Effects of Family Violence on Psychopathology Symptoms in Children Previously Exposed to Maltreatment

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Abstract

Although many studies suggest that family violence is associated with child psychopathology, multiple features of the home environment might account for this association, such as poverty and caregiver psychopathology. Studies are needed examining how change in psychopathology symptoms is affected by home violence, controlling for children's own developmental symptom histories and other predictors of psychopathology. This study used latent difference score structural equation modeling to test if witnessing home violence and/or experiencing harsh physical discipline predicted changes in psychopathology symptoms among 2,925 youth aged 5 – 16 years previously exposed to violence. Results demonstrated that harsh physical discipline predicted child-specific changes in externalizing symptoms, whereas witnessing violence predicted child-specific changes in internalizing symptoms across time. Implications for research and policy are discussed.

Many American children are exposed to violence in their homes. The U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau (2005) reported that child protective service (CPS) agencies receive over 50,000 reports of suspected child maltreatment each week. After reviewing the available literature, Straus et al. (1998) concluded that approximately 5% of children are the victims of severe physical assault and that rates of physical abuse are potentially much higher depending on the exact definition of abuse utilized in any given study. These researchers also concluded that at least one in six American couples have engaged in partner-against-partner assault, and Straus (1992) estimated that 10 million American children witness domestic violence in their homes each year. Many children experience both forms of family violence (Slep & O'Leary, 2001). The majority of studies reviewed by Edleson (1999) found 30% – 60% co-occurrence rates, and several additional studies and reviews have also reported high rates of overlap (e.g., Appel & Holden, 1998; Moffitt & Caspi, 1998).

A plethora of studies now provide compelling evidence that children who are maltreated and children who witness family violence (e.g., adult partner violence) are at increased risk of psychopathology compared with children who are not exposed to violence (e.g., Jouriles, Murphy, & O'Leary, 1989; Kaplan, Pelcovitz, & Labruna, 1999; Kernic et al., 2003; Trickett & McBride-Chang, 1995; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003). Jaffe,

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Wolfe, Wilson, and Zak (1986) found that abused boys and boys who had witnessed domestic violence had similar adjustment problem patterns and that both groups of boys had significantly more problems than a control group. In a recent meta-analysis, Wolfe et al. (2003) concluded that children who were both abused and exposed to domestic violence had higher levels of emotional and behavioral problems than did children who had only been exposed to domestic violence. Thus, children who are both victimized by violence and who witness domestic violence may be particularly vulnerable to developing psychopathology symptoms and are therefore an important population to study.

The extant literature suggests that there are several direct links between physical abuse and negative child outcomes. For example, children who are physically abused are more likely to encode violence as an acceptable interaction strategy (Black & Newman, 1996) and have deficits in their attention self-regulatory abilities that cause them to overattend to anger cues (Shackman, Shackman, & Pollak, 2007). There are also indirect links between physical abuse and negative child outcomes. Abuse of a child is often associated with a host of suboptimal parenting practices that in and of themselves contribute to increases in children's internalizing and externalizing symptoms (e.g., Belsky, 1993; Burgess & Conger, 1978). For example, compared with nonabusive parents, abusive parents engage in significantly fewer positive interactions with their children, have interactions that more frequently contain angry and punitive statements, and interact less often with their children (Burgess & Conger, 1978; Vasta, 1982). Other researchers have found that nonabusive parents are more likely to use reasoning and simple commands and to choose disciplinary techniques that match the child's misbehavior, whereas abusive parents nearly always utilize punitive disciplinary techniques even for very minor child misdeeds (Trickett & Kuczynski, 1986).

Parenting practices and children's well-being might also be affected by the relatively high rates of stress and mental health problems that adult victims of family violence experience (Farver, Crooks, Lee, McIntyre-Smith, & Jaffe, 2005; Margolin & Gordis, 2000). For example, Farver et al. (2005) showed that the association between family and community violence and children's depressive symptoms was partially mediated by mothers' depressive symptoms. Furthermore, Wolfe, Crooks, Lee, McIntyre-Smith, and Jaffe (1985) found that the association between witnessing violence and children's problems was at least partially mediated by maternal stress and associated factors, and Holden and Ritchie (1991) found that maternal stress and paternal irritability were the two major predictors of behavior problems in children of battered women. Maternal depression may contribute to children's internalizing and externalizing symptoms by making mothers less consistently supportive and reliable caregivers (Katz & Gottman, 1997).

Although parenting problems might be one pathway by which family violence increases risk for child psychopathology, children who are exposed to violence are also likely to experience many other stressors that are associated with elevated rates of psychopathology such as poverty, community violence, and poor schools (Hay & Jones, 1994; National Research Council, 1993). Even if families and children receive social services, children's homes frequently remain chaotic and violent, even if not sufficiently "abusive" to merit further action by CPS. The multiple stressors and risk factors for psychopathology that are associated with violence in the home need to be accurately measured and accounted for in research studies in order to isolate the effects of abuse and witnessing violence, as the association between family violence and children's problem behaviors may be accounted for by social disadvantage more generally.

Moreover, although family violence may lead to symptoms of depression, anxiety, substance use, or aggression in adult victims and perpetrators, adults who have histories of mental health problems and behavior problems are more likely to form relationships that become

physically and psychologically abusive (Magdol, Moffitt, Caspi, & Silva, 1998). They are also more likely to abuse their children (Bland & Orn, 1986a, 1986b; Egami, Ford, Greenfield, & Crum, 1996). This implies that the effects of family violence on child well-being may be genetically mediated. Given that adult depression, anxiety, substance use, and antisocial behavior are all moderately heritable (McGuffin, Owen, & Gottesman, 2002), it is possible that family violence is merely a marker for genetic risk for psychopathology that parents transmit to children (DiLalla & Gottesman, 1991; Jaffee, Caspi, Moffitt, Taylor, & Arseneault, 2002, 2004).

In this study, we examined how the levels of violence children reported witnessing in their home and the amount of harsh physical discipline caregivers reported using with their children were associated with changes in the externalizing and internalizing symptoms of children previously exposed to violence. We hypothesized that both harsh physical discipline and witnessing violence would be associated with changes in externalizing and internalizing symptoms above children's expected trajectories in this sample of children previously exposed to violence. Externalizing and internalizing behavior problems typically decline from childhood to adolescence, although some children maintain consistently high levels of problem behaviors (Broidy et al., 2003; Chang, Halpern, & Kaufman, 2007). One goal of our study was to test whether reexposure to violence would account for individual differences in children's trajectories and explain why some children do not show the expected decline in problem behaviors.

