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## Toward a Stress Process Model of Children's Exposure to Physical Family and Community Violence

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### Abstract

Theoretically informed models are required to further the comprehensive understanding of children's ETV. We draw on the stress process paradigm to forward an overall conceptual model of ETV (ETV) in childhood and adolescence. Around this conceptual model, we synthesize research in four dominant areas of the literature which are detailed but often disconnected including: (1) exposure to three forms of physical violence (e.g., child physical maltreatment, interparental violence, and community ETV); (2) the multilevel correlates and causes of ETV (e.g., neighborhood characteristics including concentrated disadvantage; family characteristics including socio-economic status and family stressors); (3) a range of consequences of ETV (e.g., internalizing and externalizing mental health problems, role transitions, and academic outcomes); and (4) multilevel and cross domain mediators and moderators of ETV influences (e.g., school and community factors, family social support, and individual coping resources). We highlight the range of interconnected processes through which violence exposures may influence children and suggest opportunities for prevention and intervention. We further identify needed future research on children's ETV including coping resources as well as research on cumulative contributions of violence exposure, violence exposure modifications, curvilinearity, and timing of exposure.

### Keywords

Children; Exposure to violence; Stressors; Mental health problems

### Introduction

The further development of theoretically informed models are among the pressing next steps in research on children's exposure to violence (ETV) (Feerick and Prinz 2003; Feerick and Silverman 2006; Prinz and Feerick 2003; Wolfe et al. 2003). Much research on children's ETV explores components of the stress and coping model but has resulted in separate and relatively unconnected research strands. Efforts to comprehensively integrate findings across aspects of the model are rare. We develop stress and strain theoretical perspectives by situating children's ETV in an overall stress process model that provides a framework for integrating research on types of ETV, the multilevel causes and correlates of violence, a range of consequences in children's lives, and mediating and moderating coping resources

(Pearlin et al. 1981; Pearlin 1989). This model is presented in Fig. 1. As Pearlin (1999) discusses in the stress process approach: "...the interconnectedness among relevant factors and the chains of effect that surface lead us to refer to stress as entailing a *process*" (p. 396, emphasis in original). Considering children's ETV in the overall stress process model may provide clearer understanding of the full range of processes and pathways involved and opportunities for prevention and intervention for children's health, safety, and well-being. Given our broad focus on the overall stress/violence process involving several components, we focus on physical forms of ETV in children's lives. Those considered are forms of interpersonal violence which share similarities in posing threats to children's personal safety, violate children's sense of the immediate environment as a safe haven, reduce the availability of parents for caretaking, and evoke some combination of helplessness, fear, anger, and high arousal (Margolin and Gordis 2000, p. 446).<sup>1</sup>

## ETV and the Stress Process Paradigm: Implications

We first elaborate four implications of drawing on the stress process paradigm for the study of children's ETV which are reflected in our model. First, a central tenet of the stress process model is that social stress exposure, such as ETV, is associated with social structure and social inequality (Pearlin 1989; Turner et al. 2006). More disadvantaged social locations indexed by both social statuses (e.g., lower socioeconomic status) and ecological contexts (e.g., impoverished neighborhoods) are associated with greater stress exposure (Aneshensel 1992; Mirowsky and Ross 2003; Pearlin 1989; Turner et al. 1995). Our framework recognizes that children are exposed to various forms of stress at any one point in time by their involvement in multiple social contexts and social roles.

Second, work on stress accumulation highlights the need to examine how stressors combine concurrently and over the life course (Gotlib and Wheaton 1997; Turner et al. 1995; Turner and Lloyd 1995; Rutter 1989). Stress process research investigates stress sequences (Thoits 1995) or how different stressors are related (Wheaton 1994). On stress interconnections, Pearlin (1989) further distinguishes primary (those that occur first in experience) and secondary stressors (that come about as a consequence of primary stressors). Instructive on the way in which ETV and other stressors combine over the life course is the study of Eitle and Turner (2002). They show that the effect of distal ETV, including witnessing domestic violence, on young adult criminal activity is mediated by proximal stress exposure in early adulthood, consistent with other stress process research emphasizing interconnectivities among stressors over the life course (Rutter 1989; Thoits 1995; Turner et al. 1995; Wheaton et al. 1997).

