The current study hypothesized that adolescent violence could be predicted by social processing skill, temperament, and family environment. Participants included one hundred twenty-four adolescent males aged thirteen to eighteen years. The nonviolent group consisted of adolescents who were enrolled in public school and had not been in a fight in the previous twelve months. The violent group consisted of adolescents who were incarcerated in a juvenile detention facility for committing violent crimes. Social processing was measured by viewing video-taped scenarios and completing a questionnaire measuring four of Dodge's five steps involved in processing social information. Family environment was measured using the FES, self-report form. Temperament was measured using the DOTS-R, self-report form developed by Windle. A predictive discriminant analysis indicated that group means on the social processing measure were significant. Family environment and temperament did not differ between the two groups. The unexpected results are likely due to recruitment of participants, the changes in demographics of incarcerated adolescents, and the lack of mediating effects of temperament and family on adolescents who commit violent crimes.

INDEX WORDS: Violence and Adolescence, DOTS-R, FES, Family Environment, Temperament, Social Processing, Aggression
TEMPERAMENT, HOME ENVIRONMENT, AND SOCIAL COMPETENCE
DIFFERENCES BETWEEN AGGRESSIVE AND NON-AGGRESSIVE
ADOLESCENT MALES

by

HEIDI MARIE MYERS THOMPSON

B.S., The University of Central Arkansas, 1991
M.A., The University of Georgia, 1996

A Dissertation Submitted to the Graduate Faculty of The University of
Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA
2001
TEMPERAMENT, HOME ENVIRONMENT, AND SOCIAL
COMPETENCE DIFFERENCES BETWEEN AGGRESSIVE AND NON-
AGGRESSIVE ADOLESCENT MALES

by

HEIDI M. M. THOMPSON

Approved:
Major Professor: Martha Carr
Committee: Georgia Calhoun
Claire Hamilton
Roy Martin
Steve Olejnik

Electronic Version Approved:
Gordhan L. Patel
Dean of the Graduate School
The University of Georgia
May 2001
DEDICATION

For Punkin, Princess, and Bubby-Man

the three best results of this graduate’s study

and for Sweetie

thanks for everything
ACKNOWLEDGEMENTS

Thanks to Dr. Marty Carr, without whose wisdom, kindness, friendship and ETERNAL patience the current project could never have been accomplished.

A special thanks to Dr. Carl Huberty for ‘The Bible – A.K.A. Predictive Discriminant Analysis for Dummies!’ and lots of help offered freely to a struggling statistician.

Mummy, Daddy, what can I say but thanks for prodding me and watching the kids!

Finally, to my Lord and Savior, Jesus Christ who saved me from far worse than the grudges of completing a dissertation. Philippians 4:13 – “I can do all things through Christ who strengthens me”! A promise well made and well kept. Thank You.
TABLE OF CONTENTS

DEDICATION ........................................................................................................ iv

ACKNOWLEDGEMENTS .................................................................................... v

TABLE OF CONTENTS .................................................................................. vi

LIST OF TABLES .......................................................................................... viii

LIST OF FIGURES ......................................................................................... ix

CHAPTER

I INTRODUCTION ......................................................................................... 1

   Theories Relevant to Aggression During Adolescence ..................... 3

   Historical Theories to Aggression ................................................. 5

   Modern Aggression Theory: Interactive Theory of Aggression ... 7

   Transformational Theory ............................................................... 7

   Research Relevant to Aggression During Adolescence ............ 23

   Directions for New Research .......................................................... 36

II METHOD .................................................................................................. 39

   Participants ..................................................................................... 39

   Procedure ........................................................................................ 40

   Materials .......................................................................................... 41

III RESULTS ............................................................................................. 49

IV DISCUSSION ......................................................................................... 55

V REFERENCES ......................................................................................... 61
APPENDICES

A  DEMOGRAPHIC INFORMATION .................................................. 71
B  ANSWER SHEET FOR SOCIAL COMPETENCE ............................ 72
C  SCORING FORM FOR SOCIAL COMPETENCE ......................... 74
D  DESCRIPTIVE STATISTICS OF SUBSCALE COMPARISONS... 78
LIST OF TABLES

Table 1: Pearson Correlations for Violent Group ............................................ 50
Table 2: Pearson Correlations for Non-Violent Group ............................... 51
Table 3: Group Means (Standard Deviations) ................................................. 52
Table 4: Pooled within-groups covariance matrix ......................................... 53
Table 5: Step-Wise Analysis ............................................................................. 54
Table 6: Classification Results ........................................................................ 54
Table D-1: Family Environment Scale Subscale Pearson Correlations:
  Nonviolent Group ........................................................................................ 78
Table D-2: Revised Dimensions of Temperament Subscale Pearson
  Correlations: Nonviolent Group ................................................................. 79
Table D-4: Family Environment SubScale Pearson Correlations: Violent
  Group .......................................................................................................... 80
Table D-4: Revised Dimensions of Temperament SubScale Pearson
  Correlations: Violent Group ....................................................................... 81
Table D-5: Descriptive Statistics: T-test Comparisons of Subscale Means,
  Family Environment Scale and Revised Dimensions of Temperament .. 82
LIST OF FIGURES

Figure 1: Contributing Factors to Violence........................................................ 5
Figure 2: The sequence for the development of disruptive behaviors. ........... 18
CHAPTER I
INTRODUCTION

The prevalence of violent crime in the United States continues to be a source of national concern, especially violent crime committed by adolescent males. The murder rate alone in the US is higher than in any other western culture (Lewis, 1990; Walsh, 1993). A violent crime is an aggressive act committed against another person such as armed robbery, aggravated assault, assault with a deadly weapon, murder, manslaughter, homicide, aggravated child molestation, first degree arson (FBI, 2000). Aggression is a set of primarily interpersonal actions that consist of verbal or physical behaviors that are destructive or injurious to others (Kendall, 1991, p. 25). In 1999, the FBI’s Uniform Crime Report (UCR) reported over 600,000 violent offenses for the year. In 1999 alone, 216,422 adolescent males aged 11 to 18 years were arrested for violent crimes. This number reflects a 206% increase in adolescent violent offenses in the last ten years (FBI, 2000). This crime rate has a wide-ranging impact on the adolescent who commits the crime, on both the primary and secondary victims of the crime, and on society as a whole.

The increase in adolescent aggression has a widespread impact on adolescents themselves. Adolescent violent offenders tend to demonstrate significantly lower levels of academic achievement than do non-offending adolescents (O'Donnell, Hawkins, & Abbott, 1995). These adolescent offenders often possess a negative sense of self-worth, do not feel they have
the capacity to successfully encounter new tasks and challenges, and tend to engage in self-destructive behaviors such as substance abuse and suicide (Elias & Clabby, 1992; Windle, 1991; Stice & Barrera, 1995; Power & Spencer, 1987). A large number of adolescent violent offenders also suffer from depression and a sense of hopelessness (Loeber, 1990; Windle, 1991; Ingals, 1978; Ciles, Miller, and Cox, 1979).

Violent crimes committed by adolescents affect the primary victims in several ways that are not limited to bodily harm. For example, Riggs, Rothbaum, and Foa (1995) found that 50% of male and 71% of female primary victims interviewed within 30 days of the crime qualified for a diagnosis of Post-traumatic Stress Disorder (PTSD). After 12 weeks, 21.1% of the women and none of the men continued to qualify for PTSD diagnosis. Of the victims that did not qualify for a diagnosis of PTSD 12 weeks after the crime, 40% reported suffering from continued affective disturbance including increased startle reactions, hypervigilence, and increased emotional reaction to reminders of the crime.

Violent crimes committed by adolescents also affect secondary victims including witnesses to the crime as well as friends and family members of the primary victim (Riggs, Rothbaum, & Foa, 1995). Freeman (1993) found that over one-fourth of the school age children surveyed reported witnessing violence in their school setting and therefore feeling unsafe at school.

Offenders of violent crimes also affect society at large. In 1996 alone, the United States federal budget included $1.4 billion spent toward the arrest, conviction, and incarceration of both youth and adult violent offenders.
(Uniform Crime Report, 1996). Of this money, $630 million was spent in state grants to build new prisons to hold violent offenders. On average, states spend 3.6% of their federal funds and 6.5% of their state funds, both of which are collected through tax money, on the youth corrections system (National Association of State Budget Officers, 1995). This amount reflects a 15.2% increase from 1994 to 1995. New York City, alone, spent over $60 million stationing police officers at each of its public schools to protect students from each other (Toch, Gest, & Guttman, 1993).

Violent adolescents become violent adults (Forehand & Wierson, 1993; Loeber, 1990; Windle, 1991). Eron and Huesmann (1990) conducted a 22-year longitudinal study in which they followed a sample of third grade children from 1960 through 1981. They found that aggressive behavior of third grade children in the school setting predicted antisocial aggression at ages 19 and 30. The children, especially males that were nominated at age eight by their peers as highly aggressive committed a higher number of serious violent crimes as adults. Children rated as aggressive received harsh physical discipline by their parents than did the children who were not rated as aggressive. Behaviors of these violent individuals in adulthood include abusing their wives, committing more violent crimes and vehicular violations, and using harsh physical discipline on their children. Finally, Eron and Huesmann found that the children rated as aggressive developed into adults who had children that were rated also rated as aggressive by their peers.

Theories Relevant to Aggression During Adolescence

Given the prevalence and consequences of violent crimes committed by adolescents, it is critical that research into the development of violent
criminal behavior within this population be conducted. The current study
focused on the relationship between temperament, social processing ability,
and family environment of adolescent males who commit violent crimes and
those who do not. It was assumed that aggression resulted from a
combination of factors including difficult temperament, deficits in social
competence and a difficult home environment. Specifically, children who
have difficult temperaments, who are raised in homes in which parents
provide aggressive models, reinforce aggression, use inconsistent and harsh
discipline, and do not provide adequate emotional support, and who have
deficits in social processing skills fair the worst.

What follows is a discussion of the historical development of the theoretical
basis for the development of aggressive behavior. First, two historical
theories of aggression are discussed: trait theory and environmental theory.
Second, the interactional model is briefly discussed as an alternative to these
theories. This discussion includes a comparison of two interactional models:
transformational and additive. Three current and theoretically distinctive
additive models relevant to the development of aggression are presented as
the basis for the current project. These models, in order of presentation, are:
from temperament theory, Chess and Thomas' (1996) Goodness of Fit Theory;
from cognitive-behavioral theory, Forehand and Wierson's (1993)
developmental model of aggression from early childhood through last
adolescence; and from cognitive processing theory, Dodge's model for social
cognitive problem-solving deficits. Finally, a review of the research
supporting these models is presented. The current project hypothesizes that
by combining the main variable of each model supported by research as
contributing to the understanding of the development of aggressive behavior (temperament, family environment, and social processing skill), a fuller picture of the manifestation of aggressive behavior by individual adolescent males may result. (See Figure 1)

![Diagram](image)

**Figure 1: Contributing Factors to Violence**

**Historical Theories to Aggression**

Historical theories to the development of aggressive behavior have focused on either the child or the environment exclusively while discounting the other (Lewis, 1990; Chess & Thomas, 1996). Both types of theories will be discussed, including short-comings.

Trait Theory. A trait is some innate and fixed pattern of behavior that is unaffected by environmental factors. These behavior patterns, once established, do not change as a result of environmental variation. Trait theory contends that a child needs an environment from which to construct knowledge, but the environment itself plays no role in the development of a child's behavior. An example of trait theory is bio-genetics where child behavior problems are assumed to be the result of specific genetic markers.
One problem with trait theory is that explaining familial differences in the development of aggression is more complicated than simply determining the existence of a single trait. Not all children with a genetic marker for a trait display that trait later in life (Lewis, 1990). Therefore, research into the combined effect of other trait variables such as resistance to stress and coping styles to explain the invulnerability to the development of pathology is needed. Another problem with trait theory is that the environment has been shown to play a significant role in altering behavior (Plomin, Nitz, & Rowe, 1990).

