Childhood Predictors of Teen Dating Violence Victimization

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Abstract

Most research on predictors of teen dating violence (TDV) has used cross-sectional data, which weakens predictive modeling and hypothesis testing analyses. This study uses prospective and retrospective longitudinal data on a community sample to examine previously identified predictors of TDV victimization and pathways from childhood risk and protection to TDV victimization. Data are from 941 participants in the Raising Healthy Children project. Bivariate analyses found associations in the expected direction between potential predictors and TDV victimization. For girls, a multivariate path model indicated that higher levels of bonding to parents and social skills protected against TDV victimizations, partly by reducing early adolescent alcohol use. While externalizing and internalizing behaviors in early adolescence were predicted by childhood risk and protective factors for girls, neither uniquely predicted TDV victimization. For boys, there was an indirect path from childhood bonding to parents to TDV victimization through early adolescent externalizing behavior.

Keywords

Teen Dating Violence; Victimization; Substance Use

Teen dating violence (TDV) is a prevalent form of youth violence that has gained increasing attention from researchers (Foshee, 1996; Foshee, Bauman, Linder, Rice, & Wilcher, 2007; Hickman, Jaycox, & Aronoff, 2004; D. E. Howard & Wang, 2003a, 2003b; Jaycox et al., 2006; O'Keefe, 1997; Wekerle & Wolfe, 1999). In 2005, the Youth Risk Behavior Surveillance System found that 9% of male and female high school students reported having been the victims of dating violence in the prior 12 months (Eaton et al., 2006). Silverman's (2001) study of a representative sample of 9th- and 12th-grade female students in Massachusetts found 1 in 5 respondents were victims of physical or sexual abuse in dating relationships. Studies that examine victimization by gender have shown higher rates for girls (57%) compared to boys (38%), and possibly higher rates in urban than in rural areas (Hickman, Jaycox, & Aronoff, 2004).

Research suggests that the consequences of being a victim of teen dating violence can be severe, with some acts leading to physical injuries (Foshee, Bauman, Linder, Rice, & Wilcher, 2007; Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004). Being the victim of teen dating violence can increase the risk of later substance use and mental health problems, as well as ongoing difficulties with intimate relationships (Foshee, Bauman, Linder, Rice, & Wilcher, 2007; Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004). For example, Silverman's (2001) study of female public high school students in Massachusetts found an elevated risk of substance use problems, unhealthy weight control,

sexual risk behaviors, teen pregnancy, and suicidality associated with lifetime reports of dating violence.

Studies that have attempted to identify risk factors for TDV victimization have mainly used cross-sectional data reports of childhood risks (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004; Hickman, Jaycox, & Aronoff, 2004; David A. Wolfe, Scott, Wekerle, & Pittman, 2001). These studies have documented risk factors that include poverty, child maltreatment, and childhood exposure to parental intimate partner violence (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004; Gonzalez, 2007; D. Howard, Qiu, & Boekeloo, 2003; D. E. Howard & Wang, 2003a, 2003b; D. E. Howard, Wang, & Yan, 2007; Kotch, Browne, Dufort, Winsor, & Catellier, 1999; Lee & Goerge, 1999; David A. Wolfe, Scott, Wekerle, & Pittman, 2001; Yates, Carlson, & Egeland, 2008).

Research suggests that both exposure to parental intimate partner violence and child maltreatment disrupt cognitive and social development and lead to an array of adverse outcomes including violence victimization (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004; Katz & Windecker-Nelson, 2006; Magdol, Moffitt, Caspi, & Silva, 1998) For instance, Foshee and colleagues (2004) found that having been hit by an adult increased, for boys and girls, the risk of later becoming the victim of serious physical dating violence. Experiencing poverty in childhood, which is positively associated with family violence, is similarly correlated with later victimization. These risk factors are also predictive of other adolescent problems, such as internalizing and externalizing behaviors and substance use and substance use disorders (Fagan, 2005; Herrenkohl & Herrenkohl, 2007; Herrenkohl, Hill, Hawkins, Chung, & Nagin, 2006; Herrenkohl et al., 2004; Katz & Windecker-Nelson, 2006; Maas, Herrenkohl, & Sousa, 2008; Magdol, Moffitt, Caspi, & Silva, 1998; Widom & White, 1997; D. A. Wolfe, 1999; D. A. Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003; David A. Wolfe, Scott, Wekerle, & Pittman, 2001), which are themselves positively correlated with TDV victimization (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004; David A. Wolfe, Scott, Wekerle, & Pittman, 2001). However, research is needed to establish whether paths from early risk to dating violence victimization are direct or indirect, through these other problem behaviors.

In addition to understanding how TDV victimization emerges from earlier risk factors, it is important to establish how later violence victimization can be avoided. To do so requires an investigation of protective factors; factors that reduce the likelihood of outcomes like TDV. Research suggests that positive social skills and bonds of attachment to prosocial others are protective against violence and other antisocial behaviors (e.g., Catalano & Hawkins, 1996; Little, 2007; Watts-English, 2005). The ability to get along with peers and adults (e.g., skilled conflict negotiation and emotion regulation) also has been found to protect against intimate partner violence exposure during adulthood (Moffitt, Robins, & Caspi, 2001; Widom & White, 1997). Strong social skills also increase the degree to which children can form and maintain lasting relationships with peers, adults, and intimate partners. Less is known, however, about the association between social skills and later violence victimization. Although some studies have demonstrated links between early temperament and conduct disorder problems and later interpersonal violence (IPV) (Capaldi & Clark, 1998; Magdol, Moffitt, Caspi, & Silva, 1998), prior studies have not directly tested positive social skills as a protective factor.