Central to research on connections among violence exposures more specifically is research on developmental victimology and the co-occurrence and interconnections of victimizations in children's lives (Finkelhor 2008; Finkelhor et al. 2005a, 2007a). This research further considers re-victimization where prior violence can increase the likelihood of further victimization of either the same or a different type (Finkelhor et al. 2007b). Other emerging research on ETV is beginning to specify how forms of violence are connected over the life course (e.g., Foster et al. 2008), and thus specify the pathways through which violence exposure affects children and youth. Violence sequences across domains have also been identified in several studies where, for example, ETV in the community is associated with violence exposure and conflict in the home (Lynch and Cicchetti 1998; Overstreet and Braun 2000). Research on violence exposure is also emerging on violence combinations including moderating effects (Buka et al. 2001; Lynch 2003, 2006). The focus on violence

<sup>1</sup>We focus on physical violence and do not consider other important violence exposures in the forms of child sexual abuse or psychological abuse due to space considerations.

combinations has policy relevance in identifying factors that may interrupt the connections among violence exposures concurrently and over the life course.

Third, the effects of stress are conceptualized as general rather than specific (Aneshensel et al. 1991; Horwitz et al. 1996; Horwitz 2002). A recent review of childhood stressors including ETV finds that these effects are general over a range of outcomes (McMahon et al. 2003). This approach is parallel to that of Brooks-Gunn et al. (1997a) on the general links between neighborhood poverty on child and youth academic and behavioral problems. The neighborhood research has emphasized their pervasive influences, but often finds some economic disadvantages are more strongly and consistently associated with academic outcomes than behavioral (Brooks-Gunn et al. 1997b; Leventhal and Brooks-Gunn 2000). We draw on this approach to broaden and complement research in the social learning tradition in criminology, which suggests specific links between ETV and externalizing types of behaviors, in line with research on the “cycle of violence” (Widom 1989). We consider associations with mental health and academic problems as well as role transitions.

Fourth, the stress process model includes a consideration of coping resources that are social and personal factors that people draw on when dealing with stressors, such as ETV (Thoits 1995; Pearlin and Schooler 1978; Pearlin et al. 1981). Coping resources include personal resources (e.g., self-esteem) and social coping resources (e.g., social support) that may further be diminished by violence exposure. Coping resources for children may be found across domains including family, school, peer, and neighborhood contexts (Zielinski and Bradshaw 2006) and coping may involve a combination of resources drawing on different domains (Li et al. 2007; Herrenkohl et al. 2005). Lowered coping resources in turn elevate distress illustrating an intervening process. Coping resources are therefore potential mechanisms through which ETV affects children’s outcomes. These resources may also buffer or attenuate the effects of stress on distress in moderating or interactive processes.

Coping factors have often been considered at the individual level of analysis. Recent social disorganization research in criminology and health indicates the need to broaden conceptualization of coping resources beyond the individual to features of communities, for example, “collective efficacy” or community level processes of social cohesion and coming together to intervene for the social good (Browning 2002; Sampson et al. 1997). The stress process perspective also considers the linkages between coping resources and social structure, where more advantaged social locations may lead to more resources mediating and moderating the effects of violence exposure (Pearlin and Schooler 1978; Pearlin 1989; Thoits 1995; Turner and Roszell 1994). For example, higher levels of collective efficacy, which decrease violence, are associated with less neighborhood disadvantage (Sampson et al. 1997). As others have noted for prevention and intervention, the key is first to reduce violence exposure (Luthar and Goldstein 2004) but furthermore, such efforts may also address the broader distribution of coping resources across groups. To the extent that mediating and moderating resources are socially structured they may indicate factors that are “potentially socially or programmatically modifiable” (Turner and Roszell 1994, p. 181). Addressing the social structure of coping resources may reduce the differential vulnerability of groups to the influences of violence exposure.