Environment Theory. Contrasting trait theory is environment theory, which assumes a passive child and an active environment, for example Skinner's (1953) behaviorism. In Skinner's theory, behavior is not innate, but rather develops as a consequence to stimuli in the environment. Behaviors, therefore, are malleable and change only in accordance to environmental changes.

One problem with exclusively environmental orientations to the development of aggression is that environmental factors cannot completely explain individual differences in behavior. For example, not all children raised in impoverished and violent neighborhoods display aggressive behavior (Kendall, 1991; Perry, Perry, & Boldizar, 1990). The rehabilitation rate for violent children and adolescents is low due to their resistance to treatment intervention (Forehand & Wierson, 1993). Also, interventions using behavioral retraining are mostly ineffective in the long-term alterations of adolescent aggressive behavior (Kazdin, 1987; Muro &
MODERN AGGRESSION THEORY: INTERACTIVE THEORY OF AGGRESSION

Interactive theory assumes that both a child's individual characteristics and environmental history are necessary to understand current behavior and predict subsequent behavior and adjustment (Sameroff & Chandler, 1975; Chess & Thomas, 1984; Lerner, 1984). This theoretical approach can be dichotomized into two types: transformational and additive.

TRANSFORMATIONAL THEORY

Transformational theory proposes that a child's characteristics and environment interact to produce a new set of behaviors by altering the old set and as well as altering the environment. Environment includes all behaviors and eliciting stimuli within a child's immediate setting such as voice tones, number of persons, or commands (Sameroff & Chandler, 1975). An example of a transformational theory is Sameroff and Chandler's (1975) Transactional Model. This model assumes that the child and the environment are never independent of each other. As the child and the environment interact both are transformed at each moment into a new child and a new environment. At any given time, the behavior of the child and the quality of the environment are functions of past interactions and present conditions. For example, an irritable child can transform a positive environment into a negative one where the parents display more controlling and fewer nurturing statements. This negativity in turn transforms the child to be more irritable.

According to this model, as behavior and the environment influence and transform each other, developmentally immature behaviors, such as crying to
express a need, are altered into developmentally appropriate behaviors, such as using words to say ‘I’m hungry’. Theoretically, then, the more immature behavior, crying, is no longer utilized because it is no longer available to the child. The current investigator draws an analogy between this transformation of behavior and the transformation of an acorn into an oak tree. As the acorn grows, the nutritious pulp from which it once fed transforms into roots. Now the young plant takes in nutrients from the soil. The acorn can no longer take nutrients from the pulp because the pulp is no longer available; it is a root system. Both the pulp and the roots served the same purpose as does a child's crying and asking for food. According to transformational theory, now only the developmentally more mature behavior, the root system or asking, is used.

The main problem with transformational theory is illustrated in the case of regression. Regression is when an individual displays developmentally immature behavior when appropriate behavior has been mastered (Lewis, 1990). The transformational approach cannot explain how children revert to old behaviors. Old behaviors should not resurface if they have been transformed into new behaviors.

Additive Theory. The second type of interactive theory, additive, avoids the regression dilemma. According to this theory, a child's traits and environment interact to produce new behaviors that are added to the child's behavioral repertoire, as opposed to the transformation of old behaviors into new behaviors. Using this theory, newer and more developmentally appropriate behaviors that produce successful outcomes have a high likelihood of being displayed. Old behaviors may reappear in time of stress.
The environment may or may not change with any given interaction. Using the irritable child example, some parents alter their behavior and may utter fewer emotionally supportive statements while others do not change their parenting techniques when engaging with their child (Patterson, 1986). Three additive, interactive models presented below were used as the basis for the current research.

Chess and Thomas' Goodness of Fit. Chess and Thomas' Goodness of Fit Model (1984; 1996; Thomas & Chess, 1977) assumes that behavior is the response made by an individual according to his or her temperament to fulfill environmental requirements. Temperament is an individual's behavioral style, regardless of the motivation behind the behavior or how well the behavior was executed. According to Chess and Thomas, temperament is not the what or the why of behavior (e.g. personality), but the how. Chess and Thomas outline nine categories, or traits, of temperament: activity level, rhythmicity (predictability in behavior), approach/withdrawal (initial response to new stimuli or situations), adaptability (the ease at which behavior is modified to fit new stimuli or demands), threshold of responsiveness (the intensity of an event that is necessary to evoke a behavior), intensity of reaction (the level of energy in a behavior), quality of mood (the emotional component to behavior), distractibility (how effective events are in altering a behavioral choice), and attention span/persistence (how long a behavior is continued and how long it is continued in the face of obstacles).

A Good Fit is one where a child's "capacities, motivations, and style of behavior [or temperament] and the environmental demands and expectations
are in accord ... and potentate optimal positive development" (Chess & Thomas, 1996, p. 52). Discord, such as aggression, arises when the child's behavioral style is inappropriate to meet the environmental demand causing stress (Chess & Thomas, 1996). Maladjustment, therefore, is conceptualized as the consequence of the stress arising from the mismatch between a child's behavioral style and the environmental demands. No judgments on the positiveness or negativeness of the child's behavioral style or of the environmental demands are made.

Utilizing the nine characteristics of temperament and factor analysis, Chess and Thomas have identified three general temperament constellations: easy, slow-to-warm-up, and difficult. At one end of the temperamental spectrum is the easy child. These children tend to follow a regular daily schedule while being adaptable to changes in routine, approach rather than withdraw from new stimuli, and respond to frustration and change with mild to moderate emotionality that is generally positive. Chess and Thomas estimate that approximately 40% of the population is of the easy temperament constellation. The slow-to-warm-up child is in the middle of the temperament spectrum and is often referred to as shy. These children are less regular in routine, respond to changes in routine with both negative and positive affect that is mild to moderate in nature, and adapt to changes in routine after repeated exposure. Once acclimated to new stimuli, these children engage with the environment with quiet interest. Chess and Thomas estimate that approximately 15% of the population display the slow-to-warm-up constellation. At the far end of the temperament spectrum is labeled difficult. These children are often referred to as feisty or spirited.
Irregular daily routine, negative and intense emotionality, withdrawal from new stimuli, and a non-adaptability to change characterize the difficult temperament. Children with a difficult temperament react to the environment with a higher level of emotional intensity and are therefore require increased amount of emotional support when confronted with stress. When frustrated, the emotional intensity is high and negative (crying, violence, and shouting). The positive aspect of the difficult temperament is that when a child is able to meet environmental demands, emotionality is intensely positive. At these times, difficult temperament individuals display a zest for life. Chess and Thomas estimate that approximately 15% of the population display a difficult temperament. The remaining one-third of the population have a temperamental make-up that is within the continuum, but between the three general categories and therefore not easily categorized as difficult, slow-to-warm-up or easy.

Regardless of temperamental makeup, children tend to develop normally due to an emotionally supportive home that is flexible and appropriate to the child's temperament, thereby reducing excessive and harmful stress, i.e. a good fit. Chess and Thomas define excessive and harmful stress as which is not the result of normal changes in environmental demand, but rather is the result of demands that are inappropriate to a child's level of capability. The focus of development is not to avoid stress, but to work through it while being supported. When a part of an appropriate environment, children are able to confront the normal stresses involved in cognitive, social, and physical development and master each task. Eventually, children mature into adults
with the cognitive and emotional capacity to independently cope with environmental stress.

When behavior problems occur, Chess and Thomas focused their interventions on educating and training parents to respond to behavioral problems while providing emotional support to their children. Emphasis is placed on parental behavior as appropriate or inappropriate for a particular child in a particular environment and not as good or bad. Parents are taught to change their behavior toward their child without delineating specific attitudes or values on the part of the parent. While one approach to parenting may be appropriate for one child, it may not be effective with another. To illustrate this point, Chess and Thomas present the case of a young male, Carl, who participated in their longitudinal study. Carl was rated as one of the most temperamentally difficult in the sample. His mother's reaction to Carl's fits of temper when approaching new tasks was to feel helpless, personally guilty, and angry. His father's reaction to the displays of difficult temperament was to delight in Carl's lustiness while expressing emotion. Essentially, Carl's father valued emotional expressiveness while his mother did not. The end result was that through his father's, and eventually his school and friends' support, Carl developed into a well-adjusted, adaptable, and successful adult. With guidance, Carl became aware of his temperament and how it affected his behavior in new situations. He learned to anticipate potential problems when faced with a new challenge and cope effectively.

Chess and Thomas Goodness-of-Fit model has been effectively applied to a wide variety of environments beyond the home. Applied to the school
environment, academic achievement increases when a teacher is able to identify different temperament constellations and modify instruction and behavior management techniques as needed (Chess & Thomas, 1996; Lerner, 1984). Chess and Thomas relate a story of two different children with a difficult temperament. One child had a teacher who recognized the child's individual needs and made classroom modifications. The result was an active and interested learner throughout the school year. The other child had a teacher who labeled the child lazy and disobedient. The result was a child who became a slow-learner and developed a self-defeating defense mechanism. Therefore, educating teachers in regard to different temperament constellations and offering skills training for making classroom modifications increases student success and may prove to increase teacher effectiveness.

Forehand and Wierson's Cognitive-Behavioral Model of the Development of Disruptive Behavior. Forehand and Wierson (1993) proposed a model for the differential development of aggressive behavior that focuses on the interaction between the environmental context and a child's developmental characteristics. Because development is conceptualized as occurring along a continuum, Forehand and Wierson focus their model on the critical life transitions in which children typically experience new developmental tasks. Developmental tasks are changes in expectation of social competence placed on a child by the environment. Forehand and Wierson use the term “transitions” rather than giving specific age groups because children “undergo periods of greater or lesser developmental change ... that may have only a modest relationship with specific chronological ages” (Forehand &
Wierson, 1993, p. 119). For ease of interpretation, approximate age ranges are estimated, but should not be read as totally inclusive or definitive.

The first transition in Forehand and Wierson's model is between infancy and early childhood (0-3 years). The developmental challenge here is to learn to organize behavior using simple cause-effect relationships and to interpret affective states (happy, sad, angry). Cognitively, children at this age are present-oriented in that they can make causal associations if a behavior and the consequence occur within a brief period of time. Social interaction that was previously characterized by mainly parallel, non-interactive play begins to include didactic interactions as a result of the developing ability to recognize cause and effect and interpret affect. Similarly, once the transition is mastered, children are able to communicate needs through verbal communication. One way children begin exploring cause and effect relationships is by refusing adult help with tasks. This refusal is commonly accompanied by emotional or physical outburst (e.g., shouting 'no, I do it!' while trusting with hands or grabbing at an object). Therefore, disobedience and tantrums are common as the understanding of cause and effect relationships is mastered.

The second transition is from early to middle childhood (4-7 years). During this time, children enter school. Therefore, the primary developmental challenge is to transfer the following of rules, sense of security, and self-regulation learned at home to school and social environments. Successful mastery of this challenge requires children to learn sustained attention, cooperation with authority, and maintenance of a stable emotional state. These skills allow children the ability to take the perspective of another,
organize events in temporal order, and applying ideas to real-world events because children have, to a limited extent, internalized social norms and are maturing in their ability to process multiple sources of information. Therefore, social interactions include activities involving direct interactions with others and have a simple organization structure (e.g. games). Behaviorally, children moving into late childhood still respond best to one or two simple commands. A common behavior problem is non-compliance coupled with a negatively emotional (crying, shouting) outburst when commands are too complex or abstract because the ability to organize multiple sources of information is maturing but not complete. Affective states are relatively stable, but intense emotional states and outbursts are common when a child has little success meeting developmental challenges (e.g. learning to read, making friends, following rules).

The third transition is from middle childhood to early adolescence (8-13 years). The primary developmental task is the formation of self-identity in terms of interests, skills, and values. At this age, children begin to reappraise themselves and their relationships with their parents, friends, and authority figures. Cognitively, young adolescents complete the development of abstract thought. These abilities result in greater self-reflection. Children commonly struggle to move from utilizing caregivers and other adult role models as sources for values and beliefs to relying on a system developed independently of adult influence. Moral reasoning develops from being self-centered and rule-oriented to involving mutuality as children complete the process of perspective taking. Common behavior problems include emotional negativity and fluctuation that result in refusal
of adult commands. By the end of this transition, emotionality becomes more positive and more stable.