Prosocial bonds influence the degree to which individuals will engage in antisocial behavior by influencing youth to adopt the beliefs held by those to whom they are bonded (Catalano & Hawkins, 1996). Analyses of data from the Dunedin Multidisciplinary Health and Development Study found that parent-child attachment at age 15 was negatively associated with victimization from intimate partner violence among males and females at age 21

(Magdol, Moffitt, Caspi, & Silva, 1998). Positive bonding to parents during childhood may have a similar effect on reducing the risk of later violence victimization, although few empirical studies have investigated the issue (Hickman, Jaycox, & Aronoff, 2004; Williams, Rivera, Neighbours, & Reznik, 2007).

Although research documents a range of risk factors and concurrent problems related to TDV victimization, few studies have examined the temporal sequencing among these concepts with the goal of identifying predictive pathways from childhood to later victimization. For example, research has not yet considered whether internalizing and externalizing behaviors that are predicted by early risk exposure are precursors to dating violence victimization in late adolescence or simply concurrent outcomes predicted from the same earlier precursors. Also, we need to understand whether early protection, in the form of positive social skills and attachment to parents, may reduce TDV victimization by reducing involvement in early adolescent problem behaviors or mediating other earlier risk factors for TDV. Evidence suggests that there are strong concurrent associations between TDV victimization and internalizing and externalizing behaviors, as well as substance abuse (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004; Hickman, Jaycox, & Aronoff, 2004), but more detailed accounting of temporal relationships is needed. Generally, there are few longitudinal studies that examine the link between both childhood risk exposure and childhood protective factors and pathways leading to later problems and TDV victimization.

In the current study, we examine potential pathways through which childhood risk and protective factors lead to TDV victimization, testing the conceptual model shown in Figure 1. With respect to childhood risk factors, we address the question of whether childhood stressors in the form of poverty and earlier forms of victimization (e.g., child maltreatment and exposure to violence between parents) predict later teen dating violence victimization, and whether this relationship is mediated by externalizing and internalizing behavior in early adolescence. These developmental pathways are consistent with those hypothesized in other longitudinal studies of intimate partner violence during adulthood, a later manifestation of TDV (Fagan, 2005;Herrenkohl et al., 2004;Magdol, Moffitt, Caspi, & Silva, 1998;Moffitt, Robins, & Caspi, 2001). For externalizing behavioral problems, the underlying assumption is that exposure to childhood violence and other stressors teaches children to control their environment through externalizing violent behavior and that this violent behavior then extends into romantic relationships (i.e., learned aggression). An alternative response to early stressors may be the development of internalizing problems. We examine a hypothesis of "learned helplessness" in which children who are maltreated lose the ability to withdraw from or protect themselves from violence perpetrated by others (Bargai, Ben-Shakhar, & Shalev, 2007). This makes them vulnerable over the life course to dysfunctional, violent relationships. A third response to early stressors that may lead to TDV victimization is early substance use, particularly alcohol use, which may impair relationships with peers and intimate partners and has been identified as a possible risk for TDV (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004). Finally, in addition to assessing these three paths from childhood risk through adolescent problems to TDV victimization, we examine whether positive social skills and bonding to parents, as concurrent childhood protective factors, reduce the zero-order relationship between early adolescent risks (internalizing problems, externalizing problems, and early alcohol use) as well as TDV victimization.

Some prior studies have found differences in rates and etiology of relationship violence by gender. The findings reported by Hickman and colleagues (2004) indicate that TDV victimization is more common for girls. Foshee and colleagues (2004) found that TDV victimization is more closely associated with externalizing behavior problems for boys and internalizing behavior problems for girls. In light of these findings, we test for gender differences in the level or presence of risk and protective factors and TDV victimization as

well as whether the relationships between risk and protective factors and TDV victimization differ by gender.

Our study is guided by two sets of hypotheses. First, we expect to see overall positive association between childhood exposure to hypothesized risk factors and TDV victimization and overall negative associations between protective factors and TDV victimization. Second, we expect to see these associations mediated by involvement in early adolescent problem behaviors, as specified in the conceptual model shown in Figure 1. In the course of testing these two sets of hypotheses, we examine whether overall and unique associations between potential predictors and TDV victimization differ by gender.

Method

Sample

Data used in these analyses were from the Raising Healthy Children (RHC) project, a longitudinal study of students drawn from 10 public schools in a suburban Pacific Northwest school district. RHC is a study of the etiology of problem behaviors (e.g., drug use, delinquency, and general violence perpetration) with a randomized test of a multicomponent preventive intervention nested within it. The intervention was delivered at five of the project elementary schools and consisted of instructional staff development for teachers, parenting workshops, summer camps and study clubs for students, and home-based case management services for high-risk students who exhibited academic or behavioral problems. Additional details regarding the RHC intervention have been reported by Haggerty et al. (1998; , 2006), Catalano et al. (2003), and Brown et al. (2005).[1]

Active consent was obtained from 76% of eligible families with students in first and second grades. Nine hundred and thirty-eight students were enrolled in the project in the fall of 1993. An additional 102 students, who were from the same grade levels and had transferred to the study schools, were enrolled in the fall of the subsequent year. Data were collected annually in the spring, up until the participants completed high school. To be included in analysis, subjects had to complete at least one of the annual surveys between 11th and 12th grades, when the TDV victimization was measured. This reduced the sample to 941 participants, 503 males and 438 females. The ethnic composition of the analysis sample is 83% White, 6% Asian or Pacific Islander, 4% Hispanic, 4% Black, and 3% Native American. Thirty (30%) of the sample were low income at the beginning of the RHC project as indicated by receipt of free or reduced price school lunch in either of the first 2 years of the project. The 99 students from the original RHC sample who were dropped from the current study due to not having data on TDV victimization were not significantly ($p < .05$) different from the analysis sample with respect to gender, ethnicity, or low-income status at the start of the project (55% of the excluded students were female, 86% were White, 26% received free/reduced price school lunch at the start of the project).

