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Developmental Timing and Continuity of Exposure to Interparental Violence and Externalizing Behavior as Prospective Predictors of Dating Violence

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Abstract

This study investigated the prospective pathways of children's exposure to interparental violence (EIPV) in early and middle childhood and externalizing behavior in middle childhood and adolescence as developmental predictors of dating violence perpetration and victimization at ages 23 and 26 years. Participants ($N = 168$) were drawn from a longitudinal study of low-income families. Path analyses examined whether timing or continuity of EIPV predicted dating violence and whether timing or continuity of externalizing behavior mediated these pathways. Results indicated that EIPV in early childhood directly predicted perpetration and victimization at age 23. There were significant indirect effects from EIPV to dating violence through externalizing behavior in adolescence and life stress at age 23. Independent of EIPV, externalizing behavior in middle childhood also predicted dating violence through externalizing behavior in adolescence and life stress at age 23, but this pathway stemmed from maltreatment. These results highlight that the timing of EIPV and both the timing and continuity of externalizing behavior are critical risks for the intergenerational transmission of dating violence. Findings support a developmental perspective that negative early experiences and children's externalizing behavior are powerful influences for dating violence in early adulthood.

Keywords

Keywords: exposure to interparental violence; externalizing behavior; dating violence; prospective developmental pathways; life stress

Children's exposure to interparental violence (EIPV) is a harmful experience that increases the risk for maladaptive behaviors and relationships across development. Estimates indicate that over 10 million U.S. children are exposed to interparental violence each year, and 7 million are exposed to severe interparental violence (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006; Straus, 1991). Like maltreatment, EIPV represents a frightening experience outside the range of typical development (Cicchetti & Valentino, 2006; Margolin & Gordis, 2000; Maughan & Cicchetti, 2002) and threatens children's basic sense of safety as it indicates danger from their expected source of protection (Davies & Cummings, 1994; Margolin, 2005). Children with EIPV have been found to fare just as poorly as physically

abused children, and EIPV has recently been considered a form of emotional abuse (Holt, Buckley, & Whelan, 2008; Kitzmann, Gaylord, Holt, & Kenny, 2003).

The effects of EIPV can lead to behavioral dysregulation, such as an inability to manage conflict and increases in externalizing behavior (e.g., aggression, conduct problems) in childhood and adolescence (Bauer et al., 2006; Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006; Fite et al., 2008; Litrownik, Newton, Hunt, English, & Everson, 2003; Yates, Dodds, Egeland & Sroufe, 2003). Witnessing violence against one's mother in early childhood also is reportedly the greatest risk factor for violence in the next generation (APA, 1996). Studies have found that EIPV in childhood and adolescence predicts both dating violence victimization and perpetration (Ehrensaft et al., 2003; O'Keefe, 1998; Roberts, McLaughlin, Conron, & Koenen, 2011; Tschann et al., 2009), although many of these studies utilized concurrent or retrospective data (Stith, 2000). Elevated externalizing behavior also has been identified as an antecedent of dating violence (Magdol, Moffitt, Caspi, & Silva, 1998; Wekerle & Wolfe, 1999) in addition to being an outcome of EIPV. These findings suggest that externalizing behavior may be part of the mediating pathway between EIPV and dating violence.

Many investigators acknowledge that more research is needed to sharpen understanding of the prospective relations between EIPV, externalizing behavior, and dating violence, and the timing in development when they pose the greatest risks (Gewirtz & Edleson, 2007; Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008; Kitzmann et al., 2003). Research that prospectively identifies children with histories of EIPV who are at risk for later dating violence and also identifies the intervening influences in this pathway could optimally inform interventions to halt intergenerational cycles of family violence.

The purpose of the current study was to examine (a) the prospective effects of EIPV in early childhood and middle childhood on dating violence perpetration and victimization in early adulthood, (b) the role of externalizing behavior in childhood and adolescence as an intervening influence that reinforces the risks for dating violence, and (c) the effects of these developmental risk factors, versus concurrent life stress in early adulthood, on dating violence across five years. By examining EIPV, externalizing behavior, and dating violence at multiple periods in development, this study clarifies whether and how the timing and continuity of these risks influence dating violence over time.

Theoretical and Empirical Pathways of EIPV to Dating Violence

Theoretically from an organizational developmental perspective, experiences with parents play a critical role in shaping children's expectations of social partners and beliefs about how others will respond (Bowlby, 1969; Rutter & Sroufe, 2000; Sroufe, 1979). Early perturbations in the home environment, such as EIPV between caregivers, can teach children that violence is a tolerable strategy and an acceptable tactic to resolve conflicts (Davies & Cummings, 1994; Margolin, 2005; Osofsky, 2003; Widom, 1989). EIPV can also preclude parents, who may be violent or injured themselves, from teaching children appropriate conflict resolution strategies (Holt et al., 2008; Margolin & Gordis 2000; McIntosh, 2002).

The ways in which children witness and navigate early relationships serve as an anchor to shape and constrain future relationship experiences (Ainsworth, Bell & Stayton, 1999; Sroufe et al., 2005). Expectations and behaviors from childhood may be internalized and reactivated throughout development and across generations (Cappell & Heiner, 1990; Rutter & Sroufe, 2000). When resolving conflict and managing tension with a romantic partner, internalized templates of early social experiences are highly salient (Hazan & Shaver, 1987; Waters & Cummings, 2000). Theoretically, EIPV may have enduring effects on development by reactivating expectations of violence between loved ones.

Developmental sequelae of EIPV to dating violence

Empirically, the developmental legacy that individuals with histories of EIPV tend to have increased violence in romantic relationships has been documented. Retrospective studies have shown that adults who reported witnessing violence between parents in childhood also reported higher rates of both perpetration (Roberts et al., 2011) and victimization (Miller et al., 2011) with their romantic partners. Moreover, the likelihood of engaging in violence may begin early. Children with histories of EIPV or physical abuse were more likely to perpetrate aggression in relationships as early as adolescence (O'Keefe, 1998; Tschann et al., 2009; Wolfe, Scott, Wekerle, & Pittman, 2001).

Given that children with histories of EIPV also are likely to directly experience physical abuse (Holt et al., 2008; Wolfe, Wekerle, Reitzel-Jaffe, & LeFebvre, 1998), many studies have examined the predictive effects of EIPV for dating violence after accounting for child physical abuse, with mixed results. In a longitudinal study, after controlling for physical abuse, retrospective but validated reports of EIPV in childhood directly predicted adults' victimization by romantic partners (Ehrensaft et al., 2003). Prospectively, adolescents' severe exposure to interparental violence also predicted involvement in dating violence over and above the effects of physical abuse (Ireland & Smith, 2009). However, other studies that assessed EIPV retrospectively from adults' reports or examined EIPV only in males have not found significant effects of EIPV on dating violence after accounting for physical abuse or corporal punishment (e.g., Fergusson, Boden, & Horwood, 2006; Simons, Lin & Gordon, 1998). These discrepancies suggest that many factors influence the conclusions drawn about EIPV, such as whether retrospective or prospective reports of EIPV are gathered, the severity of EIPV is captured, and both males' and females' EIPV are measured. Prospective longitudinal research on EIPV that also assesses child maltreatment and examines EIPV during multiple developmental periods is needed to clarify the long-term effects of EIPV on dating violence.

Timing of EIPV in development

Empirically, EIPV has been reported to have different effects depending on children's age or developmental stage during exposure (Cunningham & Baker, 2004). A meta-analysis reported that preschool EIPV is a particularly salient predictor of children's social deficits (Kitzmann et al., 2003). Prospective studies found that timing of EIPV uniquely predicted timing of increased externalizing behavior, such that EIPV in early childhood (ages 0-64 months) predicted externalizing behavior in adolescence, but EIPV in middle childhood

(grades 1-3) predicted concurrent externalizing behavior (Yates et al., 2003). In another study, exposure to parental discord in both early and middle childhood predicted externalizing problems in adolescence (Fergusson Horwood, & Lynskey, 1992), suggesting that continuity of exposure may also be a significant risk factor for maladjustment.

Investigators have postulated that early childhood EIPV may be the most deleterious because there has been less time for competent development to provide a foundation for resilience (Cunningham & Baker, 2004; Margolin & Gordis, 2000). However, we are not aware of research that has prospectively compared the timing of EIPV at multiple developmental periods or the timing versus the continuity of EIPV across development on the risk for dating violence. In the current study, we extend past research that has examined these issues with externalizing behavior as an outcome (Fergusson et al., 1992; Yates et al., 2003) to determine whether EIPV during one or multiple developmental periods is most detrimental to the risk for dating violence.