Our study attempted to redress several methodological limitations of previous studies in this field. First, whereas many studies examine physical violence against children or adult domestic violence, these forms of violence tend to co-occur. Therefore, we estimate the unique effect of each type of violence on children's mental health. Second, whereas many studies estimate the concurrent or prospective associations between family violence and child psychopathology, our study examines the relationship between family violence and change over time in children's symptoms. This allows us to get a better handle on the direction of the relationship between family violence and children's problem behaviors and is a better test of whether family violence is a potential cause of children's psychopathology.

Method

Subjects

The National Survey of Child and Adolescent Well-Being (NSCAW) is a nationally representative sample of U.S. children who have had contact with CPS (Dowd et al., 2004). The full cohort includes 5,501 children (50% female), younger than 1 year to 16 years when first sampled, who were subjects of child abuse or neglect investigations conducted by CPS agencies from October 1999 to December 2000. The sample was selected using a two-stage stratified sample design. At the first stage, the United States was divided into nine sampling strata. Eight strata corresponded to the eight states with the largest child welfare caseloads, and the ninth stratum consisted of the remaining 38 states and the District of Columbia. Within each of the nine strata, primary sampling units (PSUs) were formed and randomly selected. PSUs were defined as geographic areas that encompassed the population served by a single CPS agency (e.g., counties). At the second stage, equal numbers of children were selected from each PSU, regardless of PSU size. Children were selected from eight mutually exclusive and exhaustive domains such that the final sample adequately represented relevant combinations of (a) infants versus children aged 1 – 14 years, (b) children receiving CPS-funded agency services versus children receiving no services, (c) children in out-of-home care versus children not in out-of-home care, and (d) children who were investigated for allegations of sexual abuse versus other forms of abuse or neglect. Additional information about the sample composition is available from Dowd et al. (2004).

Field staff completed 12 days of training on the protocol. At baseline (Wave 1), face-to-face interviews or assessments were conducted with children, their caregivers (e.g., biological parents, foster parents, custodial kin caregivers), their teachers (when children were of school age), and their caseworkers (when applicable). Follow-up interviews were conducted at 12, 18, and 36 months postbaseline. (Only the data from the first, third, and fourth waves of data collection were used in this article, as the data collection protocol was significantly different for the second wave.) Current caregivers were paid $50 for their participation and children were given gift certificates worth $10 – $20.

The current analyses were restricted to children who were 5 years or older at Wave 1 (N = 2,925; 53% female) because younger children did not report on witnessing home violence. The racial/ethnic makeup of our sample was 46% White (non-Hispanic), 30% Black (non-Hispanic), 17% Hispanic, and 8% other races or ethnicities. Caseworkers reported on all subtypes of maltreatment children experienced and also designated the most serious type of maltreatment children experienced based on their review of the children's files and their ratings of the frequency, severity, and duration of each alleged or substantiated instance of abuse or neglect. For 40% of children, the most serious type of abuse was neglect; for 26%, it was physical; for 18%, it was sexual; for 9%, it was "other"; and for 8%, it was emotional. Within our sample, 34% of children experienced multiple types of maltreatment, and 62% of cases were substantiated. The mean child ages were 9.63 years (SD = 2.98) at Wave 1, 10.94 years (SD = 3.01) at Wave 3, and 12.24 years (SD = 2.99) at Wave 4.

Measures

Descriptive statistics are found in Table 1.

Externalizing symptoms—At each wave of data collection, caregivers were administered the Child Behavior Checklist (CBCL; Achenbach, 1991), which consists of 113 questions on a 3-point Likert-type scale (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*). We used the child's score on the CBCL Externalizing scale (which taps delinquent and aggressive behavior) as our measure of externalizing symptoms. Internal consistency reliability was high for this scale (α = .92). At each wave of analysis, 33%, 30%, and 28% of children had clinically significant externalizing scores, respectively (i.e., *t* scores at or above 65; Achenbach, 1991).

Internalizing symptoms—We used children's scores on the Internalizing scale of the CBCL (which comprises withdrawn behavior, somatic complaints, and anxious/depressed domains) as our measure of children's internalizing symptoms. Internal consistency reliability was high for this scale (α = .90). At each wave of analysis, 25%, 18%, and 17% of children had clinically significant internalizing scores, respectively (i.e., *t* scores at or above 65; Achenbach, 1991).

Witnessed violence—Children were administered the Violence Exposure Scale for Children (Fox & Leavitt, 1995), during which they were asked 23 questions regarding their exposure to violence and criminal events. Children younger than 11 years were also shown a cartoon depiction of each act, and all children were asked how often they had witnessed each act *at home* (never, once, a few times, or lots of times). They were then asked if they had witnessed the act in the past month (1 = *yes*, 2 = *no*). Internal consistency on this measure ranged from αs = .72 to .86 in a sample of inner-city minority preschool children (Shahinfar, Fox, & Leavitt, 2000).

In two-factor analyses, Raviv et al. (2001) and Raviv, Shimoni, Fox, & Leavitt (1999) identified a "mild" and a "severe" violence categorization scheme for the items on this

measure. There were six types of violent acts that loaded onto the *witnessing mild violence* category. These included observing an adult yell at someone, observing an adult throw something at another person, watching an adult push or shove someone, watching an adult slap someone, observing an adult beat someone up, and observing another child getting spanked. The six items that loaded onto the *witnessing severe violence* category included observing a person steal things from another person, seeing an adult point a knife or gun at someone, observing someone stab another person, seeing someone shoot another person with a gun, observing someone getting arrested, and seeing someone deal drugs. We summed the number of different types of incidents children reported witnessing in the past month to create a total witnessed violence scale. Thus, children received a score between 0 and 12. In the NSCAW sample, internal consistency was high for the total score (α = .96). Across waves of data collection, between 71% and 80% of children did not witness any of the severe violence category events.