## Conceptual Model

Our conceptual model of children’s violence exposure addresses these four implications. Consistent with the perspective that ETV is associated with social structure and inequality, we will examine research on path a of Fig. 1 connecting these domains of the model and first and second conceptual boxes illustrated. The social structural correlates of mediators and children’s outcomes are further considered in the model through paths e and g of Fig. 1;

path e suggests that coping resources are systematically related to social structure as are children's mental health and academic problems (path g). Second, violence inter-connectivities are considered through paths a and d. The former considers interconnected chains of violence exposures and the latter reflects how other violence exposure may moderate or amplify the influence of physical interpersonal violence exposure on children's outcomes. Third, by including a focus on a broad range of children's outcomes in the fourth box in Fig. 1 including mental health problems, academic outcomes, and role transitions, we examine violence as having potentially broad and pervasive in influencing children's lives. While path b represents a direct connection between violence exposure and children's problem outcomes, indirect pathways are also plausible, such as those that involve coping resources. The third or lower middle conceptual box of Fig. 1 includes coping resources across ecological domains of children's lives (Zielinski and Bradshaw 2006) as well as the occurrence of protective resources across multiple levels of analysis. Mediating pathways represented by paths c and f connect children's exposure to physical violence to children's outcomes working through intervening mechanisms. Mediators decrease or explain the associations between ETV and mental health or academic problems. Moderating factors are incorporated with path d where family and community factors, for example, may decrease or buffer the influence of ETV on children's outcomes. We next review the literature on children's ETV around the four major conceptual domains highlighted in Fig. 1 and discuss their interconnections. We primarily draw on studies with general population samples of children and youth given our focus on ETV in the broader community, but discuss studies with more selective samples where appropriate.

## Domains of Physical Exposure to Violence

Community violence includes acts intended to cause physical harm against a person in the community (McCart et al. 2007), and these exposures can be direct in the form of victimization or indirect in the form of witnessing. Physical violence in the home includes maltreatment (may include parent-to-child abuse or neglect) and witnessing interparental violence and are often measured through the Conflict Tactics Scale (Straus 1979). Recent estimates of the prevalence of violence exposure are available in the results of the Developmental Victimization Survey (DVS), a national study of children aged 2–17 years that used the Juvenile Victimization Questionnaire to measure a broad range of childhood victimizations (Finkelhor et al. 2005a). In the year preceding the survey, more than one half of the children and youth experienced a physical assault with and without a weapon inclusive of peer, sibling, and dating violence (530 per 1000 children). Estimates of the victimization of youth in neighborhoods are also notably high, with 20% of children in an inner-city sample having been assaulted without a weapon, and 11% assaulted with one (Perez-Smith et al. 2001). Prior research estimates a quarter or approximately 6 million children aged 10–16 years experience a completed victimization in the previous year; one in eight experience an injury (or 2.8 million youth); and 1 in 100 (almost 250,000 youth) require medical attention for violence-related injuries (Thomson et al. 2002; Finkelhor and Dziuba-Leatherman 1994). In the DVS, child maltreatment most broadly defined occurred at a rate of 138 per 1000 children or an experience had by one in seven, while the estimate of physical maltreatment if physical harm occurred yields a physical abuse rate of 15 per 1000 children and an overall maltreatment rate of 124 per 1000 children (Finkelhor et al. 2005a).

Estimates of indirect victimization or witnessing violence are available in some detail. Across sources, children's exposure to parental violence in the home is estimated annually at 3 million children per year (Osofsky 2003). Among the studies directly addressing children's witnessing of parental violence, between 16% and 25% of those in two parent families reported physical aggression between their parents (Osofsky 2003). Any witnessing of victimization yearly is estimated at 357 per 1000 children, of these witnessing assault

without a weapon is most common at 209/1000, while witnessing domestic violence is less common at 35/1000 children (Finkelhor et al. 2005a). Reviews of studies estimating the prevalence of community violence exposure found rates of witnessing slapping/hitting/punching are relatively high ranging from 44% to 82% (Stein et al. 2003). Estimates of the prevalence with which children witness or hear about violence in the community tend to exceed actual victimization (Stein et al. 2003).

