VIOLENCE BREEDS VIOLENCE:
CHILDHOOD EXPOSURE AND ADOLESCENT CONDUCT PROBLEMS

A Thesis

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by

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INTRODUCTION

Despite a recent trend of decreasing youth violence in the U.S., 2.3 million adolescents under 18 were arrested in 2001 (Snyder, 2003). In fact, 17% of all arrests and 15% of all violent crime arrests (murder, forcible rape, robbery, and aggravated assault) involved juveniles. Compared to adults, juveniles are more likely to be arrested for the crimes they commit (Snyder, 2003). Furthermore, the proportion of youth arrests sent to the courts has increased dramatically (Office of Juvenile Justice and Delinquency Prevention; 1997). This is disturbing in light of the fact that involvement in the juvenile justice system has been shown to lead to higher rates of recidivism among delinquent youth (Lamberg, 2002). As rates of juvenile offending decrease while rates of juvenile justice system involvement increase, it is critical to discover the factors that lead to the development of adolescent conduct problems and delinquency. The present study will investigate the impact of childhood exposure to violence on the development of conduct problems in adolescence using a high-risk sample of children born to teen mothers in the late 1980s and early 1990s.

Juvenile offenders are over-represented by adolescents who are at risk for maladjustment. Adolescent offenders tend to be poor, non-white, have special education needs, and mental health issues; the juvenile justice system itself has been touted as a dumping ground for these children (Steinberg, 2003). The U.S. Department of Health and
Human Services (2001) supported this claim with evidence that young minority men are disproportionately arrested for violent crimes even though self-reports indicate that the disparity between minority and majority populations as well as between boys and girls may not be as large as indicated by arrest records. In 1999, ethnic minorities accounted for 70% of youth in custody for violent crimes (Sickmund, 2004).

State and federal law only recognize two discrete categories of offenders: juveniles and adults. This dichotomy leads to increasing numbers of adolescents who commit serious crimes being tried and convicted in adult courts in order to be “eligible” for more severe penalties such as life sentences or even death (Steinberg, 2003). According to Lamberg (2002), juveniles who are detained in adult facilities are at a higher risk for being physically and sexually assaulted and have higher rates of recidivism than those who were tried in the juvenile justice system. Juvenile incarceration is exacerbating the difficulties experienced by many troubled youth trapped by family and neighborhood poverty. Research needs to identify the factors that precipitate juvenile delinquency and violence perpetration so that successful preventive efforts may be developed and implemented. The current study will investigate the effects of childhood exposure to violence on adolescent conduct problems among children of adolescent mothers.

**Violence Exposure, Victimization, and Conduct Problems**

Exposure to violence has been consistently linked to antisocial behavior among youth. Dangerously violent adolescents frequently report high levels of exposure to violence and victimization (e.g. Flannery, Singer, & Wester, 2001). In a nationally
representative sample of adolescents, violence victimization was found to be the single best predictor of juvenile violent behaviors for both males and females (Blum, Ireland, & Blum, 2003). Among urban black adolescents, witnessing violence and actual victimization were the strongest predictors of involvement in fights and the carrying of weapons (Durant, Cadenhead, Pendergrast, Slavens, & Linder, 1994). Relatedly, Jenkins and Bell (1994) indicated that weapon carrying is often done out of a fear of victimization rather than a violent or malicious intent.

Violence in the home, including child maltreatment and domestic violence, is another aspect of violence exposure that has been consistently associated with the development of conduct problems in children. Flannery, Singer, Williams and Castro (1998) found that violent behavior among adolescents with high levels of home violence was three times higher for girls and two times higher for boys than that of adolescents from low-violence homes. In a longitudinal study of inner city males, histories of maltreatment predicted higher levels of persistent serious delinquency, even while controlling for family and demographic factors (Stouthamer-Loeber, Wei, Homish, & Loeber, 2002). Lynch and Cicchetti (1998) compared maltreated and non-maltreated children between 7 and 12 years of age using a longitudinal design. Investigators found that child maltreatment and community violence exposure were related to behavior problems, depression, and self-esteem (Lynch & Cicchetti, 1998).

Children may also be exposed to violence in their neighborhoods or schools. Witnessing of, and victimization by, community-based violence contributed to the development of conduct problems over one year in a high-risk sample of urban
adolescents, even after controlling for baseline levels of antisocial behavior (Pearce, Jones, Schwab-Stone, & Ruchkin, 2003). Relatedly, Wikström and Loeber (2000) found that males living in public housing were more likely to engage in antisocial behaviors than peers living in more advantaged communities, even when the children had favorable composite indices for both risk and protective factors. Furthermore, exposure to violence at school has been shown to predict adolescent violent behaviors as well as psychological trauma (Flannery, Wester, & Singer, 2004). In addition to the influence of exposure to violence itself, children may be differentially impacted because of correlated risk or protective factors, such as socioemotional adjustment, social competency, and quality of parenting.

**Children’s Adjustment, Competency, and Conduct Problems**

The association between children’s socioemotional characteristics (i.e. depression, self-esteem) and behavioral functioning has been well-documented; nevertheless, debates exist as to the causal nature of these relationships. For instance, an investigation of comorbid depression and conduct disorder in a clinical sample demonstrated that in most cases, conduct disorders were diagnosed after depression (Kovacs, Paulauskas, Gatsonis, & Richards, 1988). In contrast, Patterson, Reid, and Dishion (1997) developed a model which posits that depression is a consequence of early antisocial behavior; depression then exacerbates conduct problems through mechanisms such as persistent social failure. In an attempt to clarify the issue, Beyers and Loeber (2003) compared the effects of depression on the types of delinquent acts committed (“delinquency variety”) to the
effects of delinquency variety on depression in a sample of adolescent boys drawn from a larger ongoing project. Over time, depression had a more robust effect on the slope of delinquency variety trajectories than the effect of delinquency variety on depression trajectories (Beyers & Loeber, 2003). In other words, depression was a better predictor of how delinquency changed over time than was delinquency in predicting how depression changed over time. It is evident that depression and delinquency in adolescents are linked; however, this association remains unclear. Depression may place children at a higher risk for developing conduct problems in adolescence and/or may be a consequence of the social factors linked with antisocial behaviors (e.g. negative peer relationships). In all likelihood, a vicious cycle best describes the nature of this relationship.