Caregiver use of harsh physical discipline—Caregivers were administered the Parent – Child Conflict Tactics Scales (CTSPC; Straus et al., 1998), which ask caregivers how often they used 22 disciplinary practices in the past year (0 = *never or not in the past 12 months*; 1 = *1 time*; 2 = *2 times*; 4 = *3 – 5 times*; 8 = *6 – 10 times*; 15 = *11 – 20 times*; 25 = *more than 20 times*). We used the caregivers' total score on the physical assault scale as our measure of harsh physical discipline, after dividing the total score by 10 in order to make the scale commensurate with that of our other variables. Examples of items on this scale range from spanking children with a bare hand to choking children. In the NSCAW sample, internal consistency for the measure was α = 0.92. Across waves of data collection, 86% – 91% of children did not experience any of the "severe" or "very severe" physical discipline category events, so scores on this measure primarily reflected corporal punishment as opposed to physical abuse.

Income—Families were classified into five categories based on total family income in 1 year (1 = $0 – $9,999; 2 = $10,000 – $19,999; 3 = $20,000 – $29,000; 4 = $30,000 – $39,999; 5 = $40,000 and over).

Caregiver's mental health—Caregivers were administered the short-form health survey (Ware, Kosinski, & Keller, 1998), which assesses mental and physical health. We used the mental health subscale as our measure of caregiver mental health. This subscale has been shown to differentiate groups known to differ in terms of the presence and seriousness of their mental health problems (Ware, Kosinski, & Keller, 1996). Some of the questions on this subscale asked caregivers how often they felt a certain way, such as "downhearted or blue," and others asked how much emotional problems interfered with their daily life and social functioning (1 = *all the time*; 2 = *most of the time*; 3 = *a good bit of the time*; 4 = *some of the time*; 5 = *a little of the time*; 6 = *none of the time*). Caregivers were asked to respond to all questions based on their experiences during the past month. Age- and gender-standardized scores were created, with higher scores indicating better mental health. Internal consistency for the mental health scale in the NSCAW sample was acceptable (α = .79).

Results

Statistical Analyses

In this study, we used a series of latent difference score (LDS) models (Hamagami & McArdle, 2001; King et al., 2006) to examine our hypothesis that witnessing violence in the home and being subjected to harsh physical discipline would predict changes in the externalizing and internalizing symptoms of children previously exposed to violence. LDS modeling has recently been put forward as an innovative methodological approach for

advancing the longitudinal study of trauma (King et al., 2006). LDS models are part of a larger family of longitudinal structural models designed to assess growth and change and offer an advantage over traditional change score approaches by partitioning the true score from the error variance in a time series and producing an optimally reliable latent change score over assessment points. In the present study, LDS models provide a dynamic means of testing whether violence exposure predicts changes in children's psychopathology symptoms across time. The structural equation modeling (SEM) framework adopted here also offers the advantage of accounting for the nonindependence of children's violence exposure over time, and allows us to address the question of whether violence exposure predicts *changes* in children's psychopathology symptoms, after accounting for children's prior symptoms and other key predictors of psychopathology.

The analyses proceeded in three steps. The same steps were followed for both externalizing and internalizing symptoms. First, a baseline LDS model was fit to the data to derive the latent symptom change scores. Second, we built on the baseline models to investigate whether witnessing violence in the home and/or experiencing harsh physical discipline predicted changes in children's externalizing and internalizing symptoms relative to their own developmental histories after accounting for other important child and family risk factors for psychopathology. Third, we ran multiple group models to examine whether children's previous exposure to physical abuse moderated the relationship between violence exposure and changes in psychopathology symptoms.

Models were estimated using Amos version 5.0 (Arbuckle, 2003). In order to evaluate model fit, we used the model chi-square test; however, because the interactive effect of sample size and model error on this test typically causes the model chi-square to be statistically significant with large samples even when the model represents a close fit to the data (MacCallum, 1990), we employed three additional fit indices: the comparative fit index (CFI; Bentler, 1990), the Tucker – Lewis index (TLI; Tucker & Lewis, 1973), and the root mean square error of approximation (RMSEA; Steiger, 1990). Model chi-square values with accompanying *p* values greater than .05 indicate a good model fit. CFI and TLI values greater than 0.95 and RMSEA values less than 0.05 indicate a good fit; CFI and TLI values between 0.90 and 0.95 and RMSEA values between 0.05 and 0.08 indicate an acceptable fit. (For a discussion of the various fit indices, see Browne & Cudeck, 1992; Medsker, Williams, & Holahan, 1994).

Missing data—Missing data ranged from 0% to 36% across variables (*Mdn* = 16%). The most frequently missing data were for harsh physical discipline (26% missing at baseline, 36% missing 18 months postbaseline, and 34% missing 36 months postbaseline). Missing data were addressed using full information maximum likelihood estimation under the assumption that the data were missing completely at random or for reasons that could be explained by other variables included in the model (Little & Rubin, 1987). In technical terms, a covariance coverage matrix is created that provides the proportion of available observations for each time point and pairs of time points. This method is a widely accepted method of addressing missing data within an SEM framework while allowing for the inclusion of all available data points (Arbuckle, 1996; Enders, 2001; Raykov, 2005), and in the present study retained all 2,925 participants for the analyses.

Key Variable Correlations

The correlations between all variables in the models are displayed in Table 2. Within-wave correlations between witnessing violence and children's internalizing and externalizing symptoms were consistently small, but significant (*rs* = .09 – .17). Within-wave correlations between harsh physical discipline and children's internalizing and externalizing symptoms

were small to moderate in magnitude (rs = .11 – .25). Within-wave correlations between witnessing violence and harsh physical discipline were small, but statistically significant (rs = .07 – .10)

Externalizing Symptoms

Baseline model—We estimated a baseline LDS model for the repeated measure of externalizing symptoms as assessed at baseline, 18 months postbaseline, and 36 months postbaseline, thereby creating two LDS that represent the change in externalizing symptoms between data collection waves (Figure 1). Alpha was set at .05, and thus all results reported as significant are p < .05 or better. The baseline model fit the observed data well, and the model fit was significant, $\chi^2(1) = 23.31$, CFI = 0.99, TLI = 0.95, RMSEA = 0.09. The model-implied mean level of externalizing symptoms decreased significantly from 16.15 to 14.43 externalizing symptoms from baseline to 36 months postbaseline. As displayed in Table 3, results from the model indicated that there was enough variability in how children changed between assessment points (i.e., variance in the difference scores) to justify testing whether the variation in children's latent externalizing change scores could be explained by witnessing violence and/or experiencing harsh physical discipline.