Theoretical and Empirical Pathways of Externalizing Behavior

Theoretically, mastery of early childhood behavior, such as accomplishing self-control and suppressing impulsivity and aggression, are developmental milestones that children achieve with the help of parents (Masten, Burt, & Coatsworth, 2006; Sroufe, 1979). In contexts of EIPV when caregivers may be threatening and less accessible to scaffold children's self-regulation (Davies & Woitach, 2008), young children's immature reasoning skills may render them vulnerable to behavioral dysregulation (Cunningham & Baker, 2004; Davies & Cummings, 1994; Kitzmann et al., 2003) and lead to negative coping skills, such as externalizing problems, to manage feelings of fear or anger (Davies & Cummings, 1994). Although these behaviors might be adaptive in violent families, they are likely maladaptive in other social contexts (Margolin & Gordis, 2000; Wekerle & Wolfe, 1999).

Although young children generally cannot control their exposure to violence, exposed children are more likely to have elevations in externalizing behavior, affiliate with deviant peers, and continue to act aggressively (Holt et al., 2008; Margolin, 2005). These are all experiences that children can actively influence (Cicchetti & Valentino et al., 2006; Holt et al., 2008; Sroufe et al., 2005). Chronic externalizing behavior stemming from EIPV in childhood could theoretically shape a maladaptive developmental pathway to increased externalizing behavior in adolescence and affiliation with aggressive peers and romantic partners (Moffitt, 1993; Dishion & Patterson, 2006).

Developmental sequelae of EIPV to increased externalizing behavior

Many empirical studies have found that EIPV is a predictor of elevations in externalizing behavior (Bauer et al., 2006; Cummings et al., 2006; Herrera & McCloskey, 2001; Litrownik et al., 2003). For example, EIPV between ages 2-4 years predicted more than a three-fold increase of developing concurrent externalizing problems (Martinez-Torteya, Bogan, von Eye, & Levendosky, 2009). After controlling for parental alcoholism, divorce, socio-economic status, and child physical abuse, EIPV throughout childhood significantly predicted externalizing behavior and general distress into adulthood (Henning, Leitenberg, Coffey, Bennett, & Jankowski, 2007). EIPV also significantly predicted children's increased

externalizing behavior at age 9 years, above and beyond parents' own histories of externalizing behavior (Ehrensaft & Cohen, 2011). Furthermore, retrospective reports of EIPV in childhood were significant antecedents of clinical levels of externalizing behavior, such as conduct disorder and criminal offense, after controlling for the effects of physical abuse (Fergusson & Horwood, 1998).

Developmental sequelae of externalizing behavior to dating violence

In addition to the consistent findings that EIPV predicts increases in externalizing behavior, a history of externalizing behavior also is a prominent antecedent to violence in intimate relationships. Adolescents' externalizing behavior was a significant predictor of both victimization and perpetration (Fergusson, Boden, & Horwood, 2008; Magdol et al., 1998). A likely mechanism that facilitates the translation of externalizing behavior to dating violence involves choosing a romantic partner who also tolerates or engages in aggression (Quinton, Pickles, Maughan, & Rutter, 1993; Shortt et al., 2011). Adolescents with antisocial behaviors were more likely to choose a dating partner from the same pool of aggressive friends, reflective of “assortative mating” of externalizing behavior (Capaldi & Crosby, 1997; Vézina & Hébert, 2007; Wolfe et al., 1998). Such a mate from an aggressive group is also likely to have deficits in managing conflict and a history of unsupportive relationships (Capaldi & Crosby, 1997; Quinton, et al., 1993). Externalizing behavior and dating violence also have been found to exert reciprocal influences on each other over time (Roberts, Klein, & Fisher, 2003; Shortt et al., 2011).

Timing of externalizing behavior in development

The timing of emerging externalizing behavior has been reported to affect the risk for dating violence. Youth with chronic increases in externalizing behavior throughout childhood, and specifically those with early onset, maladaptive behavior, were more likely to engage in dating violence than youth with externalizing problems circumscribed to adolescence (Raudino, Woodward, Fergusson, & Horwood, 2011; Woodward, Fergusson, & Horwood, 2002). These findings align with Moffitt's (1993) seminal theory that childhood-onset rather than adolescent-onset externalizing problems predict more severe and chronic maladjustment in adulthood. However, these pathways have not been examined prospectively, within the backdrop of EIPV in early versus middle childhood, while also accounting for child maltreatment and the severity of EIPV witnessed at both stages. More research is needed to tie the pathways between EIPV, externalizing behavior, and dating violence together and to examine externalizing behavior as a mediator of EIPV and dating violence. To address these gaps, we examined whether externalizing behavior in middle childhood is a stronger mediator of EIPV and dating violence than externalizing behavior in adolescence, given the existing research that externalizing behavior in childhood may portend worse outcomes in adulthood than externalizing behavior in adolescence (Moffitt, 1993).

Sex Differences

EIPV has been reported to be an equally strong predictor of males' and females' dating violence victimization and perpetration (Kalmuss, 1984; Wekerle & Wolfe, 1999). Contrary

to past findings that males are more likely to be perpetrators and females are more likely to be victims of dating violence (e.g., Stith et al., 2000), recent findings indicate that males and females are equally likely to play both roles (Anderson, 2002; Fergusson, Boden, & Horwood, 2008; Langer, Lawrence, & Barry, 2008), perpetrate with similar frequencies (Roberts & Klein, 2003), and be forthcoming about their violent behavior (Capaldi & Crosby, 1997; Ehrensaft et al., 2004). Moreover, some studies have found that females were more likely to be perpetrators of low-severity violence and initiate violent confrontations (Ehrensaft, Moffitt, & Caspi, 2004; Magdol, Moffitt, Caspi, Newman, Fagan, & Silva, 1997). Given that both sexes may similarly report and engage in perpetration and victimization, in the current study we examined whether sex influenced pathways of EIPV and externalizing behavior to dating violence, but we did not anticipate sex differences in dating violence roles.

Pathways to Victimization Versus Perpetration

While pathways to victimization and perpetration may not be differentiated by gender, they may be differentiated by individuals' histories of physical abuse, EIPV, or externalizing behavior (Cappell & Heiner, 1990; Cunningham, 2003; Herrenkohl et al., 2008). Given that EIPV may signal to children that physical abuse towards romantic partners is acceptable (Kalmuss, 1984), EIPV may transmit “learned vulnerability” across generations and increase both males' and females' risk of victimization (Cappell & Heiner, 1990). To support this finding, Ehrensaft et al., (2003) found that, although EIPV in childhood was the strongest predictor of dating violence victimization, conduct disorder in adolescence was the strongest predictor of perpetration (Ehrensaft et al., 2003). Cappell and Heiner (1990) argued that family violence increases victimization, but experiential factors (e.g., the development of externalizing problems) increase perpetration. In contrast, in another study EIPV predicted adolescent males' perpetration, but physical abuse predicted females' perpetration (O'Keefe, 1998). It is still unclear what factors influence pathways to victimization and perpetration and how these pathways differ. Empirical reports and reviews (e.g., Cummings et al., 2006; Gewirtz & Edleson, 2007; Margolin, 2005; Stith, 2000; Wekerle & Wolfe, 1999) have acknowledged that prospective research examining maltreatment, EIPV, and externalizing behavior is needed to sharpen understanding of these pathways. Our study was equipped to address these issues.

The current study also examined how dating violence unfolds over time in early adulthood, an issue few studies have addressed. Karney and Bradbury (1995) explained that dating violence is likely to be chronic pattern, rather than a one-time event or reaction to stress. Consistent with this explanation, couples' physical aggression towards each other over four years coincided with mutually reinforcing cycles of heightened stress and aggression, as well as relationship dissatisfaction, discord, and dissolution (Lawrence & Bradbury, 2007). Moreover, ongoing life stress is likely to perpetuate cycles of violence. Life stress directly related to violent tendencies for both sexes, especially in the context of a history of early adversity such as EIPV (Cano & Vivian, 2003; Frye & Karney, 2006; Langer et al., 2008; Roberts et al., 2011).

More research is needed on the patterns of stability and change in dating violence over time, in the context of developmental stressors, such as EIPV and externalizing behavior, and concurrent risks, such as life stress. Although studies have yet to examine how EIPV in early childhood predicts dating violence over time, EIPV in adolescence was found to predict dating violence across a span of approximately 10 years in early adulthood (Smith, Ireland, Park, Elwyn, & Thornberry, 2011). To add to these findings, our study accounts for current life stress in early adulthood and examines EIPV in early childhood and dating violence across five years.