Children exposed to violence frequently experience difficulty in their interactions with peers, teachers, and other community figures (see Margolin & Gordis, 2000), indicating an underlying deficit in social skills. This lack of social competence may serve as a major risk for developing conduct problems. For example, low quality of friendship patterns and associations with peers who were perceived to exhibit antisocial behaviors increased the effect of negative parenting in childhood on conduct problems in early adolescence (Lansford, Criss, Pettit, Dodge, & Bates, 2003). In turn, aggressive behavior likely disrupted the children’s chances of succeeding in school. In a longitudinal study of a representative sample of adolescents, early school achievement protected against the persistence of violent behaviors into adulthood (Kosterman, Graham, Hawkins, Catalano, & Herrenkohl, 2001). Accordingly, Lansford et al. (2003) found that children exposed to poor parenting were less likely to exhibit externalizing problems in school when they had
high levels of friendship quality and when their peers were perceived to be low in antisocial behavior. These findings indicate that there may be a domino effect of higher social competence on overall success across various social domains, including appropriate classroom behavior and affiliation with academically competent children.

**Parenting Behaviors and Children’s Conduct Problems**

A mother’s emotional connections with her child as well as her behavioral management techniques combine to create a foundation for her child’s socioemotional development. On the negative side, children who have been exposed to violence may be differentially impacted depending upon family characteristics and the quality of parenting received. For example, Farrington, Loeber, Yin, and Anderson (2002) found that ineffective and uninvolved parenting (e.g. low parental supervision, low parental reinforcement, lack of child involvement in family activities) was related to delinquency among at-risk adolescent boys. In a study investigating gender differences in conduct problems, affective characteristics of family life such as low levels of caring and connectedness were associated with violence in girls whereas only family size influenced violence in boys (Blum et al., 2003). These findings suggest that females may be more attuned to, and influenced by, emotional aspects of parenting (e.g. maternal warmth) as opposed to parental management techniques (e.g. monitoring) than boys.

Parental distress may influence the quality of parenting as perceived and experienced by children at-risk for maladjustment due to exposure to violence. Lineras and colleagues (2001) found that mothers who either witnessed or experienced both
community and family violence reported more global and trauma-related psychological distress than did mothers who were only exposed to one type of violence or the other, thus providing support for a cumulative effect of violence exposure on maladaptive outcomes. Furthermore, maternal distress mediated the association between community violence and early child behavior problems (Lineras et al.). It may be inferred that maternal distress directly influences the level of parenting warmth conveyed to the child, thereby impacting the quality of mother-child relationships and affecting parental management techniques, such as maternal monitoring ability. These findings have implications for parents who may be particularly susceptible to experiencing increased levels of stress related specifically to parenting as well as to daily living in general (e.g. those living in poverty in dangerous communities). For instance, teen mothers experience heightened stress and possess lower levels of prenatal parenting skills (Whitman, Borkowski, Keogh, & Weed, 2001), creating a substantial risk for the development of conduct problems in their children.

**Children of Adolescent Mothers**

Children of adolescent mothers are a unique population at-risk for both behavioral and social maladjustment (Whitman et al., 2001). Previous research has indicated that sons of adolescent mothers are 2.7 times more likely to be incarcerated than sons of mothers who delay childbearing until their early twenties (OJJDP, 1997). Social circumstances typically surrounding young mothers, such as poverty and a lack of social supports, create a vulnerability to high levels of stress that may transact with their
children’s developmental trajectories as well as with the social systems in which the families are embedded. In other words, maternal stress may exacerbate children’s adjustment problems, which will likely elicit negative responses from other social contexts (e.g. neighborhood, school), thereby increasing stress. This cycle creates the potential for maladjustment in both mothers and their children, which may be the result of, and precursors to, exposure to violence.

Adolescent conduct disorders have been shown to increase the risk of teen motherhood (Bardone, Moffitt, Caspi, Dickson, & Silva, 1996). In turn, lower maternal age at first birth was associated with conduct disorders in a clinical sample of boys (Wakschlag, Gordon, Lahey, Loeber, Green, & Leventhal, 2000). In a longitudinal study of urban males, repeat serious delinquents were almost three times as likely to have fathered a child by age 19 than less serious delinquents (Wei, Loeber, & Stouthamer-Loeber, 2002). Both serious delinquents and teen fathers are overrepresented by African-Americans. Even after controlling for race, the pathway between serious delinquency and teen fatherhood remained significant (Wei et al., 2002). High levels of antisocial behavior among teen parents can be extrapolated to infer increased exposure to violence for their children at a very early age.

Children of adolescent mothers are at increased risk for becoming victims of violence, such as maltreatment (Stouthamer-Loeber et al., 2002). In a study of substantiated child abuse and neglect cases, Lee and Goerge (1999) found that children born to mothers under age 18 were four times more likely to be victims of abuse or neglect. Even after controlling for race, child gender, and birth order, early childbearing
and poverty significantly predicted the incidence of abuse and neglect in children of adolescent mothers as compared to children born to mothers age 22 and older (Lee and Goerge, 1999).

Conduct problems among children of adolescent mothers may not be easily explained by considering the social factors typically associated with early childbearing. History of antisocial behavior among adolescent mothers has been related to children’s conduct problems as well as social competence (Rhule, McMahon, & Speiker, 2004). However, Jaffee, Caspi, Moffitt, Belsky and Silva (2001) found that early adulthood violent offending by offspring of adolescent mothers was the only adverse outcome that could not be explained by maternal characteristics (e.g. IQ and conviction history) and family circumstances (e.g. SES and poor parenting), suggesting that simply being a child of an adolescent mother carries substantial risk for developing conduct problems.

Furthermore, children of teen parents have higher rates of early sexual behavior and pregnancy in adolescence (Furstenberg, Hughes, & Brooks-Gunn, 1992; Havemen, Wolfe, & Peterson, 1997), thereby becoming teen parents themselves.