Does exposure to violence predict changes in children's externalizing scores?—Next, we built on the baseline LDS model (Figure 2) to examine the effects of witnessing home violence and experiencing harsh physical discipline on children's externalizing symptoms, after controlling for child gender, family income, caregiver psychopathology, and child age (for ease of presentation, these covariates do not appear in the figure, although the parameter estimates appear in Table 3). The model fit the data adequately, and the model fit was significant, $\chi^2(32) = 315.60$, CFI = 0.93, TLI = 0.88, RMSEA = 0.07. Although the TLI has fallen below 0.90, the CFI and RMSEA were still good for a model of this complexity. There was no relationship between witnessing violence and change in externalizing symptoms across assessments ($\beta_1 = 0.04$, $z = 1.02$, *ns*; $\beta_2 = 0.03$, $z = 1.02$, ns). However, experiencing harsh physical discipline did predict significant changes in children's externalizing symptoms across assessments ($\beta_1 = 0.12$, $z = 2.95$; $\beta_2 = 0.09$, $z = 2.95$). Although, on average, externalizing problems declined over time, children who experienced relatively high levels of harsh physical discipline showed more gradual declines and, in some cases, increases in externalizing problems from baseline to 36 months postbaseline. This effect remained statistically significant after controlling for child and family risk factors.

We also ran a multiple group model in order to examine whether maltreatment subtype moderated the relationship between exposure to violence (harsh physical discipline or witnessing violence) and changes in externalizing problems. Specifically, we were interested in whether the effects of exposure to violence differed for children who had been physically abused versus children who had experienced other forms of abuse. We hypothesized that exposure to violence might evoke a response that either reflected habituation or sensitization processes in youth who had already experienced physical violence. However, the model in which the effects of exposure to violence on children's externalizing symptoms were constrained to be the same for children who were physically abused versus children who were not physically abused was not a significantly worse fit than the model in which the effect of exposure to violence was free to vary across abuse subgroups, $\chi^2(2) = 0.7$, *ns*. Full analyses are available from the authors upon request.

Internalizing Symptoms

Baseline model—We estimated a baseline LDS model for the repeated measure of internalizing symptoms as assessed at baseline, 18 months postbaseline, and 36 months

postbaseline, thereby creating two LDS that represent the change in internalizing symptoms between data collection waves (Figure 3). The baseline model fit the observed data adequately and the model fit was significant, $\chi^2(1) = 32.53$, CFI = 0.98, TLI = 0.90, RMSEA = 0.10. The model-implied mean level of internalizing symptoms decreased significantly from 10.41 to 9.32, internalizing symptoms from baseline to 36 months postbaseline. As displayed in Table 4, results from this baseline model indicated that there was enough variability in how children changed between assessment points to justify testing whether the variation in children's latent internalizing change scores could be explained by witnessing violence and/or experiencing harsh physical discipline.

Does exposure to violence predict changes in children's internalizing scores?
—Next, we built on the baseline LDS model (Figure 4) to examine the effects of witnessing home violence and experiencing harsh physical discipline on children's internalizing symptoms, after controlling for child gender, family income, caregiver psychopathology, and child age (for ease of presentation, these covariates do not appear in the figure, although the parameter estimates appear in Table 4). The model fit the data adequately, and the model fit was significant, $\chi^2(32) = 361.60$, CFI = 0.92, TLI = 0.85, RMSEA = 0.07. Although the TLI has fallen below .90, the CFI and RMSEA were still good for a model of this complexity. There was no relationship between harsh physical discipline and change in internalizing symptoms across assessments ($\beta_1 = 0.07$, $z = 1.56$, *ns*; $\beta_2 = 0.06$, $z = 1.56$, *ns*). However, witnessing violence in the home did predict significant changes in children's internalizing symptoms across assessments ($\beta_1 = 0.11$, $z = 2.91$; $\beta_2 = 0.12$, $z = 2.91$). Although, on average, internalizing problems declined over time, children who witnessed relatively high levels of home violence showed more gradual declines and, in some cases, increases in internalizing problems from baseline to 36 months postbaseline. This effect remained statistically significant after controlling for child and family risk factors.

We also ran a multiple group model in order to examine whether maltreatment subtype moderated the relationship between exposure to violence and internalizing problems. Again, we were specifically interested in whether the effects of exposure to violence differed for children who had been physically abused versus children who had not been physically abused. The model in which the effect of exposure to violence on children's internalizing symptoms was constrained to be the same for children who were physically abused versus children who were not physically abused was not a significantly worse fit than the model in which the effect of exposure to violence was free to vary across abuse subgroups, $\chi^2(2) = 3.30$, *ns*. Full analyses are available from the authors upon request.

Discussion

Exposure to violence was associated with changes in children's psychopathology symptoms in this study of children previously reported to CPS. Specifically, harsh physical discipline was associated with deviations from the normative sample trajectory of declining externalizing symptoms and witnessing home violence was associated with deviations from the normative sample trajectory of declining internalizing symptoms. These effects of family violence were significant even controlling for two potential confounds—family income and caregiver mental health—and after controlling for the child's gender and age.

This study had several methodological strengths. First, the sample size was large ($N = 2,925$) and nationally representative of children involved with CPS in the United States. Second, whereas current caregivers reported on their children's externalizing and internalizing symptoms, the children themselves reported on the levels of violence they witnessed in the home. Past studies suggest that caregivers significantly underestimate the amount of domestic violence to which their children are exposed (Jaffe, Wolfe, & Wilson,

1990; O'Brien, John, Margolin, & Erel, 1997). Third, we utilized an SEM approach (LDS modeling) that allowed us to examine the association between witnessing violence, harsh physical discipline, and child psychopathology after controlling for normative developmental changes in children's externalizing and internalizing symptoms over a 36-month period as well as a number of potential confounds. The modeling technique also allowed us to account for the nonindependence of exposure to violence over time. Many past studies in this field have lacked either longitudinal data or sufficient power to take into account children's normative symptom changes and to adequately control for important confounds. Furthermore, because violent discipline tactics and domestic violence witnessed by children frequently co-occur, it is important to attempt to tease apart the effects of each type of violence so as to inform future studies and interventions. Our modeling technique allowed us to examine these questions.