The final transition addressed in Forehand and Wierson's model is from early to middle/late adolescence (11-18 years). The developmental challenges for this transition are similar to but more complex that those mastered during the previous transition. Identity formation progresses as children further individuate from the identity of their parents. Children strive for identity, autonomy, and freedom. This is not to say that a relationship with parents does not occur. On the contrary, at this age, the change in the relationship from authoritarian to egalitarian between child and parent is critical for development into adulthood. The role of parenting, therefore, is to relinquish decision-making responsibilities to the child. According to Forehand and Wierson, independent decision making is critical to the mastery of interpersonal relationships with others as children become capable of abstract reasoning, sophisticated moral reasoning, perspective taking, inferring another's thoughts, feelings, and attributes, and feeling empathy. As a result, by the end of this transition, children experience increased affective regulation and decreased behavioral problems.

According to Forehand and Wierson's model, aggression is conceptualized as an additive hierarchy of maladaptive resolutions to normal environmental challenges. Minor behavior problems at every age commonly occur. Serious aggressive behavior problems, however, develop as developmental dysfunction accumulates and is paired with harsh or ineffective parenting techniques. The degree of aggression depends on the point at which a child fails to master a developmental challenge. The earlier this failure occurs, the
more frequent and more severe the displays of aggressive behavior. Furthermore, the failure to master early challenges increases the likelihood that further challenges will become increasingly more difficult to master. Therefore, aggression develops along a hierarchical, lawful, and orderly sequence of prerequisites from mild to severe and is dependent on the stage at which the child is unable to master developmental challenges. For example, the behaviors displayed by an adolescent whose developmental failures began as a toddler will display aggressive behaviors of increased frequency and severity than one whose failures began in middle childhood.

Aggressive behavior increases in occurrence across time and situation. As a child ages, aggressive behaviors increase in sophistication from non-compliance as a young child to, in some cases, assault as an adolescent. At any given age, all previously learned behaviors are at the child's disposal and are displayed. Newly acquired behaviors are displayed more frequently. For example, at sixteen, an aggressive child will display immature behaviors such as tantruming, but at a lower frequency than more developmentally sophisticated behaviors, such as truancy and assault.

Figure 2 shows the developmental progression of aggression as hypothesized by Forehand and Wierson's model. Aggression typically begins during early childhood with a child's non-compliant behavior and difficult temperament setting the stage. Consistent with Chess and Thomas' Goodness of Fit Model, Forehand and Wierson stress the importance of parental reaction to noncompliance during this transition. Early maladaptive aggression arises when the parent responds to noncompliance and negative emotional/physical outbursts with ineffective and harsh
techniques. As a result, coercive parent-child interactions are likely to develop. During these coercive interactions, parent and child try to manipulate each other in an attempt to elicit or terminate specific behaviors from the other.

Figure 2: The sequence for the development of disruptive behaviors.

Upon entering school, the child engages in coercive interactions with peers and teachers because he recognized the utility of these interactions in attaining desired ends. Transferring coercive behavior to the school environment decreases the likelihood of mastering the cognitive skill necessary to adapt to school rules and develop social relationships. Teachers expect rule-following behavior and peers expect cooperation. Coercive interactions initiated by the child lead to social rejection in the school setting. Social rejection is usually followed by poor academic performance by the fifth grade.

During the transition between middle childhood and early adolescence, the aggressive child develops an identity of self that is disassociated from an investment in school and academically/socially successful peers. Because peer inclusion is the developmental challenge during this stage, the
aggressive child associates with other aggressive children. This association usually leads to minor delinquency followed by serious delinquency and violence during middle and late adolescence as the formation of identity progresses.

The development of aggression in the middle childhood to late adolescence is usually facilitated by increased coercive behavior by parents of aggressive children. This pattern of coercive discipline serves to reinforce rather than improve aggression because children at this age equate ‘right and wrong behavior’ with ‘good and bad child’. Also at this stage of development, children begin to look to peers rather than adults as the primary source of motivation for behavioral change. Because aggressive children are usually rejected by normal peers, they are more likely to look to other deviant peers for behavioral and personal affirmation they view as lacking from parents. Therefore, by late adolescence, aggression is stable and strengthened by the modeling and encouragement of a deviant peer group.

Forehand and Wierson’s model provides an adequate description of how aggressive behavior develops but does not adequately describe how aggressive behavior occurs at a given instance. According to Forehand and Wierson, aggression is a maladaptive resolution to normal environmental challenges. A model developed by Dodge (1986) explains why aggressive responses are displayed rather than appropriate responses during specific social encounters.

Dodge's Model of Social Cognitive Processing. According to Dodge's model, specific social behavior is the product of the internal cognitive processing of social information perceived from environmental events and stimuli. Social
processing occurs in five separate and sequential steps. These steps occur rapidly at an unconscious level several times during any given interaction. Skillful processing at each step increases the possibility that a child will behave appropriately and, thus, be accepted by peers and adults. The five steps to social processing are: encoding of social cues, representation and interpretation of the cues, generation of potential behavioral responses, evaluating the effectiveness of each response and then selecting a response, and enactment of the response.

**Encoding social cues.** This process involves searching for and focusing attention on social cues. Encoding may be automatic or require effort and may be relevant or irrelevant. Relevant cues include facial expressions, body posture, voice inflection, semantic content, and environmental context. An example of an irrelevant cue is noticing the color of another's shoes. Aggressive individuals tend to search for fewer cues and encode irrelevant cues.

**Representation and interpretation of social cues.** During this step, encoded information is given meaning. Meaning of cues is derived from the application of a set of rules for interpretation called social representations. These representations are highly complex and culturally and individually specific systems of values, ideas, practices, opinions, and attitudes. Social representations constitute a social reality for the individual and therefore influences behavior. Aggressive individuals tend to attribute hostility to the other person's behavior especially when the intent of the other person's behavior is not obviously prosocial. Dodge hypothesizes that this misinterpretation is a learned from a history of exposure to violent models.
For example, if a child has learned to interpret a scowl as a signal for hostility, then a situation where another child scowls will be interpreted as hostile.

**Generation of potential behavioral responses.** During this step, individuals create a list of potential responses that match the cues that have been interpreted. Even small children hold a repertoire of many possible behaviors for any social situation. The rules for accessing responses and matching appropriate responses to situations are in development through modeling of others responses and experience in the effectiveness of a response in obtaining a desired outcome during a given situation. Aggressive individuals tend to generate only one or two possible responses. These potential responses usually involve aggression.

**Evaluation of each potential response and selection of a response.** The next step in Dodge's model is to evaluate the effectiveness of each response generated. During this step, the possible outcome of each choice is anticipated and a response is selected that will most effectively and efficiently produce the desired outcome for the task. Aggressive individuals tend to predict that aggressive behaviors will have positive outcomes such as attaining material possessions or in the exertion of power over others.

**Enactment of the response.** Finally, once a behavior is selected, it is produced. As a result of the processing deficits at the previous four steps, aggressive individuals display prosocial behavior at a much lower rate than do non-aggressive individuals. After the behavior is displayed, the process begins again.
Deficiency in the accurate processing of any one or more steps results in socially inappropriate behavior, including, but not limited to, aggression. According to Dodge's model, a lack of social competence can be attributed to deficit in processing skill in one or more of the first four steps. Processing skill deficits occur either when an individual omits a step (such as not considering the consequences of a behavior) or when an individual is not proficient at a step (such as encoding irrelevant cues). Dodge hypothesizes that aggressive individuals, when queried, do not demonstrate sufficient skill proficiency at any of the first four steps in social processing and therefore cannot enact appropriately.

Similar to Chess and Thomas' Goodness of Fit, Dodge's model judges behavior as appropriate based on the task at hand, not on the behavior itself. Dodge provides the example of one adolescent hitting another. This behavior demonstrates social competence if it occurs in the boxing ring. The same behavior is judged to be incompetent if it occurs as a response to a comment made on the playground. A lack of competence results in socially inappropriate behavior that leads to social rejection by parents, peers, and teachers, acceptance by socially or deviant, peer groups, and aggression as described by Forehand and Wierson.

In summary, what should be taken from these three models (Chess and Thomas, Forehand and Wierson, and Dodge) is that aggressive behavior is the result of an interaction between individual differences and environmental characteristics. Specifically, the development of aggressive behavior includes the temperamentally difficult child, exposure to aggressive models, harsh and inconsistent punishment, and lack of emotional support, and a lack of the
skills necessary to competently process social stimuli. These variables, in combination, are hypothesized to result in a hypervigilent style of social interaction, a hostile attribution biases, and limited opportunities for learning prosocial solutions. Children and adolescents with difficult temperaments, that have parents using an ineffective parenting style and that have social processing deficits display the highest frequency of aggressive behavior.

**Research Relevant to Aggression During Adolescence**

Temperament and Aggression. Most of the research investigating temperament and aggression has been conducted using children who are not adolescents. Longitudinal research is inconsistent regarding the stability of temperament from childhood to adolescence. Some research findings suggest stability in the display of temperamental characteristics at different stages of development and across different situations while other findings do not. Chess and Thomas (1996) found traits to be manifested consistently from infancy to adolescence. These traits were observed in feeding behavior at 3 months, the initial adaptation to nursery school at four years, the play behavior with a peer group at six years, and in the approach to a new school and new academic subjects at 12 years of age. These traits were also observed into adulthood, although the manifestations of specific traits were developmentally different. In contrast to Chess and Thomas’ findings, a meta-analysis conducted by Schuerger, Zarrella, and Hotz (1989) indicted that temperament begins to stabilize during middle adolescence and increases in stability with increasing age. Therefore, generalizations cannot be made regarding the relationship between temperament and aggression in
childhood and adolescence. This inconsistency may be due to differences in data gathering between the two studies. Thomas and Chess utilized observations from their clinical cases while the studies included in the meta-analysis conducted by Schuerger, Zarrella, and Hotz (1989) included several data collection methods. The current study focused on middle and late adolescence (13-18 years) participants where temperament is considered to be stable by both studies.

Measurement of Adolescent Temperament. To date, one instrument has been developed to measure adolescent temperament: the Dimensions of Temperament Survey – Revised developed by Windle and Lerner (1986). The DOTS–R consists of 54 items assessing 10 temperamental traits: activity level during the day, activity level during sleep, rhythmicity (predictability or regularity in schedule) of eating (e.g. appetite level, food intake), rhythmicity of sleeping (e.g. time and duration of sleep in 24 hours), rhythmicity of daily habits (e.g. bowel movements, self-care routines), approach/withdrawal (initial response to new stimuli or situations), flexibility-rigidity (the ease at which behavior is modified to fit new stimuli or demands), quality of mood (the emotional component to behavior), distractibility (how effective events are in altering a behavioral choice), and persistence (how long a behavior is continued and how long it is continued in the face of obstacles). Internal consistency estimates (Chronbach's alphas) ranged from .54 to .81. The DOTS–R has a mean test-retest reliability correlations of .67 with an interval of 6 weeks. Content validity was determined by five Ph.D.-level developmental psychologists and five graduate-level students familiar with temperament research. The overall agreement rate was 97%.
Concurrent validity was established by comparing DOTS-R attributes with measures of perceived cognitive and social competence, general self-worth and depression. Multiple R results were .49, .54, .41, and .40 respectively.

While only a limited amount of research has been conducted investigating temperament and aggression in adolescence using the DOTS-R, the findings support Chess and Thomas' and Forehand and Wierson's models that the difficult temperament constellation is predictive of aggressive behavior in adolescence. Adolescents who display aggressive behavior are more likely to have a difficult temperament make-up consisting of high activity, irregularity, low threshold, high rigidity, high emotional intensity, high persistence, and high distractibility than those who are not aggressive (Windle & Lerner, 1986; Thomas & Chess, 1977; Chess & Thomas 1996). Windle (1991; 1992a; 1992b) found a significant relationship between the number of aggressive acts committed within a six month period and difficult temperament constellation.