The Current Study

The current study addressed the need to clarify the long-term, prospective effects of EIPV by examining the developmental sequelae of EIPV to dating violence and the mediating role of externalizing behavior. This study examined the timing and continuity of EIPV in early and middle childhood and the timing and continuity of externalizing behavior in middle childhood and adolescence as they affect perpetration and victimization in early adulthood. Dating violence was assessed at two time points, spanning five years, to examine whether participants' perpetration or victimization continued to be most strongly predicted by developmental risk factors, such as EIPV or externalizing behavior, or concurrent risk factors, such as life stress. All pathways in the analytic models were examined after controlling for theoretically-driven covariates previously found to relate to EIPV or dating violence, such as direct maltreatment (physical abuse or neglect) from infancy to late adolescence, families' socioeconomic status (SES), maternal age, and child sex (Moffitt & Caspi, 1999; Yates et al., 2003).

Consistent with the above research suggesting that EIPV and externalizing behavior occurring earlier and more continuously through development may be particularly deleterious for dating violence, we hypothesized that (a) EIPV occurring in early childhood and continuing through middle childhood would most strongly predict dating violence; (b) the link between EIPV and dating violence would be mediated by externalizing behavior, particularly in childhood as opposed to adolescence; and (c) dating violence at age 23 years would predict dating violence at age 26 years, indicative of the stability of relationship violence over time.

Methods

Participants

Participants ($N = 168$; 87 males, 81 females) in the current study were drawn from the Minnesota Longitudinal Study of Risk and Adaptation, an ongoing study that began with young, high-risk mothers aged 12-34 ($M = 20.5$ years, $SD = 3.74$ years) and their first-born children. Mothers were deemed "high-risk" due to living in poverty (100%), being unmarried (61%) and teenagers (50%), and having low educational attainment (only 59% had completed high school at the time of their child's birth). They were initially enrolled three months before children were born to obtain information about prenatal functioning and their home environment. Children were enrolled at birth and followed into adulthood. (See Egeland, 1991 and Egeland & Brunquell, 1979 for more information on the original

sample). The participants in this study were 67% Caucasian, 11% African American, 17% mixed race, and 5% other minority.

Given that the current study examined dating violence in early adulthood romantic relationships, the 168 participants were those who had participated in the early adulthood (ages 23 or 26 years) assessments. Attrition analyses indicated that there were no significant differences between participants included in the study and those who had not participated based on demographic characteristics that could account for effects of EIPV on dating violence (e.g., SES, or mothers' age or marital status at children's birth). There also were no significant differences in EIPV or externalizing behavior at either time point for participants who were or were not included in the current study. The race of participants in the current analyses was more likely to be Caucasian, $\chi^2(4, 168) = 28.18, p < .01$.

Measures: Independent Variables

Exposure to interparental violence (EIPV; 0-64 months and grades 1-3)

EIPV was coded based on mothers' responses to interviews and the Life Events Scale (see below) when children were 12, 18, 24, 30, 42, 48, 54, and 64 months old and when they were in grades 1-3. Mothers were asked about experiences of interparental violence with male spouses or partners. (During original data collection of EIPV in the late 1970s and early 1980s, mothers were only asked about their experiences of victimization; as a result, information on mothers' potential perpetration was not available). At each time point, a score for EIPV was rated on 0-7-point scale from "No evidence of violence" to "Most severe form of violent interaction that is potentially seriously injurious to the mother and should require medical attention, police intervention, and/or shelter placement." (See Table 1 for complete scale description). Coders were trained to rate EIPV, and inter-rater reliability was computed for 50 cases coded by two trained graduate students at each time point. Intraclass correlations (ICCs) ranged from .93 to .99. Scores for EIPV were collapsed and the most severe ratings from 0-64 months and grades 1-3 were used to characterize EIPV in early childhood and middle childhood, respectively.

Externalizing behavior (grades 1-3 and age 16 years)

When children were in 1st, 2nd, and 3rd grade, their teachers provided ratings of externalizing behavior on the Achenbach Teacher Report Form (TRF; Achenbach & Edelbrock, 1986), a behavior checklist of 118 items on 3-point scales (i.e., "not at all true," "sometimes true" and "often true"). The Externalizing Problems subscale is one of two broadband scales (the other is Internalizing Problems). Given that the scores on the externalizing scales across the three time points were strongly related ($r_p = .52-.61, p < .01$) and reflected a unifying construct, the mean of the scales across grades 1-3 was computed to obtain one average score of externalizing behavior in middle childhood.

When participants were 16 years old, teachers again completed the TRF in adolescence. Participants also completed the Youth Self-Report (YSR; Achenbach, 1991), a parallel measure of 112 items assessing youths' behavior from their own perspective that provides the same broadband externalizing scale as the TRF. Given that the teacher and adolescent reports were modestly related ($r_p = .27, p < .01$), to better account for adolescent

externalizing behavior in multiple contexts, and to capture externalizing behavior from multiple informants, the mean of the TRF and YSR externalizing scales was computed. At all time periods, raw scores from the TRFs and YSR were transformed into T-scores before they were averaged.

Measures: Dependent Variables

Dating violence victimization and perpetration (23 and 26 years)

Participants were interviewed about dating violence experiences at two time points, ages 23 and 26 years. At both ages, participants completed the Conflict Tactics Scale (CTS; Straus, 1979), a set of self-report items about verbal and physical behaviors (only physical items were used in this study). The physical items include eight behaviors of increasing severity (threw something at partner, pushed, slapped, kicked, hit, beat up, threatened with a gun or knife, and used a gun or knife). At age 23, participants reported how many behaviors they had inflicted towards (perpetration) and received from (victimization) their current partner and any past partner(s) since age 21. At age 26, participants were again asked about perpetration or victimization of these behaviors with their current partner and any past partner(s) since age 23. (Violence with recent past partners was included to obtain information about participants who recently had been in romantic relationships but who were single at the time of the assessments.) The number of different behaviors endorsed across past or current partners by age 23 years and by age 26 years was summed for a behavioral severity score for perpetration and for victimization at age 23 and 26.

Given that participants reported on their general experiences of perpetrating or being a victim of each behavior; the current study did not capture the number of participants' relationships during which violence had occurred, or whether violence had occurred with the same partner at both ages. However, being with the same partner or having a longer relationship was not significantly related to less perpetration or victimization. In addition, the use of the same violent behavior with both a current and past partner within the same assessment period received a maximum score of 1 to control for participants who had been in multiple violence relationships from ages 21-23 or between ages 23-26.

Measures: Control variables

Child sex and maternal age

Child sex and maternal age at the birth of the first-born (enrolled) child were obtained from hospital birth records.

Family socioeconomic status (Prenatal)

A measure of the SES of the household into which children were born was computed from the average of z-scores from three sources of information: the occupational status of the mother (or the head of household), estimated from the revised Duncan Socioeconomic Index (SEI; Duncan, 1961; Stevens & Featherman, 1981) mothers' educational attainment in years; and yearly household income. The resulting overall SES scores were transformed into T-scores to yield positively scaled distributions.

Child maltreatment (0 to 17.5 years)

Maltreatment was comprised of physical abuse, which was considered to be parents' behavior towards a child that resulted in physical injury (e.g., bruises, cuts, burns) and neglect, which was considered to be depriving the child of basic needs (e.g., nutrition, health care) or lack of supervision resulting in an unsafe home environment. We included a history of neglect to account for the possibility that participants' dating violence in early adulthood was not solely due to them having never learned appropriate conflict resolution strategies as a result of parents' inadequate care.

A team of project staff collaboratively rated the presence or absence of physical abuse or neglect beginning in infancy based on three sources of information: interviews with mothers, home observations made by study staff (including observations of physical injuries on the child, such as harsh physical discipline that left marks, and unsafe living conditions), and any records from Child Protective Services (CPS) that maltreatment had occurred. The presence of CPS records was checked for all study participants, regardless of whether or not mothers reported maltreatment during the interviews. All cases that involved maltreatment were perpetrated by the mother or primary caregiver(s), had already been referred to CPS, or were receiving services from public health nurses for inadequate caregiving at the time that data was collected.

The maltreatment variable used in the current study was compiled from comprehensive, multi-informant ratings beginning in childhood and updated with maternal and participant reports throughout adolescence. When participants were 24 months old, project staff collaboratively compiled a list of all children with maltreatment experiences since birth, and the list was updated through early childhood (at ages 48 months and 64 months) for new maltreatment that had begun after 24 months or that had occurred previously but had not been reported. Maternal reports and CPS records were continually checked and updated as participants aged in order to obtain the most accurate and comprehensive maltreatment information. The list was checked at each subsequent assessment (grades 1-3 and 6, and ages 13, 16, and 17.5 years) and revised according to newly reported maltreatment or cross-validation with CPS records (i.e., a positive CPS record that indicated maltreatment in the absence of a maternal report led to an updated "maltreated" status for that participant). In adolescence, participants were also asked whether they had experienced parental maltreatment in childhood or adolescence. To resolve discrepancies, at least two independent sources of information were needed to confirm maltreatment if it was retrospectively reported.