Our findings were largely consistent with the extant literature showing that violence exposure is associated with psychopathology symptoms in children. Additionally, we ruled out three alternative explanations for why harsh physical discipline and witnessing violence were associated with child psychopathology.

First, in light of the extensive body of literature showing that mental health problems run in families (e.g., Kendall, 2000), it is not surprising that in our sample, caregivers with poor mental health were raising children who had elevated levels of externalizing and internalizing symptoms. However, exposure to violence was still predictive of children's psychopathology symptom changes even after controlling for caregiver mental health. Thus, we can conclude that our results are not simply reflective of a spurious association between family violence and child psychopathology generated by caregiver mental health problems or by transmission of a genetic vulnerability for mental health problems from parents to children.

Second, multiple studies have shown that poverty is associated with elevated rates of child psychopathology (Bradley & Corwyn, 2002; Brooks-Gunn & Duncan, 1997; Costello et al., 2003; McLoyd, 1997). In addition, studies suggest that low-socioeconomic status (SES) parents are more likely than high-SES parents to engage in harsh or neglectful parenting styles, which are associated with more childhood problem behaviors (e.g., Bradley & Corwyn, 2002). However, harsh physical discipline was uniquely associated with externalizing symptoms and witnessing violence was uniquely associated with internalizing symptoms even controlling for family income.

Third, it is conceivable that changes in children's symptoms merely reflect the passage of time and normative trajectories. However, in our models, we controlled for children's expected symptom trajectories and showed that exposure to violence predicted deviations from these trajectories.

Implications for Research and Theory

We suggest that more research is needed to better understand why family violence increases risk for children's mental health problems. For example, although NSCAW children reported on the violent events they witnessed, they were not asked how they encoded or interpreted the events (or indeed how they encoded physical punishment). Upon reviewing the literature on children who witness domestic violence, Black and Newman (1996) concluded that researchers should give more consideration to the ways in which children cognitively interpret the violent events they witness, and Crockenburg and Forgays (1996) found that children's negative emotional reactions to their fathers during marital arguments independently predicted children's behavioral adjustment. Future studies might look more closely at how children who have previously been exposed to violence encode violent events

they witness and the ways in which their parents discipline them in order to help better understand the long-term effects of family violence.

Children who have been exposed to violence severe enough to bring them to the attention of CPS, such as the children in this sample, might be particularly vulnerable to encoding the incidents they witness or experience themselves in a way that contributes to an internal representation of the world as extremely violent, unsafe, and unpredictable and, consequently, might have stronger and more negative emotional reactions to violence and conflict. Several studies have shown that children's histories, including their past exposure to parental conflict, influence how and how much witnessing marital conflict affects them (e.g., Cummings, Vogel, Cummings, & El-Sheikh, 1989; Davies, Myers, Cummings, & Heindel, 1999). Specifically, children who have been exposed to marital conflict more frequently in the past have more negative emotional reactions to new incidences of interparental conflicts (Davies & Cummings, 1998). If children who have already been victims of maltreatment encode adult domestic violence as especially threatening, this may increase their vulnerability to internalizing and externalizing problems. Pollak's work with physically abused children, for example, suggests that abused children display increased anticipatory monitoring in response to angry interpersonal situations in the environment and display a deficit in their ability to regulate their arousal (Pollak, Vardi, Bechner, & Curtin, 2005).

There are two aspects of the results that should be examined further in future studies. First, physical abuse did not emerge as a significant moderator of the relationship between family violence and children's internalizing and externalizing problems in these analyses. However, the relationship between family violence and other types of psychopathology (or specific symptoms of internalizing and externalizing problems) may indeed depend on the type of abuse the child experienced. Second, experiencing harsh physical discipline was associated with changes in externalizing symptoms, whereas witnessing violence was associated with changes in internalizing symptoms. As reviewed above, other studies have demonstrated that both forms of family violence are associated with both internalizing and externalizing problems. Thus, our findings will need to be replicated in other samples before we can conclude with certainty that different types of family violence have specific effects on different types of child problem behaviors. To the extent that our finding is real, however, one possibility is that the different cognitive meanings these two forms of violence have for children lead to different manifestations of distress.

Finally, other research conducted with the NSCAW sample (Jaffee & Gallop, 2007) and with other samples (Cicchetti & Rogosch, 1997) has found that formerly abused children who are "free" of significant mental health problems at one point in time rarely maintain good mental health over time. Our study suggests that one reason may be that children with histories of abuse are often reexposed to various forms of violence that predict the recurrence of mental health problems. Again, more research is needed in this area.

Implications for Practice and Policy

Victims of abuse and neglect are at elevated risk of witnessing and experiencing other forms of family violence. The results of this study suggest that intervention efforts to reduce rates of mental health problems in child victims of maltreatment must focus not only on protecting children from revictimization but must also work to decrease even nonabusive forms of physical discipline and the amount of adult domestic violence children witness in their homes. Intervention efforts might help parents manage relationship conflict or, at the very least, educate parents about the importance of buffering children from exposure to conflict.

Past research on children's emotional responses to witnessing marital conflict suggests that children are less distressed by nonviolent conflict when conflicts are resolved with a compromise or an apology (Cummings, Ballard, El-Sheikh, & Lake, 1991). Future studies could explore whether this finding holds for children who witness *violent* conflict in the home. The impact of various resolution strategies might differ for children who witness violent forms of conflict, in that children who witness a continuous cycle of domestic violence and resolution of violence (such as an abusive father who breaks down into tears and apologizes to the child's mother but then abuses her again the next week) might actually normalize violence and be more prone to future problems. Given past research suggesting that children who witness domestic violence are at risk of encoding violence as an acceptable behavior in relationships (Black & Newman, 1996), resolution-improving interventions might emphasize not only that the behavior was unacceptable but also model for children more appropriate conflict-resolution strategies and disciplinary techniques.

In sum, our findings suggest that reducing the amount of violence that children witness in the home and the frequency with which their parents use harsh physical discipline could be important foci of effective family therapy interventions and prevention programs for this vulnerable population. Preventing abuse from reoccurring may not be enough to divert children from the maladaptive trajectories on which their past abuse and home environments contributed to placing them in the first place.