Data Collection

Prior to baseline data collection, parents provided written consent for their child's participation, and students assented to annual data collection. After age 18, children

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[1]The intervention that was tested as part of the RHC project attempted to reduce risk and enhance protection during childhood and adolescence and thereby reduce problem behavior. There was therefore some concern that the intervention may have affected the relationships among variables examined in the current study. Before pooling participants in the intervention and control conditions in the same analyses, we tested for invariance across experimental condition in the covariance matrices for all measured variables. We found little difference in fit ($\Delta\chi^2(25)_{\text{difftest}} = 28.27$, $p = .30$) between a model in which all covariances were constrained to equality across condition and a model in which these constraints were relaxed. On the basis of this finding, we concluded that relationships among study variables were similar across conditions and participants from the both conditions were included in the analyses.

provided written consent prior to data collection. Survey data were collected for all students enrolled in the project, even if they had left the schools from which the sample was recruited. Student interviews were conducted primarily in person (in a group or one-on-one format). Teacher surveys were done by mail and parents were generally interviewed over the telephone. For completing surveys, children received token gifts, gift cards, or money (ranging from $10 to $15 for the high school surveys and $50 for spring surveys administered after age 18).

Missing Data

Missing data for most measured variables was minimal (< 5%), with the exceptions of the parent IPV measure, which was missing for 26% of the participants due to some participants living in single-parent families, and the retrospective measures of child maltreatment which were missing for 11% of participants due to these participants not completing the age 20/21 survey. Descriptive analyses and comparisons of males and females on measured variables were based on cases with non-missing data on the given variable. Confirmatory factor analysis and path models included participants with partial data, using full information maximum likelihood (FIML) estimation (Muthén & Muthén, 1998-2004). The FIML approach provides more power and less bias than listwise deletion of missing data (Schafer & Graham, 2002). It should be noted, however, that estimates of relationships between parent IPV and other model variables are based primarily on information from participants with two parents and the generalizability of these estimates are limited by this fact.

Measures

Teen dating violence (TDV) victimization—Teen dating violence victimization was based on student responses from Grades 11 and 12, when participants ranged in age from 16 to 18 years, to the question: "In the past year, has a boyfriend, girlfriend, or someone you were going out with ever hit, slapped, or physically hurt you on purpose?" Since only a small percentage (< 2%) of the sample reported victimization at both time points, we created a dichotomous measure of TDV victimization, based on whether participants responded "yes" at either of the two time points. While this measure of TDV victimization is limited in that it does not capture frequency, duration, or severity, or the context in which the victimization occurred, the question does capture the primary features of TDV victimization (Grunbaum et al., 2002).

Childhood variables—Childhood risk factors were measured with prospective data, with the exception of measures of child maltreatment, which are based on retrospective questions asked when participants were age 20 or 21. Prospective measures included a parent-reported measure of *parental IPV* based on the average of six items from the Conflicts Tactics Scale (e.g., "In the past year how often have you hit your partner/ how often has your partner hit you?" and "In the past year how often have you threatened your partner/ how often has your partner threatened you?") across 5 years when participants were in Grades 2 through 6 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Each of the items in the scale had five response options ranging from "Never" to "11+ times." The Cronbach's α for the parental IPV scale ranged from .62 - .69 across study years. *Poverty* is based on the proportion of time points between Grades 4 through 6 at which parents reported that their child received free or reduced priced school lunch. The poverty measure is based on the same survey item at each time point.

The retrospective child maltreatment measures were based on questions from the Childhood Trauma Questionnaire (CTQ, Bernstein et al., 2003), with items specific to *emotional*, *physical*, and *sexual abuse*. Although retrospective measures of abuse are subject to some bias (Hardt & Rutter, 2004; Shorey, Cornelius, & Bell, 2008; Tajima, Herrenkohl, Huang, &

Whitney, 2004), they provided the best opportunity to collect information on emotionally sensitive phenomena due to the difficulty in obtaining it prospectively from either children or their parents (Ruspini, 2008, pp. 450-451). Five response options for each of these items ranged from "Never true" to "Always true." Emotional abuse items (α = .83) include: "I believe I was emotionally abused," "I felt that someone in my family hated me," and "People in my family said hurtful or insulting things to me, called me 'stupid,' 'lazy,' or 'ugly.' " Physical abuse items included: "I believe I was physically abused as a child," "People in my family hit me so hard that it left me with bruises or marks," and "I was punished with a belt, a board, a cord, or some other hard object." Child sexual abuse items included: "I believe I was sexually abused as a child" and "Someone tried to make me do sexual things or to watch sexual things." We created dichotomous measures of each type of abuse that, while not necessarily equivalent to legal definitions of abuse, provided indicators of maltreatment of similar severity across the different types of abuse. The CTQ in this form has been found to be sufficiently reliable in determining childhood trauma exposure in young adult populations (Paivio & Cramer, 2004), as well as in studies that identify intimate partner violence as the dependent variable, using CTQ questions as a predictor variable (Seedat, Stein, & Forde, 2005). Sexual abuse and physical abuse were dichotomized based on any report of abuse, resulting in prevalence rates of 11% and 24%, respectively. For emotional abuse, a cut point was used of one standard deviation above the sample mean on the scaled score derived from the average frequency across the five emotional abuse items. This resulted in a prevalence rate of 12%. Each type of abuse was counted only if the participants reported that the given type of abuse began before age 13.[2] The three forms of child abuse were modeled as indicators of a general construct of child maltreatment (Higgins, 2004).

