THE EFFECT OF GENDER ON A PREDICTIVE MODEL OF VIOLENT BEHAVIORS IN
RURAL YOUTH USING A CONTEXTUAL FRAMEWORK

by

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Submitted to the Graduate Faculty of
The School of Nursing in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

University of Pittsburgh
2001
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Date of final Oral Examination: 11 April 2001
ACKNOWLEDGEMENTS

For

Margaret B. Teresinski
Who dedicated 50 years to the profession of nursing

and

Laura Rose Patterson
Who is my hope and my future

I would like to acknowledge and thank my husband Todd and my many friends who tirelessly supported this effort.

I would like to acknowledge and thank the members of my committee: my chair, Kathryn R. Puskar Dr.PH who graciously allowed me to use her data and supported me to the end, Susan Sereika Ph.D. who worked with me to become statistically literate, Lorah Dorn Ph.D. who challenged me to think contextually and Carl Fertman Ph.D. who always offered encouragement and constructive feedback.
Adolescent violence is a serious health concern. It is manifest by aggressive and delinquent behavior in many of the contexts in which the adolescent is embedded: the family, peer group, school and community. Many research studies have focused on the risk behaviors of substance use, firearm availability and victimization in urban settings. Rural youth are also at risk, yet empirical efforts have been sparse with this population. The specific aims of this study with rural youth were: 1) to propose and test a predictive model of violent behavior that involves the individual characteristics of the adolescent, the risk/opportunity potential of life events and social context and 2) to examine whether there were gender differences in this predictive model. The theoretical framework of Developmental Contextualism (Lerner, 1995) was utilized.

For this secondary analysis, a cross sectional sample of 624 rural adolescents (mean age 15.85, SD = .99; females = 376, males = 248) in the 9th (n = 250), 10th (n = 186), 11th (n = 178) and 12th (n = 10) grades from four schools in Western Pennsylvania was studied to address these aims as part of a larger federally funded parent study on rural adolescents (NIH Grant #R01 NR03616). Structural equation modeling (SEM) was used. The results indicated that rural adolescents scored significantly higher than the published norms of the non-referred sample in the areas of aggression and delinquency on the Youth Self-Report of the Child Behavior Checklist (YSR-CBCL) (Achenbach, 1991). They scored lower than the published normative sample in trait
anger (Spielberger, 1996). Rural females scored higher than their male counterparts in anxiety/depression (YSR-CBCL), cognitive avoidance coping (Moos, 1993), perceived family and peer support (Procidano & Heller, 1983) and, school competence (YSR-CBCL). Life events perception (Johnson, 1993) and social context were significant mediators of violent behaviors for females, but were not statistically significant for males. Health care professionals in the school and community should continue to assess rural adolescents for violent behaviors and provide prevention programs that focus on the relational as well as overt aspect of aggression.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iv</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>ix</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>A. Problem Statement</td>
<td>5</td>
</tr>
<tr>
<td>B. Theoretical Framework :</td>
<td>7</td>
</tr>
<tr>
<td>C. Hypothesized Structural Model</td>
<td>11</td>
</tr>
<tr>
<td>D. Significance to Nursing Science and Allied Disciplines</td>
<td>15</td>
</tr>
<tr>
<td>E. General Hypotheses</td>
<td>16</td>
</tr>
<tr>
<td>F. Definition of Terms</td>
<td>17</td>
</tr>
<tr>
<td>II. LITERATURE REVIEW</td>
<td></td>
</tr>
<tr>
<td>A. Literature Review</td>
<td></td>
</tr>
<tr>
<td>1. Violent Behaviors as the Behavioral Outcome</td>
<td>22</td>
</tr>
<tr>
<td>2. Gender and Violent Behaviors</td>
<td>23</td>
</tr>
<tr>
<td>3. Trait anger and Violent Behaviors</td>
<td>25</td>
</tr>
<tr>
<td>4. Anxiety/depression and Violent Behaviors</td>
<td>27</td>
</tr>
<tr>
<td>5. Cognitive Avoidance and Violent Behaviors</td>
<td>29</td>
</tr>
<tr>
<td>6. Demographics and Violent Behaviors</td>
<td>30</td>
</tr>
<tr>
<td>7. Life Events and Violent Behaviors</td>
<td>30</td>
</tr>
<tr>
<td>8. Drug use and Violent Behaviors</td>
<td>31</td>
</tr>
<tr>
<td>9. Social Context and Violent Behaviors</td>
<td>32</td>
</tr>
<tr>
<td>a. Family Context</td>
<td>32</td>
</tr>
<tr>
<td>b. Peer Context</td>
<td>33</td>
</tr>
<tr>
<td>c. School Context</td>
<td>33</td>
</tr>
<tr>
<td>d. Rural Context</td>
<td>34</td>
</tr>
<tr>
<td>B. Summary Table of Literature</td>
<td>35</td>
</tr>
<tr>
<td>C. Effect of Present Research on the Literature</td>
<td>35</td>
</tr>
<tr>
<td>III. METHODOLOGY</td>
<td></td>
</tr>
<tr>
<td>A. Design</td>
<td>37</td>
</tr>
<tr>
<td>1. The Primary Study</td>
<td>37</td>
</tr>
<tr>
<td>2. The Secondary Analysis</td>
<td>38</td>
</tr>
<tr>
<td>B. Specific Research Hypotheses</td>
<td>38</td>
</tr>
<tr>
<td>C. Sample and Setting</td>
<td>39</td>
</tr>
<tr>
<td>D. Data Collection Procedures</td>
<td>40</td>
</tr>
</tbody>
</table>
E. Instrumentation 41
   2. Trait anger scale of the State-Trait Anger Expression Inventory
      (Speilberger et al., 1983a) 46
   3. Cognitive Avoidance Scale of the Coping Response Inventory
      Youth Form (CRI-Youth) (Moos, 1993) 47
   4. Life Events Checklist (LEC) (Johnson & McCutchen, 1980) 47
   5. Drug Use Screening Inventory (DUSI) (Tarter et al., 1992) 48
   6. Perceived Social Support Scale (Procidano & Heller, 1983) 48
   7. Demographics 48
F. Protection of Human Subjects 49
G. Data analysis 50
   1. Data Screening 50
   2. Instrumentation Reliability and Validity 52
   3. Data Analysis Procedures: Structural Equation Modeling 56
IV. RESULTS
   A. Descriptive Results 61
   B. Model Testing 71
      1. Specific Aim #1 71
      2. Specific Hypotheses 75
      3. Specific Aim #2 77
V. SUMMARY AND CONCLUSIONS
   A. Discussion 90
      1. Descriptive findings 90
      2. Model fit 92
      3. Gender specific Issues 98
   B. Limitations of the Study 100
   C. Implications for Future Research 101
BIBLIOGRAPHY 104
APPENDICES xi
   A. Summary Table of the Literature xi-xl
   B. Confirmatory Factor Analysis of Aggression Scale of YSR xli-xlili
LIST OF TABLES

Table 1. Reliability and validity as proposed by the developers of the instruments and using the rural adolescent sample 42
Table 2. Comparison of Gender-specific Means and Standard Deviations of the Developer’s Normative Sample With the Rural Adolescent Sample 53
Table 3. Comparison of the Means and Standard Deviations of the Developer’s Normative Sample With the Rural Adolescent Sample When Gender-specific Data were not Available 54
Table 4. A Gender Comparison of the Means for the Rural Adolescent Sample 55
Table 5. Correlation Matrix of Analyzed Independent and Dependent Indicator Variables for the Total Sample 64
Table 6. Correlation Matrix of the Analyzed Independent and Dependent Indicator Variables for the Female Sample 67
Table 7. Correlation Matrix of the Analyzed Independent and Dependent Indicator Variables for the Male Sample 70
Table 8. Post Hoc Changes in Goodness-of-Fit for the Overall Sample Based on t values and Modification Indices 75
Table 9. Post Hoc Changes in Goodness-of-Fit for the Female Sample Based on t values and Modification Indices 84
Table 10. Post Hoc Changes in Goodness-of-Fit for the Male Sample Based on t values and Modification Indices 87
LIST OF FIGURES

Figure 1. Conceptual and operational terms in this study using the framework of Lerner's Developmental Contextualism 8
Figure 2. Model for prediction of violent behaviors in rural youth using a contextual Framework 11
Figure 3. Structural equation model: structural and measurement description of latent variables individual characteristics, and its relationship to latent dependent variables of violent behaviors, risk/opportunity and social context 13
Figure 4. Model results: for overall sample 72
Figure 5. Post hoc model results for overall sample 74
Figure 6. Model results for female sample 79
Figure 7. Model results for male sample 80
Figure 8. Post hoc model results for female sample 83
Figure 9. Post hoc model results for male sample 86
CHAPTER ONE

INTRODUCTION

As we enter a new millennium in the United States, there is a continuing concern for the health needs of our children. Violence has been identified as a priority mental health concern for children and adolescents (Youth Risk Behavior Survey, 1995; U.S. Department of Health and Human Services [DHHS], 1996; Elster & Kuzmets, 1994; Green; 1994). It is estimated that 50% of our youth will commit an act, witness or be a victim of violence in their neighborhoods or their schools. This figure may be conservative due to under-reporting (Saner & Ellickson, 1996; Stiffman, Earls, Dore, Cunningham, & Farber, 1996). Exposure to violence will result in varying symptoms of anxiety and depression that appears similar to post-traumatic stress (Duncan, 1996).

There has been a focus on multidisciplinary research on this subject in the last five years. A major emphasis has been placed on those risk environments that present with the most exposure, specifically urban, poor, socially and economically deprived environments (Booth & Zhang, 1996; Fingerhut, Ingram, & Feldman, 1998; Fullilove et al., 1998; Gorman-Smith & Tolan, 1998; Mushinski, 1996; Selner-O'1agen, Kindlon, Buka, Raudenbush, & Earls, 1998; Williams, Stiffman, & O'Neal, 1998). Few researchers have investigated the risk and protective factors of rural youth. Yet, Kingery, Pruitt & Heuberger (1996) report that gun carrying in rural schools increased 138% over a seven-year period with anger identified as a motivating factor. Despite this growing body of research, aggressive behaviors that lead to violence and delinquency remain poorly differentiated from age normative risk behaviors.

Males are identified as the most likely perpetrators of violent crimes. More recently, empirical efforts have identified the importance of examining gender issues in studying anger and aggression (Spielberger & Syderman, 1999). In the last five years, scientists who are female have also begun to examine the different types of aggression, overt or direct and relational or indirect, and the gender influence of each type (Crick, 1997; Henning-Stout, 1998). Schools are beginning to initiate programs that focus on the “relational” aspect of aggression (Crick & Grotpeter, 1995).
In this form of aggression, relationships are the vehicle through which aggression is expressed (e.g., withdrawing friendship, teasing, inclusion or exclusion from groups based on personality styles or physical attributes) (Henington, Hughes, Cavell, & Thompson, 1998). This is a type of aggression that is most often associated with girls, but may be experienced by both genders (Richardson & Green, 1999). Some studies posit that we may be under-identifying females who are aggressive because of research instruments that have been normed on males who demonstrate overt aggressive behaviors (e.g., fighting, destroying property) (Henning-Stout, 1998).

The purpose of this study was to examine the individual characteristics that predict violent behaviors of aggression and delinquency in rural youth using a contextual framework and to investigate whether there were gender differences in the prediction of violent behaviors. According to recent crime reports, the overall rate of juvenile homicide has decreased in this country (Sells & Blum, 1996). Guns have been a consistent presence in rural communities with the majority of adolescent and adult males having access for hunting and recreation. Poverty, isolation, and agricultural lifestyles remain defining factors in rural regions (Weinert & Boik, 1995). Rural families frequently live at a distance from physical and mental health care services. Many are underinsured or uninsured. Something has changed for these youth. Little research has been conducted that identifies the motivating and contextual variables that influence violence in rural youth. Less work has been done on the gender differences in these variables in rural youth.

Historically, theories in child development supported the idea that emotional problems resulting in violent behaviors originated in the individual (Adams & Marshall, 1996; Bijou, 1976; Loeber, 1988; Santrock, 1998). The majority of psychiatric theorists focused on the child to the exclusion of the role that context has played in child development (Blos, 1979; Erickson, 1959). In contrast, social theorists viewed delinquency as a behavior that resulted from environmental stress (Conrad & Schneider, 1992). An increase in violent juvenile crime in the last fifteen years led to societal fear that sociologists and psychiatrists had not addressed the problem. Programs that de-emphasized mental health and rehabilitation and emphasized punishment were espoused.
(Stiffman et al., 1996). This punitive response by society and lawmakers has resulted in large numbers of adolescents who are sent to juvenile justice centers and adult jails with a decrease in mental health treatment. Prevention efforts are encouraged, but many believe that adolescence is too late and the preschool aged child should be the focus of these efforts (Betz, 1995).

The study of anger has followed the historical course of psychiatry with most definitions and understanding of the emotion as an intraindividual, personality trait that is fixed in early childhood. Anger was viewed as a negative emotion with little normative value (Fischer & Jansz, 1995). Definitions of anger have been vague and often confused with hostility and aggression (Spielberger, Jacobs, Russell, & Crane, 1983a). It was postulated that anger was experienced and expressed differently by males and females. Diagnostic and Statistical Manual of Mental Disorders IV (DSM IV) criteria for behavior disorders (1996) include anger as a criterion for childhood depression and behavior disorders, with males identified as the most common population for diagnosis. Some researchers have begun to address this gender issue with respect to anger (Ewart & Kolodner, 1994; Faber & Burns, 1996; Stoner & Spencer, 1987). Despite these correlates, little empirical research has been applied to children and adolescents to examine their experiences of anger in relation to violence (Fennal, 1994).

Not all behaviors, whether violent or nonviolent, will result in delinquency (Saner & Ellickson, 1996). Most adolescents engage in risky behaviors that can be normative (e.g., driving too fast, sexual experimentation, cigarette experimentation) and non-normative (e.g., promiscuous sexual activity, driving while drunk, substance use and abuse, firearm use) (Kann et al., 1998; Resnick et al., 1997; Saner & Ellickson, 1996). Behavioral psychologists have utilized the measurement of life events as the defining influence of environmental influence on the adolescent (Johnson, 1993; Williamson, Birmaher, Anderson, Al-Shabbout, & Ryan, 1995). Coping responses to these stressors have been explained using the cognitive learned response theories of the 1980s (Hewitt & Flett, 1996; Lazarus & Folkman, 1984). A reconceptualization of personality and coping theory has led to a more recent research group, which views some coping styles such
as cognitive avoidance as closely linked to personality types (Costa, Somerfield, & McCrae, 1996; Gomez, 1997).

Recent literature in psychology has also acknowledged the environmental influence of the family, peer and community on the development of the adolescent (Bronfenbrenner, 1992; Lerner et al., 1996). Although theorists have supported peer influences as being the most pronounced dynamic involved in adolescent behavior choices (Blos, 1979; Erickson, 1959), more recent empirical studies have supported the major influence of family support as a buffer for many adolescents (Resnick et al., 1997). For females, family disturbance may also affect their participation in externalizing behaviors such as promiscuity, early pregnancy and gang membership (Resnick et al., 1997). Schools have become the most common arena for acting out behaviors (Lamberg, 1998; Malek, Chang, & Davis, 1998b; O'Keefe, 1997). Teachers also have a significant impact on the socioemotional development of children and adolescents. Yet, many studies continue to lack the contextual emphasis that marks this period of growth.

The rural community is a social context that is understudied by scientists. These areas have been considered a “protected” environment of close-knit families and kinship cohorts. Over the latter half of the 1900s, the economic and agrarian nature of rural America has changed (Conger et al., 1992). This has resulted in stress on families and adolescents with an increase in poverty and mental health needs related to anxiety, depression, aggression, violence and drug use (Ge, Lorenz, Conger, Elder, & Simons, 1994). Early adolescent females in rural settings, in particular, may be at risk for increased depression and problem behaviors because of these changes (Conger et al., 1993). Rural families are at a distance from mental health care services and may not access them because of being underinsured or uninsured (Damos et al., 1998; Rickert et al., 1996; Weinert & Boik, 1995). Child psychiatrists are much less available in rural areas (Thomas & Holzer, 1999). School nurses or teachers may be the first professionals in rural communities to identify behavior problems and refer youth for treatment (Puskar, Tusai-Mumford, & Boneysteele, 1996).
Despite the poor definitions of violence and anger in the research, many programs have been implemented in reaction to the growing concern that our children have become more violent. The focus of these programs has been on those youth identified as high risk. These are poor, minority males in high urban crime areas, and incarcerated juveniles (Anderson & Roper, 1991; Black & Krishmakumar, 1998; Jenson & Howard, 1998; Seidman et al., 1998). Program outcome evaluation has been inconsistent. Most empirical studies and theories on delinquency have been developed for males with weapon carrying and substance use identified as salient, contributing factors (Arria, Borges, & Anthony, 1997; Bailey, Flewelling, & Rosenbaum, 1997; Malek et al., 1998b; Page & Hammermeister, 1997; Shapiro, Dorman, Welker, & Clough, 1998). Few studies have focused on gender distinctions and normative populations with even fewer considering the contextual effects of adolescent environment on the outcomes.

A. Problem Statement

Identification of those adolescents at risk to engage in violent behaviors in rural schools is a research need for health care practitioners and allied health professionals. Examining the impact of the expanded view of context will enable these professionals to develop and plan interventions that are appropriate for the rural adolescent. They can then include family, peers or school personnel in programs that are effective. In response, they can effect positive change to decrease the violent behavior and impact the sequelae of this behavior in our youth.

The individual characteristics of trait anger, depression and anxiety were viewed as factors that relate to violent behaviors in adolescents. Anger, as a personality trait, was believed to influence the self-reported choice to engage in violent behaviors. Anxiety and depression are mood states that are associated with violence (as predictors or consequences). Being older or younger in grade level (developmental age) can also influence violent behavior. Cognitive avoidance, as a personality based coping factor, may influence the choice of behavior that is aggressive. Understanding the impact of this coping style can also affect the choice of interventions designed to decrease violent behaviors.
The outcomes of violent behaviors were viewed as two separate degrees of expression of externalizing behaviors, aggression and delinquency. Aggression is the behavioral expression of anger and emotion that can be as direct as hitting and fighting to indirect as methods of teasing, bragging and name-calling. Delinquency is viewed as a more profound pattern of behavior that results in lifelong problems with the law. Life events that are normative and non-normative were viewed as times of risk and opportunity for the adolescent. Drug use was considered an experimentation event of the developing adolescent and a time of risk/opportunity to develop problem solving skills that could lead to abuse or rejection of this activity. These risk/opportunity events may have a mediating effect that decreases or increases the trajectory to violent behaviors. Likewise, the context of perceived family and peer support and school competence was viewed as a possible mediating factor. Lerner’s theoretical framework of developmental contextualism (1995) was chosen for this study because of its inclusion of the constructs of behavioral change and focus on the context in the explanation of adolescent development.

Although primarily noted to be a problem for male adolescents, aggressive behaviors have been documented and discussed more recently in females (Pajer, 1998). For females, there appears to be a contextual relationship with the expression of aggression (peer and family contexts) (Talbot, 1997). In urban areas, aggression may present as gang membership in female gangs (Chesney-Lind, 2001). Studies of rural females have identified the risk of depression and problem behaviors, such as aggression, as a response to parental conflict and pressures (Conger et al., 1993). More recent researchers have begun to emphasize gender differences in the expression of anger and aggression (Crick & Grootpeter, 1995; Spielberger & Syderman, 1999). Further studies have challenged the definitions of how we measure aggression based on the strong body of work that looks at direct aggression in male adolescents (Henning-Stout, 1998). There are concerns that we are missing those females who may be using more indirect methods of aggression expression that may be just as harmful to the mental health of adolescents (e.g., bullying, excluding, name calling). These indirect expressions may clearly affect the rage that
precipitates the violent behaviors that are expressed in the schools. Because aggression can be
direct or indirect, gender was considered an important issue in this secondary study.

Therefore, the specific aims of this research with rural youth were: 1) to propose and test
a predictive model of violent behavior that involves the individual characteristics of the
adolescent, the risk/opportunity potential of life events, and social context, and 2) to examine
whether there were gender differences in the predictive model for violent behavior.

B. Theoretical Framework

Adolescence is a period of development that has been historically viewed as the transition
years marking the ending of childhood and the beginning of adulthood. Many psychological
theorists have posited that personality and developmental milestones achieved in the early years
of the developing child have become either positively or negatively achieved in stages and reside
within the personality and cognitive processes of the adolescent (Blos, 1979; Erickson, 1959).
The theories of Blos (1979), Erickson (1957) and Lazarus (1984) formed the theoretical base of
the parent study, which generated the data used in this secondary analysis. They are briefly
reviewed.

Child development researchers have overwhelmingly supported the emphasis on
separation and individuation of the adolescent from his/her parents. Blos (1979) applied the
personality theory of Margaret Mahler (Blos, 1979; Mahler, Pine, & Bergman, 1975). He
described a second “separation phase”, similar to that which a toddler experiences (Blos, 1979).
Transient acting out is expected and noted to be a developmentally normal occurrence. Only
when the behavior becomes “fixed” does it become problematic. He defines the delinquent as
being in a special interaction with his society that can be a “psychological crisis” but not
necessarily a “pathological event” (Blos, 1979, p. 217). Erickson (1959) proposed the separation
of the adolescent as a stage or step essential for successful completion of the formation of
identity. During this time, peer affiliation is pronounced, and isolation is viewed as a negative
factor.
Cognition maturity is apparent during the adolescent years, and problem-solving methods are tested in response to the stress of life events. Since this occurs through learning, cognitive theorists emphasize the power of the adolescents' thoughts to affect mood and behavior (Beck, 1976; Lazarus & Folkman, 1984). Inherent in this theoretical focus is the emphasis on interventions that teach new coping skills in response to stresses that are developmental and those that are unexpected (Moos, 1993; Puskar, Lamb, & Tusai-Mumford, 1997).

In the last two decades, Bronfenbrenner (1979), Elder (1988), and Lerner (1985) have proposed theoretical frameworks to explain child development that emphasize the reciprocal relationship of the individual and the social and historical contextual systems. These frameworks were identified as the Ecological Developmental Systems Perspective that advanced child development theory to include the child and his/her context as variables in the research process (Santrock, 1998).

The framework of Developmental Contextualism (Lerner, 1995a; Lerner, 1996) is an organismic, developmental systems approach that views and explains behavior from a biopsychosocial perspective. In this theoretical focus, Lerner advances the theories of Bronfenbrenner (1979) and Elder (1988) to posit the application of this contextual approach to research which emphasizes community involvement in the program solutions to behavior (Lerner, 1995a; Lerner, 1996; Lerner et al., 1996; Ohannessian, Lerner, Lerner, & von Eye, 1995).

Because of the relational emphasis of this framework, both quantitative and qualitative methodologies are encouraged in the research analysis (Lerner, 1996; Ostrom, Lerner, & Freel, 1995). There are four main assumptions that guide Developmental Contextualism: plasticity, dynamic interaction, context embeddedness, and temporality. These are explained below and diagrammed in Figure 1.

Plasticity is the belief that the organism of study is a changing being and is capable of change at different times across the lifespan. In Figure 1, change includes issues of continuity.
Figure 1: Conceptual and operational terms in this study using the framework of Lerner's Developmental Contextualism
such as demographics (age, grade gender) and traits or personality functions (e.g., trait anger and cognitive avoidance coping). Discontinuity may include events that can be perceived as normative or non-normative (e.g., good or bad life events, drug use). The perceptions of the good or bad life events and the nature of the risk taking in this developmental period define this as a time of risk or opportunity for decisions that will lead to behavior change.

Dynamic interaction defines the fluid systems boundary of the organism with his environment. The relationships are defined as individual biologic system with psychological system, individual with family, school and peer system and individual with the social ecological system (Lerner, 1996; Lerner et al., 1996). Researchers are encouraged to examine the interlevel relationship of variables rather than a dichotomous or unilevel difference (Lerner, 1996). This is in contrast to the nature-nurture theorists who see these variables as “either-or” concepts (Bijou, 1976) and the theorists who stress critical developmental stages (Bowlby, 1969; Erickson, 1959).

Lerner also noted that the dynamic interaction of the organism with its system is a reciprocal relationship and that the adolescent, as the organism of study, can and does affect his/her context (Lerner, 1996). The adolescent is the stimulator of his context (traits) or the processor of the context (perception and emotional reactivity) and the agent, shaper or producer of the context (behavioral choices such as peer group choices, conduct choices such as acting out). Research in this theory has been involved in determining the relative impact of this reciprocal relationship in select roles on outcome variables (Ohannessian et al., 1995).

The third construct of embeddedness assumes that “being” human implies that no one lives in isolation. All human beings are embedded, or belong, in the context in which they live. These contexts are the inner biological and psychological environment and social context of family, peer and school. It is also the community as a historical system, whether urban, suburban or rural. Here human beings utilize social relationships as a support to grow and change. It is stressed that these levels do not exist singularly, but are in constant interaction with each other and influence variables at other levels (Lerner, 1995a).
Temporality is the fourth assumption of this theory. Lerner (1996) views “history - a change over time- is incessant and continuous, and it is a level of organization that is fused with other levels.” (p. 783). Because levels and contexts are linked, structure as well as function of a variable may change over time. This is an important concept for researchers whose methodology is predominantly focused on cross sectional data collection. Lerner (1996) proposes that researchers use “change-sensitive (longitudinal designs)” (p. 709) when possible and that research scientists join with communities to set up programs that involve the interrelated contexts of the adolescent (Lerner, 1995a).

In this study, the continuous individual characteristics (trait anger, age, mood of anxiety/depression and cognitive avoidance coping) interact with the discontinuous events (positive life events change, negative life events change, drug use) to predict the violent behaviors of aggression and delinquency in the rural adolescent. The adolescent acts as a stimulus (traits) and makes behavioral choices that affect the context (behaviors such as acting out aggressively, getting in trouble with the law, and property destruction). The adolescent is embedded in his/her social context, which is further identified as family, peers and school contexts. The broad embeddedness in this study is the rural environment. Mediating effects of the stress of life events and social context are considered. In the present study, this contextual influence was examined using an existing cross-sectionally sampled data set from a larger parent study funded by the National Institutes of Health, National Institute for Nursing Research (Grant # R01 NR 03616), which examined stress and coping in rural youth (Puskar, Lamb, & Sereika, 1998).

C. Hypothesized Structural Model

The model for prediction of violent behaviors in rural youth is based on the constructs presented in Lerner’s contextual theoretical framework and is presented in Figure 2. The individual characteristics of the adolescent were viewed as the latent independent variable (INDCHAR). It was hypothesized to predict the latent dependent variable outcome of violent
Figure 2. Model for prediction of violent behaviors in rural youth using a contextual framework
behaviors (VIOLBEH). Mediation involves three variables. It begins with a strong relationship between predictor and outcome variables. In mediation, this relationship may decreases to near zero when an antecedent variable is considered in the equation. Mediator variables may produce either additive or suppressive influences on the predictor to outcome relationship (Baron & Kenny, 1986; Lindley & Walker, 1993). Risk/opportunity (RISK/OPP) was examined as a mediator latent variable that would have an indirect effect on the relationship of individual characteristics on violent behaviors and a direct effect on social context. Social context (SOCCON) was also identified as a latent variable that would mediate the relationship of individual characteristics to violent behaviors.

The independent and dependent latent variables considered here were measured using indicator variables. The relationship of the latent variables to the indictor variables is presented in the structural equation model in Figure 3. The independent indicator variables were trait anger (log base 10 transformed anger variable, LOGTANG), anxiety/depression (square root transformed anxiety/depression variable, SQANXDEP), cognitive avoidance coping (CRICA), and the demographic variables of developmental age (age and grade) (square root transformed variable, SQDEVAGE). The dependent indicator variables were: positive life events change (AVGOOD), negative life events change (AVBAD), drug use (inverse transformed variable, INVDUSI), perceived family support (MSSFA), perceived peer support (PSSFR), school competence (TCOMPR), and aggression (square root transformed variable, SQAGG) and delinquency (square root transformed variable, SQDEL). Further, the indicator variables of positive and negative life events change and drug use measured the latent dependent variable of risk/opportunity. The indicator variables of family and peer social support and school competence measured the latent dependent variable of social context. Aggression and delinquency measured the latent dependent variable called violent behaviors. A more specific identification of the parameters and matrices employed in analysis will be presented in the methods section.
Key: Symbol and matrix used
$\lambda_X$ factor loading for independent latent variable ($A_X$ matrix)
$\lambda_Y$ factor loading for dependent latent variables ($A_Y$ matrix)
$\delta$ error factor for indicator independent variables ($E_\delta$ matrix)
$\epsilon$ error factor for indicator dependent variables ($E_\epsilon$ matrix)
$\gamma$ exogenous independent pathways ($\Gamma$ matrix)
$\beta$ endogenous dependent pathways ($\beta$ matrix)
$\xi$ latent exogenous independent variable ($\Phi$ matrix)
$\zeta$ latent endogenous dependent variables error ($\Psi$ matrix)

**Figure 3:** Structural Equation Model, Structural and measurement description of latent independent variable individual characteristics and its relationship to latent dependent variables of violent behaviors, risk/opportunity, and social context.
It was further hypothesized that the predictive relationship between the measured independent variable and dependent variables would generate gender specific models of violent behavior prediction. The same model was examined to determine whether the prediction held for females and males.