In support of Dodge's model, adolescents with difficult temperaments tend to choose aggressive behavior responses over prosocial responses more often than do children with other temperament constellations (Windle & Lerner, 1986; Windle,1991; 1992a; 1992b). However, while temperament seems to contribute to the learning of aggression as a primary choice in an individual's repertoire of social responses, it cannot singularly account for the development of these behaviors (Eron & Huesmann, 1990; Garmezy, Masten, & Tellegen, 1984; Rutter, 1979; Garmezy, 1989). Not all children with a difficult temperament constellation choose aggressive responses (Windle, 1991; 1992a; 1992b; Chess & Thomas, 1996; Thomas & Chess, 1977).
More research needs to be conducted investigating the relationship between temperament and aggression in adolescence. As previously stated, Chess and Thomas, Forehand and Wierson, and Dodge all stress that aggression is the result of the combination of effects between temperament and the environment. Adolescents with a difficult temperament react to the environment with a higher level of emotional intensity. When frustrated, the emotional intensity is negative (e.g. aggression, shouting). Therefore, these adolescents require increased amounts of emotional support when confronted with stress. Without early emotional support, interpersonal relationships tend to use aggression to coerce desired results as described by Forehand and Wierson. In Chess and Thomas' (1996; Thomas & Chess, 1977) longitudinal studies, poor home environment that lacked emotional support combined with temperamental make-up was the best predictor of aggression.

Home Environment and Aggression. According to Chess and Thomas (1996), Forehand and Wierson (1993), and Dodge (1986), the main environmental influence on the development of aggressive behavior is that of the characteristics of the home environment. Specifically, the degree to which the home environment provides aggressive models, reinforces aggression, and frustrates and victimizes the child through harsh, inconsistent discipline and through a lack of emotional support. These home environment characteristics lead to the development of deficits in the learning of social processing skill and hence increased levels of aggressive behavior.

Homes in which at least one family member is violent toward others is a significant predictor of adolescent aggression (McCord, 1979; Schwartz,
Dodge, Petit, & Bates, 1997). According to the UCR (FBI, 1996), more than one-half of incarcerated adolescents have at least one close relative who has also been incarcerated. As previously stated, Forehand and Wierson hypothesize that adolescents who have aggressive family members internalize the norm that violence and destruction are worthy of self-praise and result in the fulfillment of goals. Patterson (1986) investigated how family member violence in the home environment is related to the development of aggression. In these home environments, aggression has been modeled for the adolescent as method of functioning in social situations. In support of Forehand and Wierson's and Dodge's models, Patterson concluded that adolescents learn that aggression is successful for getting needs and desires met. Aggressive adolescents, therefore, internalize that aggression is a successful method of coercion and without examples of prosocial behavior, aggression becomes a response habit.

Parental behavior in conflict situations is related to aggressive behavior by adolescents. Forehand (1993) conducted extensive interviews and observations of families and found that the behavior of the father during intra-family conflict significantly predicted child functioning outside the home more so than the behavior of the mother even though the mother engaged in more parenting, regardless of child gender. David, Steele, Forehand, and Armininstead, (1996) measured family conflict using the conflict subscale of the Family Environment Scale (and found that higher levels of parental conflict occurring in front of the adolescent significantly predicted both internalizing and externalizing behavior problems in the adolescents immediately and after one year. Kempton, Thomas, and Forehand (1989)
investigated how three dimensions of intra-parental conflict (frequency, method of handling, and outcome) were related to adolescent (11-15 years) behavioral functioning (internalizing and externalizing problems) the use of verbal and physical aggression to resolve conflict was significantly correlated to conduct problems in adolescents. These results were consistent with those found by Parke and Slaby (1983).

According to Chess and Thomas' and Forehand and Wierson's models, discipline practices of parents of aggressive children are inconsistent even though these parents report placing a high level of importance on rules and structure (Stice & Barrera, 1995). Anderson, Lytton, and Romney (1986) found that the parents of aggressive children tend to ignore and tolerate aggressive behavior until it reaches a level where ignoring the behavior is not possible (i.e. someone gets hurt). These parents set limits on behavior but are ineffective in stopping socially inappropriate behavior because they fail to follow through with promised discipline (Olweus, 1980; Loeber & Dishon, 1983; Patterson & Stouthamer-Loeber, 1984). Instead of following through with discipline, parents of aggressive adolescents attempt to coerce compliance by issuing threats, nag, scold, shout which leads to an aggressive response and increased amounts of discipline (Olweus, 1980). Discipline that is issued inconsistently has been shown to increase aggressive behaviors and cause these behaviors to be resistant to extinction (Katz, 1971; Swain & Parke, 1979).

When parents of aggressive children do invoke discipline, that is when behavior can no longer be ignored, it is usually in a manner that is over controlling, harsh, and includes a high number of demands (Dodge, Petit, &
Bates, 1994). Perry, Perry and Boldizar (1990) found that parents of aggressive children use physical punishment over reasoning during discipline encounters. Parents who use physical punishment are more likely to have aggressive children and adolescents. According to Dodge's model, using physical punishment over reasoning encourages adolescents to develop behavioral habits where only aggressive solutions to problems are generated. Consistent with Forehand and Wierson's model, George and Main (1979) found that physically punished toddlers were more abusive toward their peers and daycare providers than were toddlers whose parents invoke alternative and non-punitive methods of discipline. According to Forehand and Wierson's model, this behavior leads to peer rejection at school and association with a deviant peer group.

In support of Forehand and Wierson's model, home environments that are constantly negative and that do not provide emotional support are at the highest risk for developing adolescents who behave aggressively. Several studies have found that parents of aggressive children tend to give less emotional support to their children (Perry, Perry, & Boldizar, 1990; Stice & Barrera, 1995). For example, Anderson, Lytton, and Romney, (1986) studied the direct statements of parents with and without aggressive children. The results indicated that parents of aggressive children issued significantly more negative comments to their child (e.g. Stop that! That is bad!) and little or no emotionally positive statements (e.g. That's good! I like that!). In these home environments, adolescents use aggression to gain attention, end irritation or frustration, to interrupt boredom, and obtain goals (e.g. material objects, privileges).
In conjunction with studying the interactions between parents and their own children, Anderson, Lytton, and Romney, (1986) observed the interactions between parents of both aggressive and non-aggressive children with children that were not their own. When supervising the play of both aggressive and non-aggressive children, parents with aggressive children continued to issue negative statements and multiple commands. These parents also continued to lack emotionally supportive statements. While supervising the play of aggressive children, the parents of non-aggressive children also began issuing an increased number of negative commands and a decreased number of emotionally supportive statements. This result is consistent with Forehand and Wierson’s hypothesis that the relationships between parents and aggressive children are interactional.

Loeber and Dishon (1983) conducted a review of studies of the relationship between family environment and delinquency and concluded that delinquency cannot be attributed to any single variable but to a combination of home environment conditions. Based on this conclusion, Bischof, Stith, and Whitney (1995) investigated the family environment of adolescent offenders using the Family Environment Scale Form-R (Moos & Moos, 1986) completed by the adolescents. This instrument measures the respondents perception of the nuclear family environment on ten subscales: cohesion (level of emotional support), expressiveness (degree to which family members are encouraged to express emotion), conflict (level of expressed anger, aggression, and interpersonal conflict), independence (extent to which family members are allowed to make independent decisions), achievement orientation (level of competition among family members), intellectual-cultural orientation (level
of interest in events and issues occurring in society), active-recreational orientation (extra-curricular activities engaged in as a family), moral-religious emphasis (value placed on ethical and religious issues), organization (degree of importance placed on structure and rules), and control (level of the use of rules and procedures to run the family). The results of the adolescents' responses were compared to norm tables provided in the Family Environment Scale manual.

In support of Chess and Thomas' model and Forehand and Wierson's model, Bischof, Stith, and Whitney (1995) found that the aggressive adolescents who committed violent crimes viewed their home life as one involving coercive relationships where they were not acknowledged unless they broke a rule. At those times, adolescents felt that they were not given emotional support and were not allowed to express their feelings or ideas about the situation. The adolescents did not feel that they were allowed to make personal choices independently. The adolescents described their home life as having discipline that was harsh and forbearing. As previously stated, this type of home life results in adolescents who do not learn to make active and prosocial decisions but rather learn that the best method for solving problems is to use aggression to attain goals and desired behavior from others. According to Forehand and Wierson, the relationships that develop in these home environments do not encourage adolescents to take the perspective of others when choosing their behavior.

The Bischof, Stith, and Whitney (1995) study has several limitations. One is that a sample of non-offending adolescents was not included. Rather, family constellation dimensions were measured as significantly high or low
compared to norm tables. As a result, whether or not non-aggressive adolescents have family constellations similar to those reported by the aggressive adolescents cannot be determined with these studies. Therefore, research which includes a sample of non-aggressive adolescents needs to be conducted. One of the goals of the current research is to compare the impressions aggressive adolescents have of their home environment to those of non-aggressive adolescents.

Another limitation with Bischof, Stith, and Whitney's (1995) study is that subjects were asked to describe the family condition at time of their offense. For some subjects, several years had passed since the offense. Therefore, research needs to be conducted where adolescents are questioned about their family environment at a time that is closer to the time of their offense. Another goal of the current study is to address this limitation by gathering impressions of the home environment while the adolescent is serving a sentence for the violent crime committed.

According to Forehand and Wierson, lower levels of parental support increases the likelihood that adolescents will affiliate with a deviant peer group, which in turn increases aggressive behavior. This hypothesis was supported by research conducted by Stice and Barrera (1995) and Durbin, Darling, Steinberg, and Brown (1993). These researchers found that aggressive children turn to deviant peers in an effort to find affirmation for their behavior, both positive and negative. Aggressive behavior increased significantly after adolescents associated with a deviant peer group.

Social Processing and Aggression. As previously stated, the current project assumed that aggressive adolescents demonstrate skill deficits at each step
in social processing, a temperamental makeup with the predisposition to respond with negative emotionality, and exposure to aggressive models, harsh and inconsistent punishment, and lack of emotional support that results in a hypervigilent style of social interaction, a hostile attribution biases, and limited opportunities for learning prosocial solutions.

In regard to deficits in social skill processing, aggressive adolescents search for fewer cues and encode a greater number of irrelevant cues compared to non-aggressive peers (Dodge & Newman, 1981; Slaby & Guerra, 1988). Dodge and Newman (1981) asked aggressive and non-aggressive subjects to read scenarios where one same-age adolescent had a project destroyed by another. Each scenario contained details that indicated one of three conditions: obvious hostile intent, ambiguous intent, and obvious prosocial intent. For each scenario, each subject was asked to state what happened and how he or she knew what happened. The results indicated that non-aggressive adolescents listed significantly more cues that were relevant to determining intent than did aggressive adolescents. Dodge and Tomlin (1987) found that attention to irrelevant cues significantly predicted aggressive behavior when entering a group and when provoked by another individual.

In relation to interpretation problems, aggressive adolescents tend to perceive the behavior of others as hostile more often than do non-aggressive adolescents (Dodge & Price, 1994; Steinberg & Dodge, 1983). Aggression is the most common response to frustration when an individual attributes the other person's behavior as intentionally provoking (Dodge, 1991). When confronted with aversive social situations, especially those that are
ambiguous in intent, aggressive adolescents see the other person's actions as hostile while non-aggressive adolescents attributed pro-social intent even to scenarios where the intent was obviously hostile (Dodge, 1980; Dodge & Frame, 1982; Slaby & Guerra, 1988).

Aggressive adolescents generate fewer possible solutions to social conflict than do non-aggressive adolescents (Dodge & Somberg, 1987; Steinberg & Dodge, 1983). Dodge and Somberg (1987) measured this skill by having subjects list all the possible solutions to a given social conflict (a contest entry ruined before judging by an unknown individual). The number of responses by aggressive adolescents were significantly fewer than those generated by non-aggressive peers. The solutions aggressive adolescents generate were more likely to be aggressive in nature and not prosocial, especially when feeling personally threatened (Dodge & Somberg, 1987; Deluty, 1981; Slaby & Guerra, 1988). Research by Dodge (e.g. Dodge, 1983; Dodge, Coie, & Brakke, 1982) comparing possible skill versus enactment deficits indicated that aggressive adolescents have primarily skill deficits. Aggressive adolescents were able to correctly choose a prosocial behavior when one was given as an option, but did not generate these prosocial behaviors on their own.