Prospective measures of childhood protective factors were based on scale scores averaged during elementary school years. Three to five response options were available for items in these scales (e.g., range from "never" to "always" or from "Yes!" to "No!"). Child-reported *bonding to parents* was the mean of the scaled scores from Grades 4 through 6 that included six items reported for either or both parents by the child: "I feel close to my mother and/or father," "I want to be like my mother and/or father," and "I share my thoughts and feelings with my mother and/or father" (range of α across years = .67 - .76) (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002). Teacher-reported *social skills* were based on a seven-item scale scored from Grades 2 through 6 and included questions like "the student accepts responsibility for actions," "the student is very good at understanding other people's feelings," and "the student resolves problems on his/her own" (α = .92 - .93) (Walker & Rankin, 1983; Werthamer-Larsson, Kellam, & Ovesen-McGregor, 1990).

Early adolescent mediating variables—Early teen *externalizing* and *internalizing* behavior measures were based on student-report data, using the average scaled scores from Grades 7 and 8. Externalizing behaviors were based on three questions with four response options ("Never" to "5 or more times") that asked how often the youth (1) started fights, (2) hit someone with the idea of hurting them, or (3) threw stones at people or cars (α = .65 & .73) (Elliott & Huizinga, 1987). Thirty-five percent of participants answered "never" to all three items at both time points. This variable was standardized and log transformed, reducing kurtosis to 0.52. Internalizing behaviors were measured using six questions with four response options ("Yes!", "yes", "no", "No!") that measured depressive symptoms such as "trouble sleeping," "crying," "wanting to be alone," and "feeling upset" (α = .75 & .77) (Kusché, Greenberg, & Beilke, 1988). These measures do not cover the full range of externalizing behaviors and internalizing behaviors, but scales do entail the core concepts of

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[2]NOTE: This cutoff age is different from the CTQ cutoff age, which includes events up to age 10.

each construct. For instance, the externalizing behavior measure encompasses aggressiveness and rule breaking (Brunnekreef et al., 2007). The internalizing behavior measure included survey items that measure core internalizing concepts like anxiety, depression, and somatic concerns (Brunnekreef et al., 2007). Early teen *alcohol consumption* was based on self-report data from seventh and eighth grade on the "number of times that you have drunk more than a few sips of alcohol in the past 12 months." A seven-category response option ranged from 1 = "Never" to 7 = "40+ times." Answers were averaged across the two time points (r = .40, p <0.001). Seventy-two percent of the sample reported no alcohol use at either time point. This variable was also standardized and log transformed, reducing kurtosis to 4.55.

Analysis Plan

After examining means and prevalence rates for measured variables by gender (see Table 1), a confirmatory factor analyses (CFA) was estimated to evaluate the fit of a measurement model for child maltreatment and the overall correlations among model constructs. In order to examine whether overall associations among constructs differed by gender, multiple-group CFA models were estimated, comparing the fit of a model in which all covariances were constrained to be equal across gender groups to a model in which these constraints were released.

We then estimated a structural model based on the conceptual model shown in Figure 1. A saturated model was specified that included direct paths from childhood variables to TDV victimization, testing whether there were associations not accounted for by the hypothesized indirect paths through patterns of early adolescent behaviors. Invariance in the structural model was assessed across gender by comparing fit of constrained and unconstrained multiple-group models. Tests of the statistical significance of indirect effects were based on the joint significance test, that is, whether paths from both exogenous to mediator variables and from mediator variables to TDV victimization were significant at the $p < .05$ level (MacKinnon, Warsi, & Dwyer, 1995).

Child maltreatment was treated as a latent variable, based on dichotomous indicators for each type of abuse. TDV victimization was also modeled as a categorical, dichotomous variable, while externalizing and internalizing behaviors and alcohol use were treated as continuous and normally distributed. Models were run with MPlus 5.1 using the Weighted Least Squares Means-Variance (WLSMV) estimator (Kline, 2005; Muthén & Muthén, 1998-2004). Tests of invariance for the multiple-group models were based on the derivatives difference test (Muthén & Muthén, 1998-2004).

Results

Prevalence Rates and Means on Measured Variables by Gender

Table 1 provides the descriptive information for measured variables. We found that 12% of the sample reported TDV victimization, which falls within the range reported by Hickman and colleagues (2004). A higher proportion of girls reported victimization than boys, and this difference was statistically significant ($\chi^2 = 3.98$, p = .046). Retrospective self-report of child abuse indicated that a quarter of the sample experienced physical abuse and 10% experienced some type of sexual abuse. There were significant differences by gender on some measured variables. One notable difference was the lower frequency of boys reporting emotional or sexual abuse. Also, boys were rated as having lower social skills and they reported more externalizing and early drinking behaviors during early adolescence.