D. Significance to Nursing Science and the Allied Disciplines

The research efforts in health care have focused primarily on the physical manifestations of anger as a cardiovascular health risk in children and adolescents (Ewart & Kolodner, 1994; Greer, Thomas, Dropleman, & Younger, 1994; Grunbaum, Vernon, & Clasen, 1997; Liehr Meininger, Mueller, Chandler, & Chan, 1997). Pediatric nurses have voiced a concern that behavioral manifestations of anger, hostility and aggression preclude the identification and intervention planning for the adolescent who presents with a medical problem (Muscari, 1992). Most research on violence by nurses has been conducted on the in-patient psychiatric ward or adolescent forensic unit (Anderson & Roper, 1991; Roper & Anderson, 1991). Little empirical research has been conducted by nurses to assist pediatric and psychiatric nurses in violence prevention and anger management in the urban or rural community (Lamb, Puskar, Sereika, & Corcoran, 1998; Modrican-McCarthy, Pullen, Flannery-Barnes, & Alpert, 1998). Advanced practice nurses are in a unique position to assess, plan, implement and evaluate effective programs designed to decrease violent behaviors in the family, school, neighborhood, and community. In rural communities, advanced practice nurses who collaborate with the school system have access to a high-risk population (Muscari, Philips, & Bears, 1997). It is anticipated that this study will enable advanced practice nurses and allied health professionals to more critically assess adolescents who are at risk for committing violent acts and to identify contexts that are protective and risk behaviors that are detrimental. It will also add to the body of nursing knowledge related to rural youth and gender differences in violent behavior prediction.
E. General Hypotheses

The hypotheses are:

1. The data will support the model of violent behaviors presented in the proposed structural model.
   
   1.1. There will be a positive direct relationship between individual characteristics as measured by trait anger, anxiety and depression, cognitive avoidance, and developmental age (based on age and grade) and the latent variable of violent behaviors as measured by aggression and delinquency.
   
   1.2. There will be a partial mediation effect of risk/opportunity (positive life events change, negative life events change, and drug use) on the relationship between individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (aggression and delinquency).
   
   1.3. Risk/opportunity (positive and negative life change scores and drug use) will partially mediate the relationship between individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and social context (family and peer social support and school competence).
   
   1.4. There will be a full mediation effect of social context (family social support, peer social support and school competence) on individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (delinquency and aggression).

2. There will be differences in the prediction of violent behaviors, as hypothesized in the proposed model, between male and female rural adolescents.
   
   2.1. The hypothesized model will fit better for male adolescents than female adolescents.
   
   2.2. There will be a stronger direct relationship between individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent
behaviors (aggression and delinquency) for the male adolescents as compared to the female adolescents.

2.3. There will be differences in the direct effects in the structural equation model for all of the latent variables between male adolescents and female adolescents.

F. Definition of Terms

**Rural Adolescent.** The rural adolescent is defined as one who lives in an area of low population density and must travel large distances to access services that provide health care (Weinert & Boik, 1995). Rural areas also have limited transportation to schools and health clinics and report high levels of poverty, agriculture and agrarian employment, and social isolation (Cordes, 1985).

**Adolescence** is defined as the period of physical, cognitive and emotional development that occurs between the ages of 11 to 18 years of age. Adolescents are usually in junior high or high school (Achenbach, 1991; Erickson, 1959). In this secondary analysis, the subjects were between the age of 14 and 18 with one subject falling outside this range. The latter was deleted because of not meeting the age criteria for adolescence.

**Individual Characteristics** are those traits, emotions and cognitions that are considered “continuous” in the individual (Lerner, 1996). These characteristics may be a function of personality (e.g., trait anger and cognitive avoidance coping) or biological development (e.g., age, gender). These psychological and biological landmarks are the unique markers of the individual who is the stimulus and processor of his/her behavior (Lerner, 1995b).

**Trait Anger** is defined as a stable personality dimension that is a component of a larger “experience” of intensity and duration of the emotion (Deffenbacher et al., 1996; Spielberger et al., 1983a). When the person with high trait anger is provoked, the anger state that leads to anger expression is more acute (Spielberger et al., 1983a). It is a construct that is different from the expression of anger that is evident in the “behaviors” that result from the experience of the emotion (Spielberger et al., 1983b). In this study, the ten-item scale score of the Spielberger (1983) State-Trait Anger Expression Inventory (STAXI) measures trait anger.
Anxiety/depression are mood states that reflect the individual ability to cope, function, and adapt to life changes. They are internalizing constructs that are experienced within the individual (Achenbach, 1991). Along with anger, anxiety and depression are criteria believed to be present in DSM-IV diagnosis of mood disturbances and behavioral disturbances in children and adolescents. In this study, these indicators are measured by the anxiety/depression scale of the Youth Self-Report (YSR)-Child Behavior Checklist (CBCL) (Achenbach, 1991). This is a 16 question self-report of the internalizing construct.

Cognitive Avoidance Coping is an attempt to avoid thinking realistically about problems (Moos, 1993). This cognitive pattern is viewed as a cognitive avoidance response and theoretically has been utilized as a mediating variable between personality and behavior response by transactional cognitive psychologists (Costa et al., 1996; Lazarus & Folkman, 1984; Hewitt & Flett, 1996). Others view personality variables and coping styles as “interactive or additive” in explaining maladjustment (Hewitt & Flett, 1996, p. 44). This literature is reviewed more completely in Chapter 2. In this study, cognitive avoidance is viewed as a cognitive coping style that is a personality factor and is measured in the independent latent variable of Individual Characteristics. It is measured using the cognitive avoidance subscale of the Coping Response Inventory (CRI) (Moos, 1993). This is a 6-item self-report subscale of the avoidance coping responses portion of the CRI.

Demographic variables are the attributes and characteristics of the rural adolescent sample. In research with adolescents, they most often include age, grade, gender, race, and socioeconomic status (SES) (Sussman, Dent, Stacy, Burton, & Flay, 1994). In this study, they were defined as developmental age and gender. Developmental age was viewed as age appropriate grade level. It was created by statistically regressing age on grade. Race and SES were not salient variables in this secondary study.

Risk/Opportunity is defined as a discontinuous time in the adolescents' development when normative and non-normative life events may affect choices that result in behavioral change.
The adolescents’ perception of the events may affect his/her life choices that are made regarding problem behaviors.

**Life events** are those experiences and events of adolescents, from the family, peer and school system that impact or stress the individual. They can be dependent and out of the individual’s control or independent and within their control. They are perceived to have a positive effect (positive change) or negative effect (negative change) on the adolescent. In the contextual framework, these are further differentiated into normative and non-normative life events (Lerner, 1995). Normative events are described as those related to normal developmental changes such as grade changes or an older sibling going to college. An example of a non-normative event is the death of a friend or a parent. The Life Events Checklist (Johnson, 1993) was used to determine the life events score as normative and non-normative and as having positive or negative change effects.

**Drug use** is not necessarily viewed as a pathological event, but one of experimentation that may become “fixed” state and a crisis (Blos, 1962). In this normative sample, drug use is not assumed to be drug abuse. Drug use is defined as the use of alcohol or any drug, occasionally or frequently. Drug use is viewed as a life event that may impact the adolescent in a problematic way, depending on the cumulative effect of other stresses and the protective contexts in his/her life (Dryfoos, 1997; Ellickson, Saner, & McGuigan, 1997). Adolescents who engage in violent behaviors have a strong concurrent associated risk factor of drug use (Dukarm, Byrd, Auinger, & Weitzman, 1996). Here, drug use is measured by the Drug Use Screening Inventory (DUSI) which is a self-report scale that asks the adolescent to report whether they use alcohol or specific drugs, if they have a preference or problem with any item (Tarter, Laird, Buckstein, & Kaminer, 1992). Further, the developer of the drug use screening inventory acknowledged this experimentation effect when he asked that the adolescent rate the specific drug usage as “a problem” or bothersome to the adolescent (Tarter et al., 1992).
Social Context is defined as the family, peer, and school environment of the adolescent (Lerner, Baker, & Lerner, 1985). Assessment of context includes adolescents’ self-report perception (Ohannessian et al., 1995) and accumulated data from parents, peers, and teachers. This is an interactive measure of the adolescents’ connection to his/her context.

Social support is the perceived relationship that the adolescent has with his family, peers, and others in his/her social context. It can be viewed as a positive influence with a give and take reciprocal relationship with family, peers and others. It can also be viewed as a negative relationship, as is the case in families with serious physical, sexual, or substance abuse or neglect or in cases where the adolescent is mentally impaired due to anxiety, conduct, or cognitive disorders (e.g., antisocial personality disorder, schizophrenia). The scores on the Perceived Social Support Scale-Family (PSS-Fa) and the Perceived Social Support Scale-Friend (PSS-Fr) (Procidano & Heller, 1990; Procidano, 1992) measured family and peer social support in this study.

School competence is defined as participation in school activities such as sports, clubs, and academic performance. In this study, it is measured by the sum of the raw scores for the Activities and Social scales and the mean for academic performance as measured on the first part of the YSR-CBCL.

Violent behaviors are those externalizing expressions of hostility that may be as minor as fighting and verbal aggression (swearing, yelling, threatening), or progress to actions of aggression towards things (breaking things, stealing) and towards others (hurting others in fights, using a gun, continuous infractions of societal norms) (Saner & Ellickson, 1996). Those children and adolescents who consistently exhibit the latter with disregard for societal norms are sentenced to boot camps, wilderness programs, juvenile detention, and prison.

Aggression is the behavioral expression of hostility or anger (experience) that can be overt or direct (e.g., fighting, destroying others things, destroying own things, being mean, arguing, attacking others) or covert or indirect (e.g., demanding attention, bragging, teasing) (Achenbach,
This study measures aggression using the 19-item aggression subscale of the Youth Self-Report of the Child Behavior Checklist (YSR-CBCL) (Achenbach, 1991). According to Song et al. (1994) who examined the psychometric properties of the above scale, aggression may be more specifically differentiated into three factors that they called active aggression, affect aggression and attention focusing aggression (p. 241). More recently, the validity of the measurement of aggression in females has been challenged with several author's noting the gender differences in aggression expression (Crick, 1997; Crick & Grotpeter, 1995; Henning-Stout, 1998). Confirmatory analyses of the Youth Self Report tool in the rural adolescent population guided the grouping of outcome behaviors prior to analysis.

Delinquency is noted to be the fixed behavioral expression of behaviors that are contrary to and in violation of social norms (Chesney-Lind, 2001; Gotfredson, Sealock, & Koper, 1996). The delinquency subscale of the Youth Self Report measured this variable. The delinquency subscale measures behaviors such as truancy, hangs around bad kids, steals things at home, and sets fires.
CHAPTER TWO

A. Literature Review

In this chapter, each identified variable is discussed in relation to the behavioral outcome variable of violent behaviors (aggression and delinquency). Therefore, literature on violent behaviors is discussed first followed by the literature on gender. The chapter concludes with identification of a Summary Table of the literature and notation of the gaps in the literature that this study will address.

1. Violent Behaviors as the Behavioral Outcome

Violence among adolescents is identified as a growing health need (Green, 1994; Elster & Kuzmets, 1994; Youth Risk Behavior Survey, 1995) with 73% of all deaths in youth 10-24 years of age due to one of four causes: multiple vehicle accidents, other unintentional injuries, homicides and suicides (Kann et al., 1998).

DuRant et al. (1996a) identify normative expectations to choose violence as a problem solving method by early adolescence in those who have had previous exposures to violent acts or events. Studies conducted with urban youth indicate there are violent behavioral consequences of experiencing and witnessing violence in the neighborhood and community (Alvarez & Bachman, 1997; Bailey et al., 1997; Clark, 1997; Dahlberg, 1998; DuRant, Kahn, Beckford, & Woods, 1997; Fitzpatrick, 1997; Fry-Bowers, 1997; Gorman-Smith & Tolan, 1998; Heide, 1997; Horn & Trickett, 1998; O'Keefe, 1997).

Research has also been done on juvenile offenders or institutionalized adolescents (Borduin, 1994; Fraser, Nelson, & Rivard, 1997; Hutchinson, Tess, Gleckman, & Spence, 1992; Jenson & Howard, 1998). In the last several years, more researchers are focusing on the normal adolescent to examine the pathways that lead to violence to identify appropriate primary prevention programs (Resnick, 1997; Saner, 1996; St. George, 1997; Youth Risk Behavior Survey, 1995). The definition of “violence” or “violent behaviors” is not always clear. Normal
adolescents have always engaged in "risky behaviors" with some violence risk behaviors, such as frequent fighting, poor definitive indicators (St. George & Thomas, 1997).

Violent behaviors in adolescents are associated with risk factors. Risk factors for violence are defined as alcohol and drug use/abuse (Dukarm et al., 1996; DuRant et al., 1997; Ellickson et al., 1997; Resnick et al., 1997; Saner & Ellickson, 1996), risky sexual practices (frequent partners, early pregnancy and unprotected sexual intercourse) (Melzer-Lange, 1998), frequent fighting (Lowry, Powell, Kann, Collins, & Kolbe, 1998; Malek, Chaang, & Davis, 1998a; Malek et al., 1998b), and previous engagement in deviant actions such as selling drugs, and carrying or using a gun. Large numbers of studies focus on the availability and use of firearms as a profound risk factor that leads to violence (Arria et al., 1997; Bailey et al., 1997; Dahlberg, 1998; Kingery, Pruitt, & Heuberger, 1996; Lowry et al., 1998; Malek et al., 1998a; Page & Hammermeister, 1997; Shapiro et al., 1998).

Some researchers focus on the individual characteristics, such as familial history and personality types, that predispose the adolescent to violence (Calvert, 1997; Cohen, 1998; Grosz et al., 1994). Loeber (1996) indicates that there is a lifelong trajectory of violent crimes or events that result in antisocial actions in adolescence. Loeber has focused most of his violence research on male samples (Loeber, 1988; Loeber, 1996; Loeber & Hay, 1997; Loeber & Stouthamer-Loeber, 1998). Several studies identified sexual differences in perception and experience of violence (Alvarez & Bachman, 1997; Baron & Perron, 1986; Calvert, 1997; Dukarm et al., 1996; DuRant et al., 1996a; DuRant, Treiber, Goodman, & Woods, 1996b; Fingerhut et al., 1998; Fitzpatrick, 1997; Lowry et al., 1998; McKeown, Jackson, & Valois, 1998; O'Keefe, 1997).

There was only one review prior to 1995 that examined violence and the pathway to aggression in females exclusively (Litt, 1995).

2. Gender and Violent Behavior

Although much early research has been conducted on males, the recent research has supported a gender specific model for females who are aggressive. A review of the literature by
Talbot (1997) revealed that male and female children have similar patterns of behavior when behavior disorders are present, but that adolescent females change to use social aggression. An additional review by Pajer (1998) also supported the need to study the effects of antisocial behaviors in girls, as the outcomes in adulthood are similarly devastating (e.g., high mortality, poor job history and personal functioning). This has resulted in an examination of aggression in females that includes risky behaviors (e.g., promiscuity), relational and associative aggression and violence in groups such as gangs (Chesney-Lind, 2001), as well as the previously studied behaviors of fighting and assault (Ellickson et al., 1997; Litt, 1995; Morris et al., 1995; Saner & Ellickson, 1996). More females using illicit drugs have swelled the ranks of adolescents who are resorting to violent acts (Ellickson et al., 1997). Females also seem to be more sensitive than males to the family context disruptions during the adolescent years (Saner & Ellickson, 1996). Rural female adolescents may be sensitive to the changes in parental stress and context (Conger et al., 1993).

The instruments that measure violence in females were often tested and validated on populations of male subjects with active or overt aggressive behaviors such as fighting and property destruction. These measures of aggression continue to be most often associated with males. Henning-Stout (1998) examined three scales for validity, which are used by researchers to measure aggression. The CBCL, Teacher Form, and YSR (Achenbach, 1991) were among those examined. In her study, Henning-Stout (1998) performed a content validity qualitative study with three teachers who worked with girls (aged 10-16). Interrater reliability and grounded theory methods were employed when identifying concerns and themes of females. The results indicated that out of 112 items on the YSR, seven (6.25%) were assessed to match the females’ experiences with four items contributing to clinical scales (Henning-Stout, 1998, p 442).

In response to the focus on males and overt aggression, a growing body of researchers have begun to examine the lack of gender specific study of aggression. This has resulted in an interest in an indirect type of aggression called “relational aggression” (Crick & Grotpeter, 1995,
Crick, 1997). It is identified as a type of aggression that is intended to cause harm through control or manipulation of the relationship, threatening to withdraw acceptance or friendship or using controlled exclusion from friendship groups (Crick, 1997). This type of aggression is seen as a socially unchallenged method that is used predominantly by girls. Crick & Grotpeter (1995) examined the different types of aggression and the risk for psychosocial maladjustment in a group of 491 third through sixth grade male and female students in a Midwestern town. They devised and factor analyzed their own peer nomination scale that identified classmates who were overtly aggressive, relationally aggressive and pro-social. They found that girls were significantly more relationally aggressive than boys and that relationally aggressive children were more likely to be isolated, lonely, depressed and rejected by their peers (Crick & Grotpeter, 1995). A subsequent study by Henington, Hughes, Cavell & Thompson (1998) found that both boys and girls had equally high levels of relational aggression. However, girls who had high levels of overt aggression were more likely to be rejected by peers. By examining only overt aggression and failing to use peer nominated relational aggression items, Henington et al (1998) noted that 60% of girls who were identified as aggressive would have been missed compared to 7% of the boys.

3. Trait Anger and Violent Behaviors

The concept of anger is defined as an emotion that is experienced and expressed by all human subjects. The definition of anger has been used interchangeably with hostility and aggression. The confusion of anger, hostility and aggression was consistent with the Western view of the emotional expression of anger as irrational, involuntary and primitive (Fischer & Jansz, 1995). Although anger has been associated with expression of violence and hostility, it has been poorly described and inadequately researched because of its negative connotation (Spielberger et al., 1983b; Swaffer & Hollin, 1997).

Spielberger et al., (1983) defined anger as an emotion of varying intensity that is experienced and expressed. The experience is represented affectively and physiologically in an immediate situation (state anger) and as a personality dimension or anger proneness to experience.
immediate emotion (trait anger) (Deffenbacher et al., 1996). State anger (S-Anger) included the subjective feelings of tension, annoyance, irritation, fury and rage with a reaction of the autonomic nervous system. Trait anger (T-Anger) included differences in the frequency that state anger was experienced by individuals, and persons experiencing high trait anger were more likely to perceive a wide range of situations as annoying, irritating or frustrating (Deffenbacher et al., 1996; Spielberger, 1996; Spielberger et al., 1983a; Spielberger et al., 1983b). Those persons with high trait anger were also believed to experience the arousal of anger in response to provocation more often and more intensely (Spielberger et al., 1983a).

Research studies of the experience of anger focus on the negative physiologic effects of this emotion on the health of subjects. Efforts in the area of personality type and cardiovascular effects of internalization are the most proficient (Colder & Stice, 1998; Ewart & Kolodner, 1994; Faber & Burns, 1996; Fennal, 1994; Greer et al., 1994; Liehr et al., 1997; Nugent, Champlin, & Wiinimaki, 1997; Spielberger et al., 1983b; Suls, Wan, & Costa, 1995).

In response to the growing violence in our children’s youth, many juvenile justice programs and primary prevention focused programs have begun to utilize an anger expression component that is usually psychoeducational or cognitive-behavioral in nature (Feindler & Scalley, 1998; Fennal, 1994; Hains, 1992; Hains, 1997; Lamb & Puskar, 1991; McDougall, Venables, & Roger, 1991; Wilcox & Dowrick, 1992). Some researchers are critical of the poor evaluation efforts of these programs. It is also unclear whether the types of group training programs help to effect individual change in behavior, particularly over time.

Few studies have focused on the interpersonal context of adolescents’ anger experiences (Whitesell & Harter, 1996; Zahn-Waxler, Friedman, Cole, Mizuta, & Hiruma, 1996). As in the studies of anger expression and violent behavior, researchers have neglected to examine the gender differences in the experience of anger. Few studies were found that focused on the gender differences in the anger experience and hostility expression (Crick, Bigbee, & Howes, 1996; Zahn-Waxler et al., 1996).
A recent study by Colder & Stice (1998) examined the variable connection of anger and problem behaviors (substance abuse and delinquency) in adolescents. In these prospective analyses, both anger and impassivity predicted problem behaviors. High levels of anger were associated with delinquency in impulsive adolescents. There were gender-moderated links between problem behaviors and substance use for females with males linked to impulsively and problem behaviors (Colder & Stice, 1998).

Song, Singer and Anglin (1998) studied 3735 adolescents aged 14-19 from six high schools in the Cleveland area. They identified anger as the leading trauma symptom in contributing to violence and predicting violent behaviors. This finding was not gender specific. Studies of violence are frequently focused on institutional milieu issues on the psychiatric unit with little direction for the pediatric nurse practitioner in the community or the school nurse (Fry-Bowers, 1997; Lamb & Puskar, 1991; Roper & Anderson, 1991).

4. Anxiety/Depression and Violent Behaviors

Research efforts in the last two decades have supported the trend in mental health to view violent behavior as an outcome that is within the person's control and to hold the person responsible for this behavior. Prior to this changing trend, conduct disorder was viewed as a psychiatric disorder in children, which was treatable within the in-patient mental health setting (Conrad & Schneider, 1992). The Diagnostic and Statistical Manual for Mental Disorders (American Psychological Association [DSM IV], 1993) has included the possible presence of depression as a criterion variable for behavioral disorders of childhood. These behavioral disorders include attention deficit disorders, conduct disorders and syndromes of explosive behavior disturbance (DSM IV, 1995).

Anxiety and depression have been viewed historically as symptoms of “internalization”, originating from and experienced within the individual. Many studies of violent behaviors have been conducted on males and depression as an internalized concept has correlated poorly with the outcome of violence (Loeber, 1996; Loeber & Hay, 1997; Loeber & Stouthamer-Loeber, 1998).
Recent research that has been conducted with adolescents of both sexes has examined the relationship of depression to violent behaviors (Warner & Weist, 1996). The results have been inconsistent as to whether depression is significantly related to the outcome of violence and supports a gender specific assumption when the relationship exists (Baron & Perron, 1986; Warner & Weist, 1996).

Adolescent girls are more likely to score higher in depressive symptomatology as an internalized problem, as is measured by current depression instrumentation (Baron & Perron, 1986). Adolescent males are more likely to be diagnosed with a conduct disorder or behavioral disorder (Attention Deficit Disorder, Attention Deficit Hyperactivity Disorder) (Booth & Zhang, 1996). Very few studies have examined the role of anxiety with violence (Duncan, 1996; Stavrakaki & Gaudet, 1989; Warner & Weist, 1996).

Exposure to violence and victimization in the community, neighborhood, school and family is a consistent variable predictor for aggressiveness in recent research. (Alvarez & Bachman, 1997; Bailey et al., 1997; Clark, 1997; Dahlberg, 1998; DuRant et al., 1997; DuRant et al., 1996b; Fitzpatrick, 1997; Fry-Bowers, 1997; Gorman-Smith & Tolan, 1998; Heide, 1997; Molidar, 1996; O'Keefe, 1997; Warner & Weist, 1996; Widom, 1994). Duncan (1996) examined inner city adolescents who are exposed to violence and found acute symptoms such as crying, tremors and withdrawal, and chronic problems with anxiety, depression and sleep disturbance. Horn & Trickett (1998) reviewed nine studies on violence in children and young adolescents that indicated a correlation between anxiety and depression and being a victimized and acting out aggressively. One study in the previous literature review was a rural sample (Horn & Trickett, 1998). This is in contrast to the prevailing beliefs that violent behaviors are psychologically, internally precipitated and biologically based.
5. Cognitive Avoidance and Violent Behaviors

Lazarus and Folkman (1984) and Moos (1993) support the cognitive stress/coping model that views coping responses as closely linked but separate from personality factors. This view has sparked the cognitive revival of the last 20 years and been the theoretical basis of many intervention programs. This view is seemingly different and separate from the personality or psychodynamic theorists in the psychological field. A more recent body of literature has attempted to incorporate the context of environment and individual personality types to explain the process of behavioral change (Costa et al., 1996, Gomez, 1997). It is noted that this literature does not negate the efforts of the cognitive researchers. It attempts to explain the coping styles that may effect areas of behavioral adaptation that seem resistive to change learning options such as exists in conduct disorder and delinquency.

Costa et al. (1996) viewed stress and coping “as an intrinsic part of the fabric of action and experience” (p. 44) and actually supported the idea that Lazarus and Folkman (1984) posited regarding adaptation as a larger construct of stress and coping. Costa et al. (1996) deviated from the accepted view when they identify stress as an inclusion of the emotion or feeling about an event in addition to the simple definition of it as the event or “stressor” (pp. 46-47). We can look at recent reports of violent events such as Columbine to find a lack of one “precipitating event” or “stressor”.

Moos (1993) supports this idea of coping style preference in describing his validity section of his Coping Response Inventory (CRI). In a study by Moos (1993) of youths with conduct disorder (N=58), cognitive avoidance and the other avoidance coping responses were reported as being strongly associated with problem behaviors and depression. The higher the cognitive avoidance scores the greater the behavior problems and depression level of the adolescent (Moos, 1993, p.26). Caspi and Moffitt (1993), in their work on life transitions as times of particular stress for adolescents, also support the concept of coping style preference (Caspi &
Moffitt, 1991). It is in the greatest times of stress that we use individual specific, personality styles that decrease anxiety.

6. Developmental Age and Violent Behaviors

Age and grade level are demographic variables that are related to violent behaviors in adolescents (Shapiro et al., 1998). Research supports the finding that those adolescents who are older than their grade level or “out of sync” with their peers are more likely to commit aggressive and violent felonies and be incarcerated in the juvenile or adult justice arena (Fitzpatrick, 1997; Jenson & Howard, 1998). Those adolescents who are violent are also at risk for academic failure or lack of success in school (Jenkins, 1996; Sanders-Phillips, 1997; Saner & Ellickson, 1996; Warner & Weist, 1996). Ellickson et al. (1997) found that violent youth were more likely to drop out of high school and be delinquent. Saner & Ellickson (1996) also noted that low academic orientation was among the significant factors which predict violence.

7. Life Events and Violent Behaviors

Life events can be perceived as normative events (all in a particular cohort experience them) or non-normative (experienced by only some of the cohort) (Lerner & Galambos, 1998). Examples of normative life events are biological timing or puberty synchronization and changing schools from middle to high school. Non-normative life events are described as the death of a parent or friend, physical abuse or drug use/abuse (Lerner, 1995a; Lerner et al., 1996a).

Researchers that measure stressful life events have most often focused on cumulative life changes and the impact on the child/adolescent (Johnson, 1993). The number of life events should be related to the amount of stress experienced. Some child/adolescent researchers have acknowledged that the positive or negative nature of the events will impact the experience of stress and result in mental health symptomatology, particularly anxiety and depression. Others continue to count the number of events and correlate them to problem behaviors or health problems (Johnson, 1993).
Most current studies with children and adolescents also support the impact of parental stress on this cohort (Riesch, Jacobson, & Tosi, 1994; Williamson et al., 1995). They have also begun to examine the reciprocal relationship that the child or adolescents' behavior may have on the stressful event. These are noted to be “dependent” events (pregnancy, drug use) as compared to “independent” events such as deaths, divorce and crisis (Johnson, 1993; Williamson et al., 1995). In the Williamson study (1995), findings suggest that the depressed adolescent has an increased risk for experiencing dependent events that have been linked to aggression such as suspension from school, increase in arguments with parents, failure in school.

8. Drug use and Violent Behaviors

In most of the research literature, violence, aggression and delinquency are strongly correlated with drug abuse as a risk factor for adolescents (Melzer-Lange, 1998, Tarter et al., 1992, White, 1997). Dukarm et al. (1996) conducted a descriptive, retrospective review of the 1991 Youth Behavior Survey of 12,272 high school students from all 50 U.S. states. They found that alcohol and illicit drugs were strongly associated with violent behaviors with substantial risk for adolescent females (Dukarm et al., 1996). A study by DuRant et al. (1997), of 3,054 high school adolescents, identified a high risk of alcohol use on school grounds in students who are fearful and carry weapons to school. Furthermore, Ellickson et al. (1997) studied 4500 high school seniors and dropouts from Oregon and California and found a similar increased association of violence and use of drugs in high school dropouts and those who were identified as delinquent.

Jenkins (1996) studied 2229 eighth, tenth and twelfth graders and their peer affiliations and activity in student involvement. He identified the strongest correlate with drug use across all grades was affiliation with drug using friends. These peer associations seem to combine with home environmental factors and poor academic performance to increase the risk of alcohol and drug use and involvement in violent behaviors (Saner & Ellickson, 1996, Williams, 1998)
One conflicting study of peer association identified peer affiliation with other problem peers as an effect rather than influencing factor in risk behaviors and violence. Unger (2000) proposed that peers who had problems sought out other peers with similar problems rather than the accepted theory that peers are pressured to become involved in risk behaviors such as drug use and violence (Unger, 2000). Not all drug use by adolescents will result in abuse or violent behavior.

As noted in the definition of drug use, experimentation with substances in adolescence is sometimes viewed as normative. Andrews & Duncan (1997) examined the variables of academic motivation and substance use and their reciprocal relationship. They did not find a reciprocal relationship for alcohol use, but did find one for cigarette and marijuana use. They attributed this to the normative use of alcohol as a substance (Andrews & Duncan, 1997). Despite the route of prediction, the use of alcohol and drugs is a clear risk factor for aggression and delinquency.

9. Social Context and Violent Behaviors

Family Context

Child development theorists have de-emphasized the family as a group of support for the adolescent in our society. Psychodynamic theorist (Blos) and stage theorist (Erickson) have proposed that the adolescent is separating and individuating from the family system. This “pulling away” from the nurturing and support of the parental unit has resulted in a reciprocal response of the parental unit. However, recent research that examines the impact of the context on adolescent problem behaviors has supported the continued importance of the supportive parental unit to the emotional and behavioral success of the adolescent (Cohen, 1998; Duncan, 1996; Ellickson et al., 1997; Fraser et al., 1997; Greenberg, Speltz, & Deklyen, 1993; Resnick et al., 1997). Research supports that consistent parental support and concern is viewed as a protective factor to problem behaviors (Calvert, 1997; Resnick et al., 1997; Saner & Ellickson, 1996).

Parental behaviors that are positive modeling behaviors are also important variables to adolescent success. Those parents who are involved in abuse of alcohol or drugs are more likely
to have children who indulge in these risky behaviors (Saner & Ellickson, 1996). Positive modeling of conflict resolution and violence in the household are also significant variables to adolescents using violence in other settings (Heide, 1997).

**Peer Context**

Neighborhood and community violence is directly related to violent behaviors in adolescents. The witnessing of violence has already been discussed as a relational variable in poor, urban areas. Adolescents who associate with peers who are deviant perform deviant acts in greater numbers. Whether they choose their peers because of internal motivation to associate with deviant peers or their associations are the result of the behavior (and punishment in the juvenile justice system) is unclear (Berndt & Keefe, 1995; Vitaro, Tremblay, Kerr, Pagani, & Bukowski, 1997).