In support of Dodge's model, aggressive adolescents have been found to display fewer task-appropriate behaviors and more aggressive behaviors than do their non-aggressive peers (Dodge, Coie, & Brakke, 1982). Aggressive adolescents evaluate aggressive solutions as favorable in outcome and in social desirability more so than do non-aggressive peers (Steinberg & Dodge, 1983; Dodge, Coie, & Brakke, 1982). Aggressive adolescents attach more
importance to the rewards offered by aggression and less value to the negative outcomes to others than do non-aggressive peers (Boldizar, Perry, & Perry, 1989). One reason aggressive adolescents develop these social skill processing deficits is that, when exposed to aggressive models, they learn that aggression is successful for getting needs and desires met and therefore do not generate alternative behaviors (Dodge, Petit, & Bates, 1994; Perry, Perry, Boldizar, 1990; Pellegrini, 1998). Aggression is reinforced when parents or other individuals yield to adolescent demands thereby interrupting the noxious event such as nagging, making commands or teasing (Patterson, 1986).

Aggressive adolescents lack many of the social skills necessary to successfully engage in prosocial solutions (Perry, Perry, & Boldizar, 1990). These adolescents have social skill deficits in making friends and keeping them because of difficulty engaging in routine social situations such as conversing, asking appropriate questions, and sharing ideas (Asher, Renshaw, & Geraci, 1980; Dishion, Loeber, Stouthamer-Loeber, & Patterson, 1984). Dodge (1983) found that even when intending to act prosocially, aggressive adolescents lack the skills necessary to inhibit habitual aggressive responses, verbalize their ideas in a way that does not appear aggressive or demanding, stating what they would like to see happen in a situation, and compromising to a joint solution. This result is consistent with Chess and Thomas' (1996, Thomas & Chess, 1977) difficult temperament children who come from difficult home environments.

One limitation of the studies investigating social competence in aggressive adolescents is that many of the scenarios were presented in narrative form
read silently by the subjects. In addition to adding artificiality to the task, this method of presentation presents a potential problem when considering the relationship between low academic achievement, especially in reading, and delinquency (O'Donnell, Hawkins, & Abbott, 1995). Social processing that was measured by actual tasks such as having their own project destroyed by an unknown person (e.g. Dodge, 1980; Dodge & Somberg, 1987) or by watching videos of same-age peers engage in social problems (e.g. Dodge & Price, 1994) resulted in stronger relationships between skill deficits and aggression than when these skills were measured with narratives (e.g. Steinberg & Dodge, 1983).

**Directions for New Research**

When investigating the variables influencing aggressive behavior, a uniform definition of levels of aggression and violence that is consistent with discussions about the problem of adolescent violence is required in order to compare differences in aggressive behavior (Klein, Forehand, Armistead, & Long, 1997). The current methods for defining aggression are nearly as numerous as the number of investigations. These methods for determining level of aggression range from teacher judgment (e.g. Kempton, McCombs, & Forehand, 1989) to peer nomination (e.g. Dodge, Coie, & Brakke, 1982) to participation in residential treatment programs (e.g. Bischof, Stith, and Whitney, 1995) to self-report (e.g. Moore & Gullone, 1996). A definition of aggressive behavior is needed that takes into account the level of behavior and that is based on objective criteria. The current study defined aggressive behavior based on the impact on another person and the resulting severity of
the consequences of the behavior, i.e. physical harm to another individual and subsequent jail sentencing.

The evidence presented indicates that aggression is the result of an interaction of factors. However, the current body of research is limited in its investigations of multiple factors to this problem. In most cases, only two of these three key variables, temperament, home environment, and social processing skill, have been investigated simultaneously. Windle (1991; 1992b) found a significant relationship between adolescent aggression and reduced levels of perceived family support. Petit, Dodge, and Brown (1988) found that children described as aggressive by their mothers and who received harsh discipline displayed more social processing skill deficits. Chess and Thomas (1996, Thomas & Chess, 1977) and Windle, Hooker, Lerner, East, Lerner, and Lerner (1986) found that difficult temperament children have significant deficits in social processing skills. The present study examined the three variables believed to account for individual differences in levels of aggressive behavior among adolescent males aged 12 - 17 years. Specifically, temperament, home environment, and social processing skill was assessed in non-violent adolescents and those incarcerated for violent crimes.

The current study hypothesized that an adolescent’s scores on the Family Environment Scale, the Dimensions of Temperament Survey – Revised, and on the measure of social processing skill will predict whether the adolescent was incarcerated for a violent crime or was attending public school and had not engaged in violence. Specifically, those adolescents who were incarcerated for a violent crime would be predictably characterized by a more difficult temperament (high general activity level, low approach, low
flexibility, irregularity, high persistence, and high distractibility), perceive their home environment as being poor (characterized by lower cohesion, lower independence, higher conflict, higher control, and lower expressiveness) and demonstrate more deficits in social processing skill than those in the non-violent group.
CHAPTER II

METHOD

PARTICIPANTS

One hundred fifty-eight adolescent males aged thirteen to eighteen participated in the study. Only adolescents with informed parent permission participated in the study. Permission for participation of detained adolescents was also obtained from the facility director and state detention director. All participants were assigned identification numbers and informed of confidentiality of information. Half the participants were categorized as violent and half were categorized as non-violent. Participants were matched for age, race, and social economic status. The mean age was 15.5 with 44% white, 56% black, 39% low SES and 61% middle SES for both groups. Thirty-two of the participants from the violent group self-selected out of the study. Twenty-one participant records, seventeen from the violent group and four from the non-violent group, were dropped from the final data set because of incomplete forms. Thirty-one participant records were dropped from the final data set because four reported having had a fight in the last twelve months and twenty-seven did not match a violent group participant on SES, age, and race. The analyses were run on the resulting data set of one hundred twenty-four, sixty-two violent participants and sixty-two non-violent, participants.

The violent group consisted of male adolescents who were incarcerated in a Georgia juvenile detention center for a violent offense including murder, assault, armed robbery, homicide, manslaughter, first-degree arson (setting a
fire with intent to harm a person). Membership in the violent group was
determined by residence in a state juvenile detention facility for the offense of
a violent crime. The facility director reviewed each inmate's offense record
prior to the project to ensure that only offenders of violent crimes were
included.

The non-aggressive group consisted of male students who attended a public
school in Arkansas and who had not engaged in an aggressive act in the last
twelve months. Membership in this group was determined by a review of the
participant's self-report as well as by principal recommendation. Only those
males who were not disciplined for fighting or other violence were
recommended for the non-aggressive group. Nominated students who self-
reported fighting or criminal activity were excluded from participation. For
example, if a participant's school discipline record did not indicate action
taken due to fighting, but the participant reported fighting on the
demographic form, his responses were removed from the analysis. Four
participants were excluded for this reason. If a participant reports conviction
of a violent crime, but is not currently incarcerated, this condition precluded
his participation in the study. No participants were excluded for this reason.

PROCEDURE

Each participant was told that he was participating in a confidential study
looking at the thoughts and feelings of teenage males in different situations.
Each participant was given a packet of materials with an identification
number on each form. Each packet included two copies of the personal assent
form, a brief demographic form (see Appendix A), the form for responding to
the vignettes (see Appendix B), the Family Environment Scale, and the
Dimensions of Temperament Scale – Revised. Participants were asked to complete the demographic form first. Participants were then informed that they would be viewing six vignettes on videotape and to imagine that they are the person in the gray jacket or white shirt (depending on vignette). The vignettes were counterbalanced to avoid order effects. After viewing each vignette, the participants responded to questions on the social processing answer sheet (see Appendix B). They were then asked to complete the Family Environment Scale and then the Revised Dimensions of Temperament Scale. All items on all three measures were pre-recorded to control for possible confounding due to limited reading ability and presenter differences.

Participants met in groups of ten for data collection and asked not to comment during the session. All participants were able to meet this request. Participants in the violent group met in a classroom located on the detention campus. Participants in the non-violent group met in a classroom on the school campus. All participants were seated at individual desks and were provided barriers to prevent others from viewing or copying responses. Data collection sessions lasted approximately one hour.

**MATERIALS**

Social Competence. The method of assessing social processing skill using taped vignettes is based on the work of Dodge and Price (1994) and Dodge (1980, 1986, 1991) who found this method of assessing social competence to significantly discriminate between higher and lower social competence. Some modifications from Dodge's scoring were made and are described where appropriate. Competence of social cognitive processing skill was measured
through the presentation of videotaped vignettes. Scripts, written by the investigator, depicted different social problem situations (having a lunch tray knocked over by another student or being bumped at a locker). Each situation was role-played by adolescents recruited from another state of residence to avoid recognition of the actors by the participants. White males enacted one set of problems and black males enacted the other set. For each problem situation, three vignettes were enacted: one where the intent of the antagonist is hostile (deliberate as indicated by body language, facial expression, and verbal message), one where the intent of the antagonist is prosocial but accidental (as indicated by facial expression, helping right to the situation and verbal apology), and one where intent of the antagonist is ambiguous (body language and facial expression indicate hostile intention while verbal message indicates an accident). One parent, two school counselors and one teacher rated the intent of the protagonist in each of the six vignettes to ensure validity of protagonist intent. All five adults agreed on the intent of the protagonist. Vignettes were presented in counter-balanced order.

Differing from Dodge, competence at each of the first four steps of social processing skill was measured using a response form, found in Appendix B, instead of having an investigator ask questions and take notes on participant responses. The response form was used for three reasons: to ensure accuracy collecting participant responses, to allow data collection from a group of participants rather than individuals, and to avoid confounding due to differences in question presentation from an investigator. Ten adolescents viewed the vignettes and completed the social processing questionnaire to
ensure that the understanding of directions for the social competency task. All ten adolescents were able to understand and accurately complete the instructions. Therefore, no modifications needed to be made.

The first question on the form (What happened in the scene?) was scored to ensure the participant's ability to report, but not included in the analysis. All the adolescents that attempted participation were able to record their observations and subsequent responses. The second question (Was this an accident or done on purpose?) assessed the participant's ability to correctly interpret the intent of the protagonist. Each participant received one point for correct interpretations of intent and no points for incorrect interpretations. Participants received a point for interpreting the ambiguous intent as an accident. The third question (How do you know what happened?) assessed the participant's ability to encode relevant cues. Participants received two points for recording specific and relevant cues (e.g. facial expression, level of voice), one point for recording irrelevant, internally generated or inappropriate cues (e.g. color of clothing, time of day) and no points is a reason was not given (e.g. don't know, because I saw him). The investigator generated a list of cues for each category for scoring purposes. The list was reviewed by five school counselors for verification and approved.

The procedure of the present study differed from that of Dodge in that Dodge provided participants with the actual intent of the protagonist after a participant reported his interpretation. Dodge then asked for a list of possible responses given the actual intent, whether or not the participant correctly interpreted intent. Dodge’s investigator solicited up to eight responses for each vignette. This method of querying for responses was
rejected because of several conflicts with Dodge's model. First, Dodge's method of querying for responses by offering the correct intent is artificial. According to the model, an adolescent relies on his or her own interpretation of another's intent to make response decisions. In everyday life, adolescents generally do not have an adult companion available to continually correct or verify interpretations of intent. Second, by providing intent information, the processing sequence of the individual is interrupted and true responses, based on the participant's own interpretation, are lost. Dodge's model of the sequence of processing is not tested when the participant's own interpretations are not used to generate possible responses. The possible responses generated are those based on another person's interpretations. Third, an assumption of Dodge's model is that aggressive participants generate fewer responses than competent participants do. By soliciting potential responses (e.g. “What else?”) and allowing a limit of eight, Dodge's assumption cannot be tested. Also, solicitation may lead the participant to think that he has not produced the “right” answer. Therefore, the list of potential responses may include those that the participant thinks that the investigator wants to hear while excluding those he would generate in an actual encounter. The current project attempts to avoid these possible problems by allowing each participant the opportunity to record as many responses as he can to each situation without providing the actual intent of the protagonist or limiting the number of responses. The fourth question on the response form (List as many responses to this situation as you can. List a response even if it is not something you would do) assessed the number of potential responses each participant was able to generate given his
interpretation of the protagonist's intent. Each participant was given one point for each response generated with an additional point for each socially competent response. According to Dodges’ model, competent adolescents generate aggressive as well as prosocial responses, but choose them at a lesser rate than do aggressive adolescents. The phrase “even if it is not something you would do” was included to encourage a participant to include responses he knows would be judged as inappropriate by an adult.