Overall Correlations

Results of tests of invariance across gender in the CFA model indicated a significant difference in fit between a model in which covariances were constrained to equality across gender and a model without these constraints ($\Delta\chi2$ (25) = 60.74 (p = 0.0001). Comparison of model fit of the unconstrained model with models in which particular covariances were constrained to equality across gender indicated that there were significant gender differences in covariances between child-parent bonding and both internalizing behavioral problems ($\Delta \chi2$ (1) = 5.92, p = 0.02) and early adolescent alcohol consumption ($\Delta \chi2$ (1) = 10.63, p = 0.001). The negative associations between bonding and both internalizing behavioral problems and early drinking were stronger for girls. There were also significant differences by gender in covariances between early alcohol use and both externalizing ($\Delta \chi2$ (1) = 11.65, p = 0.0006) and internalizing behavior ($\Delta \chi2$ (1) = 7.31, p = 0.0068), with these associations again being stronger for girls than boys.

The overall correlations among constructs for males and females from the unconstrained CFA models are shown in Table 2. This model met criteria for good model fit ($\chi2$ (25) = 26.78 (p'\= 0.37); CFI = 1.00; TLI = .99; RMSEA = 0.01) (Hu & Bentler, 1995). The model fit indicates that variance in the three abuse indicators was adequately captured by the latent variable model and that there were not strong unique correlations between any one type of abuse and other model variables that were not captured by correlations with the latent variable. For females, all the childhood variables, except poverty, were significantly associated in the expected direction with TDV victimization. For boys, childhood poverty was significantly and positively correlated with later victimization; also, bonding to parents, social skills, and child maltreatment had significant overall correlations with TDV victimization, but exposure to parent IPV did not.

There were also significant correlations in the expected direction between childhood variables and early adolescent problem behaviors for both girls and boys. For girls, social skills and child-parent bonding were negatively correlated with each type of early adolescent problem behavior, while parental IPV was significantly and positively correlated with internalizing and externalizing behaviors and both poverty and child maltreatment were significantly and positively correlated with internalizing problems. For boys, none of the childhood variables were significantly correlated with early teen alcohol use, but social skills and bonding to parent was significantly and negatively correlated with both internalizing and externalizing problems, and poverty, parental IPV and child maltreatment were positively correlated with internalizing problems.

Path Models

Multiple-group structural models also showed a significant difference between the constrained and unconstrained models, indicating overall differences by gender in the pathways from childhood variables to TDV victimization ($\Delta \chi2$ (26) = 55.415, p <0.001). However, the only specific longitudinal path showing a significant gender difference was from parent-child bonding to alcohol use, where the model fit in which the path was constrained to equality across gender fit worse than a model in which this constraint was released ($\Delta \chi2$ (1) = 5.59, p = 0.018). The path was stronger for females than males, even though statistically significant for both groups. Tests of constraints on specific paths also showed significant differences in some covariances in the structural model that mirrored differences found in the CFA model. For instance, the covariances between residuals for alcohol and both internalizing and externalizing behaviors where stronger for girls than boys ($\Delta \chi2$ (1) = 3.86, p = 0.04 and $\Delta \chi2$ (1) = 22.34, p = 0.001, respectively, for the tests of differences in these covariances).

The statistically significant paths from the unconstrained structural model are shown in Figure 2 for females and Figure 3 for males. (See Appendix 1 for the estimates of all estimated paths for both females and males). Since a fully saturated model was estimated, the fit was equivalent to that of the unconstrained CFA model and again indicated the adequacy of the latent variable model of child maltreatment. The model explained 20% of the variance in TDV victimization for females and 16% for males.

For both males and females, lower levels of parent-child bonding predicted more externalizing behaviors. Early teen externalizing behaviors uniquely increased the risk for TDV victimization for boys, but not for girls. Bonding to parents was also negatively associated with internalizing behavioral problems for both boys and girls, yet internalizing behaviors had no unique association with TDV victimization for either gender. For females, there was evidence of indirect protective effects of social skills and bonding to parents on TDV victimization through early alcohol consumption, which uniquely predicted heightened risk of TDV victimization. For girls there was also evidence that, even after accounting for this pathway, higher bonding to parents uniquely predicted lower risk of TDV victimization. Although the model estimates indicated that child maltreatment was uniquely associated with early teen internalizing behaviors for girls and parent-reported IPV was uniquely associated with early teen internalizing behaviors for boys, the results did not point to clear pathways from family violence risk factors to TDV victimization since internalizing behaviors were not uniquely associated with later victimization for either gender.

Discussion

The results of this study provide information on predictors of TDV victimization and pathways from childhood risk and protection to TDV victimization. Childhood predictors that were identified in the literature and analyzed in this paper include risk factors (child maltreatment, poverty, and parental IPV) and protective factors (social skills and child-parent bonding). With regard to our first set of guiding hypotheses, most of the hypothesized overall associations between childhood risk and protective factors and TDV victimization were found, with the notable exceptions that, for females, poverty did not significantly correlate with TDV victimization while, for males, parent-reported IPV did not significantly correlate with TDV victimization. Internalizing and externalizing behavioral problems and alcohol consumption were also tested as predictors of TDV victimization, as well as mediators of the relationship between childhood risk and protective factors and TDV victimization. For girls, each of these variables had overall positive associations with TDV victimization; for boys, only externalizing behaviors had an overall positive association with TDV victimization.

With regard to our second set of hypotheses regarding possible paths to TDV victimization, we found that indirect paths went through externalizing behaviors for boys and through early teen alcohol use for girls. For neither boys nor girls did we find evidence of internalizing behavior uniquely predicting TDV victimization after accounting for other predictors.