Early association with disruptive peers is associated with later association of violence and delinquency. Some researchers identify the first pre-school associations and disruptions as precursors for a life-long trajectory of poor peer relationships (Fabes, Eisenberg, Smith, & Murphy, 1996; Loeber & Hay, 1997). Other researchers emphasize the attachment disturbances in the family as related to the problem of relatedness with teachers and peers (Howes, Hamilton, & Matheson, 1994).

**School Context**

The school context is the most usual setting outside of the home in which adolescents are perpetrators or victims of violence (Alvarez & Bachman, 1997; Arria et al., 1997; Heide, 1997; Kann et al., 1998; McKeown et al., 1998; Resnick et al., 1997; Saner & Ellickson, 1996; Williams et al., 1998). This problem has grown in the last five years as more children are choosing to solve their conflicts with guns in this setting. Fighting as a form of aggression had been the usual choice of resolution (Dukarm et al., 1996; Duncan, 1996; DuRant et al., 1997; DuRant et al., 1996b; St. George & Thomas, 1997)
Adolescents feel better about themselves when they are successful at school. Positive academic success is inversely related to violent behaviors in adolescents. Involvement in extracurricular activities also decreases violent risk and adolescent drug involvement. Schools and teachers who present a positive and safe environment for learning have fewer problems with adolescents who carry guns to school, who act out aggressively and who are victims of violence (Alderman & Nix, 1997; Alvarez & Bachman, 1997; Bailey et al., 1997; Greenbaum et al., 1998; Mushinski, 1996; Reed & Strahan, 1995).

Poor conflict resolution and social skill deficits are variables that are related to increased use of violence in the school setting. Those schools that include peer support and education programs that target these areas decrease their incidence of fighting and violence while the program is being implemented (Dryfoos, 1997; DuRant et al., 1996a; Ellickson et al., 1997; Greenbaum et al., 1998; Lerner & Galambos, 1998; O'Keefe, 1997; Powell, Muir-McClain, & Halasyamani, 1995; Reed & Strahan, 1995; St. George & Thomas, 1997). The long-term efficacy of these programs is questionable because of incomplete or inadequate outcome research.

Rural Context

Most research studies of violence in adolescence have focused on adolescents who have been perceived as those at higher risk. Victimization and the witnessing of violence in the urban setting are well documented in the research. In contrast, rurality has been a protective factor for youth substance use, delinquency and violent crimes. In the last two decades, the family farm has all but disappeared, as many rural areas become suburban in nature. As the boundaries become blurred, poverty and drug use has increased in the rural setting as well, and this protective “rural” environmental factor has changed. Yet, little research has focused on the variables that contribute to violence in the rural adolescent population (Kingery et al., 1996; Muscari et al., 1997).

Conger, Ge, Elder, Lorenz & Simmons (1994) have conducted research on rural adolescents and the impact of the changing environmental face of the farms in Midwestern rural America. Poverty is noted as a significant factor in mental health problems related to depression.
and hostility in parents from these areas. These factors then influence the internalizing and externalizing behaviors of their children resulting in increased anger, drug use and aggressive behaviors (Conger et al., 1993). Rural females appear to be particularly at risk for anxiety and depression (Conger et al., 1993).

Rural adolescents live at a distance from comprehensive health care facilities. Family practice physicians have identified that 29% of rural residents in the United States are underserved by health professionals as opposed to 9% of urban residents (Damos et al., 1998). Child psychiatrists are also more drawn to urban versus rural areas (Thomas & Holzer, 1999). Rural residents may be unable to access the mental health services that are available because of problems such as transportation (Weinert & Boik, 1995). In addition, many rural children have been uninsured or underinsured because of economic hardship or poverty (Lerner, 1995a). The rural, agricultural environment also leaves them isolated with few social resources. Despite these findings, few programs have been instituted that consider the context to meet the needs of these rural adolescents resulting in more depression, anxiety and violence (Muscari et al., 1997).

B. Summary Table of the Literature

See Appendix A for a summary table of the literature (Table A1). The quantitative studies related to each variable and the dependent outcome variable of violent behaviors are divided into sections. Some qualitative studies are presented. The design of each study is listed with a description of the sample, sample size and results. Some studies overlap. Those that are integrated reviews of the literature or trend studies do not have a sample or sample size noted.

C. Effect of Present Research on the Literature

As is noted in this chapter, most studies have focused on the linear relationships of risky behaviors on violent behaviors using correlation, trend studies or regression. This study used a design that allowed for the definition of variables as constructs. This represented a broad theoretical evaluation of the data with the expectation that greater amounts of variance would be explained and specific importance of pathways would emerge. The study sample also included a
fairly substantial number of female subjects (n = 376). This allowed for a better predictive relationship of the gender differences using the advanced SEM design. Understanding of the gender differences in the experience and action of anger, anxiety and depression, coping styles and influence of life risks and social context on violent behaviors would be essential to the formation of effective programs to help adolescents change behavior for better mental health.

There has been little research in this area done by nurse scientists. Therefore, using a data sample from a larger funded nursing research study done in the school setting will advance nursing science to support school and community nurse practitioners. Even less research has been done with non-referred, rural youth. The adolescents from Western Pennsylvania, who participated in the larger study, represented a unique sample of high school adolescents who did not have known psychiatric illnesses (non-referred) and could be evaluated for prediction and prevention.
CHAPTER THREE

METHODS

A. Design

1. The Primary Study

The parent study was a two phase research project the goals of which were: 1) to measure mental and physical health in a sample of rural adolescents and 2) to test the effectiveness of a coping skills intervention designed to increase self-esteem, coping, and social support of students who were moderately depressed (Puskar et al., 1998). The theoretical framework which provided the foundation for the parent study was based on Erickson's and Bios' developmental work (Bios, 1962; Erickson, 1963), Lazarus' stress and coping model (Lazarus & Folkman, 1984), Cohen's stress buffering social support model (Cohen & Hoberman, 1983), and Beck's cognitive behavioral model (Beck, 1976). The first phase of the primary study was a descriptive survey in which the mental health of 624 rural adolescents was evaluated for depressive symptomatology, social support, coping strategies, drug use, self-esteem, anger, optimism, health concerns, and life events.

The second phase was a longitudinal, quasi-experimental design in which adolescents who scored as moderately to severely depressed on the Reynolds Adolescent Depression Inventory were randomly assigned to either an experimental group, which received a coping skills intervention or a control group, which did not receive the intervention. The intervention was a ten-week, psycho-educational program called Teaching Kids to Cope (Puskar et al., 1998). The effects of the coping skill intervention group were then evaluated using the same measures at baseline, immediately following the conclusion of the intervention, ten weeks post intervention, and at six months and one year after the group assessment. They were compared at each time to the control group who completed the same questionnaires but received no intervention.
2. The Secondary Analysis

The current study was a secondary analysis that examined the specific outcomes of aggression and delinquency as measures of violent behaviors in rural adolescents. It investigated whether trait anger, anxiety/depression and select demographics were predictors of the violent behaviors of aggression and delinquency. It examined the impact of life events (positive life change, negative life change, and drug use) and social context (perceived family and peer social support and school competence) on this relationship. A gender specific model was also explored. The theoretical framework supporting these analyses was Lerner’s Developmental Contextualism.

The design was observational and cross-sectional using the survey data collected in the first phase of the primary study. There was no manipulation of independent variables, no control group, and no randomization. The relationships of variables were associative and not causal. It was hoped that this research would lead to gender-specific primary prevention interventions for violence in rural youth, which include the context of family, peers, and school.

B. Specific Research Hypotheses

The following were the specific hypotheses that were tested. Refer to Figure 3. The model in Figure 3 is a combination of the linear structural model and measurement model. It was hypothesized that:

1. The data will support the model of violent behavior presented in the proposed structural model.
   1.1. There will be a positive direct relationship between individual characteristics as measured by trait anger, anxiety and depression, cognitive avoidance, and developmental age (based on age and grade) and the latent variable of violent behaviors as measured by aggression and delinquency.
   1.2. There will be a partial mediation effect of risk/opportunity (positive life events change, negative life events change, and drug use) on the relationship between individual
characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (aggression and delinquency).

1.3. Risk/opportunity (positive and negative life change scores and drug use) will partially mediate the relationship between individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and social context (family and peer social support and school competence).

1.4. There will be a full mediation effect of social context (family social support, peer social support and school competence) on individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (delinquency and aggression).

2. There will be differences in the prediction of violent behaviors between male and female rural adolescents.

2.1. The hypothesized model will fit better for male adolescents than female adolescents.

2.2. There will be a stronger direct relationship between individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (aggression and delinquency) for the male adolescents than for the female adolescents.

2.3. There will be differences in the direct effects in the structural equation model for all the latent variables between male adolescents and female adolescents.

C. Sample and Setting

Phase one survey data were collected on 9th through 12th grade students in four rural high schools in Western Pennsylvania. There were 17.9% (n=112) from School I, 36.7% (n=229) from School II, 30.1% (n=188) from School III, and 15.2% (n=95) from School IV. Inclusion criteria for being in the primary study included: being enrolled in a regular, college preparatory or honor curriculum, and the ability to read and write in English. Subjects were most often enrolled in regular academic courses (84.5%, n=527), with some in advanced placement courses (24.0%,...
n=150). Exclusionary criteria included being enrolled in a course for socially and emotionally disturbed students (learning disabled) and the loss of a parent/caregiver or close friend within the 12 months. The pool of subjects was all male and female students in 9th, 10th, 11th and 12th grades. Students needed to agree to participate in the second phase of the study, which reduced the number of 12th grade participants. Informed consent was obtained from the student and a parent or caregiver with whom the student lived.

The sample size at baseline was 624 adolescents. Subjects were predominantly Caucasian (97.1%), and female (60.3%, n = 376). The mean age of the sample was 15.85 years with SD=0.99 (range 14.05 to 19.82). Participants were 40.1% from the 9th grade (n = 250; females = 143, males = 107), 29.6% from the 10th grade (n = 185; females = 108, males = 77), 28.7% were from the 11th grade (n = 178; females = 118, males = 60), and 1.6% from the 12th grade (n = 10; females = 7, males = 3).

Each rural community contained no more than 7100 people and the economy was predominantly based on farming and small industry. Average annual income of the communities was $25,000. Most subjects reported living with their biologic mother (93.2%, n = 573) with two-thirds living with both biologic parents (68.7%, n = 425). They were primarily first/only child (43.9%, n=273) or second born (35.0%, n=218) with an average of 2.15 siblings (SD = 2.77).

D. Data Collection Procedures

The data for the cross sectional, survey phase of the primary study were collected by the primary investigator, project director and project team members, who were all psychiatric clinical nurse specialists with a minimum of a master's degree in psychiatric nursing. Data were collected in a 90-minute pre-arranged time period at each school during the school day. It was a group data collection that was monitored by the clinical specialists on the research team. Parents signed a consent form that they could not have access to students’ scores. Each student received a $10.00 payment at completion of the data collection for the first phase. This researcher, as a graduate
research assistant, was a participant in data collection at two schools for the first and second phase of the primary study and assisted in data management with the research team.

In the parent study, data were collected on 11 instruments measuring physical and emotional health. For this secondary analysis, only the variables of trait anger, anxiety/depression, cognitive avoidance coping, selected demographics (age, grade and gender), life events, drug use, social support, school competence, and violent behaviors (aggression and delinquency) from the cross-sectional survey data were used as indicator variables in the structural model.

E. Instrumentation

The instruments used in this study to measure the manifest variables were the Youth Self Report Scale of the Child Behavior Checklist (YSR-CBCL) (Achenbach, 1991), the Trait-Anger Scale of the State-Trait Anger Expression Inventory (Spielberger et al., 1983a), the Coping Response Inventory-Youth Form (CRI-Youth) (Moos, 1993), the Life Events Checklist (Johnson & McCutchen, 1980), the Drug Use Screening Inventory (Tarter et al., 1992), the Perceived Social Support Scales, Family and Friends (Procidano & Heller, 1990), and an investigator developed demographic questionnaire. These instruments are described below. The reliability and validity measures as presented by the developers of the original instruments and in the rural adolescent sample are presented in Table 1 below.


This instrument is widely used as a multi-axial measure for diagnosing psychiatric behavioral disturbance in children and adolescents and is used in conjunction with the Child Behavior Checklist 10-18 (Teacher and Parent forms). The Youth Self-Report (YSR-CBCL) measures adolescents’ self-reports and their own problems and competencies on 116 items. The first section measures competence in terms of activities, social and academic competence. The problem section is a behavioral measure that is divided into two broadband measures of internalizing and externalizing behaviors and seven narrowband measures that include the
### Table 1: Reliability and Validity as Proposed by the Developers of the Instruments and Using the Rural Adolescent Sample

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Published reliability estimates</th>
<th>Published validity</th>
<th>Rural sample reliability</th>
<th>Sample validity (Deviation explained in text)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth Self-Report and Profile (Achenbach, 1991)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>.46</td>
<td>Not available</td>
<td>.61</td>
<td>1 factor, 56% variance</td>
</tr>
<tr>
<td>Anxiety/depression</td>
<td>.86-.89</td>
<td>1 factor</td>
<td>.87</td>
<td>1 factor, 31% variance</td>
</tr>
<tr>
<td>Delinquency</td>
<td>.85</td>
<td>1 factor</td>
<td>.80</td>
<td>2 factors, 31% variance</td>
</tr>
<tr>
<td>Aggression</td>
<td>.85</td>
<td>1 factor</td>
<td>.85</td>
<td>4 factors, 39% variance</td>
</tr>
<tr>
<td>Trait Anger Scale (Spielberger, 1996)</td>
<td>.82-.84</td>
<td>1 factor 2 subscales, PCA</td>
<td>.88</td>
<td>2 factor, CFA</td>
</tr>
<tr>
<td>Cognitive Avoidance Scale of Coping response Inventory (CRICA) (Moos, 1993)</td>
<td>.71-.72</td>
<td>unavailable</td>
<td>.71</td>
<td>1 factor, 41% variance</td>
</tr>
<tr>
<td>Drug Use Inventory-Domain 1, items 1-10 (DUSI) (Krisici, Tarter &amp; Hsu, 1994)</td>
<td>.74 (a)</td>
<td>1 factor</td>
<td>.79</td>
<td>1 factor, 31% variance (items 1-10 only)</td>
</tr>
<tr>
<td>Life Events Checklist (LEC) (Johnson &amp; McCutchen, 1980)</td>
<td>.69-.72 + Content validity</td>
<td>N/A</td>
<td></td>
<td>16 factors, 61% variance</td>
</tr>
<tr>
<td>Perceived Social Support (PSS) (Procidano &amp; Hellers, 1983)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>.89</td>
<td>1 factor</td>
<td>.88</td>
<td>1 factor, 28% variance</td>
</tr>
<tr>
<td>Friends</td>
<td>.86</td>
<td>1 factor</td>
<td>.84</td>
<td>1 factor, 21% variance</td>
</tr>
</tbody>
</table>

+ test-retest reliability as noted in Brand & Johnson, 1982

a Measured by taking an average of reliability over trait levels resulting in “marginal reliability”

PCA- Principal components analysis

CFA- Confirmatory Factor analysis
unidimensional internalizing scale for anxiety/depression. For this analysis, the activities, social
and academic competence scales (Part 1-3) were utilized to evaluate school competence.
The problem scales for anxiety/depression, and the scales for aggression and delinquency were
used to measure those concepts. The internal consistency for the total competence scale
(Activities, Social, Academic) was estimated as .46 by the developer (Achenbach, 1991). The
reported internal consistency for the anxiety/depression (15 items) was .86-.89 (Achenbach, 1991;
Song, Singh & Singer, 1994). The internal consistency for the externalizing scales of delinquency
(11 items) and aggression scale (19 items) was estimated as .85 for each scale (Achenbach, 1991).
The reliability of the competence scale with this sample was higher than reported by the author
(alpha = .61). The reliability for the anxiety/depression scale was .87, the delinquency scale was
.80, and the aggression scale was .85. The validity analysis of the competence scale, the
anxiety/depression scale and the delinquency scale using the data in the rural sample
approximated the developers results. The aggression scale indicated a more complicated factor
structure for the rural adolescent sample (4-factor solution).

In a recent analysis by Song, Singh and Singer (1994), confirmatory factor analysis
revealed a five-factor structure for the two scales of aggression and delinquency. Since validity
(as measured by factor analysis) revealed a more complicated structure for the aggression scale, a
pre-analysis was conducted to evaluate the goodness-of-fit of the aggression scale of the YSR-
CBCL with the rural adolescent sample prior to testing the posited model. The proposed models
which were identified for analysis were: the one factor aggression scale (Model 1) (Achenbach,
1991), three factor aggression scale (Model 2) (Song, Singh, & Singer, 1994), and, four factor
aggression scale (Model 3) which was based on the exploratory results completed in the context
of this research with rural adolescents. The figure results are presented in Appendix B and
described below.

Data were screened for missing data, univariate and multivariate outliers, and for the
assumptions of normality, linearity, multicollinearity and homogeneity of variance. Screening was
conducted in SPSS for Windows (version 10.0). There were 12 cases (1.9%) with missing data on the aggression scale. There was a random pattern of missingness across the sample. Item z scores and Mahalanobis distances revealed 41 univariate outliers (6.6%) and 29 multivariate outliers (4.6%) that occurred randomly across all items. Because of the three-choice, ordinal nature of the scale items, they appeared to represent the variability in the scale. Removing them from the analysis resulted in many items becoming yes/no type items that changed the nature of the scale and eliminated the variability. A decision was made to include the outliers in analysis and employ an appropriate statistical method for ordinal scales and non-normal empirical distributions using PRELIS (Version 2.12). One case was eliminated from analysis that did not meet the 11-18 year old age requirement recommended by the author (Achenbach, 1991). Examination of the skewness and kurtosis of the items indicated significant non-normality. Linearity was assessed and found to be present using ordinal-by-ordinal bivariate assessment of the Spearman's correlation (Schumacker & Lomax, 1996). Homogeneity of variance was adequate.

Missing data were imputed in PRELIS (version 2.12) using substitution of a matched variable measure (Jöreskog & Sörbom, 1993b) with all but two cases successfully imputed resulting in a sample size of 621 (female = 376; male = 245). Because of the ordinal nature of the data, PRELIS (version 2.12) was used to estimate the matrix of bivariate polychoric correlations that was converted into an asymptotic covariance matrix for use in LISREL (Schumacker & Lomax, 1996, p. 29). LISREL for Windows (version 8.12) was used to fit the hypothesized covariance matrices using least square estimation. The chi square, root mean square error of approximation (RMSEA), and root mean residual (RMR) were used to assess model fit, and the Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), and Comparative Fit Index (CFI) were assessed for model comparison.

The results are depicted in Appendix B. Confirmatory factor analysis of the one factor aggression scale (Figure B1) indicated a significant lack of fit between the observed covariance matrix and that estimated on the fitted model \( \chi^2(152) = 2156.01, p < .0001; \) RMSEA = .15; RMR
[\chi^2(149)=3072.56, \ p < .001; \ RMSEA = .23; \ RMR = .48], \text{and for the male adolescents} [\chi^2(152) = 2594.32, \ p < .0001; \ RMSEA = .26; \ RMR = .43]. \text{The three factor model (Model 2) suggested by Song, Singh, and Singer (1994) is presented in Appendix B, Figure B2 and was also a poor fit to the data} [\chi^2(149) = 1846.94, \ p < .0001; \ RMSEA = .14; \ RMR = .30]. \text{This lack of fit was apparent in the gender samples as well} \text{[females:} \chi^2(149)=2358.49, \ p < .0001; \ RMSEA = .20; \ RMR= .40; \text{males:} \chi^2(149) = 2377.01, \ p < .0001; \ RMSEA = .25; \ RMR = .42]. \text{The four factor model (Model 3) is presented in Appendix figure B3 and also did not fit the data either overall} [\chi^2 (146) = 1699.91, \ p < .0001; \ RMSEA=.13; \ RMR=.27] \text{or by gender} \text{[female:} \chi^2(146)=2448.42, \ p < .0001; \ RMSEA = .21; \ RMR = .36; \text{male:} \chi^2(146) = 2090.85, \ p < .0001; \ RMSEA = .23; \ RMR= .36]. \text{In all cases, examining path coefficients and modification indices failed to produce a significant model fit. Factor paths remained large, but so did residuals.}

This analysis with the rural adolescent sample did little to alleviate the continuing confusion of defining aggression. A visual examination of items on the outcome scale of aggression revealed content issues regarding validity. Measuring aggression as "bragging" with items that indicate overt aggression such as "destroying others property" seems incongruent with a one factor measurement solution. Only seven items, which measured overt aggression, were consistent across all of the models tested. As supported by the literature over the last five years, the CBCL and its related forms (YSR) are an extremely well validated assessment tools in many languages (Vignoe & Achenbach, 1999). Recently, Achenbach (1999) described a two factor solution with this scale with the formation of the young adult version of the YSR (YASR) which separated "aggressive behavior" from a syndrome he calls "intrusive behavior" (Achenbach, 1999 p. 444). The intrusive syndrome includes items: "Brags", "Demands a lot of attention", "Shows off", "Talks too much", "Teases" and "Is loud" (Achenbach, 1999). Additional validation studies are needed. Because there was a poor fit with all three models in the present study and research...
using this form overwhelmingly supports the author's original model, Achenbach's model will be used as a unidimensional 19-item aggression scale in the latent outcome variable that measures violent behavior. This validity issue is discussed further in the last chapter and in the limitations section.

2. **Trait Anger scale of the State-Trait Anger Expression Inventory** (Spielberger et. al., 1983a).

   The State-Trait Anger Expression Inventory (STAXI) is a 44-item form that is divided into the measurement of the experience and expression of anger. The first ten items are the state (S-anger) evaluation, the second ten items are the trait (T-anger) evaluation, and the last 24 items represent the expression of anger as internalized (AX-IN), externalized (AX-Out), and control (AX-Con). The trait anger scale is further divided into two subscales of angry temperament and angry reaction. The ten-item trait anger scale will be used in this analysis as it represents the long-enduring individual personality characteristic of anger. It was normed on 2469 high school and college students from Tampa, Florida schools in the 1970's. (Spielberger et al., 1983b).

   Spielberger (1996) reported an alpha coefficient of .82-.84 for this scale, .85 for the temperament subscale, and .65-.70 for the reaction subscale. The alpha coefficient for the rural adolescent population was .88 for the trait scale, .92 for the temperament scale, and .78 for the reaction scale. The author's model was tested by confirmatory factor analysis with a poor goodness of fit for the two factor subscales as identified by the author of the instrument. The entire trait score will be used. There was evidence of a gender-specific influence, and this will be considered in analysis.

3. **Cognitive Avoidance Scale of the Coping Response Inventory Youth Form (CRI-Youth)** (Moos, 1993).

   The Coping Response Inventory-Youth Form is a 48-item self-report instrument, which contains eight different types of coping responses in both the cognitive and behavioral domains in response to an identified problem experienced in the last 12 months. The first set of four scales measures approach coping (logical analysis, positive reappraisal, seeking guidance and support, problem solving), and the second set of four scales measures avoidance coping (cognitive
avoidance, acceptance or resignation, seeking alternative rewards, emotional discharge) (Moos, 1993). The cognitive avoidance subscale (CRICA) was utilized in this study. It was viewed as a coping style that was an enduring stable disposition characteristic (Gomez, 1998). Cognitive avoidance is described by Moos (1993) as "cognitive attempts to avoid thinking realistically about a problem" (p. 15). The subscale is comprised of six items. The subject is asked how often he/she took a particular action to deal with a problem on one of four possible levels: "not at all," "once or twice," "sometimes," or "fairly often" (Moos, 1993). The internal consistency of the CRICA was .71 in a sample of 179 adolescent boys and .72 in a sample of 221 adolescent girls (Moos, 1993). In this study with rural youth, the reliability alpha was .71 for this subscale that approximated the author's result.

Validity of the cognitive avoidance coping subscale was verified in its use with healthy adolescents (n =143), depressed youth (n = 49), youths with conduct disorder (n =58), and youth who had rheumatic fever (Moos, 1993). Cognitive avoidance coping was most often associated with depressed adolescents and those with conduct disorder (Moos, 1993). With this sample, the items of this scale loaded on one factor that explained 41% of the variance.

4. Life Events Checklist (LEC) (Johnson & McCutchen, 1980).

The Life Events Checklist is a self-report scale that measures life events and their effect as a positive life change score or a negative life change score. A positive score is obtained by summing the impact ratings (0-3) of events rated as positive. A negative change score is obtained by summing the impact ratings (0-3) of events rated as negative. An overall score can also be obtained. Reliability tests have been conducted. One sample of 50 subjects (Brand & Johnson, 1982) indicated a test-retest reliability of .69-.72. Validity studies in a sample of 97 male and female adolescents also indicated significant correlations between negative change scores and depression, anxiety, emotional maladjustment, and an external locus of control orientation (Johnson, 1993). A test-retest reliability assessment of the rural adolescent sample data was not attempted, as only one cross-sectional collection was available.

The DUSI is a 149-item questionnaire that evaluates type and severity of drug use in adolescents. The first domain that measures types of drugs tried by the adolescent was used in this study. In previous research, Item Response Theory (IRT) was utilized to measure reliability of the DUSI for domain one by taking an average reliability over trait levels (Kirisci, Tarter, & Hsu, 1994). This resulted in marginal reliability of .74 (Kirisci et al., 1994). In validity study performed by Kirisci et al. (1994), domain one loaded strongly on one factor which explained 82% of the variance in the scale (p. 1339). In this study, an internal consistency alpha for the first ten items of domain one was .79. The factor analysis resulted in one factor that explained 31% of the variance.


This questionnaire is a 40-item list that is a self-report measure of the perceived social support of adolescents. Items are equally divided into two subscales: family and friend social support. In a study of 244 high school students conducted by the scale developers, the alpha for the family subscale was .89 and for the friend subscale was .86 (Procidano & Heller, 1990; Procidano, 1992). In this study, the internal consistency of the family scale was .88 and the friend scale was .84. Factor analysis confirmed the one factor validity of each of the constructs. Gender specific reliability measures are not available.

7. Demographics

The principal investigator from the primary study developed the demographic instrument. It measured sex, race, grade, academic program, advanced/special program curriculum, job history, transportation type to school, the family members in the home, number of siblings and birth order, if they wanted to talk to someone immediately and if there was a death in the immediate family or a death of a close friend in the past year. Demographics of age, grade, and gender were examined in the proposed structural model for prediction of violent behaviors. Prior to analysis, the variable of age was regressed on grade level to form an indicator variable called...
developmental age. This created a variable in which the residual scores represented the age appropriate grade level of the adolescent. Those adolescents who fell more than two standard deviations outside of the normal curve represented those who were either too young or too old for grade level. They represented those who were developmentally “out of sync” (on the age/grade variable) with their peer group. The sample was split to examine the gender differences using the proposed model.

F. Protection of Human Subjects

Measures to protect human subjects were followed throughout the primary study. The primary investigator obtained Institutional Review Board approval. Both parents and students were asked to give informed consent during both phases of the project. Subject identification numbers were assigned at first data collection. Data were filed and kept confidential from all persons except the research team on a need to know basis. Files were kept locked in two sets of file drawers by the primary investigator. Electronic versions of the data were kept on the primary investigator’s and the statistician’s computer. Initial assessment of depression was completed within 24 hours of collection, and persons who scored in the severe range on the Reynolds Adolescent Depression Inventory (RADS > 77) were evaluated in-person for suicidality within 72 hours. Clinical nurse specialists completed the mental health evaluations of suicidality in face-to-face sessions. At-risk adolescents were referred to local mental health agencies for follow-up. Students who also answered positively to the sexual abuse question were interviewed for possible referral.

The same measures of confidentiality were maintained throughout this secondary investigation. An exempt IRB approval was obtained. A computer encryption of identifiers (case numbers) was completed before the researcher acquired the data disk for screening and analyses.
G. Data Analysis

1. Data Screening

Data were screened using SPSS for Windows 10.0 (SPSS, 1999). Data were assessed for patterns at the univariate level, and composite scores were evaluated at the multivariate level. Missing data and outliers were evaluated for representativeness of the population. At the univariate level, missing data represented less than 3.5% of all data except on item 31 of the anxiety/depression scale of the YSR-CBCL (67 cases, 10.7%), the preference item on Part a of the DUSI and items on the Life Events Form which were gender specific and left blank. Of the missing data, there were no demographic differences noted with the exception of the delinquency scale which indicated seven cases with missing data were male subjects, and deviated from the overall sample which was 60% female. This missingness overall represented only 1.6% of the sample on the latter scale. On the CRICA, one case was missing all data on the form and seven cases had incomplete data from items 21 to 48. The missing data on the YSR-CBCL item and DUSI item were likely a result of placement on the data collection form. After screening, missing values were imputed using the PRELIS (version 2.12) program noted below (Jöreskog & Sörbom, 1999).

Multivariate and univariate outliers were evaluated using Mahalanobis distances and z scores, respectively. Consideration was given to deleting outliers or transforming them if the assumption of normality was not met (Tabachnick & Fidell, 1996, p 69). Outliers were examined on a case-by-case basis. With the exception of one case of age exceeding the YSR-CBCL instrument parameters of 11-18 (age = 19.82), outliers represented the variability in the scales and were deemed to be important to the final analysis.

The data were also screened for independence, normality, linearity, homoscedasticity, and multicollinearity. The independence assumption was met as each subject completed only one of each form in a controlled, non-interactive data collection setting. Skewness (symmetry) and kurtosis (peakedness) values for each variable divided by its standard error was evaluated to
assess normality. The skewness and kurtosis values were expected to be small or below 1. Non-normality was found across all variables for either skewness or kurtosis. Positive skewness was evident.