Limitations

First, although harsh physical discipline and witnessing violence were significant and unique predictors of psychopathology symptoms, the zero-order correlations among these variables were modest. Second, although reliability and validity statistics for the short-form health survey (from which we created our caregiver mental health variable) were good, the measure is a broad and general measure of mental health. It does not ask questions about specific mental illnesses but rather asks more about daily impairment due to emotional problems. Third, it is possible that some parents underreported their use of violent disciplinary techniques or children's problems, given that they had already been brought to the attention of CPS. Although efforts were made to minimize this possibility by administering questions about physical discipline via an audio computer-assisted interview and interviewers were thus unaware of parents' responses, Tourangeau and Yan's (2007) meta-analysis found that computer administration did not lead to significantly increased reporting of sensitive information by research participants and, indeed, rates of missing data were higher for this variable than for others.

Fourth, although we included a number of variables in the LDS models that might have accounted for the association between children's experiences of family violence and their problem behaviors, it is possible that important confounds were not assessed (e.g., measures of neighborhood violence). Moreover, although we attempted to rule out the possibility that poverty accounted for the association between family violence and child psychopathology, it is possible that there was insufficient variability in income in this high-risk sample to adequately test this hypothesis. Fifth, although youth reported on witnessed violence in the home, caregivers reported on children's experiences of harsh physical discipline as well as child psychopathology symptoms, introducing shared informant variance. Sixth, although our models tested whether higher levels of violence predicted changes in psychopathology symptoms, we did not explicitly test whether changes in harsh discipline and witnessed violence predicted changes in psychopathology. Future research should examine this question, especially research intervention designs that alter parenting practices.

Children continue to be victimized by and exposed to domestic violence at alarming rates. In all likelihood, these children are at increased risk of psychopathology symptoms not only

because they have been maltreated or exposed to violence but also because of their family's poverty status, the neighborhood violence they witness, the poor schools they attend, and the inadequacy of their housing. Thus, studies that explore how and why specific aspects of these early childhood environments affect children's mental health are important foundational work that will allow for the development of more efficacious, cost-effective, and targeted interventions. Studies that test alternative hypotheses about links between family violence and child psychopathology help researchers develop more specific hypotheses about mechanisms that link early childhood stressors to child socioemotional development.

Acknowledgments

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Figure 1.
Baseline latent difference score (LDS) model for externalizing symptoms.
Note. In this model, Δ Score 1 is the LDS representing the change in externalizing symptoms from baseline to 18 months. Δ Score 2 is the LDS representing the change in externalizing symptoms from 18 months to 36 months. Double-headed arrows above the LDS represent the variance (σ) of the difference scores. Observed scores (externalizing scores) reflect true scores plus error. Double-headed arrows attached to the observed scores represent the error variance (σ) of the externalizing scores at each assessment.

Figure 2.
Latent difference score (LDS) model for the relationship between witnessing violence, physical discipline, and externalizing symptoms ($N = 2,925$).