Our results indicate that family violence, both in the form of domestic violence between parents and child maltreatment, had predictive overall correlations with TDV victimization for females. For males, only child maltreatment had an overall predictive correlation with TDV victimization. While these results corroborate findings from prior studies that have found that exposure to family violence and maltreatment are signals of risk for later victimizations, results from the multivariate path model gave little clear evidence for either the "learned aggressiveness" or "learned helplessness" perspectives, since indirect paths from family violence and childhood poverty to TDV victimization were not found for either gender.

The lack of indirect paths from child maltreatment to TDV victimization through early adolescent problems was surprising. In the CFA, child maltreatment was significantly correlated with internalizing problems for both males and females, and internalizing behaviors was significantly correlated with female reports of IPV victimization. Yet internalizing problems did not have a unique association with later TDV victimization in the multivariate path model for either gender. Parent-reported IPV was likewise a significant predictor of externalizing behavioral problems for girls and internalizing / behavioral problems for boys, but did not uniquely predict TDV victimization in the path model. This points to the importance and deleterious consequences of exposure to family violence during childhood, but suggests that it may not be a strong and salient predictor of dating violence victimization during adolescence. Studies looking at the distal effect of child maltreatment on later violence perpetration have found that child maltreatment has a direct effect on adolescent and adult general violence perpetration; our findings, however, indicate that this effect may not be as clear in explaining TDV victimization (Fagan, 2005; Maas, Herrenkohl, & Sousa, 2008). It may be that our analytic models failed to illuminate the intertwined nature of childhood risk and protective factors. For instance, exposure to parent IPV or child maltreatment clearly contribute to deficits in attachment to parents and in the development of social skills, both of which were found to be salient predictors of early adolescent problem behaviors, and, directly or indirectly, of TDV victimization. This finding suggests that the relationship between exposure to family violence and TDV became insignificant (parental IPV and maltreatment for girls and maltreatment for boys) when these protective variables were entered into the equation (e.g., bonding to parents and prosocial skills).

For both males and females, support was found for bonding to parents being protective against TDV victimization, and for girls, higher social skills have a unique protective association with later problem behaviors. This provides some support for social development hypotheses (Catalano & Hawkins, 1996) that positive social skills development and prosocial bonding processes can have long-term effects of reducing involvement in unhealthy behaviors. Our results on bonding corroborate findings of other studies that document child-parent bonding as an important protective factor related to general violent behavior among adolescents (Herrenkohl, Hill, Hawkins, Chung, & Nagin, 2006), as well as externalizing behavioral problems predicting intimate partner violence victimization during emerging adulthood (Magdol, Moffitt, Caspi, & Silva, 1998). That bonding to parents negatively predicted TDV victimization points to the fact that positive relationships with parents during childhood signal the prospect of more healthy intimate relationships during adolescence. The finding that females with better social skills are at lower risk of alcohol use is consistent with etiological research showing that these skills reduce alcohol use in other research samples (Guo, Hawkins, Hill, & Abbott, 2001; Lonczak et al., 2001) and research from experimental trials to increase social and cognitive skills that show reduced alcohol use (Botvin, Griffin, Paul, & Macaulay, 2003; Griffin, Botvin, Scheier, Doyle, & Williams, 2003)). Overall, this indicates that parents can have an important long-term impact on adolescent behavior, while also pointing to areas in which interventions can be developed to increase child social skill development among girls.

The finding that for boys externalizing behavioral problems was the only overall and salient predictor of TDV victimization among the early adolescent variables likely reflects the fact that dating violence is often reciprocal (Ehrensaft, 2008; Foran & O'Leary, 2008; Herrera, Wiersma, & Cleveland, 2008; Kaura & Lohman, 2007; Keenan-Miller, Hammen, & Brennan, 2007). Boys who are aggressive are more likely to become involved in high-conflict relationships with intimate partners and therefore experience more violence in these relationships, both as a perpetrator and a victim. These findings are important for practitioners. Early adolescents who exhibit externalizing aggressive behaviors in peer or school contexts are at a higher risk for interpersonal conflict in intimate relationships. For

girls, all three early adolescent variables were positively intercorrelated and signaled risk for TDV victimization, with early alcohol use being the strongest indicator of risk. This suggests that early substance use is a particularly strong sign of risk for becoming involved in high-conflict relationships for girls. Further research is required to understand how early alcohol use puts adolescent females at risk for TDV victimization. Currently there is some evidence indicating that early substance use and association with antisocial peers are intertwined, which increases the likelihood of violence exposure, hence an increased likelihood of teen dating violence victimization (Arriaga & Foshee, 2004; Herrenkohl et al., 2001; Little, 2007).

Conclusion

This study is among the first to utilize path modeling of longitudinal data to understand the relationships among identified predictors of TDV victimization. We found that the effects of protective factors are mediated through externalizing behaviors for boys and through alcohol use for girls. Modeling of direct and indirect paths provides important guidance for both universal and selective prevention programming for later TDV victimization. Universal interventions that increase child-parent bonding and seek to improve children's social skills may help children avoid externalizing and internalizing behaviors, reduce alcohol consumption, and protect them from exposure to violence in general, and dating violence in particular (Foshee, Ennett, Bauman, Benefield, & Suchindran, 2005). Selective interventions for early adolescent boys with externalizing behavior problems, and for early adolescent girls who use alcohol, may also reduce the rate of later TDV (Foshee et al., 2005). By addressing these issues early on, practitioners may be able to reduce the exposure to intimate partner violence during adolescence, which may affect lifetime exposure to intimate partner violence. Such a reduction in teen dating violence would benefit both boys and girls as they develop into adults, intimate partners, and parents.