The ordinal nature of several variables precluded using scatterplots as an effective measure of linearity. Ordinal by ordinal measures, which included the Spearman's correlation, were utilized to assess the linear by linear combinations of each item in analysis (Tabachnick & Fidell, 1996). All possible bivariate relationships were examined. The nominal nature (yes/no item responses) of the Life Events Checklist and Perceived Social Support: Family and Friend survey forms necessitated examination of chi-squares and phi values. These values indicated that approximately 90% of all bivariate cross-tabulations confirmed the linearity assumption. Scatterplots were examined and confirmed that the assumption of homoscedasticity was met as well. Multicollinearity diagnostics were generated and were adequate with minimal correlation values above .50. At the multivariate level, determinants were sufficiently large and correlations lower than .70.

The upper age limit for inclusion of subjects completing the YSR-CBCL is 18 years of age (Achenbach, 1991). Therefore, the one case whose age was greater than 19 was eliminated from analysis. The age and grade level variables were regressed to produce standardized residuals. These represented those cases which deviated from the age-grade level and were labeled developmental age. The variable was re-screened for assumptions with lack of normality noted.

Because of the violation of normality, the use of transformations was evaluated on variables that were severely skewed. Square root transformations improved four variables (anxiety/depression, developmental age, aggression and delinquency). Logarithmic (Log base 10) transformation improved one variable (trait anger), inverse improved one (DUSI) and six were adequate or marginal and were used without transformation (cognitive avoidance, positive life events change score, negative life events change score, family social support, peer social support,
and school competence). All variables were then prepared for importation to PRELIS, and missing values were imputed using matched means (Jöreskog & Sörbom, 1999). Three cases could not be imputed in PRELIS resulting in a final sample size of 620, of which there were 375 females and 245 males.

2. Instrumentation Reliability and Validity

All instruments were assessed for reliability and validity using the rural adolescent sample. Whenever possible, reliability was measured using the Cronbach’s alpha, a good measure of internal consistency (Carmines & Zeller, 1979). The LEC was not assessed for internal consistency as the authors proposed test-retest and only one data collection time was utilized in this secondary analysis. Likewise, only the first ten items of the DUSI (specific drug use) was evaluated because of the aforementioned problem with missing data on the preference item.

Since the sample size was large, exploratory factor analysis employed maximum likelihood extraction with direct oblimin rotation unless otherwise specified. Reliability and validity as presented by the developers of the original measures and using the rural sample are available in Table 1.

Means and standard deviations were generated for the variables used in this study. They were compared to the instrument developers’ normative data. Effect sizes were also computed when significance was found. These are presented for the instruments that had gender-specific data (Table 2) and for those that did not have gender-specific data (Table 3). The large sample t-tests were generated to assess differences in the rural adolescents’ means from the normative samples and independent sample t-tests identified the gender differences in the rural sample. The gender differences scores for the rural adolescents are available in Table 4. Results of the means and differences in these tables are presented in the first section of Chapter Four.
Table 2: Comparison of the Gender-specific Means and Standard Deviations of the Developer's Normative Sample with the Rural Adolescent Sample

<table>
<thead>
<tr>
<th>Indicator Variables</th>
<th>Normative Data M (N)</th>
<th>Rural sample M (n)</th>
<th>Test of difference t test effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female SD</td>
<td>Male SD</td>
<td>Female SD</td>
</tr>
<tr>
<td>Trait anger</td>
<td>23.43 6.22 (1205)</td>
<td>23.65 5.88 (1264)</td>
<td>19.84 6.20 (372)</td>
</tr>
<tr>
<td>(Spielberger, 1996)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YSR anxiety/Depression</td>
<td>6.40 5.10 (678)</td>
<td>5.10 4.20 (637)</td>
<td>8.40 5.95 (376)</td>
</tr>
<tr>
<td>(Achenbach, 1991)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRI cognitive Avoidance</td>
<td>7.87 4.14 (221)</td>
<td>7.37 4.13 (179)</td>
<td>9.40 4.25 (374)</td>
</tr>
<tr>
<td>(Moos, 1993)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YSR Competence</td>
<td>14.60 2.90 (678)</td>
<td>14.40 2.70 (637)</td>
<td>13.95 4.08 (376)</td>
</tr>
<tr>
<td>(Achenbach, 1991)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YSR Delinquency</td>
<td>2.50 2.20 (678)</td>
<td>3.20 2.50 (637)</td>
<td>3.96 3.12 (376)</td>
</tr>
<tr>
<td>(Achenbach, 1991)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YSR Aggression</td>
<td>7.90 4.90 (678)</td>
<td>8.50 5.20 (637)</td>
<td>9.80 5.62 (376)</td>
</tr>
<tr>
<td>(Achenbach, 1991)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05 (2-tailed) ** p < .01 (2-tailed)
Table 3: Comparison of the Means and Standard Deviations of the Developer’s Normative Sample With the Rural Adolescent Sample When Gender-specific Data Were Not Available

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Normative data Mean</th>
<th>Normative data SD</th>
<th>Normative data N</th>
<th>Rural Sample Mean</th>
<th>Rural Sample SD</th>
<th>Rural Sample N</th>
<th>t test</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive life change</td>
<td>3.30</td>
<td>2.30</td>
<td>(50)</td>
<td>4.90</td>
<td>2.60</td>
<td>(623)</td>
<td>t = 0.696</td>
<td>.06</td>
</tr>
<tr>
<td>(Brand &amp; Johnson, 1982)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative life change</td>
<td>3.80</td>
<td>2.70</td>
<td>(50)</td>
<td>3.80</td>
<td>1.10</td>
<td>(623)</td>
<td>t = 0.000</td>
<td>.00</td>
</tr>
<tr>
<td>(Brand &amp; Johnson, 1982)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family support</td>
<td>13.40</td>
<td>4.83</td>
<td>(66)</td>
<td>10.64</td>
<td>5.87</td>
<td>(621)</td>
<td>t = -14.227*</td>
<td>-.47</td>
</tr>
<tr>
<td>(Procidano &amp; Heller, 1983)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friend support</td>
<td>15.15</td>
<td>5.08</td>
<td>(66)</td>
<td>12.05</td>
<td>5.01</td>
<td>(622)</td>
<td>t = -15.196**</td>
<td>-.62</td>
</tr>
<tr>
<td>(Procidano &amp; Heller, 1983)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05 (2-tailed)  ** p < .01 (2-tailed)
Table 4: A Gender Comparison of the Means for the Rural Adolescent Sample

<table>
<thead>
<tr>
<th>Indicator variable</th>
<th>Female</th>
<th>Male</th>
<th>Test of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Trait anger (Spielberger, 1996)</td>
<td>19.84</td>
<td>6.20</td>
<td>(372)</td>
</tr>
<tr>
<td>YSR anxiety/depression (Achenbach, 1991)</td>
<td>8.40</td>
<td>5.95</td>
<td>(376)</td>
</tr>
<tr>
<td>CRI cognitive avoidance (Moos, 1993)</td>
<td>9.40</td>
<td>4.25</td>
<td>(374)</td>
</tr>
<tr>
<td>Developmental Age</td>
<td>-.14</td>
<td>.90</td>
<td>(376)</td>
</tr>
<tr>
<td>Positive life change (Brand &amp; Johnson, 1982)</td>
<td>1.42</td>
<td>.95</td>
<td>(376)</td>
</tr>
<tr>
<td>Negative Life change (Brand &amp; Johnson, 1982)</td>
<td>1.51</td>
<td>.98</td>
<td>(376)</td>
</tr>
<tr>
<td>DUSI Drug use (Tarter, 1992)</td>
<td>1.66</td>
<td>2.57</td>
<td>(376)</td>
</tr>
<tr>
<td>Family Support (Procidano &amp; Heller, 1983)</td>
<td>11.01</td>
<td>6.13</td>
<td>(375)</td>
</tr>
<tr>
<td>Peer Support (Procidano &amp; Heller, 1983)</td>
<td>13.63</td>
<td>4.64</td>
<td>(374)</td>
</tr>
<tr>
<td>YSR competence (Achenbach, 1991)</td>
<td>13.95</td>
<td>4.08</td>
<td>(376)</td>
</tr>
<tr>
<td>YSR delinquency (Achenbach, 1991)</td>
<td>3.96</td>
<td>3.12</td>
<td>(376)</td>
</tr>
<tr>
<td>YSR aggression (Achenbach, 1991)</td>
<td>9.80</td>
<td>5.62</td>
<td>(376)</td>
</tr>
</tbody>
</table>

* p < .05 (2-tailed), ** p < .01 (2-tailed)
3. Data Analysis Procedures: Structural Equation Modeling

Structural equation modeling (SEM) is an advanced statistical technique that allows the researcher to examine several (continuous or discrete) independent variables and their relationship to several (continuous or discrete) dependent variables (Tabachnick & Fidell, 1996, p. 709). In SEM, multiple regression is the primary statistical process, but it allows for a more complex testing of theoretical constructs.

These constructs are called factors or "latent variables" in SEM (Tabachnick & Fidell, 1996). Latent variables may include a number of measurements of the same construct. In SEM, multiple models can be constructed, based on theory, and tested. In this study, plasticity and embeddedness are theoretical constructs of Lemer's Developmental Contextualism (1996) that are measured by the latent variables of risk/opportunity and social context.

SEM requires a large sample size. Bentler and Chou (1987) recommended that the ratio of sample size to estimated parameters should be between 5:1 and 10:1 (Kelloway, 1998). This is similar to the requirement for adequate power when using multiple regression (Tabachnick & Fidell, 1996). With four latent variables and twelve indicator variables, a total of thirty parameters were estimated. Using the Bentler and Chou (1987) recommendation, a sample size between 150 and 300 would be sufficient. In this analysis, the sample size was found to be adequate to detect significance (alpha set at .05, two-tailed) in the overall (n = 620) and gender-specific models (females: n = 375; males: n = 245).

Figure 3 was introduced in the first chapter and is explained below. Figure 3 represents a diagram of the structural and measurement model used in this study. There are many Greek symbols to identify the components and pathways of the model. Twelve measured variables were identified as indicator variables. They were represented on the diagram by squares and are identified by their transformed names. They are labeled as X variables if they are independent indicator variables and Y variables if they are dependent indicator variables. Four constructs were labeled as latent variables: one independent latent variable and three dependent latent variables.
Using notation associated with LISREL, the exogenous or independent indicator and latent variables are denoted as X or KSI respectively, and the endogenous or dependent indicator and latent variables as Y or ETA respectively.

In this study, there were four exogenous indicator variables: trait anger (LOGTANG/ X1), anxiety/depression (SQANXDEP/ X2), cognitive avoidance coping (CRICA/ X3), and developmental age (SQDEVAGE/ X4). They are related through a series of paths contained in the LX matrix. Trait anger, anxiety/depression, cognitive avoidance coping, and developmental age measured the latent independent variable termed Individual Characteristics (INDCHAR). The unique factor loading of each indicator on the independent latent variable is denoted as λX. The factors (residuals) for each of the four independent indicator X variables are labeled δ in the matrix, theta delta (TD). The intercorrelations of the latent independent factors, that is, the covariances of the exogenous factors, are contained in matrix PHI (Kelloway, 1998).

On the right side of the model, there were eight dependent indicator variables that were identified as Y variables. These were: positive life events change (AVGOOD/ Y3), negative life events change (AVBAD/ Y4), drug use (INVDUSI/ Y5), family social support (MSSFA/ Y6), peer social support (PSSFR/ Y7), school competence (TCOMPR/ Y8), aggression (SQAGG/ Y9), and delinquency (SQDEL/ Y10). They are related through a series of paths that are contained in the LY matrix. The latent dependent variables were: risk/opportunity (RISKOPP), which was measured by positive and negative life events change scores and drug use; social context (SOCCON), which was measured by family social support, peer social support and school competence; and violent behaviors (VIOLBEH), which was measured by aggression and delinquency scores. The unique factor loading of each indicator on the respective latent dependent variable is denoted as λY. The unique factors (residuals) for each of the eight dependent indicator Y variables are labeled ε in the matrix theta-epsilon (TE). The covariances of the endogenous factors are contained in matrix PSI (Kelloway, 1998).
Unidirectional arrows linking the latent variables are path parameters. When all the paths point in one direction, it is called a recursive model (Schumacker & Lomax, 1996). Paths represent how variables in the model relate to one another. The γ or gamma paths in the structural model relate the independent latent variables to the dependent latent variables. The β or beta paths relate latent dependent variables to other latent dependent variables. In this study, the latent independent variable individual characteristics was posited to predict the latent dependent variable violent behaviors directly through path γ1, risk/opportunity through path γ2 and social context through path γ3. Social context is thought to predict violent behaviors directly through path β1; risk/opportunity would predict violent behaviors directly through path β2; and risk/opportunity would predict social context directly through path β3. Indirect effects, which indicated mediation, were estimated by obtaining the product of the direct paths through a latent variables (e.g., λ2 × β2) and adding the product to the direct effect of the latent independent variable on a dependent variable (e.g., λ1).

LISREL for Windows (version 8.12) and PRELIS (version 2.12) were used for these analyses (Joreskog & Sorbom, 1999). A full and partially mediated recursive, SEM design was used which required all eight parameter matrices (λx, λγ, δ, ε, γ, β, φ, ξ). Parameters were estimated using weighted least squares. The standard output included initial estimates, the weighted least squares estimates, and the overall goodness-of-fit measures (Kelloway, 1998). The completely standardized solution for all pathways was reported in the results section. The squared multiple correlations (R²) were reported for the indicator variables and the structural equations. The first specific aim and related hypotheses were tested simultaneously with the SEM technique using the overall sample.

The t-value of each path was initially examined to assess significance. If t values were below 2, the path was considered for elimination. Modification indices were used to investigate alternative solutions in a post hoc exploratory examination. This involved re-examining
parameter paths and freeing parameters to allow correlation of indicator variables or factor
loading of indicator variables onto another latent variable, thus reconfiguring the model(s).
Squared multiple correlations for each indicator variable and the structural equation latent
variables were noted.

The chi-square statistic, root mean square error of approximation (RMSEA), and root
mean residual (RMR) were evaluated to assess goodness of fit of the observed covariance matrix
to the proposed matrix based on the model. An acceptable value for the RMSEA and standardized
RMR was expected to be less then .05. The researcher is looking to accept the hypothesis that the
matrices are the same. However, the Chi square value was considered a weak indicator of fit, as
the sample size was large (Schumacker & Lomax, 1996). The Goodness of Fit (GFI) and
Comparative Fit Indices (CFI) were also examined for model comparison. GFI and CFI were
expected to be above .90.

Data were then stratified by gender and the hypothesized model was assessed for gender
fit followed by a post-hoc exploration for alternative solutions using the same method as
previously noted. Testing of gender specific differences was performed using the multiple sample
model approach (Schumacker & Lomax, 1996; Hayduk, 1987). This allowed for examination of
differences of factor loading, and direct and indirect pathways between gender models. Using this
method also allowed for the consideration of error in identifying differences in models. A stacked
model comparison in LISREL was employed (Jöreskog & Sörbom, 1993b; Schumacker &
Lomax, 1996). The first hypothesis tested the equality of covariance matrices of the males to the
females. The second and third tested the equality of the factor loading of the X and Y indicator
variables on the corresponding latent variables. The fourth and fifth tested the equality of the
direct gamma and beta paths between the two groups. These hypotheses are as follows:

\[ H_0: \Sigma^{(female)} = \Sigma^{(male)} \]

\[ H_1: \text{The covariance matrix of the female sample is different from the male sample.} \]
H0: $\Lambda_x^{(female)} = \Lambda_x^{(male)}$

H1: The factor loading of the independent indicator variables on the latent independent variable is different for the female and male samples.

H0: $\Lambda_y^{(female)} = \Lambda_y^{(male)}$

H3: The factor loading of the dependent indicator variables on the latent dependent variables is different for the female and male samples.

H0: $\Gamma^{(female)} = \Gamma^{(male)}$

H4: The gamma paths are different for the female and male samples.

H0: $B^{(female)} = B^{(male)}$

H5: The beta paths are different for the female and male samples.

It is also possible to examine the equality of matrices $\Phi, \Psi, \Theta$.. The latter were not tested in this stacked model analysis. It was determined that testing the above five hypotheses would be sufficient to statistically confirm group differences. To test the above hypotheses, the two gender samples were run in a stacked manner (Hayduk, 1987). It was posited that the results would guide exploratory post hoc modeling for future study.
CHAPTER FOUR

RESULTS

In this chapter, the comparisons of the rural adolescent sample means and standard deviations to the normative sample, the gender differences in the means for the rural adolescents females and males and the correlations for the overall sample and gender subsamples are presented in the Descriptive Results. The results of model testing for Specific Aims #1 and #2 and related hypotheses, are then presented.

A. Descriptive Results

The comparison of the rural adolescents with the normative data published by the developers of the original instruments revealed significant differences on many variables. Normative data were typically reported by gender (Table 2), except for the Perceived Social Support scales (family and friend social support) (Procidano & Heller, 1983) and the Life Events Checklist (Johnson, 1993). For the latter two instruments, only the overall sample means and standard deviations were reported and compared to the overall rural sample means and standard deviations (Table 3). Since developmental age was a created variable, there were no norms. Likewise, there were no reported norms for only the first ten items of the drug use subscale.

Effect sizes were generated for all available instruments.

The rural adolescents had statistically lower levels of trait anger (female: \( t = -11.15, p < .001 \); male: \( t = -7.19, p < .001 \)), lower levels of perceived family support (\( t = -14.227, p < .001 \)), perceived peer support (\( t = -15.196, p < .001 \)) and perceived competence (female: \( t = -4.305, p < .001 \); males: \( t = -7.151, p < .001 \)) than the normative samples. The rural adolescents had higher reported levels of delinquency (female: \( t = 12.807, p < .001 \); male: \( t = 10.125, p < .001 \)), and aggression (female: \( t = 7.310, p < .001 \); male: \( t = 3.232, p < .001 \)). In addition, levels of anxiety/depression were higher than the norm for females (\( t = 7.605, p < .001 \)) but were non-significant for males (\( t = 0.150, p > .10 \)). Likewise, cognitive avoidance coping was higher than the norm for females (\( t = 7.149, p < .001 \)) but not statistically significant for males (\( t = 0.487, p = \))
.63). Effect sizes were moderate to large for the significant differences with the exception of the smaller competence score difference for the female rural sample (effect size = .16) and the aggression score difference for rural males (effect size = .16).

Because the rural adolescent scores on aggression and delinquency were so much higher than the normative data, a descriptive analysis was done to examine gender and grade differences on these two variables. Based on Achenbach's (Achenbach, 1991) criteria for aggression assessment, 10.4% of the rural female adolescents and 11.3% of the male sample had scores that were borderline (18-21) or problematic (> 22). Furthermore, the majority of the females with scores in the borderline or above range were in the 9th grade (12.6%) and, for the males, they were in the tenth grade (19.5%). Overall, 10.7% of the rural adolescents met the criteria for borderline to problematic on the variable of aggression and 4.6% had scores > 22. An ANOVA comparing the gender samples on aggression was not significant, F(1, 622) = .209, p = .646. An ANOVA comparing the grade level on aggression was also not significant, F(3, 619) = .163, p = .921.

For delinquency, 12.2% of the rural females and 19% of the rural males had scores that were borderline (8-10) or problematic (11 or greater) (Achenbach, 1991). The high scores for the females were split between the 9th (15.3%) and the 11th (13.5%) grades, and highest in the 10th grade (27.2%) for the males. Overall, 14.9% of the rural adolescents met the criteria for borderline to problematic for the delinquency variable, and 6% had scores of 11 or greater. There was a gender effect on delinquency for males, F(1,622) = 9.702, p < .002. There was no effect for grade on delinquency, F(3,619) = .368, p = .776.

The comparisons of the means of the female and male adolescents with a test of significance are presented in Table 4. Comparison of the rural adolescent means revealed differences between genders for all but three variables (drug use: t = -0.136, p = .89; family support: t = 1.878, p = .06; and aggression: t = 0.457, p = .65). Female rural adolescents had lower levels of trait anger (t = -2.025, p = .043), developmental age (t = -4.160, p < .001), and

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levels of delinquency ($t = -3.115, p = .002$) than the rural males. The rural adolescent females had higher levels of anxiety/depression ($t = 7.289, p < .001$), cognitive avoidance ($t = 5.419, p < .001$), change in positive life events ($t = 2.541, p = .011$), change in negative life events ($t = 5.546, p < .001$), perceived friend support ($t = 10.43, p < .001$), and perceived competence ($t = 2.326, p = .020$) than rural adolescent males. Observed effect sizes were all in the moderate to large range with the exception of smaller sized effects for perceived competence (effect size = .19) and delinquency (effect size = .07).

The correlation matrix of the analyzed independent and dependent variables for the overall sample is presented in Table 5 using the transformed (indicator) variables, organized by latent variable. In particular, the negative drug use correlation scores are to be interpreted as positive because of the applied inverse transformation. Although significant, many values are small representing weak relationships.

The independent indicator variables were log base 10 transformed trait anger, square root transformed anxiety/depression, cognitive avoidance, and square root transformed developmental age. Trait anger was significantly positively related to anxiety/depression ($r = .427, p < .001$) and cognitive avoidance ($r = .214, p < .001$). Anxiety/depression was positively correlated to cognitive avoidance ($r = .373, p < .001$). Developmental age was not correlated with any of the independent indicator variables.

Trait anger was positively correlated to positive life change ($r = .129, p = .001$), negative life change ($r = .209, p < .001$), inverse transformed drug use ($r = .347, p < .001$), aggression ($r = .640, p < .001$) and delinquency ($r = .456, p < .001$). Trait anger was significantly negatively related to family support ($r = -.255, p < .001$) and peer support ($r = -.142, p < .001$).

Anxiety/depression was significantly positively related to positive life change ($r = .119, p = .003$), negative life change ($r = .296, p < .001$), inverse transformed drug use ($r = .213, p < .001$), aggression ($r = .561, p < .001$) and delinquency ($r = .254, p < .001$). Anxiety/depression was negatively related to family support ($r = -.198, p < .001$)
Table 5. Correlation Matrix of Analyzed Independent and Dependent Indicator Variables for the Total Sample

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<td>-.130**</td>
<td>-.085*</td>
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<td>11. delinquency(b)</td>
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<td>.089**</td>
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<td>12. aggression(b)</td>
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<td>-.046</td>
<td>.660**</td>
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</tbody>
</table>

(a) log base 10 transformed variable  
(b) square root transformed variable  
(c) inverse transformed variable  
*p<.05 (2-tailed)  **p<.01 (2-tailed)
Cognitive avoidance was positively related to negative life change ($r = .179, p < .001$), inverse transformed drug use ($r = .139, p = .001$), aggression ($r = .258, p < .001$) and delinquency ($r = .125, p = .002$). Cognitive avoidance was negatively related to family support ($r = -.123, p = .002$). Developmental age was weakly positively related to inverse transformed drug use ($r = .085, p = .035$). Developmental age was negatively related to negative life change ($r = -.094, p = .019$) and competence ($r = -.090, p = .026$).

Risk/opportunity was measured by positive life events change, negative life events change and inverse transformed drug use. Positive life change was positively related to negative life change ($r = .415, p < .001$), family support ($r = .082, p = .041$), peer support ($r = .127, p = .002$), and competence ($r = .185, p < .001$). Negative life change was positively related to inverse transformed drug use ($r = -.163, p < .001$), peer support ($r = .106, p = .008$), competence ($r = .112, p = .006$), aggression ($r = .187, p < .001$), and delinquency ($r = .089, p = .026$). Inverse transformed drug use was also positively related to aggression ($r = .377, p < .001$) and delinquency ($r = .538, p < .001$). The only variable that inverse transformed drug use was negatively related to was family support ($r = -.296, p < .001$).

Social context was measured by family support, peer support and school competence. Family support was positively related to peer support ($r = .396, p < .001$) and competence ($r = .231, p < .001$). Family support was negatively related to aggression ($r = -.254, p < .001$) and delinquency ($r = -.350, p < .001$). In addition to being positively related to positive life change, negative life change, and family support, peer support was positively related to competence ($r = .222, p < .001$). Peer support was negatively related to delinquency ($r = -.138, p = .001$). Competence was positively related to positive life change, negative life change, family support and peer support. Competence was negatively related to developmental age and delinquency ($r = -.159, p < .001$).

Violent behaviors were measured by square root transformed aggression and square root transformed delinquency variables. Aggression was very strongly positively related to
delinquency \((r = .660, p < .001)\). Aggression was positively related to trait anger, anxiety/depression, cognitive avoidance, negative life change, and inverse transformed drug use. Aggression was negatively related to family support. Delinquency was positively related to trait anger, anxiety/depression, cognitive avoidance, negative life change, inverse transformed drug use and aggression. Delinquency was negatively related to family support, peer support and competence.

The gender-specific correlation matrices were also analyzed. They are presented in Tables 6 and 7 respectively. Transformed variables were the same as the overall sample and the results are presented in the same manner as organized for the overall sample. For the female sample, trait anger was positively related to anxiety/depression \((r = .478, p < .001)\), cognitive avoidance \((r = .241, p < .001)\), and developmental age \((r = .124, p = .016)\). Anxiety/depression was also positively related to cognitive avoidance \((r = .350, p < .001)\).

In evaluating the independent and dependent indicator variables for the female sample, trait anger was positively related to positive life change \((r = .186, p < .001)\) and negative life change \((r = .224, p < .001)\), although the correlation coefficient was small. However, trait anger was strongly positively related to inverse transformed drug use \((r = -.329, p < .001)\), aggression \((r = .646, p < .001)\) and delinquency \((r = .373, p < .001)\). There was a negative correlation of trait anger to family support \((r = -.243, p < .001)\) and peer support \((r = -.223, p < .001)\).

There was a small correlation value but a significant relationship of anxiety/depression with positive life change \((r = .104, p = .05)\) but a stronger correlation with negative life events \((r = .293, p < .001)\) and inverse transformed drug use \((r = -.217, p < .001)\). There was a negative relationship of anxiety/depression with family support \((r = -.298, p < .001)\) and peer support \((r = -.281, p < .001)\). anxiety/depression was strongly related to aggression \((r = .527, p < .001)\) and delinquency \((r = .353, p < .001)\).

Cognitive avoidance was positively related to negative life change \((r = .144, p = .005)\) and inverse transformed drug use \((r = -.158, p = .002)\). There was a negative relationship
Table 6. Correlation Matrix of Analyzed Independent and Dependent Indicator Variables for the Female Sample

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<td>2. anxiety/depression&lt;sup&gt;(b)&lt;/sup&gt;</td>
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<td>5. positive life change</td>
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<tr>
<td>7. drug use&lt;sup&gt;(c)&lt;/sup&gt;</td>
<td>-.329**</td>
<td>-.217**</td>
<td>-.158**</td>
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<td>8. family support</td>
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<td>-.061</td>
<td>-.031</td>
<td>-.233**</td>
<td>.125*</td>
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<td>.234**</td>
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<tr>
<td>11. delinquency&lt;sup&gt;(b)&lt;/sup&gt;</td>
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<td>.353**</td>
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<td>-.318**</td>
<td>.149**</td>
<td>-.238**</td>
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<td>.277**</td>
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<td>.091</td>
<td>.174**</td>
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<td>-.236**</td>
<td>-.107*</td>
<td>-.130*</td>
<td>.652**</td>
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</table>

<sup>(a)</sup> log base 10 transformed variable
<sup>(b)</sup> square root transformed variable
<sup>(c)</sup> inverse transformed variable
*<sub>p</sub> < .05 (2-tailed)  **<sub>p</sub> < .01 (2-tailed)
between cognitive avoidance and family support ($r = -0.159, p = .002$). Cognitive avoidance was related to aggression ($r = 0.277, p < .001$) and delinquency ($r = 0.184, p < .001$). Developmental age was not significantly related to any of the dependent indicator variables for the female sample.

For the female sample, positive life change was positively correlated with negative life change ($r = 0.456, p < .001$) and school competence ($r = 0.233, p < .001$). Negative life change was positively related to inverse transformed drug use ($r = -0.145, p = .005$) and weakly to school competence ($r = 0.125, p = .017$). There was also a positive association of negative life change and aggression ($r = 0.174, p = .001$). Inverse transformed drug use negatively related to family support ($r = 0.295, p < .001$), and positively correlated with aggression ($r = -0.358, p < .001$) and delinquency ($r = -0.542, p < .001$).

Family support was related to all of the dependent indicator variables for the female sample with the exception of positive life change and negative life change. Family support was strongly positively associated with peer support ($r = 0.401, p < .001$) and school competence ($r = 0.238, p < .001$). Family support was negatively related to aggression ($r = -0.318, p < .001$) and delinquency ($r = -0.236, p < .001$). Peer support was positively correlated with school competence ($r = 0.234, p < .001$). Peer support was weakly negatively related to aggression ($r = -0.107, p = .039$) and delinquency ($r = -0.149, p = .004$). In addition to the positive correlation with positive and negative life change and family support, school competence was significantly negatively related to aggression ($r = -0.230, p = .001$) and delinquency ($r = -0.238, p < .001$).

On the latent variable of Violent Behavior, aggression had the strongest, positive correlation with delinquency ($r = 0.652, p < .001$). In addition to the latter, aggression was positively correlated with negative life change and inverse transformed drug use for the female sample. Aggression was negatively related to family and peer support and school competence. Delinquency was positively related to inverse transformed drug use and negatively related to family support, peer support, and school competence.
For the male sample, trait anger was positively correlated to anxiety/depression ($r = .456$, $p < .001$) and cognitive avoidance ($r = .234$, $p < .001$). Anxiety/depression was positively related to cognitive avoidance ($r = .304$, $p < .001$). Developmental age was not significantly related to the other independent indicator variables.

Trait anger was positively related to negative life change ($r = .236$, $p < .001$), inverse transformed drug use ($r = -.374$, $p < .001$), aggression ($r = .640$, $p < .001$), and delinquency ($r = .501$, $p < .001$). Trait anger was negatively related to family support ($r = -.270$, $p < .001$). Anxiety/depression was positively associated with negative life change ($r = .179$, $p = .005$) and inverse transformed drug use ($r = -.242$, $p < .001$). There were no significant correlations of anxiety/depression with the social context indicator variables of family support, peer support or competence. There was a strong relationship of anxiety/depression with the variables of aggression ($r = .583$, $p < .001$) and delinquency ($r = .423$, $p < .001$).