Adult life stress (23 and 26 years)

As part of the assessment at ages 23 and 26 years, participants were administered the Life Events Scale (LES; Egeland, Breitenbucher, & Rosenberg, 1981), a questionnaire composed of 41 items that describe stressful events or transitions (e.g., employment changes, physical or mental health problems, deaths in the family, legal or financial issues, and personal and family stress). Participants who endorsed experiencing such events were requested to elaborate in order to obtain sufficient information to rate the extent of the stressor as disruptive to the family using a 3-point scale (i.e., "No disruption" to "Highly disruptive").

As a result, each item was weighted according to the degree of disruption. At age 23 years, trained coders rated all cases and pairs of coders rated 46 cases for reliability (ICC = .94). At age 26, trained coders rated all cases and pairs of coders rated 50 cases for reliability (ICC = .98). The current analyses utilized the total life stress score at both ages, which was the sum of each weighted item minus one item about physical fights with a romantic partner that was relevant to our outcome variable.

Data Analytic Plan

To examine the relations between EIPV in early and middle childhood, externalizing behavior in middle childhood and adolescence, and dating violence in early adulthood, path analyses were conducted using MPlus version 6.1 (Muthén & Muthén, 1998-2010) and variations of the proposed conceptual model (Figure 1). We constructed and tested a series of five hierarchically nested developmental models that first examined the direct effects of all developmental predictors on dating violence and then tested each of the three hypotheses: the timing versus the continuity of EIPV for dating violence (Hypothesis 1), the indirect effects of EIPV to dating violence through externalizing behavior (Hypothesis 2), and the effects of developmental risks versus concurrent life stress and dating violence as predictors of dating violence over time (Hypothesis 3). (When “dating violence” is subsequently referred to, it includes both perpetration and victimization unless otherwise noted.)

Model 1 (Figure 2a) tested the direct effects of all developmental predictors to dating violence at both ages 23 and 26 years. Model 1 had the most paths specified and all subsequent models were nested within Model 1 and within each other. Model 2 (Figure 2b) tested the direct effects of all developmental predictors to dating violence at age 23 years, the timing and continuity of EIPV from early childhood to middle childhood to dating violence, the timing and continuity of externalizing behavior from middle childhood to adolescence to dating violence, and the indirect effects of EIPV to dating violence through externalizing behavior at both time periods. Model 3 (Figure 2c) eliminated paths from EIPV in middle childhood to dating violence, thereby only testing the timing of EIPV in early childhood, and not the continuity of EIPV. Model 4 (Figure 2d) eliminated the direct paths from EIPV in early childhood to dating violence, thereby testing the indirect effects of EIPV to dating violence through externalizing behavior in middle childhood or adolescence. Model 5 (Figure 2e) eliminated the paths from externalizing behavior in middle childhood, thereby testing the indirect effects of EIPV to dating violence through externalizing behavior in adolescence.

Given that past literature reports that both partners often perpetrate dating violence and that it is a chronic pattern rather than a solitary event (Karney & Bradbury, 1995), we also included paths embedded in all models to specify that perpetration and victimization would be intercorrelated at age 23 and age 26 years, that age 23 perpetration would predict age 26 perpetration, and that age 23 victimization would predict age 26 victimization. Further, because the literature suggests that higher levels of life stress increase the risks for dating violence (Cano & Vivian, 2003; Langer et al., 2008), we included paths to specify that concurrent life stress at age 23 and age 26 years would predict dating violence during the

same time period and that life stress at age 23 years would predict dating violence at age 26 years.

Multiple theoretically driven covariates also were included as predictors on every pathway in every model. Child sex was accounted for on every path because although current evidence is inconclusive regarding sex differences in frequency of victimization versus perpetration, we sought to examine whether sex influenced the relations between EIPV, externalizing behavior and dating violence. As in past studies of EIPV (Fergusson et al., 2006; Yates et al., 2003) SES at the time of birth was also accounted for to rule out the possibility that relations between EIPV and dating violence are not primarily influenced by very low-income environmental contexts. Maternal age was included as a covariate given it was highly associated with EIPV and dating violence, of which it is a documented risk factor (Moffitt & Caspi, 1999). Maltreatment (physical abuse and/or neglect) was also included on every path as a covariate given previous research that calls for the need to separate the effects of EIPV and maltreatment on dating violence (Herrenkohl et al., 2008; Holt et al., 2008).

We determined acceptable model fit for the data by evaluating the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root-Mean-Square Residual (SRMR). Adopting usual practice, we considered a CFI at .90 or above and a RMSEA (or SRMR) at .08 or below to be an acceptable fit; and a CFI at .95 or above and an RMSEA (or SRMR) of .05 or below to be a good fit (Hoyle, 1995; Hoyle & Panter, 1995; McDonald & Ho, 2002). We used chi-square difference testing to compare each of the models (Muthén & Muthén, 1998-2010). On all model tests, we used the bootstrapped standard errors method in MPlus to account for non-normality of our dependent variables, perpetration and victimization at 23 and 26 years, which were positively skewed. MPlus was also used to obtain bootstrapped standard errors for the indirect effects (Preacher & Hayes, 2008).

Missing Data

Of the 168 participants in the current study, nine people at age 23 and six people at age 26 were missing information because they did not participate in the assessment at that time period. However, they were included because they did have information on dating violence at the other time period. The amount of missing data from all variables was minimal, ranging from 0% (EIPV at both time periods, child maltreatment, SES, and externalizing behavior in middle childhood) to 5% (dating violence and life stress at age 23), with a mean of 2% missing data across all variables at all time points. In order to obtain complete data for all 168 participants, we used full information maximum likelihood (FIML) estimation in MPlus (Muthén & Muthén, 1998-2010), which generates unbiased parameter estimates for data missing at random or missing completely at random (Graham, Cumsille, & Elek-Fisk, 2003; McDonald & Ho, 2002).

Results

Descriptive Analyses

Descriptive information for all variables is summarized in Table 2. A total of 74 children experienced some EIPV in childhood; 65 children experienced EIPV in early childhood, 32 experienced EIPV in middle childhood, and 23 experienced EIPV during both time periods. The distribution of EIPV ratings across all participants revealed that slightly over one third of participants (35.7%) experienced high severity EIPV in early or middle childhood (a rating of at least 5 out of 7). In terms of maltreatment, 51 children had records of facing physical abuse or neglect. Thirty of the 51 maltreated children also had a history of EIPV. In terms of externalizing behaviors, 22.7% of children in middle childhood and 28.5% of children in adolescence had levels of externalizing behavior in the borderline clinical range (T scores ≥ 60) and 7.7% of children in middle childhood and 4.8% of children in adolescence had levels of externalizing behavior in the clinical range (T scores ≥ 70 ; Achenbach, 1991).

Regarding dating violence victimization and perpetration, approximately one third (31.5%) of our participants had never been involved in perpetration or victimization at either time point, whereas two thirds (68.5%) of participants were involved in some aspect of perpetration or victimization during either or both time periods in early adulthood. Half of the participants (50.6%) reported never perpetrating violence at either time point, whereas 19.0% reported perpetrating violence at both time points. Similarly, 38.7% of participants reported never being victimized, whereas 25.0% of participants reported victimization at both time points.

Polychoric correlations between all variables are displayed in Table 3. Only EIPV in early childhood (not middle childhood) was associated with dating violence in early adulthood; externalizing behavior in both middle childhood and adolescence were associated with dating violence.

Path Model Analyses

Based on chi-square difference testing (Muthén & Muthén, 1998-2010), Model 3 was the best-fitting, most plausible model after examining fit comparisons between Models 1-5 (Table 4). Model 3 showed good fit with the data, $\chi^2/df = 1.59$, root-mean-square error of approximation (RMSEA) = .06 (90% CI = .005 - .097), comparative fit index (CFI) = .98, $p = .05$, and standardized root-mean-square residual (SRMR) = .04. Standardized coefficients for significant paths in Model 3 are displayed in Figure 3. Model 3 accounted for 25.5% of the variance in perpetration and 35.4% of the variance in victimization at age 23 years, and 40.0% of the variance in perpetration and 34.0% of the variance in victimization at age 26 years.

Hypothesis 1: Timing versus continuity of EIPV in early versus middle childhood—Models 1-3 tested the hypotheses of whether the timing of EIPV in early versus middle childhood or the continuity of EIPV from early to middle childhood would most strongly predict dating violence. The final, best-fitting model (Model 3) showed that

EIPV in early childhood directly predicted both perpetration ($\beta = .24, p < .01$) and victimization ($\beta = .17, p < .05$) at age 23, even after accounting for child maltreatment, maternal age, family SES, and child sex. While EIPV in early childhood predicted EIPV in middle childhood ($\beta = .31, p < .01$), EIPV in middle childhood was not a significant predictor of dating violence in any of the models. Models 3-5 tested the hypotheses of whether the timing of externalizing behavior in middle childhood versus adolescence would mediate EIPV and dating violence.