There are several limitations to this study. While we employed a latent variable measurement of child maltreatment based on three types of abuse, which has been found to be a better predictor of later violence (Higgins, 2004), it may be that a prospective measure or one that better captured the continuum of abuse (for example, by measuring chronicity and severity) and specified which family member was the perpetrator would show stronger associations with later TDV victimization. We also relied on a single item to measure TDV victimization. A broader measure of dating relationship behaviors (which incorporate indicators of psychological abuse or sexual assault or measured severity and chronicity of TDV victimization) may have produced different results. Furthermore, we did not have measures to evaluate the participant's dating partner. Such additional information would have allowed us to address issues of selection biases that may influence the self-report of TDV victimization (Moffitt, Robins, & Caspi, 2001). Finally, our measure of poverty, based on access to free lunch, may be too broad, and therefore have reduced the effect of poverty on the model.

This study adds to the knowledge of TDV victimization by testing longitudinal patterns in data collected from multiple sources, and by incorporating hypotheses of developmental pathways through which childhood risk and protective factors may affect teen dating violence victimization. Results point to the importance of examining intervening factors, as well as the long-term benefits of bonding to parents and positive social skill development.

Acknowledgments

Appendix 1

Unconstrained Structural Model Path Estimates for Females And Males

Structural Path	Females Coeff. (SE)		Males Coeff. (SE)	
Child maltreatment →				
Externalizing behaviors	−.05	(.05)	.07	(.22)
Internalizing behaviors	.15[**]	(.05)	.26	(.18)
Alcohol consumption	−.06	(.04)	−.04	(.14)
TDV victimization	.08	(.14)	.68	(.64)
Poverty →				
Externalizing behaviors	−.01	(.08)	.01	(.13)
Internalizing behaviors	.17	(.09)	.01	(.07)
Alcohol consumption	−.003	(.06)	.06	(.08)
TDV victimization	−.19	(.27)	.14	(.25)
Parent intimate partner violence →				
Externalizing behaviors	.18[**]	(.07)	.03	(.08)
Internalizing behaviors	.06	(.08)	.12[*]	(.06)
Alcohol consumption	.06	(.06)	.04	(.06)
TDV victimization	.29	(.22)	−.002	(.25)
Child social skills→				
Externalizing behaviors	−.12[**]	(.05)	−.08	(.06)
Internalizing behaviors	−.002	(.05)	−.003	(.04)
Alcohol consumption	−.12[**]	(.04)	−.05	(.04)
TDV victimization	−.29	(.15)	−.10	(.17)
Child-parent bonding→				
Externalizing behaviors	−.32[**]	(.05)	−.16[*]	(.08)
Internalizing behaviors	−.31[**]	(.06)	−.19[**]	(.05)
Alcohol consumption	−.22[**]	(.04)	−.05	(.06)
TDV victimization	−.39[**]	(.14)	−.11	(.20)
Externalizing behaviors →				
TDV victimization	−.14	(.15)	.34[*]	(.14)
Internalizing behaviors →				
TDV victimization	.19	(.15)	.05	(.19)
Alcohol consumption →				
TDV victimization	.40[*]	(.16)	−.08	(.20)
Child maltreatment with				
Poverty	.04[**]	(.02)	.04	(.02)
Parent intimate partner violence	.10[**]	(.03)	.02	(.02)
Social skills	−.14[**]	(.03)	−.07	(.04)
Child–parent bonding	−.11[**]	(.03)	−.05	(.03)
Poverty with				

Structural Path	Females Coeff. (SE)		Males Coeff. (SE)	
Parent intimate partner violence	.02[*]	(.01)	.003	(.01)
Social skills	−.06[**]	(.01)	−.04[**]	(.01)
Poverty with				
Child–parent bonding	−.02[*]	(.01)	−.01	(.01)
Parent intimate partner violence with				
Social skills	−.03[*]	(.01)	−.02	(.01)
Child–parent bonding	−.04[**]	(.01)	−.01	(.01)
Social skills with				
Child-parent bonding	.05[**]	(.02)	.04[*]	(.01)
Externalizing behaviors with				
Internalizing behaviors	.08[**]	(.02)	.03[*]	(.01)
Alcohol consumption	.08[**]	(.01)	.17[**]	(.02)
Internalizing behaviors with				
Alcohol consumption	.04[**]	(.01)	.01	(.01)

Coeff. = unstandardized coefficient, SE = standard error

[*] $p < .05$;

