand. Participation in this study is your choice. Choosing to participate or not, will **NOT** have any impact on grades or any school related outcomes.

What will happen if I participate?

If you agree to be in this study, you will be asked to read and sign this Consent Form. After you sign the Consent Form, the following things will happen: Describe all research procedures in detail.

What are the possible risks or discomforts of being in this study?

There are possible risks of stress, emotional distress, inconvenience and possible loss of privacy and confidentiality associated with participating in a research study. In the occurrence that you or your child has concerns regarding stress, emotional distress or inconvenience associated with participation in this study, it is highly encouraged that you speak with them regarding these concerns. You and your child may also contact the school counselor at your child's school for guidance.

How will my information be kept confidential?

This form along with the questionnaire packets will be maintained in locked file, available only to authorized members of the research team, for the duration of the study. The locked file will be located at the University of New Mexico Department of Department of

Individual, Family & Community Education (IFCE) Simpson Hall Room 113 in Dr. Flowerday's office.

Every effort will be made to protect the information you give us. However, there is a small risk of loss of confidentiality. To protect your confidentiality during the process of this, study specific measures will be taken. You will **Not** be asked to provide your name or identifying information on any of the questionnaires. Each packet of questionnaires will have a specific number code for the purpose of comparing each individual's results between each survey. Information resulting from this study will be used for research purposes and may be published; however, you will not be identified by name in any publications.

Information from your participation in this study may be reviewed by the dissertation committee for John C. Salaz (Primary Investigator) and by the UNM IRB which provides regulatory and ethical oversight of human research.

What are the benefits to being in this study?

There may or may not be direct benefit to you from being in this study. Because of the nature of this study direct benefits for each student are minimal. Because of the nature of the questions on each questionnaire of this study it is possible that participants

However, your participation may help find out how an individuals interpretation of social events may impact their behavior.

What other choices do I have if I don't participate?

Taking part in this study is voluntary so you can choose not to participate. If you are attending a class where this study will be administered, you will have the option to work on an activity of choice or read over a handout that will be provided to the class by the primary investigator which has information on dealing with aggression and anger.

Will I be paid for taking part in this study?

There is no payment for participating in this study.

Can I stop being in the study once I begin?

Yes. You can withdraw from this study at any time without penalization. You may also skip questions if you're uncomfortable with any and may stop responding at any time.

The investigators have the right to end your participation in this study if they determine that you no longer qualify to take part, if you do not follow study procedures, or if it is in your best interest or the study's best interest to stop your participation.

What if I have questions or complaints about this study?

If you have any questions, concerns or complaints at any time about the research study, John C. Salaz at 505-269-5242 and Dr. Terri Flowerday at 505-277-4535, or if you would like to speak with someone other than the research team, you may call the UNM IRB office at (505) 272-1129. The IRB is a group of people from UNM and the community who provide

independent oversight of safety and ethical issues related to research involving human subjects.

What are my rights as a research subject?

If you have questions regarding your rights as a research subject, you may call the IRB at (505) 277-0067 or visit the IRB website at <http://hsc.unm.edu/som/research/HRRC/maincampusirbhome.shtml>.

For Students 18 years of age or older.

Consent and Authorization

You are making a decision whether to participate in this study. Your signature below indicates that you read the information provided (or the information was read to you). By signing this Consent Form, you are not waiving any of your legal rights as a research subject.

I have had an opportunity to ask questions and all questions have been answered to my satisfaction. By signing this Consent Form, I agree to participate in this study and give permission for my health information to be used or disclosed as described in this Consent Form. A copy of this Consent Form will be provided to me.

_____/_____
Name of Adult Participant (print) Signature of Adult Participant Date

I have explained the research to the subject and answered all of his/her questions. I believe that he/she understands the information in this consent form and freely consents to participate.

_____/_____
Name of Research Team Member Signature of Research Team Member/Date

Parent Consent for students under 18 years of age and Child Assent

You are making a decision whether to participate (or to have your child participate) in this study. Your signature below indicates that you read the information provided (or the information was read to you).

_____/_____
Name of Child Subject Signature of Child Subject/Date

_____/_____
Name of Parent/Child's Legal Guardian Signature of Parent/Legal Guardian/Date

Appendix II

Your responses to the questionnaires will be treated as anonymous and confidential and will only be used for research purposes. Please answer as many questions as possible.