Several studies uniquely yield estimates of multiple violence exposures in children's lives. Osofsky's (2003) review indicates considerable co-occurrence of child maltreatment and domestic violence (see also Margolin 1998). In the realm of family violence, rates of co-occurrence were found between 5.6% and 11% using community samples, with even higher estimates found in samples of abused women and children (Appel and Holden 1998). Rates of overlap also vary according to the severity of items included to measure abuse occurrence (Appel and Holden 1998). Using the national community sample of the DVS, Finkelhor et al. (2005a) found 71% of all the children and youth reported one direct or a range of indirect victimizations (29% had no direct or indirect victimizations), and the number of separate incidents reported on average was three in the previous year. That victimizations co-occur is supported by the finding that 67% of those with any assault also experienced any other victimization, while 85% of those who witnessed victimization experienced any other victimization (Finkelhor et al. 2005a). Again using the DVS, 22% of children aged 2–17 years were found to have experienced *four* or more different kinds of victimizations in the previous year or “polyvictimization” (Finkelhor et al. 2005b). Multiple exposures are also found in more selective samples. With a disadvantaged sample of seventh graders, Fredland et al. (2008) found in their study that less than 1% of youth reported no violence exposure, 23% were exposed to one form, 45% were exposed to two, and 31% to three forms.

A comprehensive approach to measuring violence exposure in children's lives across contexts is a salient direction for future research. As summarized by Trickett et al. (2003) on the measurement of community violence more specifically there are issues involved in forming composite scores that remain an important topic in current research. Finkelhor and colleagues (2005b) have begun to address these measurement issues in forming a scale of “polyvictimization” and concluded weightings are useful but the enhancements were small, suggesting the use of the unweighted version of their polyvictimization scales (Finkelhor et al. 2005b). Further study on composite indices of either lifetime victimization or concurrent exposure to multiple forms in the previous year, for example, can be guided by study on stress measurement. Cumulative stress exposure indices have been comprised considering together one's childhood traumas, life events, daily hassles and ongoing chronic stressors (Turner et al. 1995). Such approaches may facilitate the operationalization of the total violence exposure load children face. Particularly important is that almost three-quarters of children have indirect or direct ETV per year.

The availability of multiple informants on similar sources of ETV further permits the investigation of inter-rater reliability as well as the relative impacts of combined or separate rater measures on adolescent outcomes. Research with a sample of 8- to 13-year olds and their primary caregivers found discrepancies between child and parent reports of children's ETV; however, the direction of the discrepancies varied by location of the exposure. Parent reports yielded higher estimates of shoving in the home, but lower estimates of shoving at school and in the neighborhood compared with children's reports (Thomson et al. 2002). Parent-child discrepancies in estimates of ETV are consistently found across studies (Aisenberg et al. 2007; Ceballo et al. 2001; Shahinfar et al. 2000; Thomson et al. 2002; Kuo et al. 2000). While parent reports are necessary for younger children (although cartoon-based measures have also been developed for this group, see Shahinfar et al. 2000), further attention must be given to the source of the report for older children. Although the



differences between parent and child ETV reports has been generally addressed as a methodological issue, it is striking that one study found that higher levels of agreement between child and parent reports of children's ETV were protective on levels of child's internalizing problems (Ceballo et al. 2001).

### **Summary and Future Directions on the Prevalence and Measurement of ETV**

Prevalence estimates indicate physical interpersonal violence exposure in the family and community is common in children's lives in both direct (victimization) and indirect (witnessing) forms. Research is beginning to examine the prevalence of multiple violence exposures. Further study on multiple exposures is essential for understanding the total violence load children face. Research studies simultaneously studying multiple violence exposures will advance our understanding of violence co-occurrences. Research instruments should draw on multiple reporters where possible. Indexes of victimization at one point in time and cumulatively over the life course should cover a range of violence exposures.

### **Multilevel Causes and Correlates of ETV**

The stress process model applied here emphasizes the connectedness of ETV to social structural antecedents and in particular, social inequality, and differential social locations (Pearlin 1989) further underpinning the direct effect (path a) posited in Fig. 1. Our review and conceptual model considers how child and adolescent violence exposure varies by neighborhood, family, and individual factors.