[**] $p < .01$

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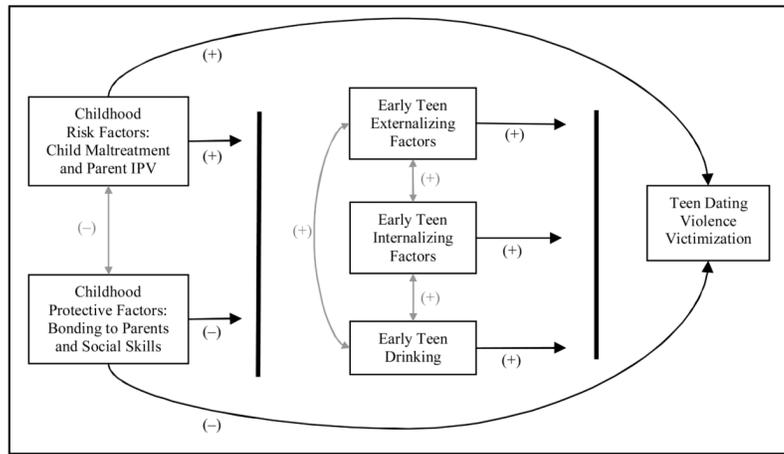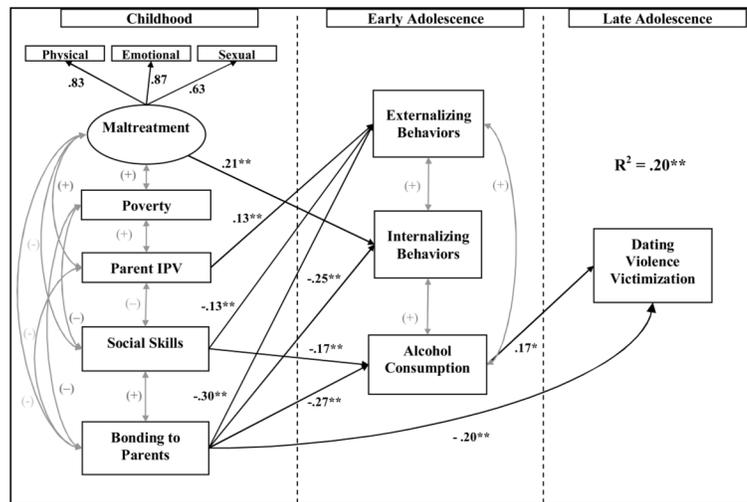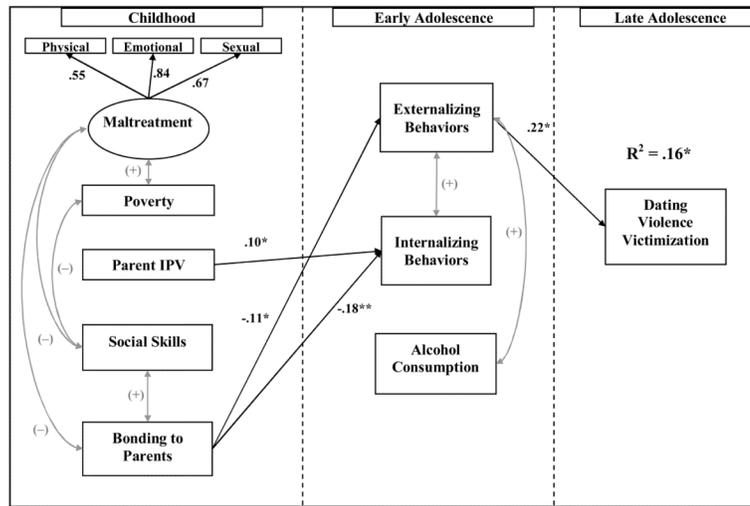
Figure 1.
Conceptual model of possible paths predicting teen dating violence victimization.

Figure 2.
Female group model predicting teen dating violence victimization.

Standardized coefficients are reported for significant pathways. Grey lines = significant co-variances. * p < 0.05; ** p < 0.01

Figure 3.
Male group model predicting teen dating violence victimization.

Table 1

Descriptive Statistics of Study Variables by Gender

	Females (n = 438) %		Males (n = 503) %	
Dichotomous				
Teen dating violence (TDV) victimization	14		10[*]	
Child emotional abuse	19		8[*]	
Child physical abuse	25		25	
Child sexual abuse	18		3[*]	
Poverty	20		21	
Continuous	Mean	Std Dev	Mean	Std Dev
Parent IPV	1.52	0.38	1.57	0.39
Parent-child bonding	3.25	0.50	3.27	0.46
Child social skills	3.55	0.56	3.29[*]	0.61
Early teen internalizing behaviors	2.10	0.61	1.98	0.49
Early teen externalizing behaviors	−.34	.53	−.08[*]	0.66
Early teen alcohol consumption	−.25	.41	−.19[*]	.49

[*] Statistically significant (p < 0.05) difference between males and females.

Table 2

Correlations Among Childhood Predictors, Early Adolescent Mediators, and Late Adolescent Outcomes (females above and males below the diagonal)

	1	2	3	4	5	6	7	8	9
1. Poverty	-----	.14*	-.10*	-.32***	.20**	.16***	.08	.06	.06
2. Parent IPV	.03	-----	-.20***	-.12*	.29***	.16**	.18***	.09	.20**
3. Child-parent bonding	-.06	-.04	-----	.17**	-.26***	-.32***	-.33***	-.28***	-.32***
4. Child social skills	-.19***	-.08	.13**	-----	-.28**	-.13**	-.17***	-.19***	-.24***
5. Child maltreatment (latent construct)	.38***	.11	-.30***	-.34***	-----	.30***	.08	.02	.22*
6. Early teen internalizing behaviors	.09*	.13**	-.24***	-.10*	.26**	-----	.37***	.26***	.24***
7. Early teen externalizing behaviors	.04	.03	-.13**	-.10*	.10	.15***	-----	.46***	.16*
8. Early teen alcohol consumption	.05	.04	-.05	-.07	.02	.08	.54***	-----	.25***
9. Teen dating violence victimization	.16*	.04	-.17*	-.18**	.32*	.14	.24**	.10	-----

*
p < 0.05;

**
p < 0.01;

***
p < 0.001