Please write in your grade and age: Grade: _____ Age: _____

Please circle one for your gender: Gender: Male or Female

Please circle one of the following that best explains your ethnic group: American Indian

or Alaska Native. Asian. Black or African American. Hispanic or Chicano. Native Hawaiian or Other Pacific Islander. White. Other_____.

CHILD ATTRIBUTIONS QUESTIONNAIRE (CAQ)

Please write down your answer to each scenario!

A. Pretend that you are standing in the school courtyard playing catch with a kid named Alice. You throw the ball to Alice and she catches it. You turn around, and the next thing you realize Alice 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 Alice hit you in the back? _____

B. Pretend you see some student's playing cards in the school courtyard. You would really like to play with them, so you go over and ask one of them, a student named Jake, if you can play. Jake says no.

2. Why do you think Jake 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 student named Leah. You stumble into a mud puddle and your new sneakers and get muddy.

3. Why do you think Leah bumped you? _____

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

4. Why do you think Dean 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 students in the club. You walk up to some of the other students and say "Hi!", but they don't say anything back.

5. Why do you think the other students 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 student named Ron bumps you from behind.

You stumble and fall and your books go flying across the floor. The other students in the hall start laughing.

6. Why do you think Ron bumped into you? _____

G. Pretend it is your first day at school. You don't know a lot of the other students 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.

7. Why do you think the other students 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 student named Jason bumps your arm and spills your coke all over your shirt. The coke is cold, and your shirt is all wet.

8. Why do you think Jason bumped into you? _____

Please circle one word from each row!

1.) Of the items in each row below, which is more typical of the kids at your school?

- | | | |
|--------------------|-----------|-------------------------|
| • Loud | <u>or</u> | Quiet |
| • Friendly | <u>or</u> | Mean |
| • Obey the teacher | <u>or</u> | don't obey the teachers |

- Help me with homework or don't help me with homework
- Do things I like to do or do stupid things
- Argue a lot or get along well
- Hate me or like me
- Pick fights with me or get along with me
- Cool or jerks

2.) Of the items, in each row below, which is more typical of your parents?

- Young or old
- Punishing or forgiving
- Quiet or out of control
- Understanding or self-centered
- Strict or loose
- Lots of rules or few rules
- Cool or out of date
- Loving or mean
- Harsh or gentle

3.) Of these two items, which is more typical of your teachers?

- Old or young
- Rigid or fair
- Smart or stupid
- Good teachers or bad teachers
- Punishing or forgiving
- Self-centered or helping kids
- Approachable or unreachable
- Weird or cool
- Mean or friendly

Instructions: There are times when most of us feel angry, or have done things we should not have done. Rate each of the items below by putting a circle around **Never**, **Sometimes**, or **Often**. Do not spend a lot of time thinking about the items—just give your first response. Make sure you answer all the items (see below).

How often have you

Please circle only one answer for each question!

- | | | | |
|--|--------------|------------------|--------------|
| 1. Yelled at others when they have annoyed you | Never | Sometimes | Often |
| 2. Had fights with others to show who was on top | Never | Sometimes | Often |
| 3. Reacted angrily when provoked by others | Never | Sometimes | Often |
| 4. Taken things from other students | Never | Sometimes | Often |

5. Gotten angry when frustrated	Never	Sometimes	Often
6. Vandalized something for fun	Never	Sometimes	Often
7. Had temper tantrums	Never	Sometimes	Often
8. Damaged things because you felt mad	Never	Sometimes	Often
9. Had a gang fight to be cool	Never	Sometimes	Often
10. Hurt others to win a game	Never	Sometimes	Often
11. Become angry or mad when you don't get your way	Never	Sometimes	Often
12. Used physical force to get others to do what you want	Never	Sometimes	Often
13. Gotten angry or mad when you lost a game	Never	Sometimes	Often
14. Gotten angry when others threatened you	Never	Sometimes	Often
15. Used force to obtain money or things from others	Never	Sometimes	Often
16. Felt better after hitting or yelling at someone	Never	Sometimes	Often
17. Threatened and bullied someone	Never	Sometimes	Often
18. Made obscene phone calls for fun	Never	Sometimes	Often
19. Hit others to defend yourself	Never	Sometimes	Often
20. Gotten others to gang up on someone else	Never	Sometimes	Often
21. Carried a weapon to use in a fight	Never	Sometimes	Often
22. Gotten angry or mad or hit others when teased	Never	Sometimes	Often
23. Yelled at others so they would do things for you	Never	Sometimes	Often