There is evidence of a cycle of violence perpetuating itself through families, homes, schools, and communities in interactive and complex patterns. Despite a great deal of research examining the precursors to, and effects of, violence exposure in children and adolescents, there are several limitations in the extant literature that merit further investigation. For instance, research is needed to investigate the impact of violence exposure that occurs during early and middle childhood (see Ingoldsby & Shaw, 2002).

Few studies have investigated how conduct problems develop in children of adolescent
mothers as a result of preadolescent violence exposure. This is important due to the special circumstances that apply to teen parents, such as the interruption of their developmental cycle combined with environmental stressors (i.e. poverty) and social problems (i.e. emotional adjustment).

Relatedly, research on the effects of violence exposure has typically failed to account for maternal and early childhood aggression. It is critical in the evaluation of environmental effects on children to account for potential genetic mediators (Rutter, 2001). In other words, maladaptive outcomes of at-risk children will likely be due, in part, to genetic contributions of maternal risk (e.g. impulsivity related to aggression and early childbearing) as well as children’s individual influences on their environments (e.g. elicitation of negative attention as a consequence of early aggression). Studies that have controlled for baseline levels of antisocial behaviors often obtain these ratings in school-age children or adolescents (e.g. Attar, Guerra, & Tolan, 1994; Gorman-Smith & Tolan, 1998; Pearce et al., 2003). By controlling for levels of behavior problems in early childhood in addition to early maternal aggression, it is less likely that linkages with adolescent conduct problems are an artifact of children’s biological predispositions towards aggressive behavior, but instead are consequences of the exposure to violence itself. The current research will capitalize on the unique opportunities presented by the Notre Dame Adolescent Parenting Project to address several of the limitations in recent methodology.
The Notre Dame Adolescent Parenting Project (NDAPP)

The NDAPP is an ongoing prospective longitudinal study investigating the effects of adolescent parenting on child development. Teen mothers were recruited in the late 1980s and early 1990s during their third trimester of pregnancy. The mother-child dyads have been followed over the past 14 years. The NDAPP represents a distinctive opportunity to investigate the effects of childhood exposure to violence on the development of adolescent conduct problems in children of adolescent mothers. In addition, the design of the NDAPP allows for the prospective measurement of prenatal maternal aggression and early child aggression to be accounted for in analyses, thereby promoting more accurate predictions regarding the true effects of childhood violence exposure on adolescent conduct problems.

In the current study, childhood violence exposure was defined as the witnessing of or victimization from threats, slapping/punching/hitting, beatings, stabbings, or shootings in the home, neighborhood, or school before the age of 10. Adolescent conduct problems were characterized by violent behaviors and delinquency after age 10. Specifically, violent behaviors were defined by threats of interpersonal harm, provoked and unprovoked hitting, beatings, and attacks with knives or stabbings. Delinquency was comprised of non-violent, violent, and status offenses such as shoplifting, selling drugs, vandalism/property damage, fighting, and running away.

Exposure to violence prior to age 10 and violent behaviors since age 10 were reported by adolescents in the NDAPP retrospectively with the aid of an individualized, event-anchored timeline. Past research has supported the use of timelines to help obtain
valid and reliable retrospective reports of various problem behaviors such as substance
use (e.g. Sobell, Sobell, Leo, & Cancilla, 1988). More recently, findings regarding the
reliability of timelines have been extended to populations of adolescents with conduct
disorders (Donahue et al., 2004). Additionally, Ouimette, Read, and Brown (2005) found
that among traumatized individuals between the ages of 15 and 55, retrospective recall of
the occurrence of a stressful event was stable over time.

Hypotheses of relationships among childhood violence exposure, adolescent
conduct problems, gender, middle childhood depression and social competence, and
parenting are presented in Figure 1. An inspection of the model shows that higher levels
of childhood exposure to violence prior to age 10 are expected to lead to higher levels of
violent behaviors and delinquency during adolescence, even after controlling for prenatal
maternal aggression and early childhood aggression. Furthermore, gender, depression,
social competency, and parenting in middle childhood are hypothesized to moderate the
relationships between childhood exposure to violence and adolescent conduct problems,
thus serving as potential risk and protective factors. Finally, depression, social
competency, and parenting are assumed to function differentially depending upon gender
as there is consistent literature supporting gender differences in the development of
conduct problems (Blum et al., 2003; Moffitt & Caspi, 2001).
In summary, the major purposes of the current study are the following: (1) describe the incidence of violence exposure, violent behaviors, and delinquency in an at-risk sample of children born to adolescent mothers; (2) determine if adolescent delinquency and violent behaviors can be predicted from violence exposure in childhood, while controlling for prenatal maternal aggression and children’s externalizing problems at age 3; (3) investigate social/emotional factors during middle childhood as potential moderators of adolescent conduct problems; and (4) examine gender differences that may differentially impact relationships among childhood exposure to violence and the development of adolescent conduct problems.
METHOD

Participants

Participants were 110 primiparous adolescent mothers and their children recruited during their third trimester of pregnancy through hospitals and community agencies in South Bend, IN and Aiken, SC. All dyads were drawn from the NDAPP (Whitman et al., 2001). The racial composition of the sample was 61% African American, 31.5% European American and 7.5% Hispanic American. The average age at childbirth was 17 years, with a range from 14 to 19.5 years; 56% were male. When their children were 18-months-old, the mothers completed an average of 11.25 years of education, with a range from 8 to 13 years. The average score on the Hollingshead Index of Social Position (Hollingshead & Redlich, 1958) was 56.13, indicating overall low socioeconomic levels. Generally, children were born in good health as indicated by birth weight in grams (M = 3213.0, SD = 488.2) and Apgar scores (M=8.9, SD=.80).

Design and Procedure

Data for the proposed research were collected at five timepoints: prenatally; when the children were ages 3, 10, and 14; and a follow-up assessment occurred when children were between the ages of 10 and 17. Table 1 contains the assessment framework in terms of time of assessment, specific measures, and the reporting source. Maternal and child
aggression measures were collected during the first two assessment waves, which occurred prenatally and when the children were 3 years of age; child social competence, depression, self-esteem, and achievement were measured at 10-years of age; adolescent delinquency was measured at age 14. At the follow-up assessment, participants were asked to report retrospectively their exposure to violence before age 10 as well as their own violent behaviors since they turned 10. Children’s reports of maternal parenting behaviors were also collected at this time.