### **Neighborhood Characteristics**

Research is emerging on the community causes and correlates of ETV. Early research on the human ecology of child maltreatment connected neighborhood disadvantages with aggregate rates of abuse (Garbarino and Sherman 1980; Molnar et al. 2003). Two multilevel studies on child maltreatment indicate associations between community factors and children's ETV (Coulton et al. 1999; Molnar et al. 2003). In a study of child maltreatment potential (a measure of risk for maltreatment rather than actual acts of maltreatment) of caregivers with a child under 18 in the home, 5% of the variance was attributable to between-neighborhood variation, while 2% of the variance in actual physical abuse was between-neighborhood (Coulton et al. 1999). Molnar et al. (2003) also partitioned the variance in parent-to-child physical aggression (PCPA) reported at Wave 1 of the Project for Human Development in Chicago Neighborhoods (PHDCN) and also found 2% of the variance in PCPA was between-neighborhood. These studies indicate that neighborhood differences account for a portion of the variation in child abuse and maltreatment.

These studies have also pointed to neighborhood structural features associated with child maltreatment potential. One study found that higher levels of community impoverishment and child care burden (a ratio of children to adults) were associated with higher levels of physical abuse and child neglect (Coulton et al. 1999). Using the PHDCN, Molnar et al. (2003) examined three-level hierarchical linear models of parent-to-child physical aggression with children nested in families, which were in turn nested in neighborhoods. Results showed that net of child and family controls, concentrated neighborhood disadvantage increased PCPA, as did a 1995 measure of neighborhood homicide. The level of immigrant concentration in the community decreased PCPA, as did greater social networks measured at the neighborhood level (Molnar et al. 2003).

Future research should further consider the neighborhood characteristics that are predictive of polyvictimization or multiple violence exposures. More disadvantaged environments may be associated with multiple exposures to violence. In fact, Finkelhor et al. (2007b) found moving to a worse neighborhood was a correlate of re-victimization. Multilevel research

with a range of neighborhood characteristics would be informative, especially with controls on family and individual risk factors investigated in prior research on violence co-occurrence (e.g., Tajima 2004).

### Family Characteristics

More research on violence exposure has attended to family and individual level correlates than to neighborhood characteristics. Family risk factors for community ETV include family living arrangements and family structure (homes without two parents) receiving the most consistent empirical support (Buka et al. 2001). Single-parent family households, those with unemployment within the last 5 years, and lower socio-economic status were also found to have higher levels of parent-to-child physical aggression (Molnar et al. 2003). A study with a national sample of 2–9-year olds found stepfamilies and single parents had higher levels of child maltreatment and witnessing family violence than those with two biological parents (Turner et al. 2006). In the same study but with 10–17-year olds, Turner et al. (2006) found those living in stepfamilies had higher levels of witnessing violence and those living in single parent families had higher levels of other violence exposures. An older age of the primary caregiver was associated with lower levels of parent-to-child physical aggression (Molnar et al. 2003). Findings on family socioeconomic status and poverty are also consistent with stress and strain perspectives, as poverty is associated with harsher parenting as measured by the number of times the parent spanked the child (McLeod and Shanahan 1993). However, the effects of poverty are importantly distinguished by duration. Persistent poverty over time was negatively associated in the latter study with the number of times the child was spanked, while an indicator of the family being currently poor was positively associated with the number of times spanked. These findings indicate that parenting seems to be taxed in particular by recent poverty. Again, the timing and duration of family risk factors need to be investigated in relation to ETV among children and youth (McLeod and Shanahan 1996). The utility of a dynamic view of risk factors is supported by a recent study indicating that more time spent in risky contexts is linked to higher ETV in the community (Richards et al. 2004).