Hypothesis 2: Timing versus continuity of externalizing behavior as a mediator of EIPV and dating violence—Overall, in the final model the total indirect effects from EIPV to dating violence at age 23 were significant for both perpetration and victimization: There was a significant indirect pathway from EIPV in early childhood to victimization at age 23 through both externalizing behavior in adolescence and life stress at age 23 ($\beta = .05, p < .05$); this same indirect pathway from EIPV in early childhood to perpetration at age 23 through externalizing behavior and life stress was marginally significant ($\beta = .03, p = .07$). More specifically, the final model (Model 3) showed that EIPV in early childhood was a significant predictor of externalizing behavior in adolescence ($\beta = .25, p < .001$), and there were significant indirect effects from externalizing behavior in adolescence to perpetration at age 23 through life stress at age 23 ($\beta = .11, p < .05$) and to victimization at age 23 through life stress at age 23 ($\beta = .18, p < .01$). Although we hypothesized that externalizing behavior in middle childhood would mediate EIPV and dating violence, there were no direct relations between EIPV in early childhood to externalizing behavior in middle childhood, or to externalizing behavior at either time period to dating violence in the final model (Model 3). Of note, however, the next best-fitting model (Model 5) displayed a significant direct pathway from externalizing behavior in adolescence to perpetration at age 23 when the direct path from EIPV in early childhood to perpetration at age 23 was removed.

In addition, although our hypothesis that externalizing behavior in middle childhood would mediate EIPV and dating violence was not supported, externalizing behavior during this period played a unique and unexpected role in the final model. Externalizing behavior in middle childhood was a significant predictor of externalizing behavior in adolescence ($\beta = .41, p < .01$). There were also significant indirect effects from externalizing behavior in middle childhood to perpetration at age 23 ($\beta = .05, p < .05$) and victimization at age 23 ($\beta = .08, p < .01$) through externalizing behavior in adolescence and life stress at age 23. Moreover, while EIPV in early childhood did not significantly predict externalizing behavior in middle childhood, child maltreatment did significantly predict externalizing behavior during this time ($\beta = .23, p < .01$).

Hypothesis 3: Stability of dating violence across time—To test whether dating violence was stable across time, we examined whether dating violence at age 26 years was most strongly predicted by early adulthood risk factors, such as previous dating violence or life stress at age 23, or developmental risk factors, such as EIPV and externalizing behavior. The results were consistent across all models, including our final model (Model 3). The strongest predictor of perpetration at age 26 was perpetration at age 23 ($\beta = .51, p < .01$), but

the strongest predictor of victimization at age 26 was life stress at age 26 ($\beta = .24, p < .01$). However, there were also significant indirect effects of externalizing behavior in adolescence to perpetration at age 26 through life stress at age 23 and perpetration at age 23 ($\beta = .06, p < .05$) and to victimization at age 26 through life stress at age 23 and life stress at age 26 ($\beta = .04, p < .05$).

Additional analyses: Sex differences—Finally, although we did not have specific hypotheses about the role of sex, there were some significant sex differences. There was a direct effect of sex on victimization at age 26 years such that males were more likely to report being victimized by partners ($\beta = -.18, p < .05$). Alternatively, females were more likely to have histories of EIPV in early childhood ($r = .17, p < .05$). There were no significant sex differences for externalizing behavior, life stress, or maltreatment.

Discussion

The current study examined the prospective developmental pathways of exposure to interparental violence (EIPV) in early and middle childhood as predictors of dating violence in early adulthood, the mediating role of increased externalizing behavior along the hypothesized pathway from EIPV to dating violence, and the stability of dating violence over time. Our theoretical models were grounded in an organizational developmental perspective, which provides a guide for understanding how children are shaped by experiences with caregivers that are carried forward to later relationships, but children also actively shape their environments through their own behaviors (Ainsworth et al., 1991; Bowlby, 1969; Cicchetti & Valentino, 2006; Hazan & Shaver, 1987; Holt et al., 2008; Rutter & Sroufe, 2000; Sroufe 1979; Waters & Cummings, 2000). From this developmental framework and using path analyses, we examined the timing and the continuity of EIPV during two developmental periods as risks for dating violence, hypothesizing that EIPV in early childhood would predict dating violence more strongly than EIPV in middle childhood. We also examined the timing and continuity of externalizing behavior in early childhood and adolescence as mediators of EIPV and dating violence, hypothesizing that externalizing behavior in middle childhood would be a stronger mediator given that it has been found to portend a worse course of long-term functioning, including increases in dating violence (Moffitt, 1993; Woodward et al., 2002).

The Role of EIPV: Timing of Risk

Our findings indicated that EIPV in early childhood was a direct predictor of both dating violence perpetration and victimization at age 23 years after controlling for maltreatment, maternal age, family SES, and child sex. Our first hypothesis was supported; EIPV in early childhood was a stronger predictor of dating violence than EIPV in middle childhood. These findings illustrate that early EIPV exerts powerful influences on reactivating violence in later romantic relationships, above and beyond EIPV that occurs later. These findings align well with research documenting the particularly deleterious effects of negative or traumatic early relational experiences on long-term relational maladaptation (Macfie et al., 2001; Sroufe et al., 2005). Our findings also extend past EIPV research to suggest that the timing

of EIPV in early childhood, rather than the continuity or persistence of EIPV through early and middle childhood is a substantial risk for dating violence in early adulthood.

The effects of EIPV in infancy and preschool may be particularly salient and enduring because they occur when children are first mastering critical developmental tasks of early childhood, such as forming expectations of social relationships and learning how to control their negative behaviors and emotions (Ainsworth et al., 1991; Masten et al., 2006; Sroufe, 1979; Sroufe et al., 2005). Experiences of EIPV at a very young age may serve as a guiding framework for future relationship expectations (Holt et al., 2008; Margolin, 2005; Osofsky, 2003). EIPV in early childhood may also have lasting implications on development because young children have less positive experiences to override negative events and may internalize violence as a conflict resolution tactic between romantic partners (Cappell & Heiner, 1990; Davies & Cummings, 1994; Fite et al., 2008; Widom, 1989).

The Role of Externalizing Behaviors: Timing of Mediation and Continuity of Risk

The current findings also revealed that there were indirect effects from EIPV in early childhood to dating violence in early adulthood through both externalizing behavior in adolescence and life stress at age 23 years. Our second hypothesis was partially supported such that increased externalizing behavior did comprise the indirect pathway between EIPV and dating violence, but this effect was significant for externalizing behavior in adolescence rather than middle childhood. Moreover, this indirect pathway also included life stress at age 23 years.

These findings suggest a number of varying interpretations. First, higher levels of externalizing behavior in adolescence may proximally increase life stressors by constraining lifestyle choices in young adulthood and distally influence dating violence through the effects of life stress, consistent with past findings on the salient role of life stress for heightened dating violence (Cano & Vivian, 2003; Langer et al., 2008). Couples may be more vulnerable to dating violence in the context of high stress (Frye & Karney, 2005), especially if they have histories of EIPV (Roberts et al., 2011). Second, it is likely that externalizing behavior in adolescence was a product of both EIPV in early childhood and externalizing behavior in middle childhood, as both of these earlier developmental factors significantly and directly increased adolescents' externalizing behavior.

Third, while our lack of findings of a direct relation between externalizing behavior in adolescence and dating violence are somewhat inconsistent with past research (e.g., Fergusson & Horwood, 1998; Magdol et al., 1998), our study has important distinctions from other studies. First, much of the past research that has documented the relations between externalizing behavior and dating violence has either not examined these relations in the context of EIPV (Fergusson et al., 2008; Shortt et al., 2011), or has measured or documented EIPV later than early childhood (Ehrensaft et al., 2003; Fergusson et al., 2006; Magdol et al., 1998; Raudino et al., 2011). Second, a comparison of our best-fitting model (Model 3) and next best-fitting model (Model 5) revealed important differences to inform our pattern of findings. Model 5 depicted a significant direct path from externalizing behavior in adolescence to perpetration at age 23, but this path was not significant in Model 3 when the direct path from EIPV to perpetration was included. Together, these models

emphasize that externalizing behavior in adolescence may prospectively predict dating violence, but this path becomes indirect after accounting for the direct relations between early EIPV and dating violence.

Furthermore, although externalizing behavior in middle childhood did not mediate EIPV and dating violence as expected, it comprised another indirect pathway to dating violence at age 23 years (independent of EIPV) through externalizing behavior in adolescence and life stress at age 23 years. This finding emphasizes that the continuity, or persistence, of individuals' negative behavior and stress are additional risks for dating violence. Externalizing behavior as a unique antecedent to dating violence also supports other empirical evidence that a history of behavior problems significantly increases the likelihood of engaging in both perpetration and victimization (Magdol et al., 1998; Moffitt & Caspi, 1999; Roberts et al., 2003) and even more so when these behavior occur earlier in childhood (Moffitt, 1993; Woodward et al., 2002).