### TABLE 1

**ASSESSMENT SCHEME OF CHILD AND MATERNAL MEASURES**

<table>
<thead>
<tr>
<th>Maternal Measure</th>
<th>Prenatal Youth Self-Report</th>
<th>3-Year</th>
<th>10-Year</th>
<th>14-Year</th>
<th>Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Measures of Violence</td>
<td></td>
<td>Child Behavior Checklist</td>
<td>Vineland Adaptive Behaviors Scales</td>
<td>Past Exposure to Violence Scales*</td>
<td></td>
</tr>
<tr>
<td>Exposure and Socio-Emotional Adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Measures of Conduct Problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Delinquency Scale*</td>
</tr>
<tr>
<td>Maternal Solicitation*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Violent Behaviors*</td>
</tr>
<tr>
<td>Maternal Warmth*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maternal Solicitation*</td>
</tr>
</tbody>
</table>

*Note.* * indicates children’s report
Maternal Measure of Externalizing Behaviors

Prenatal maternal behavioral problems were measured using the externalizing subscale of the Youth Self-Report Profile (YSR; Achenbach, 1991). The YSR is a 112-item measure of a broad range of behavioral problems and yields internalizing (withdrawal, anxiety/depression, and somatic complaints), externalizing (delinquency and aggression), and total problems scores. Items are rated on a 3-point Likert-type scale consisting of 0 for “not true,” 1 for “somewhat or sometimes true,” and 2 for “very true or often true.” Sample items from the externalizing subscale include “I destroy things belonging to others” and “I physically attack people.” Internal consistency for the total problems scale was found range from 0.47 to 0.79, and test-retest reliability ranged from 0.71 to 0.95 (Achenbach, 1991).

Measures of Children’s Violence Exposure, Socioemotional Adjustment and Social Competence

Exposure to Violence Scales: Grades 6-12 (EVS). Exposure to violence before age 10 was measured using the EVS (Singer et al., 1994). Five specific violent acts were assessed: threats, slapping/hitting/punching, beatings, knife attacks, and guns/shootings. Items regarding sexual abuse were not administered. A four-point Likert scale ranging from “never” (0) to “almost every day” (3) was used to assess level of exposure. For this study, the past exposure to violence subscale was used, which collapses across setting in order to gain more reliable reports of violence exposure. Sample items include, “You being told by someone that they were going to hurt you” and “Seeing someone else being
beaten up.” A detailed event-anchored timeline was developed with each child to facilitate accurate reporting of events. Children were asked to reflect on anchors such as where they lived, what school they attended, what grade they were in, and who their friends were at the age of 10. Next, they were instructed to report their exposure to violent events that occurred before they turned 10. Item responses were summed, yielding a total past exposure to violence score with a possible range from 0 to 30, as well as witnessing of violence and victimization from violence subscores, each with a possible range of 0 to 15. Reliability of the 10 items for our sample was 0.70.

_Achenbach Child Behavior Checklist for Ages 2-3 (CBCL/2-3)._ Children’s behavioral problems were assessed using the Externalizing subscale of the CBCL/2-3 (Achenbach, 1992). The CBCL/2-3 is a 100-item measure using a three-point rating scale consisting of 0 (“very true or often true”), 1 (“somewhat or sometimes true”), and 2 (“not true”). Mothers reported how true each item was for their child over the past two months. The CBCL measures two major constructs: internalizing and externalizing behaviors. The Internalizing scale consists of a depression and an anxiety subscale. The Externalizing scale consists of an aggression and a delinquency subscale. Reliability and validity of this measure have been well-established; the average test-retest was 0.89 to .93 over a 7-day time period.

_Children’s Depression Inventory (CDI)._ The CDI is a 27-item inventory that measures level of depression in children (Kovacs, 1992). Each child chose one of three statements that best described his/her feelings or ideas regarding various depressive symptoms such as worthlessness, suicidality, and changes in sleeping and eating patterns.
over the past two weeks. A sample sentence grouping is “I am sad once in a while,” I am sad many times,” or “I am sad all the time.” Internal consistency has been found to be .86 with a clinical sample and .87 with a large sample of school-age children. It should be noted that the CDI correlates highly with the Revised Children’s Manifest Anxiety Scale (Kovacs, 1992).

*Vineland Adaptive Behavior Scales (VABS).* The VABS (Sparrow, Balla, & Cicchetti, 1984) is a 297-item semi-structured maternal interview that measures children’s social and personal competence, indicating global adaptive behaviors. For this study, social competence was measured using the 66-item socialization domain subscale, which assesses the child’s functioning in each of three subdomains: (1) interpersonal relationships, (2) play and leisure time, and (3) coping skills. Items were scored 0 (activity is ever performed), 1 (activity is sometimes performed with partial success), or 2 (activity is usually performed). Sample items include, “Initiates conversations on topics of particular interest to others,” “Shares toys or possessions without being told to do so,” and “Follows school or facility rules.” The VABS was found to have good validity and reliability. Split-half reliability coefficients for the socialization domain subscale ranged from 0.78 to 0.94. Test-retest reliability ranged from 0.78 to 0.88 (Sparrow et al., 1984).

**Measures of Adolescent Conduct Problems**

*Delinquency Scale.* Delinquent behaviors were assessed using a 16-item self-report from the National Longitudinal Study of Adolescent Health (AddHealth; UNC Carolina Population Center, 2003). Participants were asked to rank how often they have
participated in various delinquent acts over the past year using a 4 point scale ranging from “Never” to “5 or more times.” Sample items included the frequency of running away from home and selling marijuana or other drugs. For the purpose of this study, one item measuring violence exposure was omitted. Items were scored using summed totals of item responses, yielding a possible range of 0 to 45. Reliability for this measure was reported to be 0.84 (Demuth & Brown, 2004). For our sample, reliability was 0.88. In general, the validity of self-reported delinquency among adolescents has been supported (Jolliffe, Farrington, Hawkins, Catalano, Hill, & Kosterman, 2003).