The fifth question (For each response you listed, write a 0 next to the response if it is a good thing to do and write a 1 next to the response if it is not a good thing to do) assessed the participant's ability to evaluate potential responses. Participants were given one point for each prosocial response correctly identified as good to do. The investigator generated a list of prosocial responses and a list of aggressive responses for scoring purposes. The lists were evaluated by five adults for category agreement and found to be acceptable.

The sixth question (From your list, circle what your response to this situation would be) assessed the participant's ability to choose a prosocial response from his list of potential responses. Participants were given one point for choosing a prosocial response and no points for choosing an aggressive response. The scope of the current project did not allow for the assessment of competence during enactment.

Each participant's responses to the six vignettes were scored and recorded on the scoring form for social competence (see Appendix C) then totaled and entered as a single predictor variable for analysis. Lower totals indicate less
competence in social cognitive processing skill. Interrater reliability calculated for this study was .99.

Family Environment Scale – Revised, Form R. Family environment characteristics were measured by the Family Environment Scale – Revised, Form R (Moos & Moos, 1986). The FES Form R (Self-Report) measures the respondent's perception of the nuclear family environment on ten subscales: cohesion (level of emotional support), expressiveness (degree to which family members are encouraged to express emotion), conflict (level of expressed anger, aggression, and interpersonal conflict), independence (extent to which family members are allowed to make independent decisions), achievement orientation (level of competition among family members), intellectual-cultural orientation (level of interest in events and issues occurring in society), active-recreational orientation (extra-curricular activities engaged in as a family), moral-religious emphasis (value placed on ethical and religious issues), organization (degree of importance placed on structure and rules), and control (level of the use of rules and procedures to run the family). The FES-R was normed on 1125 normal and 500 distressed families. Participating families were from all over the United States and chosen using a stratified sampling technique based on the 1980 Census data. Distressed families were defined as having a member who abused alcohol, a member who was a general psychiatric patient, or as having an adolescent or younger child that was in crisis (i.e. runaway, delinquent, or in foster care). Distressed families were referred for the study from psychiatric family clinics, probation/parole departments and correction facilities. Internal consistency ratings ranged from .61 to .78. Test-retest reliability for the subscales are acceptable and
range from .68 to .86 at two months and .52 to .89 at twelve months. The authors of the FES demonstrated that the measure distinguishes between normal and distressed families.

Because scores for cohesion, independence, conflict, control, and expressiveness are most highly related to adolescent aggression, the raw scores obtained for these subscales are the only ones from the FES were totaled and entered as a predictor variable for analysis. To maintain consistency, items measuring conflict and control were reversed scored. Low total scores indicate poor family environment.

Revised Dimensions of Temperament Survey. Temperament was measured with the Revised Dimensions of Temperament Survey (Windle & Lerner, 1986). The DOTS-R is a 54-item, factor analytically developed self-report instrument that measures ten temperament traits on a Likert scale ranging from 0 (usually false about me) to 4 (usually true about me). The traits measured are: activity level during the day, activity level during sleep, rhythmicity (predictability or regularity in schedule) of eating (e.g. appetite level, food intake), rhythmicity of sleeping (e.g. time and duration of sleep in 24 hours), rhythmicity of daily habits (e.g. bowel movements, self-care routines), approach/withdrawal (initial response to new stimuli or situations), flexibility-rigidity (the ease at which behavior is modified to fit new stimuli or demands), quality of mood (the emotional component to behavior), distractibility (how effective events are in altering a behavioral choice), and persistence (how long a behavior is continued and how long it is continued in the face of obstacles). Internal consistency estimates (Chronbach's alphas)
ranged from .54 to .81. The DOTS-R has a mean test-retest reliability 
correlation of .67 at two months.

Raw scores from all the subscales were totaled and entered as a single 
predictor variable for analysis. To maintain consistency, items measuring 
activity level, persistence, and distractibility were reversed scored. Lower 
totals indicated a more difficult temperament.
CHAPTER III

RESULTS

A predictive discriminant analysis (PDA) was run for the purpose of predicting an individual participant's group membership based on temperament, social competence, and family environment. The grouping variables were 1) residence in a detention facility for having committed a violent crime and 2) attending a public school without having committed a violent crime or having engaged in a fight for 12 months. The predictor variables were scores on the FES, DOTS-R, and social processing inventory.

A PDA is a multivariate statistical technique that allows the researcher to predict a participant's group membership with respect to several variables. This analysis procedure has several basic assumptions. First, the responses of one participant may not influence the responding of another. The current study meets this assumption by having participants complete the questionnaires individually, without comment to each other. Participants were also provided with barriers to prevent any one from viewing another’s responses. Second, a PDA assumes that participants cannot be members of more than one group. As a fail-safe, demographic information was taken to insure that participants belong to only one group. The third assumption is that the predictor variables must be measured at the interval or ratio level. The current study uses predictor variables measured at the interval level.
The fourth assumption of a PDA is that the predictor variables cannot be perfectly correlated. Pearson correlations between the predictor variables by group are presented in Tables 1 and 2. None of the scales are correlated to each other for either group. The fifth assumption of PDA is that the predictor variables are not redundant such as the sum or average of other predictor variables. The current study meets this assumption by summing the scores for the measures and not using individual subtest scores. The fifth assumption of a PDA is that participants are drawn from a population in which each predictor variable is normally distributed. The three discriminating variables in the current study are normally distributed in the population. Finally, PDA assumes two or more groups with at least two cases per group and any number of predictor variables as long as the number is less than the total number of cases minus two. This assumption has been met by the current study with the inclusion of one hundred twenty-four participants in the final data set and three predictor variables.

Table 1. *Pearson Correlations for Violent Group*

<table>
<thead>
<tr>
<th></th>
<th>Social Processing</th>
<th>Temperament</th>
<th>Family Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Processing</td>
<td>1.00</td>
<td>.99</td>
<td>-.042</td>
</tr>
<tr>
<td></td>
<td>P= .</td>
<td>P= .44</td>
<td>P= .75</td>
</tr>
<tr>
<td>Temperament</td>
<td>.099</td>
<td>1.00</td>
<td>.231</td>
</tr>
<tr>
<td></td>
<td>P= .44</td>
<td>P= .</td>
<td>P= .07</td>
</tr>
<tr>
<td>Family Environment</td>
<td>-.042</td>
<td>.231</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>P= .75</td>
<td>P= .07</td>
<td>P= .</td>
</tr>
</tbody>
</table>

n=62; (Coefficient / 2-tailed Significance)
Prior to analysis, the data list and plot were investigated for incomplete observations, outliers, and normality of distribution. Twenty-one incomplete observations, seventeen from the violent group and four from the non-violent group, were excluded from the database. Based on the standard of typical probability < .02 (Huberty, 1994) and review of the posterior probabilities, no outliers were found. The normal probability plots were obtained and determined to be within limits. Because prior probabilities should reflect population demographics (Huberty, 1994), an investigation of current population demographics was conducted using the 2000 Census projections and information from the FBI. According to these two sources, approximately 2% of the adolescent male population are violent resulting in priors of .98 for the non-aggressive group and .02 for the violent group. This estimate is conservative, given the fact that there exists violent adolescent males who

Table 2. Pearson Correlations for Non-Violent Group

<table>
<thead>
<tr>
<th></th>
<th>Social Processing</th>
<th>Temperament</th>
<th>Family Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Processing</td>
<td>1.00</td>
<td>.143</td>
<td>.099</td>
</tr>
<tr>
<td>P=.</td>
<td>P=.27</td>
<td>P=.45</td>
<td></td>
</tr>
<tr>
<td>Temperament</td>
<td>.143</td>
<td>1.00</td>
<td>.227</td>
</tr>
<tr>
<td>P=.27</td>
<td>P=</td>
<td>P=.08</td>
<td></td>
</tr>
<tr>
<td>Family Environment</td>
<td>.099</td>
<td>.2274</td>
<td>1.00</td>
</tr>
<tr>
<td>P=.45</td>
<td>P=.08</td>
<td>P=</td>
<td></td>
</tr>
</tbody>
</table>

n=62; (Coefficient / 2-tailed Significance)
have never been arrested or incarcerated. Group means and standard deviations for each predictor are provided in Table 3. Group means for the social processing measure were significantly different, $t(122)=7.8, p=.01$, other mean comparisons were non-significant. Descriptive statistics including subscale correlations and subscale t-test results between the family environment and temperament scales are presented in Appendix D.

Table 3. Group Means (Standard Deviations)

<table>
<thead>
<tr>
<th>Group</th>
<th>Social Processing</th>
<th>Temperament</th>
<th>Family Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Violent</td>
<td>58.69 (15.40)</td>
<td>137.56 (14.24)</td>
<td>25.19 (6.34)</td>
</tr>
<tr>
<td>Violent</td>
<td>39.17 (12.26)</td>
<td>137.94 (15.68)</td>
<td>25.61 (5.86)</td>
</tr>
<tr>
<td>Total</td>
<td>48.94 (16.97)</td>
<td>137.75 (14.92)</td>
<td>25.40 (6.08)</td>
</tr>
</tbody>
</table>

(n=62)

For the current project, the PDA procedure was run on the University of Georgia mainframe utilizing the SPSS DISCRIMINANT command with the DISCLASS macro. This procedure was chosen because it employs the Leave-One-Out (L-O-O) method for external analysis. An external analysis was necessary to obtain unbiased hit-rates because a sample to test the prediction rule was not available in the scope and resources of the current project (Huberty, 1994). With three predictor variables and two groups, a linear classification rule was preferred (Huberty, 1994). The pooled with-in groups covariance matrix is presented in Table 4. A test of the equality of the two group covariance matrices yielded an $F(1,45) = 3.12, P = .078$. The null
hypothesis of equal matrices is retained and the pooled covariance matrices utilized, yielding a linear classification rule.

Table 4. Pooled within-groups covariance matrix

<table>
<thead>
<tr>
<th>Social Processing</th>
<th>Temperament</th>
<th>Family Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Processing</td>
<td>193.85</td>
<td></td>
</tr>
<tr>
<td>Temperament</td>
<td>25.26</td>
<td>224.43</td>
</tr>
<tr>
<td>Family Environment</td>
<td>3.31</td>
<td>20.98</td>
</tr>
</tbody>
</table>

df=122; N=124

A step-wise analysis, included in the SPSS DISCRIMINANT command, determined which predictors are most relevant to the PDA. As determined by the SPSS DISCRIMINANT procedure, only those variables with a minimum F (1,22) = 3.84 were included in the PDA. The results of the analysis are presented in Table 5. Only a participant’s score on the social processing scale, F (1,22) = 60.91, was determined to be a contributor of predictive accuracy and included in the analysis. All classification results reported are based on one predictor variable instead of the original three.

The current classification rule is normal-based and linear, with unequal priors. Classification results are reported in Table 6. As is evident, all cases were assigned to the non-violent group with a 50% total hit-rate. This hit-rate is not significant since 50% of the total participants were originally from the non-violent group and 50% were not.
Table 5. Step-Wise Analysis

Wilks' Lambda (U-statistic) and univariate F-ratio with 1 and 122 degrees of freedom

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wilks' Lambda</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Processing</td>
<td>.667</td>
<td>60.910</td>
<td>.000</td>
</tr>
<tr>
<td>Temperament</td>
<td>.999</td>
<td>.019</td>
<td>.890</td>
</tr>
<tr>
<td>Family Environment</td>
<td>.998</td>
<td>.146</td>
<td>.703</td>
</tr>
</tbody>
</table>

N=124

Table 6. Classification Results

<table>
<thead>
<tr>
<th>Actual Group</th>
<th>No. of Cases</th>
<th>Predicted Group Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non-Violent</td>
</tr>
<tr>
<td>Group 0</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Non-Violent</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Group 1</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Violent</td>
<td></td>
<td>100.0%</td>
</tr>
</tbody>
</table>

N=124
Percent of "grouped" cases correctly classified: 50.00%
CHAPTER IV
DISCUSSION

It was hypothesized that scores on measures assessing social processing ability, temperament, and perceived family environment would predict whether an adolescent male was incarcerated for a violent crime or had not been in a fight or committed a violent act in the last twelve months. The three variables assessed were chosen based on previous research supporting the importance of the relationship of each variable to adolescent violence when studied individually. The purpose of combining these three variables was to create a fuller picture of the factors related to adolescent violence thereby providing further evidence to direct the development of effective interventions. According to the analysis, the hypothesis was not fully supported. Social processing skill was related to group membership while temperament and family environment were not.