Child maltreatment also played an unexpected role in our findings, such that externalizing behavior in middle childhood was predicted by a history of child maltreatment although maltreatment did not affect the pathways from EIPV to dating violence. This finding is consistent with past research that child-onset externalizing behavior may be uniquely predicted by pernicious caregiving (Moffitt, 1993). Taken together with our primary findings that EIPV in early childhood directly predicted dating violence after accounting for maltreatment, these findings suggest that there may be two independent pathways of risk to dating violence: one that stems from EIPV in early childhood, and one that stems from maltreatment and externalizing behavior in childhood.

Patterns of Dating Violence Across Early Adulthood

The current findings also revealed that dating violence persisted over time but was influenced by factors unique to perpetration versus victimization. According to our third hypothesis, we expected stability of dating violence across early adulthood, such that perpetration and victimization at age 23 years would predict perpetration and victimization at age 26 years. To test this hypothesis, we examined whether developmental risks versus recent dating violence or life stress at age 23 years would most strongly predict dating violence at 26 years. Our third hypothesis was partially supported. Perpetration at age 26 was most strongly predicted by perpetration at age 23 years; however, victimization at age 26 was most strongly predicted by life stress at age 26 years. These findings indicate that the experience of perpetrating violence may be more stable over time, consistent with research on the stability of dating violence (Karney & Bradbury, 1995), but the experience of being victimized may be more strongly predicted by life stress affecting the couple, consistent with research on the salience of stress for heightened dating violence (Langer et al., 2008). These findings must be interpreted with caution, however, given that participants reported on both perpetration and victimization.

We also found evidence for assortative mating of dating violence at both 23 and 26 years (Capaldi & Crosby, 1997; Quinton et al., 1993). Concurrently at both time periods, victimization and perpetration were related, which is consistent with previous reports that in violent relationships both partners are likely to inflict and receive physical aggression

(Anderson, 2002; Langer et al., 2008). Participants who had never been violent tended to affiliate with partners who also refrained from violence, whereas violent individuals tended to pair with each other (Capaldi & Crosby, 1997; Moffitt et al., 1993; Shortt et al., 2012; Vézina & Hébert, 2007; Wolfe et al., 1998). Moreover, the current findings emphasize that violence tends to become an entrenched pattern in relationships, it is reciprocally influenced by both partners, and it is likely not a one-time event (Karney & Bradbury, 1995; Moffitt & Caspi, 1999).

Although not hypothesized, notable sex differences were found for EIPV and dating violence. Female participants were more likely to have histories of EIPV in early childhood than males, which was not expected but suggested that females in our sample had been more vulnerable to early EIPV. Male participants were modestly but significantly more likely than female participants to report being victimized by their romantic partners at 26 years. This finding adds to previous studies reporting slightly higher rates of female-to-male perpetration in community samples (e.g., Ehrensaft et al., 2004; Magdol et al., 1997).

Strengths and Limitations

Our findings support the current empirical but largely retrospective evidence on the salient and enduring role of early childhood EIPV as a predictor of violence in romantic relationships (Miller et al., 2011; O'Keefe, 1998; Roberts et al., 2011). By employing prospective data that documented participants' EIPV from infancy, this study provided evidence that the severity of violence witnessed in early childhood predicts the extent of perpetration or victimization in early adulthood. Children who witnessed more threatening violence against their mothers were more likely to engage in a greater number of distinct violent behaviors with romantic partners. These findings extend the extant empirical research on the intergenerational transmission of dating violence (Ehrensaft et al., 2003; Kalmuss, 1984; Stith et al., 2000) to show that the severity of exposure to violence may be transmitted to a greater behavioral repertoire of violence with partners in early adulthood.

Our study also provides novel and clarifying information on the relative influences of EIPV on dating violence when considered in tandem with externalizing behavior and child maltreatment. Recent reviews have acknowledged the difficulties associated with investigating EIPV and maltreatment separately (e.g., Herrenkohl et al., 2008; Holt et al., 2008), and past empirical studies have reported mixed evidence about whether EIPV and maltreatment affect dating violence and how they differentially affect perpetration or victimization (Cappell & Heiner, 1990; Ehrensaft et al., 2003; O'Keefe, 1998). The current study found that EIPV was a significant direct predictor of perpetration and victimization after accounting for maltreatment; however, externalizing behavior in middle childhood was a significant indirect predictor of dating violence, and it may have originated from experiences of maltreatment.

A number of reasons may explain why these findings differ from past studies. One explanation for why maltreatment did not influence the effects of EIPV on dating violence could be that we conceptualized maltreatment as 'physical abuse and neglect' to provide a more stringent test of the relations between EIPV and dating violence and also to account for the possibility that a history of neglect could potentially preclude children from learning

appropriate conflict resolution strategies. Alternatively, another explanation could be that a history of EIPV might confer direct risk for violence between romantic partners while a history of maltreatment might confer direct risk for abusing one's children, which the current study did not examine. Lending support to this conjecture, past research from our team has found that of participants who had been physically abused as children, 70% of their mothers also reported being abused in their childhoods (Egeland, Jacobvitz, & Papatola, 1987). Future research should examine the prospective pathways from EIPV versus maltreatment in childhood to risks for perpetrating dating violence versus maltreatment in the next generation.

Another explanation as to why our findings differ from some past studies could be that our study used prospective data of EIPV gathered in early childhood, whereas other studies have relied on retrospective (Fergusson et al., 2006; Miller et al., 2011; Roberts et al., 2011) or partially retrospective but concurrently-validated reports of EIPV (Ehrensaft et al., 2003). In addition, other studies have assessed EIPV in adolescence (e.g., Ireland & Smith, 2009; Tschann et al., 2009). When these studies are examined in conjunction with our study of EIPV in early childhood, the current findings highlight that the interpretation of the risks associated with EIPV may vary with the developmental timing and measurement of this construct. If our study had only measured EIPV in middle childhood, our conclusions would have been much different.

Our study also possessed several methodological strengths. The prospective design illustrated the developmental sequelae of EIPV beginning in early childhood and documented at the time it occurred. Recent literature on EIPV has recommended that prospective, longitudinal data is best suited for clarifying the relations being EIPV and dating violence (Gewirtz & Edleson, 2007; Herrenkohl et al., 2008; Margolin, 2005; Margolin & Gordis, 2000). Information on the developmental predictors was also gathered from multiple sources such as maternal reports, observations, and CPS records in early childhood and teacher and self-reports in adolescence and early adulthood. The opportunity to utilize a multi-informant design guards against reporter bias, which could result from reporters' perceptions of one variable (e.g., dating violence) influencing their recollections and reports of another variable (e.g., EIPV). We also included a number of theoretically driven covariates, which when accounted for provide a more stringent test of the relations between EIPV, externalizing behavior, and dating violence.

Similar to many prospective longitudinal studies, the current study also possessed a number of limitations, such as relatively small sample size. These findings also apply to one community sample of high-risk, impoverished families in one Midwestern area. Given that the entire sample was deemed high-risk, these findings may not generalize to middle-class or more affluent community samples. In particular, the rates of maltreatment, EIPV, and dating violence may have been higher in this sample than other community samples (e.g., Katz & Windecker-Nelson, 2006). However, high-risk samples with greater variability in experiences of adversity provide means to study deleterious influences on development via "natural experiments," or windows into how developmental maladaptation may unfold (Rutter, 2000).

Additional limitations involve the properties of the EIPV and dating violence variables. When the interview questions on interparental violence were administered to mothers in the late 1970s and early 1980s, only information on mothers' experiences with victimization was gathered. Thus, the current findings may have underestimated the impact of maternal perpetration on children's maladjustment. We were also unable to quantify the extent to which mothers may have repartnered with different partners or spouses across their children's development. Our measure of EIPV also did not include information on children's proximity to the actual violence that mothers reported. Previous research has indicated, however, that EIPV as reported by parents is highly salient to children (Kitzmann et al., 2003). For example, children were reported to indirectly or directly witness up to 80% of reported violent incidences in homes (Jaffe, Wolfe, & Wilson, 1990). Another study reported children could hear or see 81% of violent events, confirmed by police reports (Fantuzzo & Fusco, 2007).