*Violent Behaviors Scale (VBS).* Violent behaviors were assessed using this self-report measure, which measured five types of violent acts: threatening harm to others; slapping, punching, hitting someone before the child was hit; slapping, punching, hitting someone after being hit; beating up someone; attacking or stabbing someone with a knife; and shooting at someone. Using the individualized event-anchored timeline, each participant rated how often he or she engaged in each act since the age of 10 on a 4-point scale ranging from 0 for “never” to 3 for “almost every day.” Items were summed creating a violent behaviors total score, with a possible range of 0 to 15. Principle component analysis revealed that the items loaded on a single factor, which accounted for 51% of the variance among the items (Song, Singer, & Anglin, 1998). Each item correlated with the variable cluster, with a range of 0.56 to 0.81. The internal consistency of the items was acceptable, with a Cronbach $\alpha$ of 0.79 (Song et al., 1998). Reliability of the items in our sample was 0.70.
Measures of Parenting

*Maternal Warmth.* Warmth in parenting was assessed using the 10-item acceptance subscale of the Children’s Report of Parental Behavior Inventory (CRPBI; Schaefer, 1965). Children were asked to rate how much each description was like their mothers’ present behaviors using a 5-point scale ranging from 0 for “not like her” to 4 for “like her.” Item responses were summed, creating a total score with a possible range from 0 to 40. Sample items include “My mother seems to see me good points more than my faults” and “My mother tries to find ways to show me that she loves me.” The CRPBI was found to have adequate internal consistency (Schaefer, 1965) and high test-retest reliability (Margolies & Weintraub, 1977); the acceptance subscale was found to have adequate reliability (Fogas, Wolchik, & Braver, 1987). Reliability of items on our sample was 0.93.

*Maternal Solicitation.* A 5-item youth-report measure that assessed maternal efforts to solicit information from her child in an attempt to monitor his/her whereabouts and activities (Kerr & Stattin, 2000; Stattin & Kerr, 2000) was administered. Each child was asked to read behavioral descriptions of parental solicitation and rate how often his/her mother “acts like this” using a 5-point scale ranging from 0 for “never” to 4 for “always.” Items were summed, yielding a total score with a possible range of 0 to 20. Sample items include, “My mother talks to the parents of my friends” and “My mother starts conversations with me about my free time.” The alpha for the child-report was 0.70; test-retest reliability was 0.84 over a 2-month time period (Kerr & Stattin, 2000). Reliability in our sample was also 0.70.
RESULTS

Descriptive Results

Means, standard deviations, and ranges associated with past exposure to violence, delinquency, violent behaviors, prenatal maternal and early childhood externalizing behaviors (covariates), and potential moderators (e.g. middle childhood depression and social competency) are presented in Table 2. Since the distributions of scores for exposure to violence (total score, witnessing subscale, and victimization subscale) and violent behaviors were moderately positively skewed, square root transformations were performed on these measures, as recommended by Tabachnick and Fidell (2001). A logarithm transformation was conducted on the delinquency distribution due to substantial positive skewness. Note that the following sections of key descriptive statistics are reported for non-transformed variables.
### TABLE 2

DESCRIPTIVE STATISTICS FOR MEASURED VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past Exposure to Violence</td>
<td>3.79</td>
<td>3.18</td>
<td>0-15</td>
</tr>
<tr>
<td>Past Witnessing of Violence</td>
<td>2.90</td>
<td>2.56</td>
<td>0-12</td>
</tr>
<tr>
<td>Past Victimization from Violence</td>
<td>0.88</td>
<td>1.16</td>
<td>0-5</td>
</tr>
<tr>
<td>Delinquency</td>
<td>5.11</td>
<td>6.24</td>
<td>0-33</td>
</tr>
<tr>
<td>Violent Behaviors</td>
<td>2.66</td>
<td>2.08</td>
<td>0-11</td>
</tr>
<tr>
<td>Maternal Externalizing Behaviors</td>
<td>51.99</td>
<td>8.99</td>
<td>27-77</td>
</tr>
<tr>
<td>Children’s Externalizing Behaviors</td>
<td>53.34</td>
<td>8.83</td>
<td>30-76</td>
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<tr>
<td>Depression</td>
<td>45.88</td>
<td>8.75</td>
<td>35-79</td>
</tr>
<tr>
<td>Social Competency</td>
<td>76.99</td>
<td>8.44</td>
<td>53-101</td>
</tr>
<tr>
<td>Maternal Monitoring</td>
<td>11.57</td>
<td>4.61</td>
<td>0-20</td>
</tr>
<tr>
<td>Maternal Warmth</td>
<td>29.20</td>
<td>10.05</td>
<td>2-40</td>
</tr>
</tbody>
</table>
Past exposure to violence. In terms of witnessing violent acts prior to age 10, the most commonly reported event was seeing someone slapped, punched, or hit (64.6%), followed by seeing someone beaten (61.5%), threatened with harm (60.4%), attacked or stabbed with a knife (11.5%), and shot or shot at (7.3%). Among males, witnessing someone being threatened with harm was the most frequently reported event (71.7%) whereas females most frequently reported seeing someone slapped, punched, or hit (58.2%). The only gender difference in violence exposure among our at-risk sample was the witnessing of threats. Compared to females, males were more likely to witness someone being threatened with harm (15.1% vs. 7.0%), $\chi^2(1, N = 95) = 6.84, p < .01$.

The most frequently reported incident of violence victimization was being threatened by harm (30.3%), followed by being slapped, punched, or hit (28.1%), beaten (9.4%), attacked or stabbed with a knife (2.1%), and shot or shot at (1.0%) with a gun. However, males were most often threatened with harm (32%) whereas females had equal rates of being threatened with harm and being slapped, punched or hit (27.9%). Only males reported being attacked or stabbed with a knife (3.8%) or shot or shot at with a gun (1.9%); however males were not considered more likely than females to experience these events.

Delinquency. At age 14, adolescents prospectively reported their own delinquent behaviors over the past year. Among the total sample, the most commonly reported delinquent activity was lying to parents about whereabouts (56%), with males being more likely to lie than females, $\chi^2(1, N = 84) = 5.61, p = .01$. Females most frequently reported becoming loud, rowdy, or unruly in a public place (45%). About 46% of the
sample reported getting into a serious fight and over 30% participated in a group fight. Males were more likely than females to hurt someone badly enough to require bandages or medical care, $\chi^2 (1, N = 84) = 4.07, p < .05$. Selling drugs was the least frequently reported delinquent activity (5% of males, 4.6% of females).