Note. In this model, Δ Score 1 is the LDS representing the change in externalizing symptoms from baseline to 18 months. Δ Score 2 is the LDS representing the change in externalizing symptoms from 18 months to 36 months. The nonindependence of witnessing violence across assessments is represented by the regression of witnessing violence on itself across baseline, 18-month and 36-month assessments. The nonindependence of experiencing physical discipline across assessments is represented by the regression of physical discipline on itself across baseline, 18-month and 36-month assessments. Double-headed arrows represent the variance of latent and observed variables. Although not shown in the model for sake of clarity, the correlation between witnessed violence and harsh physical discipline was small but significant ($r = .06$, $p < .05$). Parameter estimates in Figure 2 are adjusted for age, gender, caregiver mental health, and income. Parameter estimates for the covariate controls are not included in Figure 2 but are available in Table 3.
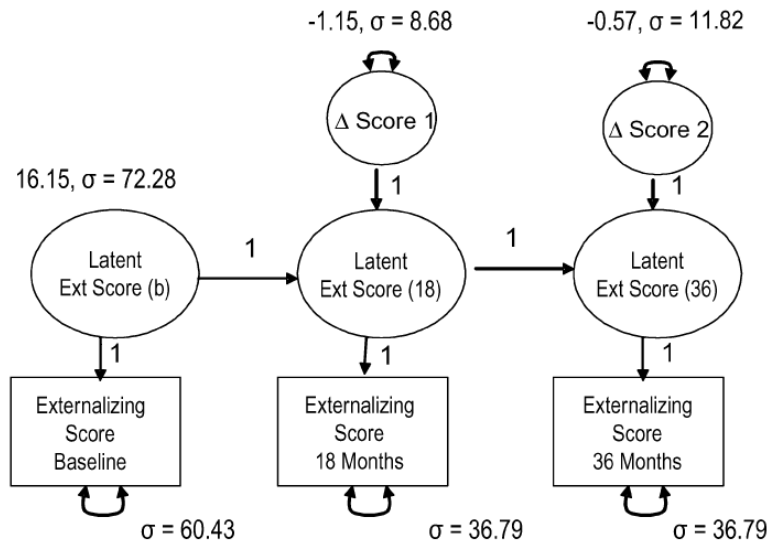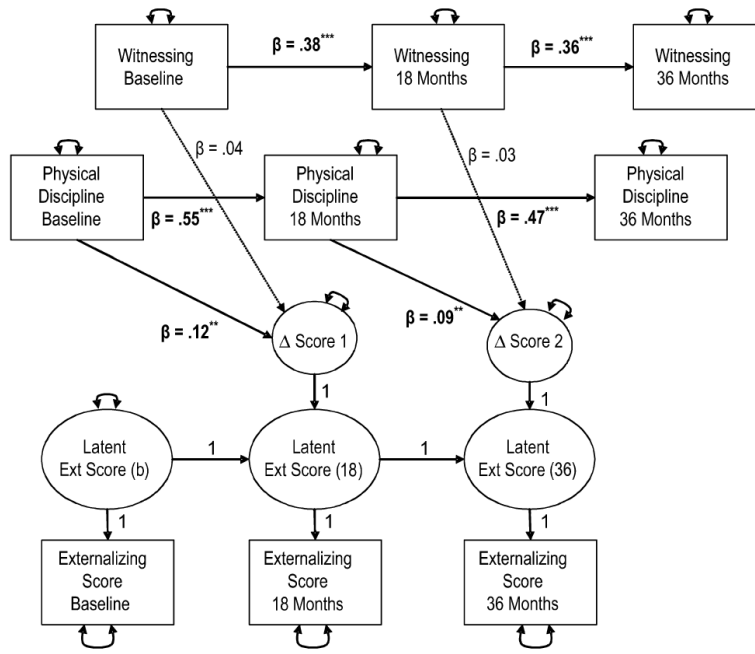$**p < .01$. $***p < .001$.
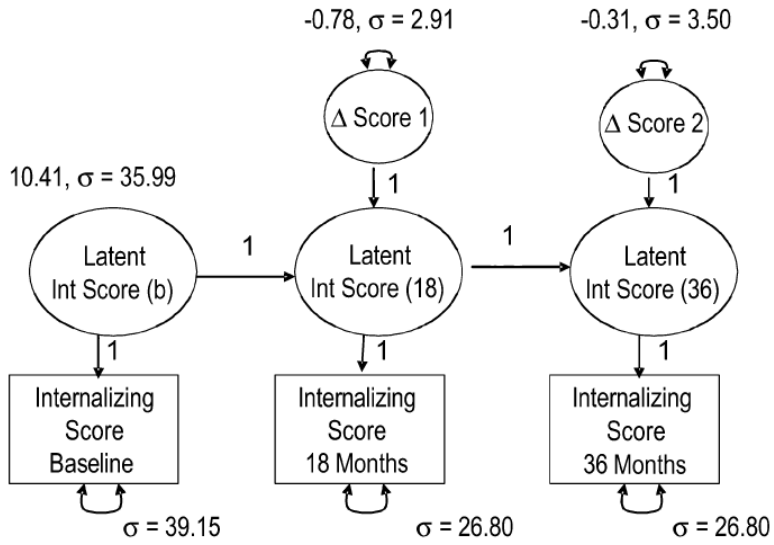
Figure 3.
Baseline latent difference score (LDS) model for internalizing symptoms.
Note. In this model, Δ Score 1 is the LDS representing the change in internalizing symptoms from baseline to 18 months. Δ Score 2 is the LDS representing the change in internalizing symptoms from 18 months to 36 months. Double-headed arrows above the LDS represent the variance (σ) of the difference scores. Observed scores (internalizing scores) reflect true scores plus error. Double-headed arrows attached to the observed scores represent the error variance (σ) of the internalizing scores at each assessment.
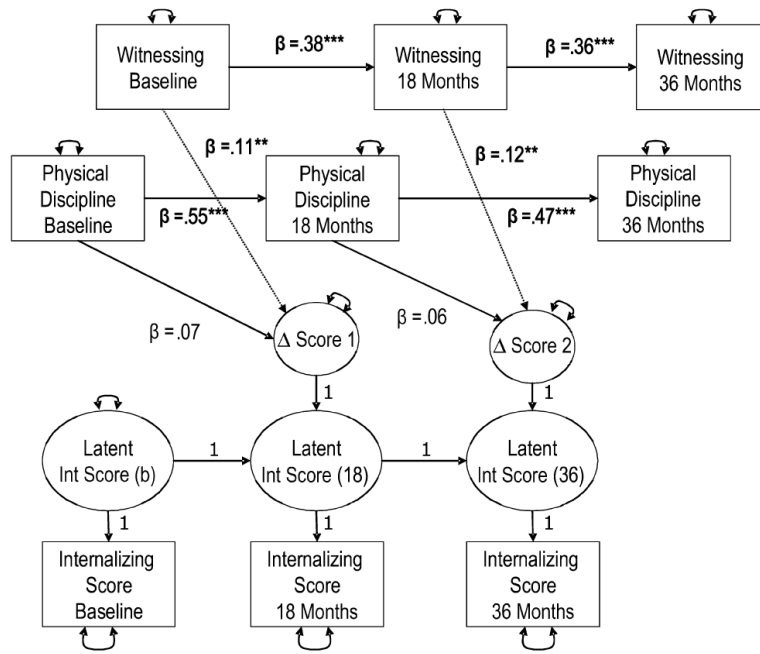
Figure 4.
Latent difference score (LDS) model for the relationship between witnessing violence, physical discipline, and internalizing symptoms ($N = 2,925$).

Note. In this model, Δ Score 1 is the LDS representing the change in internalizing symptoms from baseline to 18 months. Δ Score 2 is the LDS representing the change in internalizing symptoms from 18 months to 36 months. The nonindependence of witnessing violence across assessments is represented by the regression of witnessing violence on itself across baseline, 18-month and 36-month assessments. The nonindependence of experiencing physical discipline across assessments is represented by the regression of physical discipline on itself across baseline, 18-month and 36-month assessments. Double-headed arrows represent the variance of latent and observed variables. Although not shown in the model for sake of clarity, the correlation between witnessed violence and harsh physical discipline was small but significant ($r = .06$, $p < .05$). Parameter estimates in Figure 2 are adjusted for age, gender, caregiver mental health, and income. Parameter estimates for the covariate controls are not included in Figure 4 but are available in Table 4.
**$p < .01$. ***$p < .001$.

Table 1

Descriptive Statistics for Variables Included in the Latent Difference Score Models

	M	*SD*	**Range**
Externalizing symptoms, baseline	16.13	11.52	0 – 60
Externalizing symptoms, 18 months	15.14	11.13	0 – 60
Externalizing symptoms, 36 months	14.59	11.14	0 – 65
Internalizing symptoms, baseline	10.40	8.67	0 – 58
Internalizing symptoms, 18 months	9.72	8.35	0 – 47
Internalizing symptoms, 36 months	9.48	8.09	0 – 54
Witnessed violence, baseline	3.57	2.72	0 – 12
Witnessed violence, 18 months	3.15	2.56	0 – 12
Witnessed violence, 36 months	2.80	2.55	0 – 12
Physical discipline, baseline	6.80	11.18	0 – 142
Physical discipline, 18 months	4.94	9.65	0 – 87
Physical discipline, 36 months	3.87	8.08	0 – 94
Income[a]	2.82[a]	1.41	1 – 5
Caregiver mental health	48.48	11.16	12 – 70
Child age, baseline	9.63	2.98	5 – 16

[a] Income was recoded such that 2 = $10,000–19,999 per year; 3 = $20,000 – 29,000 per year.