Similarly, because the two assessments of dating violence in early adulthood were provided by participants' reports of their perpetration and victimization, our sample rates of dating violence prevalence may be underestimated without partners' reports. We did find, however, that approximately half (49.4%) of our participants reported perpetrating at least one violent behavior over the five-year span and almost two-thirds (61.3%) of participants reported being victimized at least once by a romantic partner. Thus, even considering that these percentages may be an underestimate, there was wide variability and a high prevalence of different violent behaviors used by our participants. Finally, the current sample was constrained to early adulthood and only examined dating violence that had occurred by age 26 years. This research could be replicated in a larger sample extended further into adulthood.

Implications and Future Directions

The current study described the maladaptive pathways from EIPV in early childhood to dating violence in early adulthood, but it also highlighted the role of resilience processes in development. Resilience is defined as the ability to withstand or recover from significant adversity (Egeland, Carlson, & Sroufe, 1993; Masten et al., 2006), a process that has been observed in children exposed to EIPV who continue to fare well (Holt et al., 2008; Kitzmann et al., 2003; Martinez-Tortoya et al., 2009). In the current sample, approximately one-fourth of participants (25.7%; $n = 19$) who had some degree of EIPV did not go on to engage in dating violence. Previous research on resilience in children with EIPV suggests that absence of parental psychopathology and warm and supportive parent-child relationships might buffer the consequences of EIPV on development (DeBoard-Lucas et al., 2010; Holt et al., 2008; Magdol et al., 1998; Martinez-Tortoya et al., 2009; Sturge-Apple et al., 2008). These findings emphasize multifinality, or multiple developmental outcomes, in children with violent parents (Cicchetti & Rogosch, 1996; Margolin, 2005). They also suggest that protective mechanisms, such as positive, supportive relationships may underlie pathways to adaptive interpersonal functioning. However, in contrast to the participants with EIPV who refrained from dating violence, 49.1% ($n = 53$) of participants involved in dating violence at least once in early adulthood had no history of EIPV. Future studies should continue to examine the protective factors that deter the negative consequences of EIPV, the intervening

developmental stressors that increase the risk for dating violence, and the timing of EIPV in development.

There is much research to be done to sharpen our understanding of children's experiences with family violence and to determine how to effectively intervene immediately after exposure and in the long term. Although the current study implicates timing and severity of exposure to violence as significant developmental stressors, the evidence for children's specific experiences immediately after a domestic violence incident is scarce (Gewirtz & Edleson, 2007). Multiple mediating and moderating processes following EIPV could undermine children's functioning or promote resilience, such as fractures in the family system, emotional dysregulation, fragile and ineffective coping processes, and extended support systems. An example of one possible intervention that may ameliorate psychological harm in the immediate aftermath of EIPV is the Child Developmental Policing Program (CDPP), which trains police officers in developmentally appropriate communication with young children exposed to violence. This program has been reported to promote awareness of young children's needs and facilitate access to mental health services (Gewirtz, Harris, & Avendano, 2006). Specific efforts to restore stability and predictability to children's daily routines, maintain family ties, and tailor interventions to the developing timing of exposure are also critical in promoting recovery (Osofsky, 2003).

In terms of long-term interventions, attachment-based therapy, such as child-parent psychotherapy for strengthening the parent-child relationship and restoring security, support, and trust has been reported to have significant long-term effects on child adjustment after EIPV (Egeland & Erickson, 2004; Lieberman, Van Horn, & Ghosh, 2005). Trauma-focused cognitive behavioral therapy (TF-CBT), widely validated for maltreated children, also shows promise as an effective treatment for young children exposed to violence, and especially those with post-traumatic stress symptoms (Cohen, Manarino, Murray, & Igleman, 2006). However, presence of increased externalizing behavior also would likely influence treatment effects.

Intervention efforts should also preventatively target couples and parents at risk for domestic violence. Parents in highly stressful environments with low social support are at risk for perpetrating violence and maltreatment (Sroufe et al., 2005). Couples with children, and especially young parents, also may be more likely to be violent than those without children (McDonald et al., 2006; Moffitt & Caspi, 1999). Efforts to address maladaptive behaviors in romantic relationships and promote healthy conflict resolution could have potential to prevent children's EIPV as well as halt intergenerational cycles of dating violence in those with a history of EIPV. Policies designed to reduce families' current stress could also deter dating violence.

Conclusions

The current study addressed a need for prospective research on the developmental sequelae of EIPV to dating violence, the timing of exposure of EIPV, and the mediating influences of externalizing behavior in development. The main findings of this study revealed that EIPV in early childhood and externalizing behavior at both time periods played prominent roles in pathways to dating violence. EIPV in early childhood more saliently predicted perpetration

and victimization than EIPV in middle childhood, suggesting that timing of EIPV, rather than continuity, is a critical predictor of dating violence. Continuity of externalizing behavior in middle childhood, stemming from maltreatment and continuing through adolescence also was a critical risk for future dating violence, compounded and aggravated by early adulthood life stress. The timing of externalizing behavior in adolescence also played an important role in two indirect pathways to dating violence, with one beginning with EIPV in early childhood, and the other comprising maltreatment and externalizing behavior in middle childhood. Finally, dating violence at age 26 years was predicted by a previous history of dating violence as well as concurrent life stress. These findings emphasize the complexity of negative early experiences for dating violence, as well as the continuity of negative behavior and current life circumstances (Sroufe et al., 2005). Interventions to deter the intergenerational transmission of dating violence might have the most significant benefit if they target parents at risk for violence, promote recovery in children after EIPV, and deter the development and continuity of increased externalizing behavior in middle childhood and adolescence.

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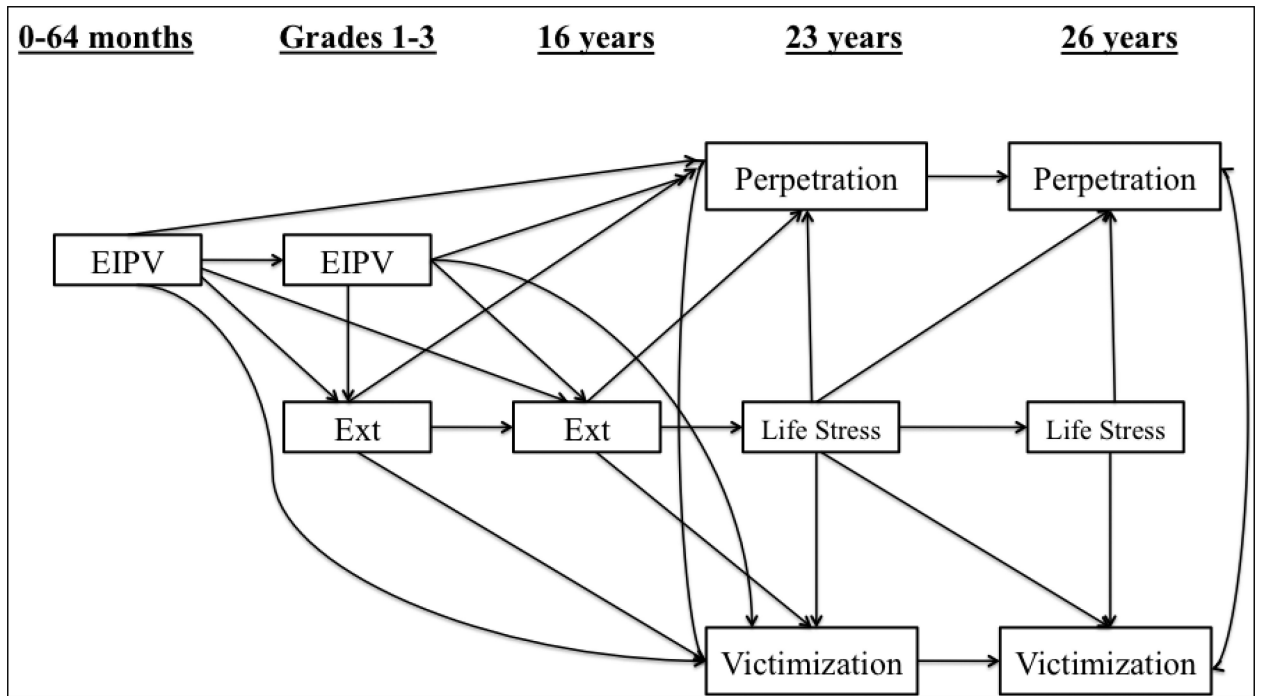
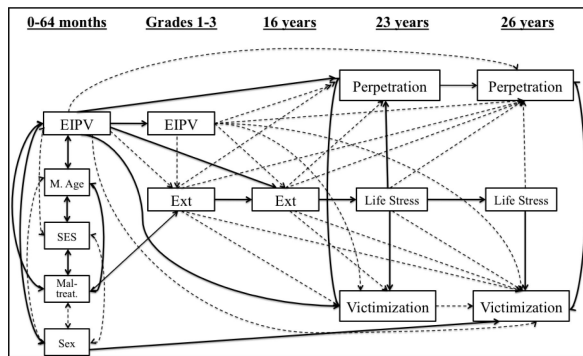
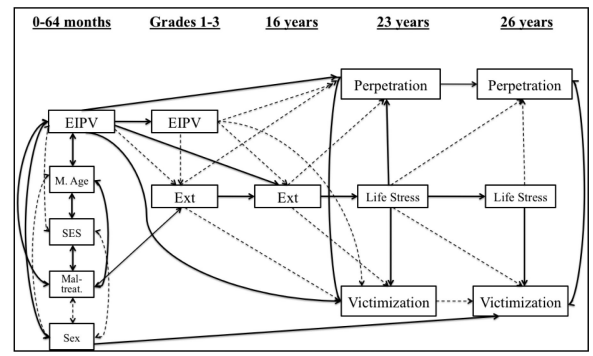