**Violent Behaviors.** The perpetration of violent behaviors since the age of 10 was reported retrospectively with the aid of an individualized timeline. Slapping, hitting, or punching someone after being hit was the most commonly reported event among the total sample (74.8%) as well as within gender (86.8% of males, 64.5% of females). Slapping, hitting, or punching someone before they were hit was less frequent among both males (47.4%) and females (45.2%). Nearly 70% of males threatened someone with harm as compared to 42% of females, $\chi^2 (1, N = 95) = 3.21, p < .10$; 55.3% of males reported beating someone as compared to 32.3% of females, $\chi^2 (1, N = 95) = 4.57, p < .05$.

**Relationships Among Covariates, Exposure to Violence, Conduct Problems, and Moderators**

Bivariate correlations among the total sample revealed that past exposure to violence (total score) was significantly correlated with past witnessing of violence, $r (93) = .953, p < .001$, past victimization from violence, $r (93) = .671, p < .001$, adolescent delinquency, $r (67) = .376, p < .05$, and violent behaviors, $r (93) = .464, p < .001$. Witnessing of and victimization from violence were correlated with both measures of adolescent conduct problems. Delinquency and violent behaviors, $r (67) = .502, p < .001$,
prenatal maternal externalizing and children’s 3-year externalizing problems, \( r (81) = .377, p < .001 \), children’s depression and social competency, \( r (80) = -.249, p < .05 \), and maternal solicitation and warmth, \( r (92) = .441, p < .001 \), were also significantly correlated. Relationships between children’s depression and violence victimization, \( r (72) = .209, p < .10 \), children’s social competency and externalizing behaviors, \( r (74) = -.218, p < .10 \), and maternal warmth and violent behaviors, \( r (92) = -.183, p < .10 \), approached significance.

Table 3 contains intercorrelations among the predictors, outcomes and potential moderators for males and for females. Witnessing of violence prior to age 10 was significantly correlated with both adolescent delinquency and violent behaviors for boys, \( r (36) = .387, p < .05 \) and \( r (51) = .552, p < .001 \), respectively, but not for girls, \( r (29) = .196, p = .29 \) and \( r (40) = .210, p = .18 \), respectively. Victimization from violence was correlated with delinquency for girls, but not for boys, \( r (29) = .426, p = .01 \) and \( r (36) = .190, p = .25 \), respectively. Interestingly, for both males and females, maternal solicitation was significantly correlated with violence exposure and witnessing of violence, but was not correlated with violence victimization.
TABLE 3

CORRELATION MATRIX OF MEASURED VARIABLES AMONG MALES

(ABOVE THE DIAGONAL) AND FEMALES (BELOW THE DIAGONAL).

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Past Exposure to Violence</td>
<td><strong>1.0</strong></td>
<td>.950**</td>
<td>.633**</td>
<td>.399†</td>
<td>.616**</td>
<td>-.087</td>
<td>.116</td>
<td>-.106</td>
<td>.164</td>
<td>-.286†</td>
<td>-.168</td>
</tr>
<tr>
<td>2. Past Witnessing of Violence</td>
<td>.950**</td>
<td><strong>1.0</strong></td>
<td>.380**</td>
<td>.387†</td>
<td>.552**</td>
<td>-.100</td>
<td>.147</td>
<td>-.158</td>
<td>.078</td>
<td>-.301†</td>
<td>-.170</td>
</tr>
<tr>
<td>3. Past Victimization from Violence</td>
<td>.728**</td>
<td>.515**</td>
<td><strong>1.0</strong></td>
<td>.190</td>
<td>.495**</td>
<td>-.067</td>
<td>-.066</td>
<td>.124</td>
<td>.253†</td>
<td>-.100</td>
<td>-.208</td>
</tr>
<tr>
<td>4. Delinquency</td>
<td>.297</td>
<td>.196</td>
<td>.426†</td>
<td><strong>1.0</strong></td>
<td>.476**</td>
<td>-.073</td>
<td>.118</td>
<td>-.123</td>
<td>-.100</td>
<td>-.267†</td>
<td>.006</td>
</tr>
<tr>
<td>5. Violent Behaviors</td>
<td>.270†</td>
<td>.210</td>
<td>.319†</td>
<td><strong>1.0</strong></td>
<td>-.174</td>
<td>.132</td>
<td>.126</td>
<td>-.160</td>
<td>-.116</td>
<td>-.253†</td>
<td></td>
</tr>
<tr>
<td>6. Maternal Externalizing Behaviors</td>
<td>.208</td>
<td>.113</td>
<td>.181</td>
<td>-.053</td>
<td>-.048</td>
<td><strong>1.0</strong></td>
<td>.431**</td>
<td>.263†</td>
<td>-.097</td>
<td>-.082</td>
<td>.008</td>
</tr>
<tr>
<td>7. Children’s Externalizing Behaviors</td>
<td>.179</td>
<td>.191</td>
<td>.052</td>
<td>-.131</td>
<td>.258</td>
<td>.322†</td>
<td><strong>1.0</strong></td>
<td>-.295†</td>
<td>.240</td>
<td>-.062</td>
<td>-.010</td>
</tr>
<tr>
<td>8. Children’s Social Competency</td>
<td>.251</td>
<td>.339†</td>
<td>-.069</td>
<td>-.095</td>
<td>-.148</td>
<td>-.121</td>
<td>-.098</td>
<td><strong>1.0</strong></td>
<td>-.388**</td>
<td>.061</td>
<td>-.153</td>
</tr>
<tr>
<td>9. Children’s Depression</td>
<td>.098</td>
<td>.077</td>
<td>.175</td>
<td>.046</td>
<td>.017</td>
<td>-.012</td>
<td>-.166</td>
<td>-.129</td>
<td><strong>1.0</strong></td>
<td>-.077</td>
<td>.093</td>
</tr>
<tr>
<td>10. Maternal Solicitation</td>
<td>.398**</td>
<td>.426**</td>
<td>.207</td>
<td>.045</td>
<td>-.006</td>
<td>.158</td>
<td>.374†</td>
<td>.072</td>
<td>-.221</td>
<td><strong>1.0</strong></td>
<td>.408**</td>
</tr>
<tr>
<td>11. Maternal Warmth</td>
<td>.085</td>
<td>.142</td>
<td>.033</td>
<td>-.121</td>
<td>-.158</td>
<td>-.057</td>
<td>.075</td>
<td>-.128</td>
<td>-.139</td>
<td>.531**</td>
<td><strong>1.0</strong></td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, †p < .10
Effects of Exposure to Violence on Adolescent Conduct Problems