Table 2

Correlation Matrix of All Variables in Latent Difference Score Models

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Gender	1.00															
2. Age	.07	1.00														
3. Income, W1	–.01	.05	1.00													
4. CGMH, W1	–.01	–.03	.17	1.00												
5. Ph. disc., W1	–.09	–.18	–.07	–.14	1.00											
6. Ph. disc., W3	–.05	–.18	NA	NA	.50	1.00										
7. Ph. disc., W4	–.06	–.21	NA	NA	.43	.54	1.00									
8. Wit. viol., W1	.02	–.08	–.01	–.05	**.10**	.08	.07	1.00								
9. Wit viol., W3	.05	–.03	NA	NA	.08	**.07**	.07	.32	1.00							
10. Wit. viol., W4	.08	.04	NA	NA	.04	.03	**.08**	.26	.43	1.00						
11. Int., W1	.01	.16	.01	–.31	**.11**	.06	.02	**.10**	.09	.11	1.00					
12. Int., W3	.01	.13	NA	NA	.07	**.14**	.10	.10	**.14**	.13	.66	1.00				
13. Int., W4	.03	.10	NA	NA	.06	.10	**.16**	.08	.11	**.16**	.46	.57	1.00			
14. Ext., W1	–.13	.13	0	–.26	**.25**	.17	.13	**.09**	.12	.12	.65	.43	.37	1.00		
15. Ext., W3	–.11	.11	NA	NA	.16	**.23**	.18	.07	**.15**	.13	.37	.66	.45	.60	1.00	
16. Ext., W4	–.11	.08	NA	NA	.16	.19	**.25**	.07	.11	**.17**	.32	.41	.67	.52	.65	1.00

Note. The correlations in bold are the correlations between the main outcome variables and the main predictor variables of interest for the research question.

*r*s .04 are significant at the *p*<.05 level; *r*s .05 are significant at the *p*<.01 level.

W1=Wave 1; W3=Wave 3; W4=Wave 4; CGMH=caregiver mental health; Ph. disc.=physical discipline; Wit. viol.=witnessed violence; Int.=internalizing symptoms; Ext.=externalizing symptoms; NA=not applicable.

Table 3

Latent Difference Score Model for Witnessed Violence and Physical Discipline on Externalizing Symptoms

Parameter estimates	Estimates	CR
Baseline model		
Externalizing symptoms intercept	16.15	75.48***
Initial status variance	72.28	27.58***
Difference score$_1$ mean	−1.15	−5.65***
Difference score$_1$ variance	8.68	4.09***
Difference score$_2$ mean	−0.58	−2.99***
Difference score$_2$ variance	11.82	3.87***
Model with covariates		
Exposure to violence		
Witness$_1 \rightarrow$ Diff$_1$	0.04	1.02
Witness$_3 \rightarrow$ Diff$_2$	0.03	1.02
Physical discipline$_1 \rightarrow$ Diff$_1$	0.12	2.95**
Physical discipline$_3 \rightarrow$ Diff$_2$	0.12	2.95**
Witness$_1 \rightarrow$ Witness$_3$	0.38	25.79***
Witness$_3 \rightarrow$ Witness$_4$	0.36	25.79***
Physical discipline$_1 \rightarrow$ Physical discipline$_3$	0.55	37.68***
Physical discipline$_1 \rightarrow$ Physical discipline$_3$	0.47	37.68***
Covariates		
Age$\rightarrow$ Externalizing intercept	0.15	7.10***
Gender$\rightarrow$ Externalizing intercept	−0.16	−7.79***
Caregiver mental health$\rightarrow$ Externalizing intercept	−0.24	−10.97***
Income$\rightarrow$ Externalizing intercept	0.03	1.32

Fit indices	Baseline model	Model with covariates
χ^2/df	23.31/1	315.60/26
CFI	0.99	0.93
TLI	0.95	0.88
RMSEA	0.09	0.07

Note. All estimates are standardized estimates.

CR is critical ratio (estimate/standard error); values > 1.96 are statistically significant at the $p < .05$ level.

Diff = difference score; CFI = comparative fit index; TLI = Tucker Lewis index; RMSEA = root mean square error of approximation.

**
$p < .01$.

***
$p < .001$.

Table 4

Latent Difference Score Model for Witnessed Violence and Physical Discipline on Internalizing Symptoms

Parameter estimates	Estimates	CR
Baseline model		
Internalizing symptoms intercept	10.41	64.64***
Initial status variance	35.99	25.69***
Difference score$_1$ mean	−0.78	−4.74***
Difference score$_1$ variance	2.91	2.35*
Difference score$_2$ mean	−0.31	−1.95***
Difference score$_2$ variance	3.50	1.86
Model with covariates		
Exposure to violence		
Witness$_1$→Diff$_1$	0.11	2.91**
Witness$_3$→Diff$_2$	0.12	2.91**
Physical discipline$_1$→Diff$_1$	0.07	1.56
Physical discipline$_3$→Diff$_2$	0.06	1.56
Witness$_1$→Witness$_3$	0.38	25.81***
Witness$_3$→Witness$_4$	0.36	25.81***
Physical discipline$_1$→Physical discipline$_3$	0.55	37.64***
Physical discipline$_1$→Physical discipline$_3$	0.47	37.64***
Covariates		
Age→Internalizing intercept	0.19	9.00***
Gender→Internalizing intercept	−0.01	−.29
Caregiver mental health→Internalizing intercept	−0.31	−13.94***
Income→Internalizing intercept	0.06	2.46*

Fit indices	Baseline model	Model with covariates
χ^2/df	32.53/1	361.60/26
CFI	0.98	0.92
TLI	0.90	0.85
RMSEA	0.10	0.07

Note. All estimates are standardized estimates.

CR is critical ratio (estimate/standard error); values > 1.96 are statistically significant at the $p < .05$ level.

Diff = difference score; CFI = comparative fit index; TLI = Tucker – Lewis index; RMSEA = root mean square error of approximation.

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.