Cognitive avoidance was weakly, positively correlated to negative life change ($r = .136$, $p = .034$), inverse transformed drug use ($r = -.132$, $p = .042$) and aggression ($r = .182$, $p = .005$). Likewise, developmental age was weakly positively related to negative life change ($r = .136$, $p = .033$) and inverse transformed drug use ($r = -.131$, $p = .040$). Developmental age was negatively associated with school competence ($r = -.148$, $p = .023$).

For the dependent indicator variables, positive life change was positively correlated with only one variable, negative life change ($r = .326$, $p < .001$). Positive life change was weakly negatively related to peer support ($r = .153$, $p = .016$). Negative life change was positively correlated to inverse transformed drug use ($r = -.210$, $p = .001$) and weakly positively correlated to aggression ($r = .147$, $p = .020$) and delinquency ($r = .131$, $p = .040$). Inverse transformed drug use was negatively correlated with family support ($r = .300$, $p < .001$) and positively correlated to aggression ($r = -.428$, $p < .001$) and delinquency ($r = .588$, $p < .001$).

Family support was positively related to peer support ($r = .393$, $p < .001$) and school competence ($r = .202$, $p < .001$) in the male sample. In addition to trait anger and inverse
Table 7. Correlation Matrix of Analyzed Independent and Dependent Indicator Variables for the Male Sample

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<td>.304**</td>
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<tr>
<td>4. developmental age(^{(b)})</td>
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<td>.019</td>
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<td>6. negative life change</td>
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<td>.179</td>
<td>.137*</td>
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<td>.045</td>
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<td>.393**</td>
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<tr>
<td>10. school competence</td>
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<td>-.148**</td>
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<td>.048*</td>
<td>.054</td>
<td>.202**</td>
<td>.156*</td>
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<tr>
<td>11. delinquency(^{(b)})</td>
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<td>.423**</td>
<td>.041</td>
<td>.025</td>
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<td>-.588**</td>
<td>-.392**</td>
<td>-.084</td>
<td>-.130*</td>
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<tr>
<td>12. aggression(^{(b)})</td>
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<td>.583**</td>
<td>.182**</td>
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</table>

\(^{(a)}\) log base 10 transformed variable
\(^{(b)}\) square root transformed variable
\(^{(c)}\) inverse transformed variable

*\(p < .05\) (2-tailed)  **\(p < .01\) (2-tailed)
transformed drug use, family support was negatively associated to aggression ($r = - .340, p < .001$) and delinquency ($r = -.392, p < .001$), Peer support was positively related to school competence ($r = .156, p = .016$).

In addition to trait anger, anxiety/depression, cognitive avoidance and inverse transformed drug use, aggression was very strongly associated with delinquency for males ($r = .741, p < .0001$). For males, inverse transformed drug use was the strongest positively related indicator variables and family support was the largest negatively related indicator variable with delinquency. Delinquency was weakly related negatively to school competence ($r = -.130, p = .045$).

**B. Model Testing**

*Specific Aim # 1.*

The data will support the model of violent behavior presented in the proposed structural model.

The overall model results are presented in Figure 4. Completely standardized results are reported for model paths in the text and figures. Evaluating the proposed structural equation measurement model indicated a significant lack of fit between the observed covariance matrix and that estimated covariance matrix based on the fitted model [$\chi^2(48) = 340.58, p < .0001$; RMSEA = .10; RMR = .09; CFI = .83]. With the exception of aggression, standardized residuals were moderate to large for all indicator independent and dependent variables. The Q-plot confirmed the poor fit.

The factor paths for the independent indicator variables in the overall model were significant with the exception of developmental age ($\lambda_4 = -.04, t = -1.04, p = .15; R^2 = .00$). Trait anger accounted for 51% of the variance in the latent independent variable, anxiety/depression accounted for 42%, and cognitive avoidance accounted for 12%.

Negative life change explained 60% of the variance, while positive life change explained 27% for the latent dependent variable of Risk/Opportunity. The latent variable had a large error in
Figure 4. Model results for overall sample. $\chi^2(48) = 340.58, p < .0001$; RMSEA = .099, RMR = .089; CFI = .83

**$p < .001$ (2-tailed) *$p < .01$ (2-tailed)
relation to the structural model with $\zeta = .77$. The latent variable Risk/opportunity explained only 23% of the variance in the structural equation model. Also, the factor loading for drug use on risk/opportunity was low with a very large error residual and this variable explained only 3% of the latent variable ($\lambda_5 = -.16, \varepsilon_5 = .97, R^2 = .03$).

On the latent variable of social context, 55% of the variance was explained by family support, 29% by peer support, and 11% by school competence. The factor loading for the indicator variables on the latent dependent variable of social context were significant. The path from social context to violent behaviors was significant as well, but with a t value below 2.0 ($\beta_1 = .13, t = 1.87, p > .03$) The error factor for social context was large ($\zeta = .70$), and this latent variable explained only 23% of the overall structural equation model.

The dependent latent variable of violent behaviors, as measured by the indicator variables of aggression and delinquency, was the strongest measure of the structural equation model. The aggression indicator variable accounted for 95% of the variance. Factor loading values were large for both aggression ($\lambda_2 = .98, t = 16.19, p < .0001$) and delinquency ($\lambda_1 = .67$). The residuals were small and the majority of the variance in the structural equation model was explained by this latent variable ($\zeta = .15, R^2 = .85$).

Post hoc analysis was conducted to explore the best path relationships and propose a model for future research. The results for the overall sample are presented in Figure 5. The changes in the goodness of fit indices as paths were added or deleted for the overall sample are presented in Table 8. Using the endogenous side of the equation and the suggested modification indices as starting points, four paths were added: from aggression to social context, from drug use to violent behaviors and a correlation of error factors between drug use and delinquency, and anxiety/depression and cognitive avoidance. Because developmental age was nonsignificant, it was eliminated from the design. Using $t$-values as indicators, all other factor paths and structural model paths were significant ($t$-values $> 2.00$).
**Figure 5.** Post hoc model results for overall sample. $\chi^2(34) = 100.26, p < .0001; \text{RMSEA} = .056, \text{RMR} = .052; \text{CFI} = .96$

**p < .001 (2-tailed)**  **p < .05 (2-tailed)**
Table 8. Post hoc Changes in Goodness-of-Fit for the Overall Sample Based on t-values and Modification Indices

<table>
<thead>
<tr>
<th>Model</th>
<th>Goodness of fit indices</th>
<th>Maximum $\chi^2$ Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Model</td>
<td>$\chi^2 = 340.58$ (48)</td>
<td>$p &lt; .0001$ RMSEA $= .099$ CFI $= .83$ $\delta(5,1) = 65.17$</td>
</tr>
<tr>
<td>Residual path $\epsilon_{(5,1)}$ added: delinquency to drug use</td>
<td>$\chi^2 = 258.57$ (47)</td>
<td>$p &lt; .0001$ RMSEA $= .085$ CFI $= .88$ $\lambda_{Y(5,1)} = 38.31$</td>
</tr>
<tr>
<td>Factor path $\lambda_{Y(5,1)}$ added: drug use to violent behaviors</td>
<td>$\chi^2 = 219.27$ (46)</td>
<td>$p &lt; .0001$ RMSEA $= .078$ CFI $= .90$ $\lambda_{Y(2,3)} = 41.98$</td>
</tr>
<tr>
<td>Factor $\lambda_{Y(2,3)}$ added: aggression to social context</td>
<td>$\chi^2 = 170.69$ (45)</td>
<td>$p &lt; .0001$ RMSEA $= .067$ CFI $= .92$ $t_{X4} = -1.14$</td>
</tr>
<tr>
<td>Path dropped: $X_{sqdevage}$</td>
<td>$\chi^2 = 139.11$ (35)</td>
<td>$p &lt; .0001$ RMSEA $= .069$ CFI $= .94$ $\delta(3,2) = 36.20$</td>
</tr>
<tr>
<td>Residual $\delta(3,2)$ added: depression to cognitive avoidance</td>
<td>$\chi^2 = 100.26$ (34)</td>
<td>$p &lt; .0001$ RMSEA $= .056$ CFI $= .96$ stopped</td>
</tr>
</tbody>
</table>

Additional paths added presented a very complicated model. After the last addition of the theta delta path, LISREL maximized iterations at 300 to attempt to fit the proposed covariance matrix. Further modifications were not attempted and this post hoc model was accepted as the best solution.

Specific Hypotheses

Because of the lack of fit of the proposed model, the specific hypothesis results are reported but should be viewed with caution.

Hypotheses 1.1

*There is a positive direct relationship between the latent independent variable of individual characteristics as measured by trait anger, anxiety and depression, cognitive avoidance, and*
developmental age (based on age and grade) and the latent dependent variable of violent behaviors as measured by aggression and delinquency.

This hypothesis was supported. There was a strong positive direct effect between the individual characteristics of trait anger, anxiety/depression, cognitive avoidance and developmental age and violent behaviors of aggression and delinquency ($\gamma_1 = 1.08, t = 8.61, p < .001$). Examination of t-values were greater than 2 with the exception of developmental age ($\lambda_{X4} t = -1.04, p = .15$). However, error factors were large especially for developmental age ($\varepsilon_4 = 1.00$). The variable of developmental age represented the residuals for the regressed age on grade variables. The latent variable of violent behavior, which was measured by aggression and delinquency, represented 85% of the variance in the structural equation model that was proposed.

**Hypothesis 1.2**

*There is a partial mediation effect of Risk/opportunity (positive life events change, negative life events change, and drug use) on the relationship of individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (aggression and delinquency).*

This hypothesis was supported. Using the completely standardized solution for effects, there was a positive total effect of the latent variable of individual characteristics on the latent variable of risk/opportunity ($\gamma_2 = .48, t = 5.41, p < .001$). There was a negative total effect of risk/opportunity on individual characteristics ($\beta_2 = -.28, t = -3.39, p < .001$). A fully mediated effect was not present (effect = .13). However, there was a small partially mediated effect of risk/opportunity on the relationship between individual characteristics and violent behaviors in the overall sample that lowered the direct effect from $\gamma_1 = 1.08$ to $\gamma_1 = .95$.

Drug use was strongly correlated with the observed variables of delinquency ($r = .538, p < .001$) and aggression ($r = .377, p < .001$). The error variances of invdusi and delinquency were also correlated and very large ($\varepsilon_3 = .94$ to .98). Exploratory factor analysis using principal
components extraction with varimax rotation indicated a strong factor loading of the indicator variable drug use on the latent variable of violent behaviors. Post hoc exploration of best model fit established a path to that latent variable in the overall sample.

**Hypothesis 1.3**

*Risk/opportunity (positive and negative life change scores and drug use) fully mediates the relationship between individual characteristics (trait anger, anxiety/depression, cognitive avoidance and developmental age) and social context (family and peer social support and school competence).*

This hypothesis was supported. First, there was a moderately positive effect of risk/opportunity on social context ($\beta_3 = .35, t = 4.04, p < .001$). There was also a small fully mediated effect of risk/opportunity on the relationship of individual characteristics and social context that was significant (full effect = .17, $t = 3.15, p < .01$).

**Hypothesis 1.4**

*Social context (family social support, peer social support, and school competence) fully mediates the relationship of individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (delinquency and aggression).*

This hypothesis was not supported in the overall sample. The relationship between the latent variable of individual characteristics and social context was a strong negative direct effect ($\gamma_3 = -.54, t = -6.03, p < .001$). However, the path from social context to violent behaviors was marginal with a t value below 2.0 ($\beta_1 = .13, t = 1.87, p = .03$). As was noted earlier, the latent variable of social context played a small part (23%) in measuring the prediction of violent behaviors in the proposed model.

**Specific Aim # 2**

*There are differences in the prediction of violent behaviors between male and female rural adolescents.*
This hypothesis was supported. Fitting the same hypothesized model to each gender sample generated some differences. The female overall model is presented in Figure 6. A lack of fit of the hypothesized model was observed for the female rural adolescents $[\chi^2(48) = 310.09, p < .0001; \text{RMSEA} = .12; \text{RMR} = .11]$. The male sample results are presented in Figure 7. The goodness-of-fit of the observed covariance matrix to the proposed covariance matrix was also poor for the male adolescents $[\chi^2(48)=106.93, p < .0001; \text{RMSEA} = .07; \text{RMR} = .08]$. The following results are not evidence of statistical differences between gender models as each model is considered separately.

There was one similarity between the female and male sample results. For both the female sample and the male sample, developmental age did not measure the latent variable individual characteristics (female: $\lambda_{XX} = -.05, t = 0.83, p = .20$; male: $\lambda_{XX} = -.11, t = -1.59, p = .06$). Visual examination of the $t$-values suggested that the female sample seemed to more closely approximate the fitted model for the overall sample on all indicator independent and dependent variables. For the female sample, the total effect of individual characteristics on violent behavior was still strong ($\gamma_1 = 1.23, t = 5.36, p < .001$). The total effect of individual characteristics on risk/opportunity was also strong ($\gamma_2 = .51, t = 5.18, p < .001$). The path from risk/opportunity to violent behaviors was also significant ($\beta_2 = -.34, t = -2.39, p = .008$). The indirect effect of risk/opportunity on the relationship of individual characteristics and violent behavior was a strong, partially mediated one (indirect effect = -.39, $t = -2.27, p = .012$). Drug use was a stronger factor in measuring the latent variable of risk/opportunity in the female sample ($\lambda_{XY} = -.25, t = -3.71, p < .01$). Positive life change represented 34% of the variance in the latent variable while negative life change represented 54%.

The path from social context to violent behaviors, which was nonsignificant in the overall sample, was now significant ($\beta_1 = .40, t = 2.59, p = .005$). More interestingly, social context explained 42% of the variance in the structural equation model for the female sample. The
Figure 6. Model results for female sample. $\chi^2(48) = 310.09, p < .0001$; RMSEA = .121, RMR = .110; CFI = .75

**$p < .001$ (2-tailed)  *$p < .01$ (2-tailed)
Figure 7. Model results for male sample. \( \chi^2(48) = 106.93, p < .0001; \) RMSEA = .071, RMR = .075; CFI = .90

**p < .01 (2-tailed) *p < .05 (2-tailed)
variance of violent behaviors decreased to 82%, with risk/opportunity explaining 26% of the overall variance in the model. The variance explained by family support increased to 41%, while peer support measured 40%. The aggression path as an indicator measuring violent behavior appeared to be over-identified with a nonsignificant t-value for the error variance $\xi_2 = -.01$, $t = -.15$, $p = .44; R^2 = 1.01$).

In the male sample, several indicator dependent variables had low paths factor loading values: peer support ($\lambda_7 = .32$, $t = 1.87$, $p = .03$), competence ($\lambda_8 = .17$, $t = 1.65$, $p = .05$), and drug use ($\lambda_5 = -.15$, $t = -1.83$, $p = .03$). The independent latent path from individual characteristics to violent behaviors was strong ($\gamma_1 = .97$, $t = 7.64$, $p < .001$). Violent behavior represented 89% of the variance in the predictive model for the male sample. The path from individual characteristics to risk/opportunity was also significant ($\gamma_2 = .37$, $t = 2.01$, $p = .02$) and from individual characteristics to social context was negative, but significant ($\lambda_3 = -.26$, $t = -3.52$, $p < .001$). The beta parameters were nonsignificant or marginal ($\beta_1 = -.06$, $t = -1.00$, $p = .16$; $\beta_2 = -.14$, $t = -1.72$, $p = .04$; and $\beta_3 = -.02$, $t = .30$, $p = .38$). Risk/opportunity had a high error ($\zeta = .86$) and accounted for only 14% of the variance in the structural equation model. Social context also had an large error factor ($\zeta = .94$), with an explained variance that was very small ($R^2 = .06$).

The previous result of comparison was considered an visual assessment of differences as one group was assessed at a time (Schumacker & Lomax, 1996). It is recommended that a statistical evaluation between models is a more substantive assessment of path differences (Schumacker & Lomax, 1996). The multiple sample stacked model was utilized to test the hypotheses posited. When comparing various aspects of the models, females and males had significantly different covariance matrix structures, dependent indicator factor matrix (LY) structures, and the beta and gamma matrix structures. Global goodness-of-fit results are reported.

The hypothesis of $H_0$: $\Sigma^{\text{female}} = \Sigma^{\text{male}}$ was rejected for the equality of covariance matrices of the independent variables [$\chi^2(10) = 23.27$, $p < .001$] as well as for the dependent indicator
indicator variables or LY \( \chi^2(36)= 102.28, p < .001 \). The equality of factor structure for \( \lambda_X \) or \( H_0^X \): 
\[ \Lambda_X^{(\text{females})} = \Lambda_X^{(\text{males})} \] was not rejected \( \chi^2(8)= 13.28, p = .10 \). The equality of factor structure for \( \lambda_Y \) or \( H_0^Y \): 
\[ \Lambda_Y^{(\text{females})} = \Lambda_Y^{(\text{males})} \] was rejected \( \chi^2(39)=269.71, p < .001 \). Testing of the equality of the gamma paths or \( H_0^\gamma \): 
\[ \Gamma^{(\text{females})} = \Gamma^{(\text{males})} \] indicated that this hypothesis was rejected as well 
\( \chi^2(123) = 440.23, p < .001 \). Finally, the beta path equality or \( H_0^\beta \): 
\[ B^{(\text{females})} = B^{(\text{males})} \] was tested. This final hypothesis was also rejected \( \chi^2(123) = 434.53, p < .001 \). With the exception of the comparison of the \( \lambda_X \), rejection of the other hypotheses supported the post hoc modeling of separate structural equation models for the rural adolescent female and male samples.

**Hypothesis 2.1**

*The hypothesized model fits better for male adolescents than female adolescents.*

This hypothesis was not supported. As noted in the last section, the original proposed model appeared to approximate the observed covariance matrix for the female sample. The post hoc results for the female sample are presented in Figure 8 with specific paths added or deleted and changes in goodness of fit indices noted in Table 9. Post hoc explorations were performed to identify potential models for future research and should not be considered for significance to the present study.

For the female sample, post hoc exploration results approached a better fit \( \chi^2(34) = 69.28, p < .0003; \text{RMSEA} = .053; \text{RMR} = .044 \) with acceptable comparison indices. However, it remained quite complicated. Five additional paths were added. The error factors of drug use and delinquency and anxiety/depression and cognitive avoidance were correlated. Factor loading of the dependent variables indicated three factors double loading. Drug use loaded on the violent behavior latent variable \( \lambda_5 = -.45 \), aggression loaded on the social context latent variable \( \lambda_2 = .66 \) and competence had equivocal loading on both risk/opportunity latent variable \( \lambda_6 = .24 \) and social context \( \lambda_8 = .17 \).
Figure 8. Post hoc model results for female sample. $\chi^2(44) = 69.28, p < .0001$; RMSEA = .053, RMR = .044; CFI = .97

**$p < .001$ (2-tailed) *$p < .01$ (2-tailed)
Table 9. Post hoc Path Changes in Goodness-of-Fit for the Female Model Based on t-values and Modification Indices

<table>
<thead>
<tr>
<th>Model</th>
<th>Goodness of fit indices</th>
<th>Maximum $\chi^2$ Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Model</td>
<td>$310.09 \ (48)$</td>
<td>$\varepsilon_{(5.1)} = 86.25$</td>
</tr>
<tr>
<td>Residual path $\varepsilon_{(5,1)}$ added:</td>
<td>$205.73 \ (47)$</td>
<td>$\lambda_{Y(5,1)} = 64.43$</td>
</tr>
<tr>
<td>delinquency to drug use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor path $\lambda_{Y(5,1)}$ added:</td>
<td>$138.74 \ (46)$</td>
<td>$\lambda_{Y(2,3)} = 21.24$</td>
</tr>
<tr>
<td>drug use to violent behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor path $\lambda_{Y(2,3)}$ added:</td>
<td>$111.82 \ (45)$</td>
<td>$t_{X4} = 0.79$</td>
</tr>
<tr>
<td>aggression to social context</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Path deleted: $X_{sqdevage}$</td>
<td>$93.47 \ (35)$</td>
<td>$\lambda_{Y(8,2)} = 14.76$</td>
</tr>
<tr>
<td>Factor path $\lambda_{Y(8,2)}$: added:</td>
<td>$78.39 \ (34)$</td>
<td>$t_{B1} = -1.13$</td>
</tr>
<tr>
<td>competence to risk/opportunity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Path $\beta_1$ deleted: social</td>
<td>$79.01 \ (34)$</td>
<td>$\delta_{3,2} = 10.95$</td>
</tr>
<tr>
<td>context to violent behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual path $\delta_{3,2}$ added:</td>
<td>$69.28 \ (34)$</td>
<td>stopped</td>
</tr>
<tr>
<td>anxiety/depression to cognitive avoidance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$\chi^2$, df, p value, RMSEA, CFI.
Post hoc exploration of the female model seemed to indicate that drug use could be a measurement of violent behaviors in the female sample. The latent variable of social context could also be involved as a direct moderator on the relationship of individual characteristics to violent behaviors. This analysis is left for future research. Solution explorations were stopped because of the continued factor path overlapping suggested.

The post hoc male sample results are presented in Figure 9. The specific path changes are noted in Table 10. A more parsimonious model was proposed based on the previously noted nonsignificant pathways. Social context was removed as a latent variable and drug use was factor loaded as an indicator on the violent behaviors latent variable. The error variances of anxiety and cognitive avoidance and drug use and delinquency were allowed to correlate. Risk/opportunity was retained because of the significant direct effect between individual characteristics and risk/opportunity and to assess whether the power was exceeded with the large number of pathways. This resulted in a model with excellent fit \( \chi^2(15) = 9.84, p = .83; \) RMSEA = .000; RMR = .02; GFI = .99; CFI = 1.00. There were strong direct effects between the remaining latent independent and dependent variables \( (\gamma_1 = 1.01, \gamma_2 = - .35) \). The risk/opportunity latent variable explained only 11% of the variance in the structural model with violent behaviors explaining 95%. Despite the highly significant model fit, the path from individual characteristics to risk/opportunity \( (\gamma_2) \) had a nonsignificant value \( (t = 1.46, p = .07) \) and from risk/opportunity to violent behaviors \( (\beta_1) \) had a marginal value \( (t = - 1.93, p = .03) \). It appeared that the best male model was a direct effect between the latent independent variable called individual characteristics and the dependent latent variable of violent behaviors. This model also decreased the number of path estimates to 16 \( (df = 15) \) which was more in keeping with the sample size of the male sample \( (n = 245) \).
Figure 9. Post hoc model results for male sample. $\chi^2(15) = 9.84, p < .83$; RMSEA = .000, RMR = .002; CFI = 1.00

$**p < .001$ (2-tailed)
Table 10. Post hoc Changes in Goodness-of-Fit for the Male Model Based on t-values and Modification Indices with Changes in Goodness-of-Fit

<table>
<thead>
<tr>
<th>Model</th>
<th>Goodness of fit indices</th>
<th>RMSEA</th>
<th>CFI</th>
<th>Maximum $\chi^2$ Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Model</td>
<td>$\chi^2 = 106.93$ (48)</td>
<td>$p &lt; .0001$</td>
<td>.071</td>
<td>$t_{p1} = -1.00$</td>
</tr>
<tr>
<td>Paths deleted: $\gamma_3$ and $\beta_1$ Social context dropped, moved drug use to violent behavior, dropped $X_4$</td>
<td>$\chi^2 = 29.57$ (17)</td>
<td>$p &lt; .0001$</td>
<td>.054</td>
<td>$\varepsilon_{(3,1)} = 10.34$</td>
</tr>
<tr>
<td>Residual path $\varepsilon_{(3,1)}$ added: delinquency to drug use</td>
<td>$\chi^2 = 18.50$ (16)</td>
<td>$p &lt; .2957$</td>
<td>.025</td>
<td>$\delta_{(2,2)} = 8.83$</td>
</tr>
<tr>
<td>Residual path $\delta_{(2,3)}$ added: anxiety/depression to cognitive avoidance</td>
<td>$\chi^2 = 9.84$ (15)</td>
<td>$p &lt; .8299$</td>
<td>.000</td>
<td>Stopped</td>
</tr>
</tbody>
</table>

**Hypothesis 2.2**

*There is a stronger direct relationship between individual characteristics (trait anger, anxiety/depression, cognitive avoidance, and developmental age) and violent behaviors (aggression and delinquency) for the male adolescents than for the female adolescents.*

This hypothesis was supported. The relationship between the two latent variables remained strong for both gender samples. There was a stronger direct effect for the male sample (female: $\gamma_1 = 1.23, t = 5.36, p < .001$; male: $\gamma_1 = .97, t = 7.64, p < .001$). This was supported in post hoc analysis as well (female: $\gamma_1 = 1.05, t = 8.53, p < .001$; male: $\gamma_1 = 1.01, t = 7.87, p < .001$). For the female sample, the R$^2$ was .82 for the latent dependent variable of violent behaviors representing 82% of the variance in the structural model. For the males, R$^2$ was .89 for the latent variable of violent behavior representing 89% of the variance in the structural model.
Hypothesis 2.3

There are differences in the direct effects in the structural equation model for all the latent variables between male adolescents and female adolescents.

This hypothesis was supported. In the female sample, the path from social context to violent behaviors was a positive direct one ($\beta_1 = .40, t = 2.59, p = .005$). In the male sample, the path from social context to violent behaviors was a nonsignificant path ($\beta_1 = -.04, t = -1.00, p = .16$). As noted previously, there was a partially mediated indirect effect of risk/opportunity on the relationship of individual characteristics and violent behaviors in the female sample. There was an indirect mediating effect of social context on the relationship of individual characteristics in the female sample (indirect effect = .30). In post hoc exploration, this path became nonsignificant when aggression loaded onto both social context and violent behaviors ($\beta_1 = -.18, t = -1.13, p = .13$). Social context had a higher explained variance for the female sample as well (female: $R^2 = .42$; male: $R^2 = .06$). Overall, there were no significant mediating effects for the male sample through either the latent dependent variable of risk/opportunity or social context.
CHAPTER FIVE
SUMMARY AND CONCLUSIONS

A. Discussion

1. Descriptive findings

The comparison of means for the rural adolescent sample to the normative samples generated some very interesting results. The rural sample had lower scores for trait anger, lower perceptions of family and peer support and lower competence scores than the norms. In contrast, the female sample had higher anxiety/depression and aggression scores than the published norms. In the rural adolescent sample, aggression scores were highest for the 9th grade females. These findings suggest that younger rural adolescent females report more anxiety/depression and aggressive behaviors than do their peers in the normative sample (Achenbach, 1991). This finding supports the literature by Conger et al., (1992, 1993, 1994) regarding the changing face of rural America. Economic hardship, pressures of modernization, infiltration of drugs, and parental depression are but a few environmental stresses facing rural adolescents in the new millennium. Young adolescent females may carry more of the affect and behaviors associated with family and cultural hardship than their male counterparts (Conger et al., 1993). Female adolescents in the first year of high school may also be affected by the transitions of moving to a new school, making new friends and pressures regarding changing biology. This would support the literature on transitions and their effects on young adolescent females (Brooks-Gunn & Petersen, 1984; Caspi & Moffitt, 1991).

The aggression and delinquency scores for the rural male sample were also surprising. They were borderline or problematic for a large percentage of the rural males. In Achenbach’s non-referred normative sample, only 2% of the boys had borderline scores on aggression and no scores were reported over 22 (Achenbach, 1991, p. 40). High levels of poverty and isolation could be a factor in these findings. Lerner’s (1995a) report on youth in crisis identified poverty as
a primary factor in problem behaviors. The delinquency scores for males were significantly higher than for their female classmates. This was consistent with the literature on problem behaviors in males (Loeber, 1996; Loeber & Hay, 1997). However, almost one fifth of the males in this sample were reporting delinquency behaviors which were notably higher than reported norms (Achenbach, 1991). Dryfoos (1997) projected that 30-35% of 14-17 year olds will participate in, or experiment with, multiple risk behaviors that will affect their health (Dryfoos, 1997). The alarming figures in this secondary analysis seem to support these projections and highlight that rural youth are equally at-risk for health problems related to violent behaviors. These figures may also indicate that behavior problems in rural youth are either not identified or not referred by the school to the family or mental health system. Also, families may not seek services due to the negative stigma or lack of services (Damos et al., 1998). The under-representation of child psychiatrists may be a factor, as well (Thomas & Holzer, 1999).

It can also be argued that society has changed significantly in this country over the last fifteen years and the non-referred sample norms reflect a less violent time. Achenbach (1991) stated that his normative non-referred scores for the competence, aggression and delinquency subscales were based on data collected from 1,719 subjects who had not received mental health services or were in remedial classes (aged 11-18) in a national sample (Achenbach, 1991). They were selected to be representative of the 48 states and their urban, suburban, rural mix in the middle 1980s (Achenbach, 1991, p 16). The events of recent school violence and the extensive media coverage could have threatened the validity of the present study of violent behaviors. However, these data were collected prior to the Columbine shooting which could clearly influence validity of more recent studies.

The trait anger scores for the rural adolescents were lower than the Spielberger (1996) norms. The Spielberger norms were established from research done on adolescents in Tampa, Florida in the late 1970s. (Spielberger et al., 1983a.) This area was a changing rural-urban environment during this time, which may explain the differences in the anger scores. However,
high levels of trait anger have been evident in rural adolescents who become aggressive and delinquent (Kingery et al., 1996). In this analysis, trait anger was also strongly correlated with aggression and delinquency in the overall and gender-specific samples.

The variable correlations in this study were in the expected direction and supported the literature on problem behaviors in adolescence. The negative correlation of anger and anxiety/depression with positive life change supports the stress model (Lazarus & Folkman, 1984). High correlates of the individual characteristic variables, negative life change and drug use with violent behavior variables of aggression and delinquency were evident in rural youth. Rural youth had lower reports of perceived family and peer support than the norms. Family support has been noted to be a buffer for aggressive and delinquent behavior in adolescents (Lyons, Perrotta, & Hancher-Kvam, 1988). It raises concern that rural families may be less involved in their adolescents’ lives or more involved in their own economic survival possibly due to agrarian changes (Conger et al., 1992; Conger et al., 1994).