Regression analyses were used to predict adolescent conduct problems from exposure to violence prior to age 10. Missing data were handled using maximum likelihood estimates with Mplus software (Muthén & Muthén, 1998). First, the total childhood exposure to violence score was used to predict adolescent delinquency and violent behaviors while controlling for the effects of prenatal maternal externalizing problems and children’s 3-year externalizing problems. Because children’s ages during the follow-up assessment varied from 10 to 17, age at time of assessment was controlled in all analyses involving violent behaviors as the outcome variable.

Next, potential moderational effects of depression, social competency, and parenting behaviors on the relationships between childhood violence exposure and adolescent conduct problems were tested using regression analyses according to the steps outlined by Baron and Kenny (1986). Specifically, the potential moderating effects of children’s depression and social competency in middle childhood, child’s gender, and maternal solicitation and maternal warmth were tested. The role of gender was investigated in all tests of moderation, yielding potential three-way interactions. In order to investigate potential differential effects of type of exposure to violence, witnessing and victimization subscales were tested separately as predictors of adolescent conduct problems.

*Exposure to violence and adolescent conduct problems.* Regression statistics (Beta, standard error, T-ratio, and R²) for adolescent conduct problems on childhood exposure to violence are presented in Table 4. Delinquency at age 14 and adolescent...
violent behaviors were regressed on exposure to violence prior to age 10. Higher levels of exposure to violence in childhood significantly predicted higher levels of delinquency at age 14, controlling for prenatal maternal externalizing problems and early childhood externalizing problems, $\beta = 0.142, p < .01$, $R^2 = 0.16$. There were no significant two-way or three-way interactions.
Next, the predictive relationship between childhood exposure to violence and adolescent violent behaviors was tested while controlling for prenatal maternal externalizing behaviors, early childhood externalizing behaviors, and child’s age at time of assessment. There was a significant negative effect of prenatal maternal externalizing problems on adolescent violent behaviors, $\beta = -.170$, $p < .05$, $R^2 = 0.02$, suggesting that higher levels of maternal aggression during pregnancy predicted lower levels of adolescent violent behaviors. Age significantly predicted adolescent violent behaviors.
with older adolescents engaging in more violent behaviors, $\beta = .188, p < .01, \Delta R^2 = 0.01$. Higher rates of childhood exposure to violence predicted higher levels of adolescent violent behaviors while including all covariates, $\beta = .421, p < .01, R^2 = 0.30, \Delta R^2 = 0.25$. The two-way and three-way interactions were non-significant.

*Witnessing of violence and adolescent conduct problems.* Witnessing of violence prior to age 10 was tested as a predictor of delinquency at age 14 and violent behaviors since age 10. While including covariates in the model, childhood witnessing of violence significantly predicted higher levels of adolescent delinquency, $\beta = .130, p < .01, R^2 = 0.12, \Delta R^2 = 0.11$, and violent behaviors, $\beta = .354, p < .01, R^2 = 0.23, \Delta R^2 = 0.18$. There was a significant main effect of age, $\beta = .163, p < .01, \Delta R^2 = 0.05$, and the effect of prenatal maternal externalizing problems was approaching significance, $\beta = -.145, p < .10, R^2 = 0.02$. All tests of potential two-way and three-way interactions were non-significant.

*Victimization from violence and adolescent conduct problems.* Delinquency at age 14 and violent behaviors since age 10 were regressed on childhood victimization from violence. Higher levels of childhood violence victimization predicted higher levels of adolescent delinquency after controlling for prenatal maternal and early childhood externalizing problems, $\beta = .108, p < .05, R^2 = 0.09, \Delta R^2 = 0.08$. There was a three-way interaction of social competency and gender on the relationship between childhood victimization from violence and delinquency at age 14, $\beta = .238, p < .05, R^2 = 0.27$ (see Table 7); this interaction is presented in Figure 2. For girls who experienced lower levels of childhood violence victimization, those with lower social competency engaged in
fewer delinquent behaviors at age 14 than those with higher social competency. At higher levels of violence victimization, girls with higher social competency engaged in fewer delinquent behaviors than those with lower social competency. As violence victimization increased, delinquent behaviors among girls with low social competency increased. In contrast, boys exposed to lower levels of childhood violence victimization consistently displayed fewer delinquent behaviors than those who experienced higher levels of victimization, regardless of social competency. As violence victimization increased, however, delinquency among boys with lower social competency increased more rapidly than rates among boys with higher social competency.

Figure 2. Social Competency (SC) by Gender Interaction on the Relationship Between Violence Exposure and Delinquency
DISCUSSION

Whereas the high rates of violence exposure during childhood for our sample of children of adolescent mothers are concerning, they are somewhat lower than would be expected in an at-risk sample (cf. Osofsky, 1998). For example, among inner-city children in a Chicago neighborhood, 39% reported witnessing a shooting (Bell & Jenkins, 1993) as compared to 7.3% of our sample. However, rates of violence exposure observed in our sample are more similar to those found among children in grades 3 through 8 from a small Midwestern city characterized as primarily blue collar workers (Singer et al., 1999): 18% of males and 11% of females had been beaten up as compared to 13% of males and nearly 5% of females in our sample. Similarly, self-reported violent behaviors among our sample coincided with those found among a large sample of urban and suburban adolescents ages 14 to 19 (Flannery et al., 1998).