Family factors are also related to multiple violence exposures. Hughes et al. (1989) found maternal education significantly distinguished groups of children in their study of shelter samples and a community control group. The group with the largest proportion of mothers who had not completed high school were found among children who both witnessed domestic violence as well as had been physically abused. Tajima (2004) found lower levels of education and higher levels of depression and health problems were associated with the co-occurrence of child abuse and wife abuse in a national sample. Herrenkohl et al.'s (2008) review also concluded that socio-economic status is the most robust predictor of co-occurrence, although other family adversities tend to also be present. An analysis of national data found lower parental education and incomes levels were associated with higher levels of child maltreatment, witnessing family violence, and other major violence exposure among children aged 2–9 years (Turner et al. 2006). Education and income did not differentiate child maltreatment levels among those aged 10–17 years but lower levels were associated with more witnessing of family violence (Turner et al. 2006). In contrast, Hanson et al. (2006) using adolescent reports from a national survey found family poverty was not associated with any combined or specific types of violence exposure net of other family adversities. Rather, family substance use and family structure (not living with natural parents) increased the odds of adolescent violence exposure above individual socio-demographic factors. Finally, Salzinger et al. (2006) find negative parenting (including a measure of child maltreatment) was indirectly related to risk of community violence exposure through the mediating factor of children's self-reported and teacher reported

externalizing behavior problems. This model suggests more complex pathways through which violence exposures across domains are interconnected.

### Individual Characteristics

Research on the patterning of violence exposure is emerging with ethnically and socio-economically diverse samples. Community ETV is greater among ethnic minorities (Buka et al. 2001; O'Keefe and Sela-Amit 1997; Selner-O'Hagan et al. 1998). A study of adolescents in a diverse sample compared exposure levels of five types of violence across four racial/ethnic groups and found African-American youth had consistently higher mean levels of exposure to male-on-female spousal violence, female-on-male spousal violence, child abuse, threats or physical assault in the community, and weapon injury in the community (Malik et al. 1997). Hanson et al. (2006) also find clear racial and ethnic differences in violence exposure among adolescents: African-Americans, Hispanics, and Native-Americans are at a higher risk of any violence exposure than are whites, while Asians are not distinguished from whites in ETV. However, an in-depth study of Southeast Asian American adolescents found high rates of witnessing and victimization compared to national estimates with other racial ethnic groups (Ho 2008).

Other findings on race/ethnicity and ETV include that African-American youth are more likely than whites to witness domestic violence, while African-American, Hispanic-American, and Native-American youth are all more likely than whites to witness community violence (Hanson et al. 2006). These race/ethnic differences were found in multivariate analyses controlling for family adversities including poverty although such factors can be better specified by taking into account further grandparental characteristics including education (Duncan et al. 1994; Phillips et al. 1998). In an urban study, African-American youth were more likely to witness and be victimized by community violence than white and Hispanic youth (O'Donnell et al. 2002). Furthermore, results with a national sample of children and adolescents aged 2–9 years found African-American youth were at an elevated risk of witnessing family violence and other major violence exposure compared to other racial and ethnic groups, but group differences were not found in levels of child maltreatment (Turner et al. 2006). Similarly, another study of parent-to-child aggression found that when adjusted for SES, there were no racial/ethnic differences in exposure on any items except being hit with an object (O'Keefe and Sela-Amit 1997). Among older children in Turner et al.'s (2006) study, Hispanic children were at risk of child maltreatment and both African-American and Hispanic children had high levels of other major violence exposure. A national study found that African-American youth were more likely than whites to witness violence (Finkelhor et al. 2005a; see also Schilling et al. 2007). Hispanic youth were at the highest risk of assaults without injury followed by white and then African-American youth. Together these studies suggest that racial and ethnic differences in violence exposure are prevalent and the need for further research looking at specific exposures as well as total exposure composites.

Reviews also find fairly consistent support for greater male than female ETV in the community (Buka et al. 2001). However, some complexities are found in the literature. For example, direct exposure to victimization in the community and at school was found in a disadvantaged sample of 11–14-year olds in Brooklyn to be higher for males than females, but no gender differences were found in direct victimization at home (Springer and Padgett 2000). Furthermore, indirect victimization or exposure to witnessing at home was higher for females than males. Hanson et al. (2006) found with their national study of adolescents that females were more likely than males to witness domestic violence and were at a higher risk of sexual assault. Boys were at a higher risk of physical assaults. These gendered patterns for sexual assault and physical assault were also found in a sample of high school seniors



(Schilling et al. 2007). Finkelhor et al. (2007a) also found males were at higher risk for polyvictimization, measured across a broad range of violence exposures.