In light of the high delinquency scores, the lower peer support was interesting. The literature overwhelmingly indicates that association with problem peers influences whether adolescents become aggressive or delinquent (Anderson & Roper, 1991; Edwards, 1996; Loeber & Stouthamer-Loeber, 1998). Vitaro (1997) tested two models which suggested that aggressive peers may play a causal role in delinquency (Vitaro et al., 1997). In contrast, Unger (2000) argued that association with peers who are aggressive or delinquent may be a result of choice by the adolescent. In this sample, rural distances may play a protective role in negative peer association.

The correlation of drug use with all of the problem variables (trait anger, anxiety/depression, cognitive avoidance, developmental age, negative like change, delinquency and aggression) was significantly positive. This confirmed the strong association of drug use with anger, anxiety/depression, cognitive avoidance, problem behaviors and violence that is reported in the literature (Dryfoos, 1997; Dukarm et al., 1996). The significant negative correlation of drug
use with family support reinforces the findings of positive and sustained family involvement as a buffer against drug use (Calvert, 1997).

2. Model Fit

Although there was a poor fit of the proposed model to the data, the contextual focus of Lemer’s theoretical framework offered a comprehensive developmental approach to the research design. The findings are initially discussed by aims and resulting specific paths. Some interesting findings arose with the specific pathways that resulted, especially when considering the gender differences in the rural sample.

The poor fit of the overall model and gender specific models leads to a cautious interpretation of the results. It appears that the latent variables of risk/opportunity and social context might have been underidentified by the indicator variables. There was a large error factor for risk/opportunity. The indicator variable of drug use did not load well on the risk/opportunity latent variable and was associated with delinquency and the violent behavior latent variable. This clearly supports the literature that drug use is an associated risk for violence. Since the domain used to define drug use was only a record of the number of times a substance was used, the issue of whether the drugs were a problem for this sample was not known. In addition, the positive and negative life events change scores may have been a weak indicator of the latent variable. Adding measures of risk behaviors from parents and teachers, cognitive problem solving scales and a measure of self-esteem would have added to the value of this latent variable. Adolescents in this sample reported a large amount of negative life change. There was also a small partially mediated effect of risk/opportunity on the relationship of individual characteristics and violent behaviors for the female sample. This suggests that there may be a problem-solving component related to cognitive maturity that was of value to the equation.

The negative predictor effect of individual characteristics on social context was expected. This is congruent with the social support literature, which emphasizes the negative relationship between positive social support and a lower incidence of maladjustment, psychiatric
symptomotology, and violence (Herrenkohl et al., 2000). The greater variance explained by family versus friend support is contrary to the separation/individuation literature. Traditional psychological theories stress the concept that peers become more important to the adolescent than do parents. However, family closeness and support continues to be documented as a buffer to problem behaviors (Bailey et al., 1997; Galambos, Sears, Almeida, & Kolaric, 1995; Resnick et al., 1997). In this sample, rural adolescents report a high level of parental support with lower levels of peer support.

The strong direct relationship between the independent latent variable of individual characteristics and the dependent latent variable of violent behaviors was expected and supported the literature on violence over the last decade (see extensive literature review and Appendix A). It was surprising to get such a strong relationship given the questionable confirmatory factor analysis that resulted with the aggression scale of the YSR (see Appendix B). Variable redundancy was initially suspected with a re-evaluation of the trait anger scale for multicollinearity with the outcome variable of aggression. It supported that collinearity did not affect the outcome results, but that transformation of the anger variable had decreased the variability in the trait anger scores. This may have affected the direct pathways resulting in values exceeding 1.0. The latent variable of violent behaviors was clearly over-identified.

Anxiety and depression explained almost half of the variance in the independent latent variable. It was a significant path in all samples. This reinforces the literature that links these mood states with violence in adolescents (Baron & Perron, 1986; DuRant et al., 1996b; Horn & Trickett, 1998). Rural adolescent females had higher levels of anxiety and depression than males did in this study, which is also consistent with the gender differences in mental health symptomatology and reporting (Beck, 1976; Conger et al., 1994). Cognitive avoidance was correlated with anxiety and depression in all of the samples. In the normative rural adolescent population, this particular cognitive scale in decision making seemed to be a function of personality as much as a coping response to life events (Gomez, 1998; Moos, 1993).
The lack of importance of developmental age to the analysis was also not surprising. There were only a few (7 subjects) who were “out of sync” or older than the expected age for their grade level (as measured by more than three standard deviations from the mean). None of the adolescents were younger than grade level. This may be due to the regulated beginning age to start first grade at a chronological age of six. In rural schools, few districts make exceptions. There are no data on the biological synchronization of pubertal changes in this sample, which is documented as a factor in the risk for aggressive and violent behaviors (Brooks-Gunn & Petersen, 1984). Because of the small nature of this outlier sample, generalizations about the findings are not appropriate. The previously noted evaluation of grade, gender and aggression scores was an attempt to examine this variable further.

In the overall sample, there was a small, partial mediation effect of the latent variable of risk/opportunity on the direct relationship of individual characteristics on violent behaviors. Adolescents’ self report of the type of life event and effect (positive or negative) created a negative path in the prediction of anger, anxiety/depression and cognitive avoidance on aggression and delinquency. Gender differences were also noted. Males had a larger variance of the latent variable of risk/opportunity represented by their experience of the bad events. Females had more equivalent variances represented by the experience of bad and good events. More importantly, the female sample had significant path values for this effect as opposed to the male sample, which did not exhibit significance. This effect could represent an optimism or resilience that is at work in the rural females that is not present in the male sample. The strong relationship between individual characteristics and risk/opportunity in the overall and female samples support the inter-relatedness of these two concepts as the larger construct of plasticity in Lerner’s model (Lerner, 1995b). The small mediation effect also bolsters the construct of plasticity as a possible time of change in the developmental trajectory of the adolescent.

Drug use represented a small amount of the variance in explaining the latent variable of risk/opportunity in all samples. The small variance reflected the relatively low use of drugs in this
rural adolescent sample. Drug use also assumed a path to violent behaviors in post hoc analysis in all samples. There was a somewhat larger variance explained for the female sample. This reinforces the theory that adolescent females who use alcohol and drugs are at substantial risk for violence (Dukarm et al., 1996).

Competence in social and school context as measured by the competence scale of the YSR did not explain a significant amount of the variance in the latent variable of social context. In the rural adolescent sample, the reliability of this scale was low, but better than the author's norms (see Table 1). The post hoc analysis of the female model revealed a factor loading for this variable that was equivocal on the latent variable of risk/opportunity as well as social context. It appears that it may have been valid as a weak indicator of self-esteem as well as context. It may have been salient to utilize the academic subscale alone as a measure of school competence. This design was rejected because of the highly subjective and ordinal nature of the subscale (three categories for academic success). The Teacher Report of the CBCL would have been a better measure of school success had it been completed in the original study. Actual grade recordings for the sample would also have added to the validity of this concept. These were not available for this secondary analysis.

Social context did not mediate the direct effect of individual characteristics on violent behaviors. However, in the female sample, the variance explained by this latent variable was higher than in the overall and male sample. For females, social context as measured by family and peer support and competence may play an important role in the prediction of violent behaviors. In the male sample, all of the paths through this latent variable were nonsignificant. It is possible that a moderating effect could be occurring, although it was not tested. This would support Lerner's (1995b) construct of embeddedness in social context as being inter-connected and influential in behavior response for adolescents.

The post hoc exploration of the overall model indicated a better fit of the data using the RMSEA, RMR and CFI as indicators. The full mediation effect of risk/opportunity improved and
the path from social context to violent behaviors became significant supporting the value of this construct of plasticity or change potential based on life events in this sample. There was no mediation effect of social context on the relationship of individual characteristics and violent behaviors with the additional paths. Drug use double loaded on violent behavior, but the loading value was still low. This could be due to measurement issues with using one domain of this measure. The aggression indicator variable also factor loaded on the social context latent variable. This was contextually confusing. A possible explanation could be a redundancy between the aggression variable measurement and the variables that measured social context. This was not apparent in data screening for collinearity. The strong correlation of family support with aggression could contribute to the double loading.

The lack of model fit for the gender samples could be explained in the examination of the same model for both sexes. Although it appeared that the male sample fit the proposed model better than the females, the beta paths for the male model were all non-significant. The total direct effect of individual characteristics on violent behavior for the male sample was expected based on the literature on males (Loeber, 1996). The stacked model analysis of gender specific differences yielded statistical support for model testing the females and males separately in future research.

The post hoc analysis of the gender samples supported a complicated model for the female sample. The addition of aggression as a double factor loaded variable on violent behaviors and social context caused the previously significant path from social context to violent behaviors to become nonsignificant. The elimination of the path improved the goodness of fit of the model. It appeared that the social context variable was not a consistent mediator when applying the hypothesized model to gender samples. The possibility of a buffer effect may exist. The double loading of the competence variable also supported the future use of a a stronger measure of school competence on the social context latent variable and a stronger measure of self-esteem on the risk/opportunity latent variable.
The post hoc analysis of the male sample supported a less complicated solution. The strong direct paths from individual characteristics to violent behaviors and risk/opportunity were retained. Although a strong goodness-of-fit was noted, the importance of the latent variable of risk/opportunity, as measured in this model, was not significant. In this sample, the importance of risk/opportunity and embeddedness in social context was not supported. However, as noted earlier, moderation effects could be occurring.

O'Hannessian et al. (1995) applied Lerner's theoretical framework to early adolescents' perception of family functioning. Their results supported a gender influence in adolescent's perception of family functioning as compared to parents' reports. Adolescent males were more likely to vary from the parental reports of family functioning than the adolescent females. They also proposed that young adolescent girls were more likely to be emotionally responsive to their parents and parents were more likely to expect dependent behaviors from the girls (Ohannessian et al., 1995). In this analysis, the female sample also presented a complicated response in aggression association with social context.

Cognitive maturity is an issue in adolescent development and was weakly measured using the cognitive avoidance subscale exclusively in this study. Adolescents' perceptions and ability to problem solve using cognitive skills are less advanced in early adolescence and may contribute to behavioral responses that are impulsive or problematic. Lerner's framework clearly supports the time of early adolescence as the optimal time for change to occur based on biological and psychological developmental constructs (Lerner et al., 1996). Further, he presents the problematic nature of continuity and discontinuity of change in research (Lerner et al., 1996). He questions the ability to measure change using traditional measures of statistical techniques especially means and correlations (Lerner et al., 1996). If the adolescent (organism) is constantly changing, how do scientists measure all of the variables that impact that change, either in the individual or in the context? Multi-method (qualitative and quantitative) methods improve the ability to identify the effect of change based on continuity and discontinuity life events. Likewise, research
measurement at high periods of biological change or transition increases the chance of identifying change (Lerner et al., 1996). The fact that minimal mediation effects were identified in this secondary analysis may be a function of the age of the adolescents or the cross sectional sampling. Also, the higher levels of aggression and delinquency identified in the 9th grade female sample supports this assumption of continuity and discontinuity effects at transition time from middle to high school. These adolescents may be at highest risk for problematic or violent behaviors.

In Developmental Contextualism, the influence of biological development as interrelated with, and influenced by, the context is stressed and defined in Lerner’s construct of dynamic interaction (Lerner et al., 1996). The present study did not identify this reciprocal relationship and had no biological markers. A future study which examines the interrelatedness of the latent variables using non-recursive relationships of latent variables in a SEM model could be designed. Multi-method, multi-trait measurements would further substantiate the use of this theoretical framework in prediction of violent behaviors. In addition, a longitudinal design would support the theoretical construct of temporality.

2. Gender Specific Issues

Some gender effects were discussed above as they related to specific model pathways. Some interesting results emerged with post hoc exploration and are worthy of discussion. The reader is cautioned to be cognizant of the non-significance of the overall model fit.

In post hoc analysis, the female model appeared more complicated than initially proposed. The continued significance of the latent variables of risk/opportunity and social context and the dual loading of aggression on social context and drug use in violent behaviors suggested the importance of the context in studying aggression in female rural adolescents. This also supported the literature on female social context and relational aggression as proposed by Crick & Grotpeter (1995).
A continued research concern is the use of instruments that lack social validity when measuring aggression in females. A pre-analysis confirmatory factor analysis of the YSR (Achenbach, 1991) with this rural adolescent sample confirmed that the most salient and consistent items that loaded with this sample were those that measured overt aggression. Findings by Henning-Stout (1998) found a low number of items in this scale that measured relational types of aggression, a type of aggression that is experienced and expressed more often by females (Crick & Grotpeter, 1995; Henington et al., 1998; Richardson & Green, 1999). Findings of this study support a higher then normal reporting of aggression by rural females.

Some researchers report findings that support these gender differences. Spielberger et al (1999) have begun to observe and document some gender differences in the experience of state anger in their research. In addition, researchers from the parent study using this rural adolescent sample found some interesting gender differences in the expression of anger when compared to age (Lamb et al, unpublished). In the latter study, there was a gender by age effect for anger expression in rural adolescent females. Older rural female adolescents were significantly more likely to express anger than younger rural adolescent females or rural adolescent males.

In this study, females reported a higher positive life change score than males. The variance for negative life change was also large for females. They viewed their experienced life events as positive more often than males. Coping strategies were not examined in this analysis, but could be part of the explanation for this difference in perception. Optimism may also be a factor. This clearly supports Lerner's construct of plasticity, or a time of possible positive and negative behavior change despite experiencing negative life events.

The post hoc male model generated was clearly less complicated than the female model. Interestingly, neither the social context embeddedness nor the risk/opportunity construct seemed to effect the overwhelming strong direct effect of the mental health indicators on violent behaviors. In males, it appears that the mental health indicators that are individual characteristics are the most salient predictors of the violent behaviors of delinquency and aggression. However,
the moderation effect of family context on the direct effect of individual characteristics on violent behaviors was not studied and may be present as a contextual variable.

**B. Limitations of the Study**

The self-report nature of the data and the nominal and ordinal nature of many instruments were limitations. The "problem" focus of the research design necessitated keeping the outliers and presented the issue of using skewed data in a multivariate normal sensitive statistical design (SEM). In order to approach the assumption of normality, data needed to be transformed. Transformations further complicated the evaluation of results, especially the variable that was inversely transformed (drug use) and log transformed (trait anger). In addition, using a statistical method of analysis such as SEM, does not allow a causal interpretation of the results and generalizability must be done with caution.

The cross-sectional nature of the data collection represented only a one-time measurement of the adolescents' experience. The non-experimental design also limited predictability and causal analysis. Lerner's framework would have been better served to evaluate the constructs of plasticity and embeddedness, and their effects over time, using a longitudinal design. The changes in the context: changing schools, death of a parent or divorce could also have an impact on the variables that predict violence and may have bolstered the importance of social context in the results. Also, assessing socioeconomic status would have increased generalizability to the larger rural population. This could have been achieved with a two-question addition to the informed consent form regarding parental income and education.

The sample sizes of the female and male samples were not equivalent. This presented a problem with descriptive comparison examination of the means and standard deviations. Therefore, results should be interpreted with caution.

The most significant limitation was the questionable validity of the outcome measures of aggression and delinquency. When examining the gender differences of violent behaviors, a validated tool that identifies and measures the different types of aggression is necessary. It is
unclear whether the items on the YSR-CBCL truly measure the "relational" aspect of aggression. In addition, the norms for this instrument and the anger scale are based on data that is now over 15 years old. The norms for these two variables may have changed significantly in this time period.

C. Implications for Future Research

This secondary analysis contributed to furthering the science of nursing in an empirical and practical manner. The application of a theoretical framework to the primary design that utilized several grand and mid range psychological theories was unique. It enabled the application and testing of measures at the construct level. This was possible using the structural equation modeling process. Although not a replacement for experimental design, SEM offers the scientist a technique that measures large amounts of variance while examining variable error. Many conceptual models in nursing present constructs that can be represented and evaluated using multi-trait and multi-method measurements. The use of this statistical process would broaden the design possibilities for the nurse scientist.

The findings of this study support the concern regarding the mental health and violence potential of adolescents. This study expands that concern to the rural environment and to rural 9th grade females and 10th grade males in particular. Rural youth appear to be at risk for violence in growing numbers. This study supports the alarming numbers of youth who report engaging in violent behaviors. Continuing poverty, lack of access to health care and isolation are but a few of the problems rural youth face. Focusing on the psychosocial factors that lead to aggression in rural youth is essential. Comparison studies should be made with their urban counterparts to examine the predictive trajectory to violent behaviors. Research efforts should consider measuring violent behaviors in middle school youth as well.

These findings support the social validity question of recent researchers regarding the concept of aggression in females. The world of adolescent females in society is changing. While proposing a more traditional model of violence prediction in males, these findings also support...
the more complicated involvement of female adolescents in their family and peer context and the impact of anxiety and depression on aggression and delinquency. Future research to evaluate the differences in relational and overt aggression between rural females and males is needed. In addition, the use of structural equation modeling can help researchers develop a more comprehensive picture of the constructs that predict violent behaviors. Continued psychometric testing of instruments that accurately measure aggression in adolescent females is also essential. The work of Crick & Grotpeter (1995) should be expanded to adolescents. Intervention efforts need to focus on the relational aspect of aggression and include rural girls as well as boys in these programs. Researchers should evaluate the outcomes of these programs.

Cognitive coping strategies and optimism were not included in this analysis. Positive coping strategies have been documented as a successful method of lowering mental health problems and possibly working as a buffer or moderator of the trajectory to violence. The role of optimism and resilience in this trajectory could also be explored.

Future research should also continue to focus on the role of context in the prediction of violent behaviors. Using contextual developmental theories and frameworks to understand the complex nature of human violence in adolescence is essential. Lerner (1995a) emphasized the importance of forming policies and programs that consider the adolescent in “relationship” with others in the family, peer, and school and community systems (p. 122). Rural communities are the larger systems context for many adolescents. Collaborative programs that form relationships between the adolescent and the rural community are essential to mental health promotion and prevention. The school is a primary context for the building of these relationships. Focus should be on assessment of anger, anxiety/depression, coping strategies, problem solving and types and levels of aggressive and delinquent behaviors. Parents and peers also need to be included and reinforced as primary supports to the adolescent.

If the results of this study can be cautiously generalized, large numbers of rural youth may not be referred for intervention related to aggression and delinquency or may not access the
services that are available. How do the health professionals intervene with these youth? Nurses, health care professionals and teachers are in a unique role to work with adolescents in the rural school setting. Because of the distance of rural youth to health services, psychiatric clinical nurse specialists and nurse practitioners in rural clinics and nurse-run agencies can connect with the school and are vital links to health care prevention and promotion. Education of teachers and administrators that focuses on mental health issues rather then formation of punitive policies may affect the incidence of violent behavior. Grassroots programs that employ the efforts of volunteers, mothers and fathers, teachers, nurses, clergy and politicians is a first step toward resolving the more complex problem of predicting violent behavior. Mentoring relationships that foster growth in our adolescents will help produce well-adjusted adults and parents. An open, collaborative dialogue with all members of the rural community is essential.

In the wake of the most recent school shootings, adolescents are beginning to talk about the issues that impact violent behavior. They report that it is not about the guns, it is about the factors that lead them to use the gun. Words such as “bullying” and “rage” are used to describe a generation affected by a rapidly changing and overwhelming culture. Juvenile justice efforts such as metal detectors and life sentences are not having the effect that was intended. The youth are asking more of the adults in their context. It will be more difficult to address the issue of violence if ineffective “relationship” is the predictor. This involves a broader community commitment to a more complex solution.
BIBLIOGRAPHY


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APPENDICES
### Appendix A Table 1: Summary of Literature

#### Violence and Risk Factors

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>Sample and Size</th>
<th>Description</th>
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<tbody>
<tr>
<td>Alvarez, A., &amp; Bachman, R. (1997). Predicting the fear of assault at school and while going to and from school in an n adolescent population. <em>Violence and Victims</em>, 12(1), 69-86.</td>
<td>Retrospective chart review</td>
<td>Junior and senior high school n=10,000</td>
<td>Examined factors contributing to students' fear of assault in school and en route. Results indicate recent victimization, presence of gangs or previous violent attacks, and availability of alcohol and drugs related to fear. Young females NOT more fearful than males. Authors cite need for context and content validity of “fearfulness”.</td>
</tr>
<tr>
<td>Ellickson, P., Saner, H., &amp; McCaig, K. (1997). Profiles of violent youth: Substance use and other concurrent problems. <em>American Journal of Public Health</em>, 87(6), 985-991.</td>
<td>Longitudinal, retrospective chart review</td>
<td>High school seniors and dropouts from Oregon and California n=4500</td>
<td>Examined co-occurrence of violent behaviors with mental health problems and gender differences. More than ¼ of sample had engaged in violence in last year with 1 in 4 committing predatory violence. Boys more likely than girls to commit violence except in the family. Violent youth had &gt; incences of mental health problems, use drugs, drop out of high school and are delinquent. Boys less likely to have mental illness. Violence with 3 or more problems as high as 21%.</td>
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<tr>
<td>Fitzpatrick, K. M. (1997). Aggression and environmental risk among low-income African American youth. <em>Journal of Adolescent Health</em>, 21(3).</td>
<td>Two-group comparison design. Quasi-experimental</td>
<td>African American adolescents from housing communities in central Alabama n=160</td>
<td>Examined extent to which individual, family and environmental factors discriminated between aggressive and non-aggressive African American youth. Variables included demographics, exposure to violence, weapon carrying, and aggression. MANOVA with discriminant analysis found age (older) and gender (male) as important discriminators between groups in this sample. Victimization and witness to violence also significantly related to aggression.</td>
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<td>Fitzpatrick, K. M. (1997). Fighting among America’s youth: A risk and protective factors approach. <em>Journal of Health and Social Behavior</em>, 38(2), 131-148.</td>
<td>Three group comparison, multiple regression, predictive design</td>
<td>Stratified sample using three groups ages 8-18</td>
<td>Examined health compromising behavior (fighting) using a risk and protective factors model. Explored the interplay between risk and protective factors to identify whether they were mediators or buffers in the risk taking process. Results indicated that risk factors such as victimization and exposure to violence predicted fighting in all age groups. Protective factors in some instances act as buffers; when protective factors are absent or weak, the negative impact of risk and health compromising behavior was present. Recommend using a multidisciplinary approach or consideration of family, school and community factors in designing prevention strategies.</td>
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<td>N2= 36 (non-violent depression)</td>
<td>Examined 9 studies of violence against children. Excluded war related violence. All but one study was conducted on school age children with one which included young adolescents (aged 7-13). One study was on rural youth. Results indicated a correlation between anxiety and depression and victimized/witnessed violence and symptoms that look like PTSD. Acting out and aggression were also associated with violence. It was unclear whether the violence was experienced in the family or in the community in some studies.</td>
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<td>Youth Risk behavior Surveillance System identifies six categories of priority health risk. 73% of all deaths among youths result from four causes: motor vehicle accidents, other unintentional injuries, homicide and suicide. H.S. students engage in behaviors that increase the risk 18.3% had carried a weapon, 7.7% had attempted suicide in last 30 days.</td>
<td>Descriptive study of risk factors using the South Carolina Youth Risk behavior Survey. % carrying a weapon in the last 30 days ranged from 9% to 50% (white males). Over 35% reported fighting, 12% reported someone forcing them to have sexual intercourse. The most consistent predictor of all outcomes was substance use. although having sexual intercourse was associated with most outcomes.</td>
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<td>Gender was a significant factor of risk for violence. Low academic orientation, lack of parental support and affection and parental substance abuse were significant factors in predicting violence. Girls were more affected by family disruption than boys. Weak school and family bonds affected boys.</td>
<td>Examined social context influences on risk behaviors. Assessed 8 areas: emotional distress, suicidal thoughts and behaviors, violence, use of substances (cigarettes, alcohol, drugs), sexual behavior patterns, pregnancy. IV’s included individual, family and school contexts. Parent-family connectedness and perceived school connectedness was protective in all areas except pregnancy. Ease of access to guns increased violence and suicidality.</td>
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<td>40% of variance involvement in violent behaviors predicted by environmental risk factors of exposure to violence, deteriorated school environment, negative peer environment and traumatic experiences. Alcohol and substance use were significant variables.</td>
<td>Gender was a significant factor of risk for violence. Low academic orientation, lack of parental support and affection and parental substance abuse were significant factors in predicting violence. Girls were more affected by family disruption than boys. Weak school and family bonds affected boys.</td>
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### Violence and Firearms

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<th>Study</th>
<th>Type</th>
<th>Sample and Description</th>
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<tbody>
<tr>
<td>Aria, A., Borges, G., &amp; Anthony, J.C. (1997). Fears and other suspected risk</td>
<td>Prospective longitudinal</td>
<td>Urban, mid-Atlantic. 17% reported carrying a weapon for defense or protection for the one year. 83% did not carry for</td>
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<tr>
<td>(one year follow-up) middle school students n=1131</td>
<td>any reason. Fear, deviant peer affiliation and worrying were cited as reasons to start carrying a weapon. For the lowest risk group, self reported fears were the highest association (p=.01)</td>
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<tr>
<td>Dhulberg, L. L. (1998). Youth violence in the United States. Major trends, risk factors, and preventative approaches. American Journal of Preventative Medicine, 14(4), 259-272.</td>
<td>Explored the relationship between social, demographic and behavioral characteristics with self-reported carrying of a weapon to school 15% carried a weapon to school in the past month. Risk factors included being male, not living with both parents, not feeling close to parents, drinking heavily, participating in fights, damaging school property and perceiving that other students brought guns to school were significantly associated with carrying. Fear of safety and victimization were not associated. Family plays an important role.</td>
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<td>Lowry, R., Powell, K. E., Kana, L., Collins, J. L., &amp; Kolbe, L. J. (1998). Weapon carrying, physical fighting, and fight related injury among U.S. adolescents. American Journal of Preventative Medicine, 14(2), 122-129.</td>
<td>Tested in 1994 in central Texas. Results: students who carried weapons to school one or more times in last year were compared using discriminant analysis and Chi-square square. Gun carrying at school increased 138% from seven years earlier. Most students reported they carried a gun out of fear and anger. Those who carried an extremely elevated rate of victimization: attack at school, attack outside school, forced sex, rape. Less knowledge of use of alternative methods of anger expression with greater crack cocaine use.</td>
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<tr>
<td>Malek, M. K., Chang, B. H., &amp; Davis, T. C. (1998). Fighting and weapon carrying among seventh-grade students in Massachusetts and Louisiana. Journal of Adolescent Health, 22(2), 94-102.</td>
<td>Examined associations between weapon carrying and physical fighting. Association was stronger for females, but was not affected by demographic characteristics. Those who carry firearms have a greater risk of seeking care in an ER for fight related injury. Concluded that firearm carrying is associated with an increased involvement in physical fighting.</td>
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<tr>
<td>Shapiro, J. P., Dorman, R. L., Welker, C. J., &amp; Clough, J. B. (1998). Youth attitudes towards guns and violence: Relations with sex, age, ethnic group, and firearm exposure. Journal of Clinical Child Psychology, 27(1), 98-108.</td>
<td>This paper reviews the prevalence of weapon carrying by youth, reasons why they carry, ways the firearms are obtained and violence and the controlling of weapons at school</td>
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<tr>
<td>Descriptive survey Students grades 3-12 in urban, suburban, private schools n=1164</td>
<td>Self-report on attitudes towards guns and violence. Results indicated boys scored higher than girls, public school students scored higher than private students did. Sex, grade and firearm exposure was associated with relatively large differences, while ethnic and type of school were associated with relatively small differences.</td>
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## Violence and Urban

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<tr>
<td>Arrin, A., Borges, G., &amp; Anthony, J. C. (1997). Fears and other suspected risk factors for carrying lethal weapons among urban youth of middle school age. <em>Archives of Pediatrics &amp; Adolescent Medicine</em>. 151(6), 355-360.</td>
<td>Prospective longitudinal (one year follow-up)</td>
<td>Urban, mid-Atlantic, middle school students n=1131</td>
<td>17% reported carrying a weapon for defense or protection for the one year. 83% did not carry for any reason. Fear, deviant peer affiliation and worrying were cited as reasons to start carrying a weapon. For the lowest risk group, self reported fears were the highest association (p=.01)</td>
</tr>
<tr>
<td>Booth, R. E., &amp; Zhang, Y. (1996). Severe aggression and related conduct problems among runaway and homeless adolescents. <em>Psychiatric Services</em>. 47(1), 75-80.</td>
<td>Descriptive Survey</td>
<td>Runaway and homeless youth at urban drop-in centers n= 218</td>
<td>Assessed prevalence of severe aggression and conduct disorder. More than 50% met criteria for conduct disorder, 62% reported severe aggression. Adolescent Health Survey used. Living at home where aggression was used was associated with aggression; sexual abuse was associated with conduct disorder. Sever aggression associated with suicide attempt, pregnancy, arrests and convictions.</td>
</tr>
<tr>
<td>Fingerhut, L. A., Ingram, D. D., &amp; Feldman, J. J. (1998). Homicide rates among U.S. teenagers and young adults. <em>JAMA</em>. 280(5), 423-427.</td>
<td>Trend study</td>
<td>5 urban strata identified. US statistics 1987-1995. Sample age 15-24</td>
<td>Examined the trend for homicides in a stratified sampling frame. Results indicated in some strata, there was a significant decline in number of homicide deaths in both genders and all races. In other strata areas, there was no decline. Unable to identify variables or factors that might influence the trend.</td>
</tr>
<tr>
<td>Gorman-Smith, D., &amp; Tolan, P. (1998). The role of exposure to community violence and developmental problems among inner-city youth. <em>Development &amp; Psychopathology</em>. 10(1), 101-116.</td>
<td>Predictive from a descriptive survey. One year follow-up</td>
<td>African American and Latino boys and their caregivers from inner-city Chicago n= 245</td>
<td>Examined the relationship of exposure to violence, family relationship characteristics and parenting patterns. Rates of exposure to violence could not be predicted from family relationships and parenting characteristics. If discipline was violent, there was a trend. Increases in community violence were associated with an increase in aggressive behavior and depression over a one-year period. Implications for programs and policy presented.</td>
</tr>
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<td>Hausman, A., Pierce, G., &amp; Briggs, L. (1996). Evaluation of comprehensive violence prevention education: Effects on student behavior. <em>Journal of Adolescent Health</em>. 19(2), 104-110.</td>
<td>2 group Non equivalent groups- non random assignment</td>
<td>Urban, public high school students (14-18) n= 1523</td>
<td>Evaluated the impact of two violent prevention programs with one control group on students' behavior. One school received class specific comprehensive educational interventions and a control group, the second school received a school wide program with a control group. The class specific exposure resulted in a 7% decrease in suspension over three years as opposed to the control group at the same school. The school wide program school showed some significance, but not always statistically significant from control group.</td>
</tr>
<tr>
<td>Mushinski, M. (1996). Teenagers' view of violence and social tension in U.S. public schools. <em>Statistical Bulletin-Metropolitan Insurance Companies</em>. 77(3), 2-10.</td>
<td>Descriptive Survey</td>
<td>Trend study of Melliive Insurance Co</td>
<td>Indicated a decrease in the amount of violence a student perceives in public school. In 1996, 22% of 7-12 graders thought school violence decreased in the last year. More than 50% of students thought social tensions were high. When teachers taught tolerance and education standards were high, 80% perceived positive relations in their schools. Students in urban areas reported gang violence, fights between students, threats of bodily harm or destructive acts with 27% fearful of being attacked. Minorities reported gang violence twice as often as whites.</td>
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### Violence and Rural

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Anger and Problem Behaviors

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<tr>
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<tbody>
<tr>
<td>Colder, C. R., &amp; Stice, E. (1998). A longitudinal study of the interactive effects of impulsivity and anger on adolescent problem behavior. <em>Journal of Youth &amp; Adolescence, 27</em>(3), 255-274.</td>
<td>Longitudinal parent study. Cross sectional retrospective with prospective predictive analyses</td>
<td>Adolescents</td>
<td>Examined moderating effect of impulsivity on the relationship between anger and problem behaviors of substance abuse and delinquency. High levels of anger were associated with delinquency for impulsive but not non-impulsive adolescents. This moderating effect was not present for substance use. Gender moderated links between temperament and problem behavior showed that anger predicted substance abuse for females only, and impulsivity was more closely associated with delinquency and problem behaviors in males. In prospective analyses, both impulsivity and anger predicted problem behavior, but impulsivity did not moderate the effects of anger.</td>
</tr>
<tr>
<td>Collins, S. W., &amp; Hailey, B. J. (1989). The anger expression (AX) scale: Correlations with the state-trait personality inventory and subscale intercorrelations. <em>Educational and Psychological Measurement, 49,</em> 447-455.</td>
<td>Instrumentation reliability and validity</td>
<td>Undergraduate students (18-24) n = 502</td>
<td>Evaluation of the State-Trait Personality Inventory and the Anger Expression Scales of the STAXI (AX-In, AX-Out, AX-Con, AX-EX) The STPI Trait anger Temperament subscale was more highly correlated with AX-Out than any other personality subscales except STPI Trait Anger. Results provide partial support for the internal consistency of the Anger Expression Scale.</td>
</tr>
<tr>
<td>Eckhardt, C. L., Kassinove, H., Tzetsuoev, S. V., &amp; Sukhodolsky, D. G. (1995). A Russian version of the State-Trait Anger Expression Inventory: Preliminary data. <em>Journal of Personality Assessment, 64</em>(3), 440-455.</td>
<td>2 group evaluation to support instrumentation</td>
<td>120 Students from a Russian University and 31 from a Top Security Psychiatric</td>
<td>Results support Spielberger’s model in a Russian sample. All of the scales with the exception of Anger-In, had good alpha coefficients, and the means were generally similar to an equivalent American sample. Russian men scored higher in Anger-Out than did Russian women.</td>
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<td>Study</td>
<td>Design</td>
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<tr>
<td>Fennel, M. D. (1994). Adolescent victims and non-victims of violent life events, relationships and differences among measures of self-regulation and anger. University of South Carolina.</td>
<td>Descriptive correlation Retrospective data from an NIMH longitudinal study called Carolina Adolescent Health Project (CAHP)</td>
<td>Freshman &amp; sophomore students aged 14-17 from 2 high schools in SE South Carolina who survived Hurricane Hugo n= 985</td>
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Exhausted how preschoolers cope with anger at well liked and not well liked peers. Observed free play fro 6 months. The frequency, causes as well as intensity of anger were compared for incident provoked by peers that were "really lilled" as opposed to those likes "only a bit". Although there were no differences in the intensity of anger provocations, children's responses to the well liked peers were more controlled with boys being generally more responsive to how they felt about the provocateur. Findings suggest angry interactions with well liked peers is less stressful.