Consistent with the previous literature on both low and high risk samples, we found that children of adolescent mothers who were exposed to violence had higher rates of adolescent conduct problems than those who experienced less violence exposure (e.g. Blum et al., 2003; Durant et al., 1994; Flannery et al., 2001; Singer et al., 1999). Moreover, this relationship held even after controlling for prospective measurements of early maternal externalizing problems and children’s 3-year externalizing problems. The use of prenatal maternal and early childhood reports of problem behaviors is a strength of
this study. Researchers examining the relationships between maternal and children’s conduct problems typically have used retrospective reports of maternal behavior (e.g. Jaffee et al., 2001; Rhule et al., 2004). Furthermore, research that has attempted to control for children’s early levels of problem behaviors in the prediction of future conduct problems typically obtained these measures in middle to late childhood (e.g. Attar et al., 1994; Gorman-Smith & Tolan, 1994), leaving the possibility that problem behaviors manifested themselves at a much earlier age. Thus, our study represents an important contribution to the literature because we measured maternal externalizing behaviors prospectively during the last trimester of pregnancy and children’s externalizing problems were measured at 3-years of age. These methodological strengths allowed for more precise estimates of the effects of childhood violence exposure on the development of conduct problems during adolescence.

We found support for a three-way interaction between social competency and gender on the relationship between violence victimization and 14-year delinquent behaviors, partially supporting our second hypothesis. Specifically, higher social competency seemed to be most important for girls who experienced elevated levels of childhood violence victimization in protecting them from developing delinquent behaviors at age 14. Among boys with higher social competency, delinquency was consistently slightly lower. As rates of males’ childhood victimization increased, the protective function of social competence increased. However, higher social competency served as a risk factor for delinquency among girls who experienced less victimization in childhood. The findings of elevated rates of delinquency among both socially competent
males and females who experienced low rates of victimization in childhood is consistent with the literature on the normative nature of delinquent activity among adolescents (Loeber & Stouthamer-Loeber, 1998; Moffitt, 1993, Moffitt & Caspi, 2001). Furthermore, children who show chronic behavioral problems throughout childhood and into adulthood (e.g. life-course persistent offenders) differ on key factors such as neurocognitive functioning and emotional adjustment as compared to individuals whose problem behaviors occur only during adolescence (e.g. adolescent limited offenders; Moffitt & Caspi, 2001).

According to this line of research, we would expect well-adjusted adolescents to have delinquency rates in mid-adolescence that are similar to those who are less socially competent. We found this pattern for boys, but less socially competent girls had lower rates of delinquency. It may be that the lack of social skills among these girls led to difficulties in peer relationships and isolation rather than associations with delinquent peers. Accordingly, Bukowski, Sippola, and Newcomb (2000) found that adolescents become concerned with appearing immature, which increases their attraction to delinquent peers. It can be extrapolated that teens who are not socially competent will be less concerned with, or aware of, perceptions of their peers.

We did not find evidence for the expected two- and three-way interactions involving children’s depression, gender, or parenting. Because of the nature of our at-risk sample, attrition over the years has contributed to a low sample size, thereby compromising the statistical power needed to detect effects. Despite the lack of adequate power, there were trends suggesting that depression, social competency, and gender
moderated the relationships between childhood exposure to violence and adolescent conduct problems. Surprisingly, there was no evidence that this association differed depending upon parenting. For example, parenting practices have been consistently associated with delinquency among adolescents (e.g. Blum et al., 2003; Farrington et al., 2002; Moffitt & Caspi, 2001). Because of our small sample size and inadequate power, the absence of moderating effects of parenting should be interpreted with caution.

Interestingly, when maternal externalizing behaviors significantly predicted adolescent conduct problems, the effects were negative, suggesting that children of mothers who had conduct problems during pregnancy had fewer conduct problems themselves during adolescence. Research has typically shown positive associations between maternal conduct problems and children’s aggression (Jaffee et al., 2001; Shaw, Winslow, Owens, & Hood, 1998). However, the negative relationship between maternal and adolescent aggression found in our study may be explained by evidence suggesting that childbirth among pregnant teens serves as a protective factor against future delinquency as compared to teens who abort (Hope, Wilder, & Watt, 2003). These findings suggest that adolescent mothers may decrease their externalizing behaviors upon birth, reducing the likelihood of problem behaviors manifesting among their children. Further research is needed to investigate this trend among teens who become pregnant.

Our findings have important implications, particularly for children who are at-risk for maladjustment. First, the effects of childhood exposure to violence on adolescent conduct problems while controlling for early maternal and childhood externalizing problems suggests there is an environmental impact on the development of behavioral
maladjustment of at-risk adolescents above and beyond early markers of maladjustment. These findings provide evidence of cumulative risk and underscore the importance of youth violence prevention and intervention program development and implementation. Specifically, prevention programs should target children and their families who are at-risk for being exposed to violence (e.g. those living in dangerous communities), regardless of whether they are displaying early behavioral maladjustment in order to protect them from developing conduct problems during adolescence. Our research also suggests that programs should incorporate skill-training to increase children’s social competence, especially if they are at-risk for being victimized by violence.

Future research should investigate children’s exposure to violence and conduct problems longitudinally using prospective measures beginning in early childhood and extending into early adulthood, yielding trajectories of how these factors unfold over time. Furthermore, transactional effects over time should be investigated. For example, how does violence exposure at age 3 affect children’s negative behavior at age 4, and in turn, how do these behavioral problems influence exposure at age 5? In addition to exploring cross-lagged models, future research should investigate the potential for a differential impact of exposure to violence on the development of conduct problems, depending upon the patterns of offending displayed by adolescents (e.g. chronic versus adolescent limited). Relatedly, patterns of violence exposure trajectories over time should be investigated, yielding qualitatively distinct subgroups of children. For example, there may be a group of children who have consistently low violence exposure over time, a group who has consistently high exposure, and a group that has steadily increasing or
decreasing rates of exposure. Furthermore, the effects of socioemotional factors as predictors and outcomes of potential exposure-group status should be explored among children who have differing family and neighborhood contexts that might magnify or mitigate the cumulative effects of exposure to violence. By gaining a greater understanding of how levels of violence exposure and the development of conduct problems unfold over time as well as how these factors are ameliorated or exacerbated, more effective, individualized, and well-timed youth violence prevention programs can be developed and implemented.
REFERENCES