It was hypothesized that participants in the violent group would have lower scores on the social processing measure than those in the non-violent group. This hypothesis was partially supported by significant univariate mean differences between the groups which was consistent with previous research by Dodge (Dodge, Petit, & Bates, 1994; Dodge & Price, 1994; Steinberg & Dodge, 1983). However, social processing skill did not singularly predict group membership in the PDA. The lack of predictability by one variable was not surprising because in PDA, the accuracy of the prediction line created by the composite of the variables is tested as opposed
to testing the individual variables (Huberty, 1994). With only one significant predictor variable a linear composite including all three variables was not created, but rather the prediction rule included only the social processing variable. Therefore, social processing scores by themselves did not predict group membership in the analysis. Specifically, all of the participants from the violent group were misclassified on social processing skill according to the prediction rule generated.

Another possible explanation for the lack of power for the PDA to correctly classify participants based on social processing skill may be a result of the anonymity of the social processing task (Kingery, Coggeshall, & Alford, 1998). McKeown, Jackson, and Valois (1998) found that adolescents are more likely to self-report crime and choose violent responses when the information provided cannot be traced to the participant. Participants in the current study were able to choose responses to each situation without regard to possible consequences. Consistent with Dodge's model, participants in the non-violent group scored as significantly more proficient social processors than the violent group. However, participants in the non-violent group also recorded and choose violent responses more often than was expected. Recent research on bullying and adolescent violence by Pellegrini (Pellegrini, Bartini & Brooks, 1999; Pellegrini, 1998) describes two reasons for violent behavior, instrumental and reactive. Instrumental violence involves the systematic targeting of violence to hurt another or to achieve a goal (Pellegrini, 1998). Reactive violence is a response to situational conditions, usually being provoked to anger or being a victim of a violent act (Pellegrini, 1998). Violent adolescents engage in instrumental and reactive violence while non-violent
adolescents are most likely to engage in reactive violence (Pellegrini, Bartini & Brooks, 1999; Pellegrini, 1998). The current measure did not discriminate between the two types of violence. It may be that the nonviolent participants felt free to report reactive violence even though they would not engage in such violence.

Based on the literature reviewed, temperament was assumed to be related to violence by adolescents. In the current study, temperament was not related to group membership. Means and standard deviations for both the total score and for the individual subscales of the temperament measure were nearly identical for both groups of adolescents studied. This result was inconsistent with the research reviewed (e.g. Windle, 1991; 1992a; 1992b; Windle & Lerner, 1986). One explanation for this difference may be that Windle collected and analyzed data from a wide range of behaviors mostly comprised of minor delinquency (e.g. skipping school, damaging property, substance use). Only two of the behaviors included in Windle's analysis were violent, while the current study focused exclusively on violent behaviors. Temperament may be a critical factor in the development of minor delinquency, but not in the development of violent behavior. In the current project, participants in the violent group were of a variety of temperaments, not just difficult. For violent adolescents (but not adolescents who are mildly delinquent), other factors than temperament may be critical for predicting violent behavior.

Another explanation for the inconsistency in findings with previous research may be in participant recruiting. Participation in the current study was based on personal as well as parental permission. This method of
recruitment may have limited the range of temperament of the participants.
Thirty-two, approximately one-third, of the incarcerated students who were
eligible to participate in the study refused whereas only three of the students
in public school refused. Refusal to participate in novel activities is, by
definition, characteristic with an extremely difficult temperament (i.e. high
withdrawal and high negative emotionality). The participants with the most
difficult temperament may have self-selected out of the study.

Based on the review of the literature, the current study also hypothesized
that certain family factors would be predictably related to adolescent
violence. Means and standard deviations for both the total score and for the
individual subscales of the family measure were nearly identical for both
groups of adolescents studied. This finding is also inconsistent with previous
research (e.g., Klein, Forehand, Armistead & Long, 1993; Bischof, Stith, &
Whitney, 1995; Perry, Perry, & Boldizar, 1990; Stice & Barrera, 1995). This
difference in findings may be due to several factors. Similar to the results in
regard to temperament, this difference may be due to the current study’s
focus on violent rather than mildly delinquent behavior. Prior researchers,
for example, Klein, Forehand, Armistead & Long (1993) analyzed a variety of
delinquent behaviors that were not violent and found significant differences
in the family environment. In the current study, seriously violent
participants were the focus. For this group, other factors, perhaps
psychopathology or prenatal influences, may be more important than family
environment at this age (Pfiffner, McBurnett, Lahey, Loeber, Green, Frick, &
Rathouz, 1999; Frick, Christian & Wooten, 1999).
Another possibility for the lack of difference in reported family environment is that family environments may be changing. In the past, SES was a significant predictor of family environment and was, therefore, related to violence. The demographics of adolescent being arrested and serving sentence for violent crime appears to be changing. According to the UCR (FBI, 2000), 68% of adolescent males arrested were white and 43% were from the middle range of SES compared to 31% white and 22% middle range SES in 1985. Most studies where violence was the focus and family environment was related to violence utilized clinical samples where SES of participants was low (e.g. David, Steele, Forehand, & Arminstead, 1996; Anderson, Lytton, & Romey, 1986) or not held constant (e.g. Bischof, Stith, & Whitney, 1995; Perry, Perry & Boldizar, 1990). When SES is controlled for, an association between family and violence is not found (Valois & McKewon, 1998). It may be that family environments play less of a role in the development of adolescent violence now than in the past.

The lack of difference in reported family environment of the two groups may also be explained by recent research findings that reliability and validity of self-report information by violent individuals is negatively related with violence level, level and frequency of criminal activity and the age of first incarceration (Simon, 1999). Therefore, participants in the violent group may have reported an inaccurate description of their family environment. They may have been reporting what they wished the family environment to be or reporting how the family environment, as a concept, compared to the prison environment. To further investigate these possibilities, it is recommended that further research obtain family information during the intake process.
In summary, the current study was a point of departure from previous studies in that it examined simultaneously the influences of several variables as predictors of adolescent violence. Based on the results of the current study, only social processing skill significantly predicted adolescent violence. Surprisingly, temperament and family environment did not predict violence committed by adolescents as was hypothesized.

More research is needed to determine which variables predict adolescent violence. The results of the current study suggest that social processing skill be studied further as an important component of prevention and intervention programs focusing on adolescent violence. Other factors, possibly psychopathology and prenatal influences, may be better predictors of seriously violent behavior in children. In order to develop effective prevention and treatment programs we need to better understand the causes and predictors of violent behavior.
REFERENCES


temporal stability of personality by questionnaire. *Journal of Personality
and Social Psychology, 56*, 777-783.


Simon, L. (1999). Are the worst offenders the least reliable? *Studies on
Crime & Crime Prevention, 8*, 210-224.


Slaby, R. & Guerra, N. (1988). Cognitive mediation of aggression in
580-588.

adolescent boys and girls. *Journal of Social and Clinical Psychology, 1*,
312-321.

reciprocal Relations between perceived parenting and adolescents
substance use and externalizing behaviors. *Developmental Psychology,
31*, 322-334.

Swain, D. & Parke, R. (1979). The effects of interagent inconsistent
discipline on children's aggressive behavior. *Journal of Experimental
Child Psychology, 28*, 525-538.

Brunner/Mazel: New York.


APPENDIX A

DEMOGRAPHIC INFORMATION

Remember, DO NOT put your name anywhere on these papers.

1. When were you born? Year _____ Month _____ Day _____

2. How many fights have you been in this year? ______________

3. Have you ever been convicted of one of the following crimes? If yes, circle those that apply:
   a. assault
   b. aggravated assault
   c. armed robbery
   d. assault with a deadly weapon
   e. murder (1st or 2nd degree)
   f. manslaughter
   g. homicide (vehicular and accidental not included)

4. If you have been convicted of one of these crimes, did you serve time?
   a. How long ______________
   b. When ______________
   c. Where ______________
APPENDIX B

ANSWER SHEET FOR SOCIAL COMPETENCE

While you are watching each scene, imagine that you are the boy in the red shirt.

After watching the scene, please answer the following questions:

1. What happened in the scene?

2. Was this an accident or done on purpose?

3. How do you know that this is what happened?
4. List as many responses to this situation as you can. List a response even if it is not something you would do. If you need more room, please use the back of this sheet.

5. For each response you listed, write a 0 next to the response if it is a good thing to do and write a 1 next to the response if it is not a good thing to do.

6. On your list, circle what your response to this situation would be.
APPENDIX C

SCORING FORM FOR SOCIAL COMPETENCE

ID #____________

Scene 1:

Q2. ______ (0 = incorrect interpretation of intent, 1 = correct interpretation of intent)

Q3. ______ (0 = cannot provide reason, 1 = used irrelevant, internally generated and inappropriate cues, 2 = used specific and relevant cues).

Q4. ______ (score = number of responses generated with an additional point for each socially competent response).

Q5. ______ (1 point for each prosocial response correctly identified as good to do).

Q6. ______ (0 = aggressive response circled, 1 = competent response circled).

Total for Scene 1 ______

Scene 2:

Q2. ______ (0 = incorrect interpretation of intent, 1 = correct interpretation of intent)

Q3. ______ (0 = cannot provide reason, 1 = used irrelevant, internally generated and inappropriate cues, 2 = used specific and relevant cues).

Q4. ______ (score = number of responses generated with an additional point for each socially competent response).
Q5. ______ (1 point for each prosocial response correctly identified as good to do).

Q6. ______ (0 = aggressive response circled, 1 = competent response circled).

Total for Scene 2 ______

Scene 3:

Q2. ______ (0 = incorrect interpretation of intent, 1 = correct interpretation of intent)

Q3. ______ (0 = cannot provide reason, 1 = used irrelevant, internally generated and inappropriate cues, 2 = used specific and relevant cues).

Q4. ______ (score = number of responses generated with an additional point for each socially competent response).

Q5. ______ (1 point for each prosocial response correctly identified as good to do).

Q6. ______ (0 = aggressive response circled, 1 = competent response circled).

Total for Scene 3 ______

Scene 4:

Q2. ______ (0 = incorrect interpretation of intent, 1 = correct interpretation of intent)

Q3. ______ (0 = cannot provide reason, 1 = used irrelevant, internally generated and inappropriate cues, 2 = used specific and relevant cues).

Q4. ______ (score = number of responses generated with an additional point for each socially competent response).
Q5. _______ (1 point for each prosocial response correctly identified as good to do).

Q6. _______ (0 = aggressive response circled, 1 = competent response circled).

Total for Scene 4 _______

Scene 5:

Q2. _______ (0 = incorrect interpretation of intent, 1 = correct interpretation of intent)

Q3. _______ (0 = cannot provide reason, 1 = used irrelevant, internally generated and inappropriate cues, 2 = used specific and relevant cues).

Q4. _______ (score = number of responses generated with an additional point for each socially competent response).

Q5. _______ (1 point for each prosocial response correctly identified as good to do).

Q6. _______ (0 = aggressive response circled, 1 = competent response circled).

Total for Scene 5 _______

Scene 6:

Q2. _______ (0 = incorrect interpretation of intent, 1 = correct interpretation of intent)

Q3. _______ (0 = cannot provide reason, 1 = used irrelevant, internally generated and inappropriate cues, 2 = used specific and relevant cues).