Examined the relationships between measures of self-regulation, and anger in adolescent victims and non-victims of violent life events. Results indicated significant differences between violent and non-violent life events. Statistical differences found between anger-in and self-regulation and anger control and self-regulation. Black females were most likely to be victimized, usually in a sexual way.

Examined the factor structure of the Spielberger State-Trait Anger Expression Inventory (STAXI0 using this sample. Used principal components factor analysis with varimax rotation. The factor structure is similar to the scale structure claimed for this instrument.

Examined relationships between selected predictors (stress, anger and health habits) such as exercise, diet, video game playing and blood pressure. Stress increased BP significantly with girls scoring higher than boys on both testing. ANCOVAs on SBP and DBP change scores revealed change I anger scores and in hours of video game playing contributed to changes in DBP. Body mass index explained the most variance in SBP. Video game playing was associated with smoking, poor diet, and greater BMI.

Examined the effectiveness of a stress inoculation training program. Ss were trained in cognitive restructuring, anxiety management and problem solving skills. Measured state and trait anxiety, depression, self-esteem and anger expression at baseline, pre and post training, and at 3 mo follow-up. Five Ss reported improvement on state and trait anxiety scores with initiation of treatment. Improvements noted on pre and post training for state and trait anxiety and trait anger. No other significance. No significance at 3 mo follow-up.
<table>
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<tr>
<th>Reference</th>
<th>Study Title</th>
<th>Methodology</th>
<th>Sample Characteristics</th>
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<tbody>
<tr>
<td>Jones, M. B., &amp; Peacock, M. K. (1992).</td>
<td>Descriptive survey (Chi square) and qualitative theme recognition</td>
<td>Adolescents aged 11-16 n=85</td>
<td></td>
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<tr>
<td>Kollar, M., Groer, M., Thomas, S., &amp; Cunningham, J. L. (1991).</td>
<td>Repeated measures, cohort design</td>
<td>High school freshman and same group as seniors n-</td>
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Very small sample size (power problem). Examined the effectiveness of a cognitive intervention training program to reduce adolescent emotional response to stress. SS complete state-trait anxiety and anger scales (STAI and STAXI), Reynolds’s Depression Inventory, self esteem and stress scales. Divided into low and high arousal groups. Those in high arousal group had high mean in the clinical range for all traits and mental health indicators. After training those in high arousal group were in non-clinical range for all traits and mental health indicators.

Examined the relationship between anger experience and expression, other psychosocial measures and health problems. SS indicated high level of expressed anger correlated with the number of health problems if the person had a personal problem. Anger expression interacted with measures of strain to predict health problems. Relationship was independent of gender, age, urbanicity and drinking problems.

Variables such as gender, age grade in school, race and family composition explored with recognition and expression of anger and their views about acceptable/ unacceptable expressions of anger. Study found that 1) anger is a natural human emotion, 2) adolescents need adults who can model the effective management of anger and 3) problem solving skills, stress management techniques, and role play situations can help adolescents recognize and express anger in acceptable ways.

Anger was measured by the anger Index (Seigel, 1984) The purpose was to discover if anger changed over time and if there were gender differences. Results indicated anger scores were stable over time for both boys and girls. There were gender and time differences on individual responses for certain items indicating a dimension of the emotion may differ over time and by gender. Adolescents’ interpretations of certain questions also changed over time.

Surveyed anger, depression and suicidal ideation. Suicidal ideation was present in 15.9% and depression in 14%. Subjects with suicidal ideation demonstrated greater levels of anger and poorer anger control. School collaboration to develop programs with specific criteria to measure mental health should be instituted.

Evaluated systolic and diastolic blood pressure to assess gender patterns and the influence of biologic maturity. Pilot data confirmed increase in systolic and diastolic B/P during angry talking, males who were biologically mature had increased B/P (SBP & DBP)

Studied emotion and emotion control strategies. Dependent measures were the Governor’s reports, trait anger as measured by Spielberger’s State-Trait Anger Inventory. 10 scales from a special hospitals assessment of personality and socialization (SHAPS), four anger expression control scales. Results indicated the Governor’s reports, SHAPS aggressive scale and anger expression scales distinguished significantly between the groups.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Methodology</th>
<th>Findings/Significance</th>
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<tbody>
<tr>
<td>Norvell, N., Walden, K., Getelman, T., &amp; Murrin, M. (1993).</td>
<td>Understanding occupational stress in child-welfare supervisors. <em>Journal of Applied Social Psychology</em>, 23(24), 2043-2054.</td>
<td>Reviewed recent literature on anger in children and adolescents in published literature. Conclusion was that angry may be a healthy or unhealthy response expressed by children who experience small injustices and great problems. There is a need to clearly define anger and the correlates of anger in children and adolescents. There are limited studies on anger and anger management strategies in recent literature to assist health care professionals.</td>
</tr>
<tr>
<td>Nugent, W. R., Champlin, D., &amp; Wiinimaki, L. (1997).</td>
<td>The effects of anger control training on adolescent antisocial behavior. <em>Research on Social Work Practice</em>, 7(4), 446-462.</td>
<td>Examined stress and physical symptoms to assess relationship with job satisfaction, anger withheld, perceived stress and physical symptoms. A tendency to suppress angry feelings was related to an increased level of perceived stress and to dissatisfaction with coworkers. Results did not indicate any significant relationship between type of managerial style and job satisfaction, perceived stress, anger or physical symptoms.</td>
</tr>
<tr>
<td>Singer, M. L., Anglin, T. M., Song, L. Y., &amp; Lunghofer, L. (1995).</td>
<td>Adolescents’ exposure to violence and associated symptoms of psychological trauma. <em>Journal of the American Medical Association</em> (JAMA), 272(6), 477-482.</td>
<td>Compared to a random sample of comparable adolescents in state custody and adolescents in a comparison group home. Used internalizing and externalizing scales of the T. Achenbach Child Behavior Checklist to evaluate antisocial behavior. Results showed that those who had ACT showed greater improvement in controlling antisocial behavior than did comparison groups. Time-series data on rate of acting out per week per client over a period of 61 weeks was also analyzed. Improvements correlated with start of ACT and then deteriorated after unplanned cessation of program.</td>
</tr>
<tr>
<td>Song, L. Y., Singer, M. I., &amp; Anglin, T. M. (1999).</td>
<td>Violence exposure and emotional trauma as contributors to adolescents’ violent behaviors. <em>Archives of Pediatrics &amp; Adolescent Medicine</em>, 153(6), 531-536.</td>
<td>Examined whether exposure to violence had a positive and significant association with depression, anger, anxiety, dissociation, posttraumatic stress and total trauma symptoms. Respondents represented 68% of all students at participating schools, aged 14-19. All hypotheses were supported. A consistent and significant association was demonstrated linking violence exposure to trauma symptoms.</td>
</tr>
<tr>
<td>Spielberger, C. D., Johnson, E. H., Russell, S. F., Crane, R. J., Jacobs, G. A., &amp; Worden, T. J. (1983).</td>
<td>The experience and expression of anger: Construction and validation of an anger expression scale. In <em>Instrumentation in reliability and validity</em> College, Navy recruits and adolescents. N= 9000</td>
<td>Describes the addition of the anger expression scale to the earlier version of the State Trait Anger Expression Inventory to create the State-Trait Anger Expression Inventory. Describes the reliability and validity of the anger-in, anger-out, anger-con...</td>
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3 group design, descriptive, non-random sample 21-83 year old volunteers, divides by age Gp1=21-30 yr old; Gp2=40-59; Gp3=60-83 yr olds n=150

The Anger Expression Scale (AX) of the State-Trait Anger Expression Inventory (STAXI) was administered to the three groups and compared. Results indicate that the young adult group expressed more anger-out than the old group, and both the young adult group and the middle adult group had higher total AX than the older group.


Outcome evaluation. Repeated measures on same sample; pre-wait list, pre-treatment, post-treatment

Treatment included cognitive-behavioral techniques for reduction of arousal, self-monitoring, stress inoculation, and self-reinforcements. Instruments were Navaco’s (1975) Anger Inventory and the State-Trait Anger Inventory. Results indicated a greater result than regular treatment results. Indicated that this was sufficient to use this program in residential treatment.

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<td>Baron, P., &amp; Perron, L. M. (1986). Sex differences in the Beck Depression Inventory scores of adolescents. Journal of Youth &amp; Adolescence, 15(2), 165-171.</td>
<td>2 group comparison, male and female</td>
<td>Adolescents aged 13-27, Gp1=131 males: Gp2=160 females N=291</td>
<td>Examined the differences of males and females on the Beck Depression Inventory (BDI) as a function of demographic variables and variables related to their living conditions. Results showed that females scored significantly higher than males. However, none of the variables included in the questionnaire had a differential effect on the BDI scores of either male or female Ss.</td>
</tr>
<tr>
<td>Dryfoos, J. G. (1997). The prevalence of problem behaviors: Implications for programs. In R. P. Weissberg, Gullotta, T. P., et al. (Eds.), Healthy children 2010: Enhancing children’s wellness. Issues in children’s and families’ lives. (Vol. 8, pp. 17-46). Thousand Oaks, CA.: Sage Publications Inc.</td>
<td>Integrated review, trend study</td>
<td>N/A</td>
<td>Summarizes prevalence data for problem data among adolescents in categories; substance use, sexual behavior, delinquency, violence, depression and suicidal ideation. Results indicate that these behaviors often co-occur and that common risk and protective factors influence social and health problems. 30% of 14-17 year olds engage in multiple problem behaviors that put them at risk, about 35% are experimenting with various risky behaviors and the final 35% are at low risk for future problems. Prevention efforts should be focused on families, schools and neighborhoods, health, welfare and justice systems and employment and training.</td>
</tr>
<tr>
<td>Duncan, D. F. (1996). Growing up under the gun: Children and adolescents coping with violent neighborhoods. Journal of Primary Prevention, 16(4), 343-356</td>
<td>Integrated literature review</td>
<td>N/A</td>
<td>Examines studies on inner-city children who become victims and witness violence. Acute symptoms such as crying, tremors and withdrawal and chronic problems such as anxiety, depression and sleep disorders occur in response to violence exposure. Those children who cope successfully have an internal locus of control, a strong sense of...</td>
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<tr>
<td>DuRant, R. H., Treiber, F., Goodman, E., &amp; Woods, E. R. (1996).</td>
<td>Intention to use violence among young adolescents. Pediatrics, 98(6 Pt 1), 1104-1108.</td>
<td>Descriptive survey, regression</td>
<td>Adolescents aged 12.9 +/- 1 year in two middle schools n= 225</td>
</tr>
<tr>
<td>Gorman-Smith, D., &amp; Tolan, P. (1998).</td>
<td>The role of exposure to community violence and developmental problems among inner-city youth. Development &amp; Psychopathology, 10(1), 101-116.</td>
<td>Predictive from a descriptive survey. One year follow-up</td>
<td>African American and Latino boys and their caregivers from inner-city Chicago n= 245</td>
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<td>Haapasalo, J., &amp; Hamalainen, T. (1996).</td>
<td>Childhood family problems and current psychiatric problems among young violent and property offenders. Journal of the American Academy of Child &amp; Adolescent Psychiatry, 35(10), 1394-1401.</td>
<td>Two group comparison using retrospective data</td>
<td>Young property and violent offenders</td>
</tr>
<tr>
<td>Horn, J. L., &amp; Trickett, P. K. (1998).</td>
<td>Community violence and child development: A review of the literature. In P. K. Trickett &amp; C. J. Shellenbach (Eds.), Violence against children in the Family and the community (pp. 10138). Washington, DC: American Psychological Association.</td>
<td>Research literature review</td>
<td>N/A</td>
</tr>
<tr>
<td>O'Keefe, M. (1997).</td>
<td>Adolescents' exposure to community and school violence: Prevalence and behavioral correlates. Journal of Adolescent Health, 20(5), 368-376.</td>
<td>Descriptive Survey with Hierarchical regression</td>
<td>Urban &amp; suburban high school students (14-18) n= 935</td>
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when controlling for family violence and demographics. For girls, only school violence was a predictor. Internalizing scores were not significant for either, but girls experienced more internalizing behaviors (depression and withdrawn) than boys.


Integrated literature review


When controlling for family violence and demographics, only school violence was a predictor. Internalizing scores were not significant for either, but girls experienced more internalizing behaviors (depression and withdrawn) than boys.


Integrated literature review


Reviews literature on witnessing violence in children and adolescents. In reaction to witnessing violence, youths present with PTSD: separation anxiety, depression, disturbed grieving and bereavement, show externalizing behaviors such as aggressiveness, have impaired interpersonal and family relationships and show a decline in school performance. Factors that mediate the impact of violence exposure include age, gender, and history of prior trauma.


Integrated review of literature and research


Defines childhood victimization and reviews a number of methodological limitations that characterize some research. Examines the relationship of childhood victimization and six kinds of problem behaviors seen in adolescence: delinquency and violence, running away from home, sexual promiscuity and teenage pregnancy, alcohol use and abuse, illicit drug use and abuse and self-destructive behaviors such as suicide attempts. Describes a number of protective factors.

Demographics (gender, age, grade) and Violent Behaviors

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</tr>
<tr>
<td>Crick, N.B. &amp; Grotpeter, J.K. (1995). Relational aggression, gender and social-psychological adjustment. Child Development, 66, 710-722.</td>
<td>Factor analysis, ANOVA, correlation</td>
<td>491 third through sixth graders</td>
<td>Used peer and teacher nominated aggression scale to assess covert/relational aggression in children. Examined the impact on loneliness, depression and the gender differences in expression. Findings indicated that children who expressed high relational aggression were at significant risk for psychosocial maladjustment and rejection. They reported higher levels of depression, loneliness and isolation in relation to their non-relationally aggressive peers. Girls were more relationally aggressive than boys and were...</td>
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<td>Study</td>
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<tr>
<td>Crick, N.R. (1997). Engagement in gender normative versus nonnormative forms of aggression: Links to social-psychological adjustment. Developmental Psychology. 32(4), 610-617.</td>
<td>Factor analysis, ANOVA</td>
<td>Used peer nomination and Teacher reports (CBCL-Teacher Form) to examine links between aggression and social-psychological adjustment and gender differences. Found that overtly aggressive girls and relationally aggressive boys were significantly more likely to be maladjusted than those children who engaged in gender normative forms of aggression or those children who were not aggressive. The latter findings were from peer and teacher nominations, while self-reports of aggressive behavior were underreported.</td>
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<tr>
<td>Dukarm, C. P., Byrd, R. S., Aninger, P., &amp; Weitzman, M. (1996). Illicit substance use, gender and the risk of violent behavior among adolescents. Archives of Pediatrics &amp; Adolescent Medicine. 150(8), 797-801.</td>
<td>Descriptive analysis of The 1991 YRBSS, retrospective review</td>
<td>Investigated the relationship between substance use and weapon carrying and physical fighting among adolescents as a cohort and between males and female adolescents. A significant relationship existed between carrying weapons, fighting and substance use. Weapon carrying increased with use of marijuana, alcohol consumption, cocaine and anabolic steroids. The risk of violent behavior increased and was of equal magnitude for adolescent females and males who were substance users. Concluded alcohol and illicit drugs are highly associated with violent behaviors with substantial risk for adolescent females.</td>
<td></td>
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<tr>
<td>Ellickson, P., Saner, H., &amp; McGuigan, K. (1997). Profiles of violent youth: Substance use and other concurrent problems. American Journal of Public Health. 87(6), 985-991.</td>
<td>Longitudinal, retrospective chart review</td>
<td>Examined co-occurrence of violent behaviors with mental health problems and gender differences. More than ½ of sample had engaged in violence in last year with 1 in 4 committing predatory violence. Boys more likely than girls to commit violence except in the family. Violent youth had &gt; incidences of mental health problems, use drugs, drop out of high school and are delinquent. Boys less likely to have mental illness. Violence with 3 or more problems as high as 21%.</td>
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<tr>
<td>Fitzpatrick, K. M. (1997). Aggression and environmental risk among low-income African American youth. Journal of Adolescent Health. 21(3), 172-178.</td>
<td>Two-group comparison design, Quasi-experimental</td>
<td>Examined extent to which individual, family and environmental factors discriminated between aggressive and non-aggressive African American youth. Variables included demographics, exposure to violence, weapon carrying, and aggression. MANOVA with discriminant analysis found age (older) and gender (male) as important discriminators between groups in this sample. Victimization and witness to violence also significantly related to aggression.</td>
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<tr>
<td>Hausman, A., Pierce, G., &amp; Briggs, L. (1996). Evaluation of comprehensive violence prevention education: Effects on student behavior. Journal of Adolescent Health. 12(2), 104-110.</td>
<td>Content analysis of three behavior assessment tools used in</td>
<td>Evaluated the impact of two violent prevention programs with one control group on students' behavior. One school received class specific comprehensive educational interventions and a control group, the second school received a school wide program with a control group. The class specific exposure resulted in a 71% decrease in suspension over three years as opposed to the control group at the same school. The school wide program school showed some significance, but not always statistically significant from control group.</td>
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<tr>
<td>Hennings-Stout, M. (1998). Assessing the behavior of girls what we see and what we miss. Journal of School Psychology. 36(4), 433-455.</td>
<td>Three teachers in the theme group, three in the</td>
<td>Used a grounded theory approach to assess the salient themes in girls' experience of being 9 12 years old. Identified 22 concerns (83% interrater reliability) and then used that list to assess three traditional psychological and research assessment tools.</td>
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Cross sectional retrospective chart review
High school seniors and dropouts from Oregon and California n= 4500

Gender was a significant factor of risk for violence. Low academic orientation, lack of parental support and affective experience of fear. Weak school and family bonds affected boys.

Retrospective, descriptive from a larger survey
335 females, 286 males, 32% Latino from public middle schools in New York City, Aged 11-14.

Lived in urban area with high rates of poverty, unemployment and crime. Assessed PTSD symptoms, cognitive coping strategies, social support and affective experience of fear. Gender differences were found. For girls, witnessing violence in the community preceded PTSD symptoms and for males it was violence in the school which preceded symptoms. When examining fear, for males, fear in the community was predictive of PTSD. For girls, fear of violence

ANNOVA with gender groups and direct and indirect aggression groups
113 college students; 57 women and 56 men from Florida

Examined the gender of aggressor and the gender of target of aggression in direct and indirect aggression. Some issues regarding validity as parts of the Richardson Conflict Response Questionnaire were used to measure indirect aggression (Cronbach alpha = .80). Findings were consistent with the social sanctions model. Females exhibited less overt aggression and more indirect aggression. Males received both types of aggression more as targets.

Correlational, narrative analysis and parent and teacher ratings
652 twins in a non-clinical sample; parents evaluated children at age 5 and 7; teachers at age 7.

Play narratives were examined by two coders for aggression. Sample was taken from the MacArthur Longitudinal Twin Study completed in the state of Colorado. The sample was 92% Caucasian. Parents completed the CBCL- Parent Form (Achenbach, 1991) and teachers completed the CBCL-Teacher Form (Achenbach, 1991). Found that girls told more coherent story narratives that were less aggressive than boys did. Aggressive themes were more closely correlated to behavior disturbance as reported by parents and teachers.

ANOVA to examine gender groups and overt versus relational aggression groups
461 boys and 443 girls in second and third grades in midsize city in southwest

Used peer and teacher nominated (CBCL-Teacher Form) assessment to identify overtly versus relationally aggressive children in second and third grades. Boys were more overtly and relationally aggressive than girls in the second and third grade. They also found that between the ages of 8 and 11, girls increase their reliance on relational types of aggression and boys decrease their reliance on it. Suggest future research on the reciprocal nature of peer rejection based on aggression; does it happen first or follow the aggression?

ANNOVA to examine gender groups and overt versus relational aggression groups
36(4), 457-477.


457-477.

<table>
<thead>
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<th>Study</th>
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<td>Warner, B., &amp; Weist, M. D. (1996). Urban youth as witnesses to violence: Beginning assessment and treatment efforts. <em>Journal of Youth &amp; Adolescence, 25</em>(3), 361-377.</td>
<td>Integrated literature review</td>
<td>N/A</td>
<td>Reviews literature on witnessing violence in children and adolescents. In reaction to witnessing violence, youths present with Ss PTSD: separation anxiety, depression, disturbed grieving and bereavement, show externalizing behaviors such as aggressiveness, have impaired interpersonal and family relationships and show a decline in school performance. Factors that mediate the impact of violence exposure include age, gender, and history of prior trauma.</td>
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Life Events and Problem Behaviors

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<td>Duncan, D. F. (1996). Growing up under the gun: Children and adolescents coping with violent neighborhoods. <em>Journal of Primary Prevention, 16</em>(4), 343-356.</td>
<td>Integrated literature review</td>
<td>N/A</td>
<td>Examines studies on inner-city children who become victims and witness violence. Acute symptoms such as crying, tremors and withdrawal and chronic problems such as anxiety, depression and sleep disorders occur in response to violence exposure. Those children who cope successfully have an internal locus of control, a strong sense of self-efficacy, an optimistic and positive attitude towards the future. Parental support and open communication in the family especially important.</td>
</tr>
<tr>
<td>DuRant, R. H., Treiber, F., Goodman, E., &amp; Woods, E. R. (1996). Intentions to use violence among young adolescents. <em>Pediatrics, 98</em>(6 Pt 1), 1104-1108.</td>
<td>Descriptive survey, regression</td>
<td>Adolescents aged 12.9 +/- 1 year in two middle schools n= 225</td>
<td>Examined early adolescents to determine whether perceived normative expectations to use violence are already established. Sample was 49.4% male. Asked to respond to Violence in Hypothetical Situation Scale after reading situations that were violent. 36% of variance was explained by age, grade, church attendance, alcohol and drug use, depression and exposure to violence. Stresses church going in conclusion.</td>
</tr>
<tr>
<td>Fabes, R. A., Eisenberg, N., Smith, M. C., &amp; Murphy, B. C. (1996). Getting angry at peers: Associations with liking of the provocateur. <em>Child Development, 67</em>, 942-956.</td>
<td>Descriptive, two group design Preschoolers</td>
<td></td>
<td>Examined how preschoolers cope with anger at well liked and not well liked peers. Observed free play fro 6 months. The frequency, causes as well as intensity of anger were compared for incident provoked by peers that were &quot;really liked&quot; as opposed to those likes &quot;only a bit&quot;. Although there</td>
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Descriptive survey, regression

Adolescents and parents


Literature review

N/A


Descriptive correlational, retrospective chart review

Institutionalized adolescents aged 11-17

n=187


Instrumentation

Reliability and validity

Adolescents


Descriptive survey

High school juniors in 2 rural counties in PA. N= 709


Cross sectional retrospective chart review from longitudinal parent study

Grades 7- 12

n= 12,118


Qualitative ethnography

White, middle class urban

Adolescents

Examined parent-adolescent relations and its impact on problem behaviors. Parents provided information on work overload, levels of stress, and parent adolescent relations. Analysis revealed some spillover, but mediators differed for mothers and fathers. Mothers acceptence mediated the link between her work overload and and changes in adolescent problem behavior, while parent-child conflict mediated link between father's work overload and adolescent problem behaviors. Parental stress was correlated highest with parent-child conflict.

Describes and discusses families of Mexican American teens. Existing data regarding teen social class levels, school performance, substance abuse, pregnancy and parenting, and suicide is presented. Findings from family cohesion studies, including those not related to MA families, is summarized.

This book presents chapters on comparison of measurements of life stressors including the Life Events Checklist. Reliability and validity data is presented. Comparisons to negative and positive change scores and problem behaviors such as aggression and delinquency is presented.

Examined health beliefs and behaviors using the Adolescent Wellness Appraisal (AWA) Indicated usual problems of violence, substance usage and poor nutritional habits and exercise habits. Striking numbers of stressful events present such as parental loss and relocation. Overall, stress the need for greater availability of health promotion in rural areas.

Examined social context influences on risk behaviors. Assessed 8 areas: emotional distress, suicidal thoughts and behaviors, violence, use of substances (cigarettes, alcohol, drugs), sexual behavior patterns, pregnancy. IV's included individual, family and school contexts. Parent-family connectedness and perceived school connectedness was protective in all areas except pregnancy. Ease of access to guns increased violence and suicidality.