Figure 1.
Proposed Conceptual Model of Timing and Continuity of Exposure to Interparental Violence and Externalizing Behavior as Predictors of Dating Violence

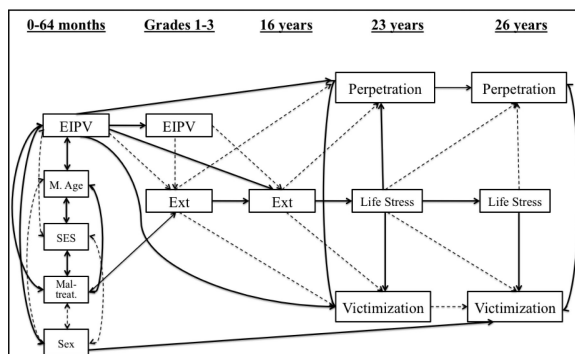
(a) Model 1



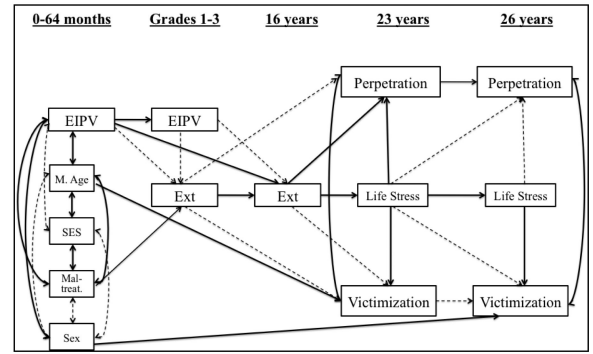
(b) Model 2



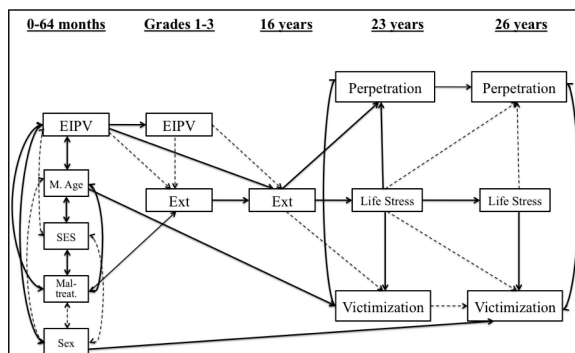
(c) Model 3



(d) Model 4



(e) Model 5



Figures 2a-e.

Solid lines represent significant paths; dashed lines represent paths included but not significant. All covariates [child sex, family SES, maternal age (M. Age), and maltreatment] were included on every path. For simplicity, only the interrelations between covariates and any significant paths from them are shown.

Table 1

Description of the Rating Scale for Exposure to Interparental Violence

Rating	Description
0	No evidence of family violence.
1	Slight evidence of violent interactions between parent and any individual other than partner or evidence of violent interaction among extended family members, past or present.
2	Rare (has not occurred more than twice) mild form of violent interaction (this includes a single shove that occurs in an episode that is quickly terminated).
3	Mild form of violent interaction that has occurred on more than two occasions.
4	More severe form of interaction that occurs on one occasion and is not repeated. The interaction may result in a mild form of injury for the mother that does not require medical attention, and the mother does not seek shelter. The mother may remain in this relationship or may terminate it, but episodes of violence are not repeated with this partner or with subsequent partners.
5	More severe form of violent interaction that has occurred on more than one occasion between mother and partner(s). The interaction elicits fear and may include mild injury for the mother, not requiring medical attention.
6	Severe form of violent interaction. This interaction is of a chronic nature and can easily, and often does, result in injury to the mother. Medical attention may be required and shelter placement may follow.
7	Most severe form of violent interaction. This interaction has the potential for serious injury to the mother, and, if it occurs, should require medical attention, police intervention, and/or shelter placement. It is frequently accompanied by threats to the mother's life.

Note. This scale, developed by project staff from the Minnesota Longitudinal Study of Risk and Adaptation, was also published in Yates et al. (2003).

Table 2

Descriptive Characteristics of the Sample

Variable	<i>M</i>	<i>SD</i>	<i>Sample Range</i>
1. Child Sex*			
2. Prenatal Socioeconomic Status	50.76	9.96	32-106
3. Maternal age	20.64	3.60	15-34
4. Maltreatment*			0-1
5. EIPV in Early Childhood	2.00	2.72	0-7
6. EIPV in Middle Childhood	1.05	2.24	0-7
7. Externalizing Problems in Middle Childhood	55.43	8.94	39.00-78.33
8. Externalizing Problems in Adolescence	56.8	7.65	37.00-79.50
9. Life Stress at Age 23	9.67	6.29	0-29
10. Dating Violence Perpetration at Age 23	.58	1.08	0-4
11. Dating Violence Victimization at Age 23	.97	1.62	0-8
12. Life Stress at Age 26	10.04	6.24	0-31
13. Dating Violence Perpetration at Age 26	.72	1.30	0-6
14. Dating Violence Victimization at Age 26	1.03	1.64	0-7

Note.

* Child age and maltreatment were ordinal variables so sample means are not relevant. There were 87 males and 81 females in the current study, and 51 (30.4%) children in this study experienced maltreatment.

Table 3

Correlations Between All Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Child Sex	--													
2. Family SES	-.14	--												
3. Maternal age	-.02	.44**	--											
4. Maltreatment	-.09	-.18*	-.15*	--										
5. EIPV early childhood	.17*	-.13	-.22**	.20**	--									
6. EIPV middle childhood	.10	-.08	-.19*	.24**	.37**	--								
7. Ext. middle childhood	-.07	-.10	-.08	.28**	.10	.19*	--							
8. Ext. adolescence	.12	-.20*	-.22**	.05	.31**	.15	.41**	--						
9. Life stress age 23	.11	-.07	-.13	.12	.11	-.05	.26**	.39**	--					
10. Perpetration age 23	.17*	-.06	-.11	.04	.31**	.11	.17	.32**	.39**	--				
11. Victimization age 23	-.03	-.13	-.24**	.08	.23**	.02	.16*	.31**	.53**	.56**	--			
12. Life stress age 26	.01	-.03	-.03	.14	.02	-.09	.13	.24**	.41**	.34**	.32**	--		
13. Perpetration age 26	.20**	-.07	-.13	.02	.16*	.04	.21	.34**	.38**	.59**	.35**	.36**	--	
14. Victimization age 26	-.17*	-.01	.19*	.09	.06	.07	.14**	.24**	.38**	.33**	.48**	.40**	.60**	--

Note.

* $p < .05$

** $p < .01$.

EIPV = Exposure to interparental violence. Ext. = Externalizing behavior. Polychoric correlations were used due to ordinal variables.

Table 4

Goodness of Fit Indices for Final Model (Model 3), Null Model, and Alternative Models

Model	df	χ^2	p-value	χ^2/df	$\Delta\chi^2 (\Delta df)$	CFI	RMSEA	SRMR
Null Model	81	562.63	.00	6.93				
Model 1	9	19.88	.02	2.21	--	.98	.09	.03
Model 2	17	29.84	.03	1.76	9.96(8)	.97	.07	.04
Model 3	19	30.27	.05	1.59	.43(2)	.98	.06	.04
Model 4	21	41.12	.01	1.99	10.85(2)*	.96	.08	.04
Model 5	23	41.65	.01	1.81	.53(2)	.96	.07	.04

Note. Models 1-5 were compared hierarchically. Model 1 vs. 2: Model 2 was not significantly better fitting but was more parsimonious than Model 1; Model 2 was retained. Model 2 vs. 3: Model 3 also was not significantly better fitting than Model 2 but was more parsimonious than Model 2; Model 3 was retained. Model 3 vs. 4: Model 4 was significantly worse fitting than Model 3; Model 3 was retained.

(Model 4 vs. 5: Model 5 was not significantly better fitting than Model 4 but was more parsimonious; Model 5 was retained.) Model 3 was a significantly stronger fit than Model 5, so Model 3 was determined to be the best fitting, final model.

* $p < .05$.