Q4. _______ (score = number of responses generated with an additional point for each socially competent response).
Q5. _______ (1 point for each prosocial response correctly identified as
good to do).

Q6. _______ (0 = aggressive response circled, 1= competent response
circled).

Total for Scene 6 _____

TOTAL SOCIAL COMPETENCE SCORE (1+2+3+4+5+6) _____
APPENDIX D

DESCRIPTIVE STATISTICS OF SUBSCALE COMPARISONS

Table D-1: Family Environment Scale Subscale Pearson Correlations:

Nonviolent Group

<table>
<thead>
<tr>
<th></th>
<th>Cohesion</th>
<th>Independence</th>
<th>Conflict</th>
<th>Control</th>
<th>Expressiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesion</td>
<td>1.00</td>
<td>.071</td>
<td>.662</td>
<td>.325</td>
<td>.519</td>
</tr>
<tr>
<td>P= .</td>
<td>P=.58</td>
<td>P=.00</td>
<td>P=.00</td>
<td>P=.01</td>
<td>P=.00</td>
</tr>
<tr>
<td>Independence</td>
<td>.071</td>
<td>1.00</td>
<td>.068</td>
<td>.203</td>
<td>.283</td>
</tr>
<tr>
<td>P=.58</td>
<td>P=.</td>
<td>P=.60</td>
<td>P=.11</td>
<td>P=.03</td>
<td></td>
</tr>
<tr>
<td>Conflict</td>
<td>.662</td>
<td>.068</td>
<td>1.00</td>
<td>.189</td>
<td>.324</td>
</tr>
<tr>
<td>P=.00</td>
<td>P=.60</td>
<td>P=.</td>
<td>P=.14</td>
<td>P=.01</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>.325</td>
<td>.203</td>
<td>.189</td>
<td>1.00</td>
<td>.345</td>
</tr>
<tr>
<td>P=.01</td>
<td>P=.11</td>
<td>P=.14</td>
<td>P=.</td>
<td>P=.01</td>
<td></td>
</tr>
<tr>
<td>Expressiveness</td>
<td>.519</td>
<td>.283</td>
<td>.324</td>
<td>.345</td>
<td>1.00</td>
</tr>
<tr>
<td>P=.00</td>
<td>P=.03</td>
<td>P=.01</td>
<td>P=.01</td>
<td>P=.</td>
<td></td>
</tr>
</tbody>
</table>

n= 62
Table D-2: Revised Dimensions of Temperament Subscale Pearson Correlations: Nonviolent Group

<table>
<thead>
<tr>
<th></th>
<th>Flexibility</th>
<th>Activity Level</th>
<th>Approach/Withdrawal</th>
<th>Mood</th>
<th>Rhymicity</th>
<th>Persistence/Distractibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td>1.00</td>
<td>.252</td>
<td>.207</td>
<td>.305</td>
<td>.182</td>
<td>-.093</td>
</tr>
<tr>
<td>P=.</td>
<td>P=.05</td>
<td>P=.11</td>
<td>P=.02</td>
<td>P=.16</td>
<td>P=.47</td>
<td></td>
</tr>
<tr>
<td>Activity Level</td>
<td>.252</td>
<td>1.00</td>
<td>.027</td>
<td>.026</td>
<td>-.104</td>
<td>.162</td>
</tr>
<tr>
<td>P=.05</td>
<td>P=</td>
<td>P=.84</td>
<td>P=.84</td>
<td>P=.42</td>
<td>P=.21</td>
<td></td>
</tr>
<tr>
<td>Approach/Withdrawal</td>
<td>.207</td>
<td>.026</td>
<td>1.00</td>
<td>.342</td>
<td>-.192</td>
<td>.293</td>
</tr>
<tr>
<td>P=.11</td>
<td>P=.84</td>
<td>P=</td>
<td>P=.01</td>
<td>P=.14</td>
<td>P=.02</td>
<td></td>
</tr>
<tr>
<td>Mood</td>
<td>.3049</td>
<td>.026</td>
<td>.342</td>
<td>1.00</td>
<td>.010</td>
<td>.103</td>
</tr>
<tr>
<td>P=.016</td>
<td>P=.84</td>
<td>P=.01</td>
<td>P=</td>
<td>P=.94</td>
<td>P=.43</td>
<td></td>
</tr>
<tr>
<td>Rhymicity</td>
<td>.182</td>
<td>-.104</td>
<td>-.192</td>
<td>.010</td>
<td>1.00</td>
<td>-.141</td>
</tr>
<tr>
<td>P=.16</td>
<td>P=.42</td>
<td>P=.14</td>
<td>P=.94</td>
<td>P=</td>
<td>P=.28</td>
<td></td>
</tr>
<tr>
<td>Persistence/</td>
<td>-.093</td>
<td>.162</td>
<td>.293</td>
<td>.103</td>
<td>-.141</td>
<td>1.00</td>
</tr>
<tr>
<td>Distractibility</td>
<td>P=.47</td>
<td>P=.21</td>
<td>P=.02</td>
<td>P=.43</td>
<td>P=.28</td>
<td>P=</td>
</tr>
</tbody>
</table>

n=62
Table D-4: Family Environment SubScale Pearson Correlations: Violent Group

<table>
<thead>
<tr>
<th></th>
<th>Cohesion</th>
<th>Independence</th>
<th>Conflict</th>
<th>Control</th>
<th>Expressiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesion</td>
<td>1.00</td>
<td>.291</td>
<td>.713</td>
<td>.010</td>
<td>.359</td>
</tr>
<tr>
<td></td>
<td>P= .</td>
<td>P= .02</td>
<td>P= .00</td>
<td>P= .94</td>
<td>P= .00</td>
</tr>
<tr>
<td>Independence</td>
<td>.291</td>
<td>1.00</td>
<td>.134</td>
<td>.043</td>
<td>.111</td>
</tr>
<tr>
<td></td>
<td>P= .02</td>
<td>P= .</td>
<td>P= .30</td>
<td>P= .74</td>
<td>P= .39</td>
</tr>
<tr>
<td>Conflict</td>
<td>.713</td>
<td>.134</td>
<td>1.00</td>
<td>.105</td>
<td>.177</td>
</tr>
<tr>
<td></td>
<td>P= .00</td>
<td>P= .30</td>
<td>P= .</td>
<td>P= .42</td>
<td>P= .17</td>
</tr>
<tr>
<td>Control</td>
<td>.010</td>
<td>.043</td>
<td>.105</td>
<td>1.00</td>
<td>.111</td>
</tr>
<tr>
<td></td>
<td>P= .94</td>
<td>P= .74</td>
<td>P= .42</td>
<td>P= .</td>
<td>P= .39</td>
</tr>
<tr>
<td>Expressiveness</td>
<td>.359</td>
<td>.111</td>
<td>.177</td>
<td>.111</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>P= .00</td>
<td>P= .39</td>
<td>P= .17</td>
<td>P= .39</td>
<td>P= .</td>
</tr>
</tbody>
</table>

n=62
Table D-4: Revised Dimensions of Temperament SubScale Pearson Correlations: Violent Group

<table>
<thead>
<tr>
<th></th>
<th>Flexibility</th>
<th>Activity Level</th>
<th>Approach/Withdrawal</th>
<th>Mood</th>
<th>Rhymicity</th>
<th>Persistence/Distractibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td>1.00</td>
<td>.151</td>
<td>.151</td>
<td>.029</td>
<td>.226</td>
<td>.205</td>
</tr>
<tr>
<td></td>
<td>P= .</td>
<td>P= .23</td>
<td>P= .24</td>
<td>P= .82</td>
<td>P= .08</td>
<td>P= .11</td>
</tr>
<tr>
<td>Activity Level</td>
<td>.151</td>
<td>1.00</td>
<td>-.141</td>
<td>-.177</td>
<td>.125</td>
<td>.520</td>
</tr>
<tr>
<td></td>
<td>P= .23</td>
<td>P=.</td>
<td>P=.27</td>
<td>P=.17</td>
<td>P=.33</td>
<td>P=.00</td>
</tr>
<tr>
<td>Approach/Withdrawal</td>
<td>.151</td>
<td>-.141</td>
<td>1.00</td>
<td>.260</td>
<td>.081</td>
<td>.168</td>
</tr>
<tr>
<td></td>
<td>P=.24</td>
<td>P=.27</td>
<td>P=.</td>
<td>P=.04</td>
<td>P=.05</td>
<td>P=.19</td>
</tr>
<tr>
<td>Mood</td>
<td>.029</td>
<td>-.177</td>
<td>.260</td>
<td>1.00</td>
<td>-.166</td>
<td>.057</td>
</tr>
<tr>
<td></td>
<td>P=.82</td>
<td>P=.17</td>
<td>P=.04</td>
<td>P=.</td>
<td>P=.20</td>
<td>P=.66</td>
</tr>
<tr>
<td>Rhymicity</td>
<td>.226</td>
<td>.125</td>
<td>.081</td>
<td>-.166</td>
<td>1.00</td>
<td>.161</td>
</tr>
<tr>
<td></td>
<td>P=.08</td>
<td>P=.33</td>
<td>P=.05</td>
<td>P=.20</td>
<td>P=</td>
<td>P=.21</td>
</tr>
<tr>
<td>Persistence/Distractibility</td>
<td>.205</td>
<td>.520</td>
<td>.168</td>
<td>.057</td>
<td>.161</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>P=.11</td>
<td>P=.00</td>
<td>P=.19</td>
<td>P=.66</td>
<td>P=.21</td>
<td>P=.</td>
</tr>
</tbody>
</table>

n=62
Table D-5: Descriptive Statistics: T-test Comparisons of Subscale Means, Family Environment Scale and Revised Dimensions of Temperament

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean (SD)</th>
<th>T-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesion</td>
<td>Violent</td>
<td>6.40 (2.17)</td>
<td>(t_{(122)} = .41, p = .68)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>6.24 (2.20)</td>
<td></td>
</tr>
<tr>
<td>Independence</td>
<td>Violent</td>
<td>5.90 (1.54)</td>
<td>(t_{(122)} = -.49, p = .63)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>6.03 (1.40)</td>
<td></td>
</tr>
<tr>
<td>Conflict</td>
<td>Violent</td>
<td>5.05 (2.33)</td>
<td>(t_{(122)} = -.60, p = .55)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>5.29 (2.15)</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>Violent</td>
<td>3.74 (1.86)</td>
<td>(t_{(122)} = 1.18, p = .24)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>3.35 (1.80)</td>
<td></td>
</tr>
<tr>
<td>Expressiveness</td>
<td>Violent</td>
<td>4.55 (1.57)</td>
<td>(t_{(122)} = .91, p = .37)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>4.27 (1.79)</td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>Violent</td>
<td>17.14 (3.85)</td>
<td>(t_{(122)} = -.48, p = .63)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>17.45 (3.23)</td>
<td></td>
</tr>
<tr>
<td>Activity Level</td>
<td>Violent</td>
<td>24.66 (6.96)</td>
<td>(t_{(122)} = -.57, p = .57)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>25.32 (5.87)</td>
<td></td>
</tr>
<tr>
<td>Approach/Withdrawal</td>
<td>Violent</td>
<td>16.10 (3.58)</td>
<td>(t_{(122)} = -.63, p = .53)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>16.47 (2.96)</td>
<td></td>
</tr>
<tr>
<td>Mood</td>
<td>Violent</td>
<td>20.08 (5.37)</td>
<td>(t_{(122)} = -2.41, p = .02)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>22.27 (4.73)</td>
<td></td>
</tr>
<tr>
<td>Rhythmicity</td>
<td>Violent</td>
<td>40.68 (7.36)</td>
<td>(t_{(122)} = 3.25, p = .00)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>36.34 (7.52)</td>
<td></td>
</tr>
<tr>
<td>Persistence/Distractibility</td>
<td>Violent</td>
<td>19.18 (4.76)</td>
<td>(t_{(122)} = -1.22, p = .23)</td>
</tr>
<tr>
<td></td>
<td>Nonviolent</td>
<td>20.18 (4.37)</td>
<td></td>
</tr>
</tbody>
</table>

\(N=124\)