Part of a larger study of parent-child communication. Responded to the question " Using your own words, list any happenings that occurred in the family that you feel may have been difficult
Substance Use and Violent Behaviors

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<td>Alvarez, A., &amp; Bachman, R. (1997). Predicting the fear of assault at school and while going to and from school in an n adolescent population. Violence and Victims, 12(1), 69-86.</td>
<td>Retrospective chart review</td>
<td>Junior and senior high school n=10,000</td>
<td>Examined factors contributing to students' fear of assault in school and en route. Results indicate recent victimization, presence of gangs or previous violent attacks, and availability of alcohol and drugs related to fear. Young females NOT more fearful than males. Authors cite need for context and content validity of &quot;fearfulness&quot;.</td>
</tr>
<tr>
<td>Booth, R. E., &amp; Zhang, Y. (1996). Severe aggression and related conduct problems among runaway and homeless adolescents. Psychiatric Services, 47(1), 75-80.</td>
<td>Descriptive Survey</td>
<td>Runaway and homeless youth at urban drop-in centers n=218</td>
<td>Assessed prevalence of severe aggression and conduct disorder. More than 50% met criteria for conduct disorder, 62% reported severe aggression. Adolescent Health Survey used. Living at home where aggression was used was associated with aggression, sexual abuse was associated with conduct disorder. Severe aggression associated with suicide attempt, pregnancy, arrests and convictions.</td>
</tr>
<tr>
<td>Dukarm, C. P., Byrd, R. S., Aninger, P., &amp; Weitzeran, M. (1996). Illicit substance use, gender and the risk of violent behavior among adolescents. Archives of Pediatrics &amp; Adolescent Medicine, 150(8), 797-801.</td>
<td>Descriptive analysis of The 1991 YRBSS, retrospective review</td>
<td>U. S. High school students from 50 states n=12,272</td>
<td>Investigated the relationship between substance use and weapon carrying and physical fighting among adolescents as a cohort and between males and female adolescents. A significant relationship existed between carrying weapons, fighting and substance use. Weapon carrying increased with use of marijuana, alcohol consumption, cocaine and anabolic steroids. The risk of violent behavior increased and was of equal magnitude for adolescent females and males who were substance users. Concluded alcohol and illicit drugs are...</td>
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<tr>
<td>Study</td>
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<td>Results/Findings</td>
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<tr>
<td>DuRant, R. H., Kahn, J., Beckford, P. H., &amp; Woods, E. H. (1997).</td>
<td>Two stage probability survey</td>
<td>Examined the association between weapon carrying on school property and engaging in health risk and problem behaviors such as fighting and substance use on school property, fear of attending school and victimization at school. Results indicated weapon carrying at school was more strongly associated with use of violence and the use of substances at school than was prior victimization and fear of attending school. A subgroup of at-risk students was identified who was victimized at school, is afraid to come to school, is using alcohol at school and is carrying a weapon to school.</td>
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<tr>
<td>DuRant, R. H., Treiber, F., Goodman, E., &amp; Woods, E. R. (1996).</td>
<td>Descriptive survey, regression</td>
<td>Examined early adolescents to determine whether perceived normative expectations to use violence are already established. Sample was 49.4% male. Asked to respond to Violence in Hypothetical Situation Scale after reading situations that were violent. 36% of variance was explained by age, grade, church attendance, alcohol and drug use, depression and exposure to violence. Stresses church going in conclusion.</td>
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<tr>
<td>Ellickson, P., Saner, H., &amp; McGuigan, K. (1997).</td>
<td>Longitudinal, retrospective chart review</td>
<td>Examined co-occurrence of violent behaviors with mental health problems and gender differences. More than ¼ of sample had engaged in violence in last year with 1 in 4 committing predatory violence. Boys more likely than girls to commit violence except in the family. Violent youth had &gt; incidences of mental health problems, use drugs, drop out of high school and are delinquent. Boys less likely to have mental illness. Violence with 3 or more problems as high as 21%.</td>
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<tr>
<td>Haapasaalo, J., &amp; Hamalainen, T. (1996).</td>
<td>Two group comparison using retrospective data</td>
<td>Examined whether the two groups would differ from each other in the prevalence of childhood abuse and neglect, early family problems, disruptive behavior disorders, depression and substance abuse. No statistically significant differences in the prevalence of childhood physical, psychological abuse or neglect. Physical abuse was experienced by 57%. 5% of the violent offenders versus 37% of the property offenders (p=10). Conclusion was that the two groups were surprisingly similar to each other in childhood experiences, family problems, and psychiatric diagnoses. The prevalence of family and psychiatric problems was high in both groups.</td>
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<tr>
<td>Jenkins, J. E. (1996).</td>
<td>Longitudinal, random design</td>
<td>Examined the importance of students' academic performance level and extracurricular activities as predictors of drug involvement relative to peer influences. At all three levels, involvement in extracurricular activities and academic performance were related to gateway and hard drug use. The strongest correlate with drug use across all grade levels was affiliation with drug using friends. Having a job after school was marginally related at grade ten.</td>
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<tr>
<td>Kann, L., Kinchen, S. A., Williams, B. L., Roos, J. G., Lowry, R.,</td>
<td>Descriptive survey non-experimental</td>
<td>Youth Risk behavior Surveillance System identifies six categories of priority health risk. 73% of all deaths among youths result from four causes; motor vehicle accidents, other unintentional</td>
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<td>Study</td>
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<td>Morris, R. E., Harrison, E. A., Knox, G. W., Trombauer, E. Marquis, D. K., &amp; Watts, L. L. (1995).</td>
<td>Health risk behavioral survey from 39 juvenile correctional facilities in the United States. <em>Journal of Adolescent Health</em>, 17, 334-344.</td>
<td>Descriptive survey</td>
<td>Adolescents in juvenile detention; 39 Centers in U.S. n=1801</td>
</tr>
<tr>
<td>Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., Tabor, J., Bearinger, L. H., Shaw, M., Ireland, M., &amp; Udry, J. R. (1997).</td>
<td>Protecting adolescents from harm: Findings from the National Longitudinal Study on adolescent health. <em>JAMA</em>, 278(10), 823-832.</td>
<td>Cross sectional retrospective chart review</td>
<td>Grades 7-12 n= 12,118</td>
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<td>Saner, H., &amp; Ellickson, P. (1996).</td>
<td>Concurrent Risk Factors for adolescent violence. <em>Journal of Adolescent Health</em>, 12(2), 94-103.</td>
<td>Cross sectional retrospective chart review</td>
<td>High school seniors and dropouts from Oregon and California n= 4500</td>
</tr>
<tr>
<td>White, H. R. (1997).</td>
<td>Longitudinal perspective on alcohol use and aggression during adolescence. <em>Recent Developments in Alcoholism</em>, 13, 81-103.</td>
<td>Integrated literature review</td>
<td>N/A</td>
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### Social Context (Family) and Violent Behaviors

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<td>Bailey, S. L., Flewelling, R. L., &amp; Rosenbaum, D. P. (1997). Characteristics of students who bring weapons to school. Journal of Adolescent Health. 20(4), 461-470.</td>
<td>Descriptive exploratory</td>
<td>Seventh and eighth graders n=1503</td>
<td>Explored the relationship between social, demographic and behavioral characteristics with self-reported carrying of a weapon to school. 15% carried a weapon to school in the past month. Risk factors included being male, not living with both parents, not feeling close to parents, drinking heavily, participating in fights, damaging school property and perceiving that other students brought guns to school were significantly associated with carrying. Barriers and victimization were not associated. Family plays an important role.</td>
</tr>
<tr>
<td>Cohen, D. (1998). Culture, social organization, and patterns of violence. Journal of Personality &amp; Social Psychology, 75(2), 408-419.</td>
<td>Research literature review</td>
<td>3 studies in the U.S. South and West</td>
<td>Examined cultures where culture-of-honor traditions persist. It was hypothesized that greater social organization was associated with more violence. This was confirmed in examinations of argument related homicide rates (Study 1), mass consumption patterns for violence in recreation, entertainment and vocational pursuits (Study 2), and voting patterns of political elites on gun control and national defense issues (Study 3). Effects were different from the North.</td>
</tr>
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<td>Duncan, D. F. (1996). Growing up under the gun: Children and adolescents coping with violent neighborhoods. Journal of Primary Prevention. 16(4), 343-356.</td>
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<td>Examines studies on inner-city children who become victims and witness violence. Acute symptoms such as crying, tremors and withdrawal and chronic problems such as anxiety, depression and sleep disorders occur in response to violence exposure. Those children who cope successfully have an internal locus of control, a strong sense of self-efficacy, and an optimistic and positive attitude towards the future. Parental support and open communication in the family especially important.</td>
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<td>Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.</td>
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<tr>
<td>Psychiatry. 35(4), 296-300.</td>
<td>Two group comparison using retrospective data</td>
<td>Young property and violent offenders</td>
<td>Examined whether the two groups would differ from each other in the prevalence of childhood abuse and neglect, early family problems, disruptive behavior disorders, depression and substance abuse. No statistically significant differences in the prevalence of childhood physical, psychological abuse or neglect. Physical abuse was experienced by 57%-5% of the violent offenders versus 37% of the property offenders (p=10). Conclusion was that the two groups were surprisingly similar to each other in childhood experiences, family problems, and psychiatric diagnoses. The prevalence of family and psychiatric problems was high in both groups.</td>
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<td>Haapasalo, J., &amp; Hamalainen, T. (1996). Childhood family problems and current psychiatric problems among young violent and property offenders. <em>Journal of the American Academy of Child &amp; Adolescent Psychiatry</em>. 35(10), 1394-1401.</td>
<td>Descriptive survey, non-experimental</td>
<td>Institutionalized adolescents aged 11-17</td>
<td>Intent was to provide a psychological description of institutionalized psychiatric adolescent patients. Findings indicate they are not a psychologically dysfunctional as expected when considering the correlation of accumulated life events, family problems and current displacement. There is no substantive demographic base regarding institutionalized adolescents.</td>
</tr>
<tr>
<td>Hutchinson, R. L., Tess, D. E., Gleckman, A. D., &amp; Spence, W. C. (1992). Psychosocial characteristics of institutionalized adolescents: Resilient or at risk. <em>Adolescence</em>. 27(106), 339-356.</td>
<td>Descriptive survey, non-experimental</td>
<td>Public high school students in So. Carolina, 1993</td>
<td>Descriptive study of risk factors using the So.Carolina Youth Risk behavior Survey. % carrying a weapon in the last 30 days ranged from 5% to 50% (white males). Over 35% reported fighting. 12% reported someone forcing them to have sexual intercourse. The most consistent predictor of all outcomes was substance use, although having sexual intercourse was associated with most outcomes.</td>
</tr>
<tr>
<td>McKeown, R. E., Jackson, K. L., &amp; Valois, R. F. (1998). The frequency and correlates of violent behaviors in a statewide sample of high school students. <em>Family Community Health</em>. 20(4), 38-53.</td>
<td>Descriptive survey, non-experimental</td>
<td>Mexican American fathers and sons</td>
<td>Investigated the relationship between the fathers’ family violence and delinquency. It was proposed the greater the father’s violence in the family, the less the bonding of members to the family. The less the bonding the greater the delinquency</td>
</tr>
<tr>
<td>Murata, J. M. (1990). Father’s family violence and son’s delinquency: Conflict tactics, bonding, and serious juvenile crime in the Mexican-American family. <em>Western Journal of Nursing Research</em>. 12(1), 60-70.</td>
<td>Descriptive survey, regression modeling</td>
<td>Urban &amp; suburban high school (14-18)</td>
<td>Studied adolescents perception of violence in communities and schools and examined the relationship between that and emotional &amp; behavioral functioning while controlling for the effects of family violence and demographics. YSR used with other forms. Over 45% reported witnessing severe forms of violence such as shootouts, beatings or stabblings. For males, this witnessed violence predicted aggression even when controlling for family violence and demographics. For girls, only school violence was a predictor. Internalizing scores were not significant for either, but girls experienced more internalizing behaviors (depression and withdrawn) than boys.</td>
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<tr>
<td>Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., Tabor, J., Bearling, T., Sieving, R. E., Shaw, M., Ireland, M., Bearinger, L. H., &amp; Udry, J. R. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on adolescent health. <em>JAMA</em>. 278(10), 823-832.</td>
<td>Cross sectional retrospective chart review from longitudinal parent study</td>
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<td>Riesch, S. K., Jacobson, G. A., &amp; Tosi, C. B. (1994).</td>
<td></td>
<td>Young adolescents’ identification of difficult life events. Clinical Nursing Research.</td>
<td>Qualitative Ethnography</td>
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<tr>
<td>Sanders-Philips, K. (1997).</td>
<td></td>
<td>Assaultive violence in the community: Psychological responses of adolescent victims and their parents (review). Journal of Adolescent Health.</td>
<td>Retrospective literature review</td>
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<td>Saner, H., &amp; Ellickson, P. (1996).</td>
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<td>Concurrent Risk Factors for adolescent violence. Journal of Adolescent Health.</td>
<td>Cross sectional retrospective chart review</td>
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<td>Stavnakaki, C., &amp; Gaudet, M. (1989).</td>
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<td>Epidemiology of affective and anxiety disorders in children and adolescents. Psychiatric Clinics of North America.</td>
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unique set of individual, family and environmental factors. Direct associations of alcohol and aggression in adolescence are spurious and not unique.

## Social Context (School) and Violent Behaviors

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<td>Alderman, G. L., &amp; Nix, M. (1997). Teachers' intervention preferences related to explanations for behavior problems, severity of the problem and teacher experience. Behavioral Disorders, 22(2), 87-95.</td>
<td>Descriptive survey</td>
<td>Educators in grade school n=144</td>
<td>Examined teachers' preference for positive versus negative interventions with students based on the amount of information given about the student with behavior problems. Having an explanation of misbehavior did lead to the choice of more positive interventions than negative interventions. The experience level of the teacher was a complicating extraneous variable to the outcome.</td>
</tr>
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<td>Alvarez, A., &amp; Bachman, R. (1997). Predicting the fear of assault at school and while going to and from school in an adolescent population. Violence and Victims, 12(1), 69-86.</td>
<td>Retrospective chart review</td>
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<td>Arria, A., Borges, G., &amp; Anthony, J. C. (1997). Fears and other suspected risk factors for carrying lethal weapons among urban youth of middle school age. Archives of Pediatrics &amp; Adolescent Medicine, 121(6), 553-560.</td>
<td>Prospective longitudinal (one year follow-up)</td>
<td>Urban, mid-Atlantic, middle school students n=113</td>
<td>Examined the relationship between social, demographic and behavioral characteristics with self-reported carrying of a weapon to school 15% carried a weapon to school in the past month. Risk factors included being male, not living with both parents, not feeling close to parents, drinking heavily, participating in fights, damaging school property and perceiving that other students brought guns to school were significantly associated with carrying. Fear of safety and victimization were not associated. Family plays an important role.</td>
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<td>Examined the influence of friend's behavior and the features of the relationship. Students also described qualities of their best friends. Teachers reported on student involvement, disruption and grades. Students whose friends in the fall who described themselves as more disruptive increased in self reported disruption during the year. Girls self reported disruption was more influenced by that of their best friend than was boys’. Students who reported positive best friendships reported an increase in involvement. The reverse was true for negative friendships and increased disruption.</td>
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<tr>
<td>Bernadt, T. J., &amp; Keefe, K. (1995). Friend's influence on adolescents' adjustment to school. Child Development, 66, 1312-1329.</td>
<td>Longitudinal design, survey</td>
<td>Seventh grade students and their teachers with repeat survey in eighth grade one year later n=297</td>
<td>Examined the influence of friend's behavior and the features of the relationship. Students also described qualities of their best friends. Teachers reported on student involvement, disruption and grades. Students whose friends in the fall who described themselves as more disruptive increased in self reported disruption during the year. Girls self reported disruption was more influenced by that of their best friend than was boys’. Students who reported positive best friendships reported an increase in involvement. The reverse was true for negative friendships and increased disruption.</td>
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<td>Dodge, K. A., Lochman, J. E., Harmish, J. D., Bates, J. E., &amp; Petit, G. S. (1997).</td>
<td>Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth. Journal of Abnormal Psychology. 106(1), 37-51.</td>
<td>1997</td>
<td>106(1)</td>
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<td>Dukarm, C. P., Byrd, R. S., Asinger, P., &amp; Weitzman, M. (1996).</td>
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<td>DuRant, R. H., Kahn, J., Beckford, P. H., &amp; Woods, E. H. (1997).</td>
<td>The association of weapon carrying and fighting on school property and other health risk and problem behaviors among high school students. Archives of Pediatrics &amp; Adolescent Medicine. 151(4), 360-366.</td>
<td>1997</td>
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<td>DuRant, R. H., Treiber, F., Getts, A., McCloud, K., Linder, C. W., &amp; Woods, E. R. (1996).</td>
<td>Comparison of two violence prevention curricula for middle school adolescents. Journal of Adolescent Health. 19(2), 111-117.</td>
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<td>Journal</td>
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<tr>
<td>DuRant, R. H., Treiber, F., Goodman, E., &amp; Woods, E. R. (1996).</td>
<td>Intentions to use violence among young adolescents.</td>
<td>Pediatrics, 98(6 Pt 1), 1104-1108.</td>
<td>Descriptive survey, regression</td>
</tr>
<tr>
<td>Ellickson, P., Saner, H., &amp; McGuigan, K. (1997).</td>
<td>Profiles of violent youth: Substance use and other concurrent problems.</td>
<td>American Journal of Public Health, 87(6), 985-991.</td>
<td>Longitudinal, retrospective chart review</td>
</tr>
<tr>
<td>Fabes, R. A., Eisenberg, N., Smith, M. C., &amp; Murphy, B. C. (1996).</td>
<td>Getting angry at peers: Associations with liking of the provocateur.</td>
<td>Child Development, 67, 942-956.</td>
<td>Descriptive observational, two group design</td>
</tr>
<tr>
<td>Fraser, M. W. (1996).</td>
<td>Aggressive behavior in childhood and early adolescence: An ecological-developmental perspective on youth violence.</td>
<td>Social Work: Journal of the National Association of Social Workers, 41(4), 347-361.</td>
<td>Integrated research literature review</td>
</tr>
<tr>
<td>Haussman, A., Pierce, G., &amp; Briggs, L. (1996).</td>
<td>Evaluation of comprehensive violence prevention education: Effects on student behavior.</td>
<td>Journal of Adolescent Health, 19(2), 104-110.</td>
<td>2 group Non equivalent groups- non random assignment</td>
</tr>
<tr>
<td>Howes, C., Hamilton, C. E., &amp; Matheson.</td>
<td>Toddler security with teachers was negatively</td>
<td>Longitudinal Four year</td>
<td>N/A</td>
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<table>
<thead>
<tr>
<th>Source</th>
<th>Design</th>
<th>Sample Details</th>
<th>Findings</th>
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<tbody>
<tr>
<td>C. C. (1994). Children's relationship with peers: Differential associations with aspects of the teacher-child relationship. Child Development, 65, 253-262.</td>
<td>Sample: Olds in enrolled in child care as infants n=48</td>
<td>Associated with hostile aggression and positively related with complex peer play and gregarious behaviors. Dependent behaviors on teachers were associated with social withdrawal and hostile aggression. Prosocial and withdrawal behavior was associated with preschool security with teacher. Teachers' negative socialization was negatively correlated with friendliness and positively related to ratings of difficulty.</td>
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<tr>
<td>Jenkins, J. E. (1996). The influence of peer affiliation and student activities on adolescent drug involvement. Adolescence, 31(122), 297-306.</td>
<td>Longitudinal, Random sample of adolescent sin eighth, tenth and twelfth grades in 17 school districts in NE Ohio n=2779</td>
<td>Examined the importance of students' academic performance level and extracurricular activities as predictors of drug involvement relative to peer influences. At all three levels, involvement in extracurricular activities and academic performance were related to gateway and hard drug use. The strongest correlate with drug use across all grade levels was affiliation with drug using friends. Having a job after school was marginally related at grade ten.</td>
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</tr>
<tr>
<td>Kann, L., Kinchen, S. A., Williams, B. L., Ross, J. G., Lowry, R., Hill, C., Grunbaum, J. A., Blumson, P. S., Collins, J. L., &amp; Kolbe, L. (1998). Youth risk factors surveillance- United States 1997. MMWR CDC Surveillance Summaries, 47(S), 1-89.</td>
<td>Descriptive survey non-experimental 10-24 year old random sample entire U.S.</td>
<td>Youth Risk behavior Surveillance System identifies six categories of priority health risk. 73% of all deaths among youths result from four causes: motor vehicle accidents, other unintentional injuries, homicide and suicide. H.S. students engage in behaviors that increase the risk 18.3% had carried a weapon, 7.7% had attempted suicide in last 30 days.</td>
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<tr>
<td>Kingery, P. M., Pruitt, B. E., &amp; Heuberger, G. (1996). A profile of rural Texas adolescents who carry handguns to school. Journal of School Health, 66(1), 18-22.</td>
<td>Descriptive Rural Texas adolescents n=1072</td>
<td>Tested in 1994 in central Texas. Results: students who carried weapons to school one or more times in last year were compared using discriminant analysis and Chi-square. Gun carrying at school increased 138% from seven years earlier. Most students reported they carried a gun out of fear and anger. Those who carried had an extremely elevated rate of victimization; attack at school, attack outside school, forced sex, rape. Less knowledge of use of alternative methods of anger expression with greater crack cocaine use.</td>
<td></td>
</tr>
<tr>
<td>McKeown, R. E., Jackson, K. L., &amp; Valois, R. F. (1998). The frequency and correlates of violent behaviors in a statewide sample of high school students. Family Community Health, 20(4), 38-53.</td>
<td>Descriptive survey non-experimental Public high school students in So. Carolina 1993</td>
<td>Descriptive study of risk factors using the So. Carolina Youth Risk behavior Survey. % carrying a weapon in the last 30 days ranged from 9% to 50% (white males). Over 35% reported fighting, 12% reported someone forcing them to have sexual intercourse. The most consistent predictor of all outcomes was substance use, although having sexual intercourse was associated with most outcomes.</td>
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<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Mushinski, M. (1996)</td>
<td>Descriptive Trend study</td>
<td>Indicated a decrease in the amount of violence a student perceives in public school. In 1996, 22% of 7-12 graders thought school violence decreased in the last year. More than 50% of students thought social tensions were high. When teachers taught tolerance and education standards were high, 80% perceived positive relations in their schools. Students in urban areas reported gang violence, fights between students, threats of bodily harm or destructive acts with 27% fearful of being attacked. Minorities reported gang violence twice as often as whites.</td>
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<tr>
<td>O'Keefe, M. (1997)</td>
<td>Descriptive Urban &amp; suburban</td>
<td>Studied adolescents perception of violence in communities and schools and examined the relationship between that and emotional &amp; behavioral functioning while controlling for the effects of family violence and demographics. YSR used with other forms. Over 45% reported witnessing severe forms of violence such as shootings, beatings or stabbings. For males, this witnessed violence predicted aggression even when controlling for family violence and demographics. For girls, only school violence was a predictor. Internalizing scores were not significant for either, but girls experienced more internalizing behaviors (depression and withdrawn) than boys.</td>
</tr>
<tr>
<td>Page, R. M., &amp; Hammermeister, J. (1997)</td>
<td>Integrated review of trend studies</td>
<td>This paper reviews the prevalence of weapon carrying by youth, reasons why they carry, ways the firearms are obtained and violence and the controlling of weapons at school.</td>
</tr>
<tr>
<td>Powell, K. E., Muir-McClain, L., &amp; Halasyamani, L. (1995)</td>
<td>Outcome evaluation of nine programs</td>
<td>Examined curriculum and results of programs to reduce violence in schools. Most schools use conflict resolution or peer mediation programs (CR/CM). Some programs may modify youth's violent behaviors, increase discipline and decrease absenteeism. Much variation in program implementation. Inconclusive results support the need for better implementation and evaluation of these programs.</td>
</tr>
<tr>
<td>Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., Tabor, J., Bearinger, L. H., &amp; Anda, R. F. (1997)</td>
<td>Cross sectional retrospective chart review from longitudinal parent study</td>
<td>Examined social context influences on risk behaviors. Assessed 8 areas; emotional distress, suicidal thoughts and behaviors, violence, use of substances (cigarettes, alcohol, drugs), sexual behavior patterns, pregnancy, IV's included individual, family and school contexts. Parent-family connectedness and perceived school connectedness was protective in all areas except pregnancy. Ease of access to guns increased violence and suicidality. Literature supports that the number of adolescent victims of assaultive violence is increasing. They and their parents may experience significant psychological distress including school difficulties, guilt and fears of subsequent injury, and changes in risk behaviors and perceptions of life.</td>
</tr>
<tr>
<td>Sanders-Phillips, K. (1997)</td>
<td>Retrospective literature review</td>
<td>Literature supports that the number of adolescent victims of assaultive violence is increasing. They and their parents may experience significant psychological distress including school difficulties, guilt and fears of subsequent injury, and changes in risk behaviors and perceptions of life.</td>
</tr>
<tr>
<td>Saner, H., &amp; Ellickson, P. (1996)</td>
<td>Cross sectional retrospective chart review</td>
<td>Gender was a significant factor of risk for violence. Low academic orientation, lack of parental support and affection and parental substance abuse were significant factors in predicting violence. Girls were more affected by family disruption than boys.</td>
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### Social Context (Peers) and Violent Behaviors

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>Sample and size</th>
<th>Description</th>
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<tbody>
<tr>
<td>Berndt, T. J., &amp; Keefe, K. (1995). Friend’s influence on adolescents’ adjustment to school. <em>Child Development, 66</em>, 1312-1329.</td>
<td>Longitudinal design, survey</td>
<td>Seventh graders and their teachers with repeat survey in eighth grade one year later n= 297</td>
<td>Examined the influence of friend’s behavior and the features of the relationship. Students also described qualities of their best friends. Teachers reported on student involvement, disruption and grades. Students whose friends in the fall who described themselves as more disruptive increased in self reported disruption during the year. Girls self reported disruption was more influenced by that of their best friend than was boys’. Students who reported positive best friendships reported an increase in involvement. The reverse was true for negative friendships and increased disruption.</td>
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<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Title</td>
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<td>The influence of peer affiliation and student activities on adolescent drug involvement</td>
<td>Adolescence, 31(122), 297-306</td>
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<tr>
<td>Kipke, M. D., Unger, J. B., O'Connor, S., Palmer, R. F., &amp; LaFrance, S. R.</td>
<td>1997</td>
<td>Street youth, their peer group affiliation and differences according to residential status, subsistence patterns, and use of services</td>
<td>Adolescence, 32(127), 655-669</td>
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<td>Vitara, F., Tremblay, R. E., Kerr, M., Pagani, L., &amp; Bukowski, W. M.</td>
<td>1997</td>
<td>Disruptiveness, friends' characteristics, and delinquency in early adolescence: A text of two competing models of development</td>
<td>Child Development, 68(4), 676-689</td>
</tr>
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</table>
Appendix B. Figure B1: Model 1 One Factor Solution for Aggression Scale of YSR as proposed by Achenbach (1991) (N=621)

\[
\begin{align*}
\delta_1 &= .37 \quad \text{argues} \quad 03 \quad \lambda_{X_1} = 79 \\
\delta_2 &= .40 \quad \text{brags} \quad 07 \quad \lambda_{X_2} = 78 \\
\delta_3 &= .11 \quad \text{is mean} \quad 16 \quad \lambda_{X_3} = .94 \\
\delta_4 &= .30 \quad \text{demands attention} \quad 19 \quad \lambda_{X_4} = .44 \\
\delta_5 &= .17 \quad \text{destroys own things} \quad 20 \quad \lambda_{X_5} = .91 \\
\delta_6 &= .18 \quad \text{destroys other things} \quad 21 \quad \lambda_{X_6} = .96 \\
\delta_7 &= .44 \quad \text{disobeys at school} \quad 23 \quad \lambda_{X_7} = .75 \\
\delta_8 &= .69 \quad \text{jealous} \quad 27 \quad \lambda_{X_8} = .55 \\
\delta_9 &= .22 \quad \text{fights} \quad 37 \quad \lambda_{X_9} = .88 \\
\delta_{10} &= .15 \quad \text{attacks others} \quad 57 \quad \lambda_{X_{10}} = .97 \\
\delta_{11} &= .35 \quad \text{screams} \quad 68 \quad \lambda_{X_{11}} = .91 \\
\delta_{12} &= .19 \quad \text{shows off} \quad 74 \quad \lambda_{X_{12}} = .90 \\
\delta_{13} &= .38 \quad \text{stubborn} \quad 86 \quad \lambda_{X_{13}} = .79 \\
\delta_{14} &= .34 \quad \text{mood changes} \quad 87 \quad \lambda_{X_{14}} = .81 \\
\delta_{15} &= .48 \quad \text{talks much} \quad 93 \quad \lambda_{X_{15}} = .72 \\
\delta_{16} &= .29 \quad \text{teases} \quad 94 \quad \lambda_{X_{16}} = .84 \\
\delta_{17} &= .39 \quad \text{temper} \quad 95 \quad \lambda_{X_{17}} = .78 \\
\delta_{18} &= .06 \quad \text{threatens} \quad 97 \quad \lambda_{X_{18}} = .97 \\
\delta_{19} &= .18 \quad \text{is loud} \quad 104 \quad \lambda_{X_{19}} = .91
\end{align*}
\]

Aggression
\( \phi = 1.00 \)
Appendix B, Figure B2: Model 2, Three Factor Solution for Aggression Scale of YSR as proposed by Song, Singh & Singer (1994) (N=621)

$\delta_{1,11} = 0.06 \rightarrow$ threatens $\lambda_{X_{1,1}} = 0.97$

$\delta_{2,11} = 0.14 \rightarrow$ attacks others $\lambda_{X_{2,1}} = 0.95$

$\delta_{3,11} = 0.09 \rightarrow$ destroys own things $\lambda_{X_{3,1}} = 0.95$

$\delta_{4,11} = 0.05 \rightarrow$ destroys others things $\lambda_{X_{4,1}} = 0.97$

$\delta_{5,11} = 0.22 \rightarrow$ fights $\lambda_{X_{5,1}} = 0.89$

$\delta_{6,11} = 0.38 \rightarrow$ disobeys at school $\lambda_{X_{6,1}} = 0.79$

$\delta_{7,11} = 0.17 \rightarrow$ is mean $\lambda_{X_{7,1}} = 0.91$

$\delta_{8,11} = 0.36 \rightarrow$ mood changes $\lambda_{X_{8,1}} = 0.80$

$\delta_{9,11} = 0.39 \rightarrow$ stubborn $\lambda_{X_{9,1}} = 0.78$

$\delta_{10,11} = 0.43 \rightarrow$ temper $\lambda_{X_{10,1}} = 0.76$

$\delta_{11,11} = 0.29 \rightarrow$ screams $\lambda_{X_{11,1}} = 0.84$

$\delta_{12,11} = 0.45 \rightarrow$ talks much $\lambda_{X_{12,1}} = 0.74$

$\delta_{13,11} = 0.36 \rightarrow$ argues $\lambda_{X_{13,1}} = 0.80$

$\delta_{14,11} = 0.15 \rightarrow$ shows off $\lambda_{X_{14,1}} = 0.92$

$\delta_{15,11} = 0.32 \rightarrow$ demands attention $\lambda_{X_{15,1}} = 0.82$

$\delta_{16,11} = 0.17 \rightarrow$ is loud $\lambda_{X_{16,1}} = 0.91$

$\delta_{17,11} = 0.28 \rightarrow$ teases $\lambda_{X_{17,1}} = 0.85$

$\delta_{18,11} = 0.44 \rightarrow$ brags $\lambda_{X_{18,1}} = 0.75$

$\delta_{19,11} = 0.72 \rightarrow$ jealous $\lambda_{X_{19,1}} = 0.53$

Active Aggression $\Phi_{1} = 1.00$

Affect Aggression $\Phi_{2} = 1.00$

Attention Aggression $\Phi_{3} = 1.00$