Some research indicates that older adolescents tend to have higher levels of exposure to community violence than younger ones (Malik et al. 1997) but other research indicates some inconsistencies in patterning of exposure by age (Buka et al. 2001). Older adolescents may be more likely to witness violence in the community but not in the home, to experience sexual assaults, and to be exposed to polyvictimization (Hanson et al. 2006; Finkelhor et al. 2007c).

Finally, drawing on insights from the ecological–transactional model, higher levels of externalizing behavior problems are also associated with higher levels of community violence exposure, both in the forms of witnessing and direct victimization in support of the direct effect hypothesized in Fig. 1 (path a) (Lynch and Cicchetti 1998). Research with longitudinal data assessing behavior problems in first grade find influences on violence exposure in middle school, 5–7 years later (witnessing community violence over time for girls and victimization in boys) (Boyd et al. 2003). Storr et al. (2007) found that scoring in the highest quartile of aggressive behaviors in Grade 1 elevated the odds of exposure to assaultive victimization in early adulthood (ages 20–23): higher reading readiness scores in Grade 1 decreased assaultive victimization.

### Violence Interconnections

Consistent with the tenets of developmental victimology (Finkelhor 2008), an ecological–transactional model of violence exposure (Lynch and Cicchetti 1998), and stress models over the life course (Rutter 1989; Gotlib and Wheaton 1997), further study is required on how types of violence exposure at different levels of analysis may also influence exposure to other forms of violence over time. Our model predicts that violence exposure should be positively associated with other violence exposures as postulated by the direct effect in Fig. 1 (path a). Longitudinal research will advance the disentanglement of these pathways. Exposures listed in the middle block of the conceptual model may also occur concurrently. Furthermore, understanding specific *types* of connections will illuminate pathways through which primary exposures have their influence. For example, children who experience community violence are also at heightened risk of experiencing domestic violence and child maltreatment (Garbarino et al. 1992; Lynch and Cicchetti 1998; Overstreet and Braun 2000), and children living in household with domestic violence are also at increased risk of themselves becoming victims (Herrera and McCloskey 2001; Osofsky 1995). The co-occurrence of child abuse and children's exposure to domestic violence is corroborated in several reviews (Appel and Holden 1998; Herrenkohl et al. 2008). It would be useful to study these patterns of interconnections developmentally to identify ages where the risks of specific types of overlap among these forms of violence are greatest. Other pathways have not yet been fully investigated including how among older children, more violence in the home may lead to spending more time in communities and in turn more exposure to community violence.

That violence exposure in one context elevates the risk for exposure in others is supported by several studies. Finkelhor and colleagues (2005a, 2007b) theorize that one form of victimization can be a precursor or catalyst for new exposures, or exposure to more than one type of violence may be due to common neighborhood conditions. Mrug et al. (2008) found violence exposures across school, home, and neighborhood contexts were positively associated with correlations ranging from  $r = 0.12$  to  $0.23$ . Intercorrelations among other violence exposures range from  $0.07$  (between family and community violence) (McCart et al. 2007) to  $0.38$  (between direct and indirect community violence) (Henrich et al. 2004). Further evidence of violence interconnections is found with a national household probability

sample of adolescents (the National Survey of Adolescents) aged 12–17 (Hanson et al. 2006). Net of a range of control variables, both witnessing domestic violence and community violence as reported by adolescents are associated with physical assaults. Domestic violence exposure elevated the risk of physical assaults in the family. Witnessing community violence was associated with almost six times the odds of exposure to domestic violence, and the converse relation was estimated with an odds ratio of 5.4 (Hanson et al. 2006). Furthermore, all the types of violence exposures (including sexual assault) were positively associated with witnessing community violence.

The majority of studies to date examining multiple exposures have yielded cross-sectional results. However, longitudinal studies on the stability in violence exposure are emerging (Lambert et al. 2005) (path a in Fig. 1). The latter study with a school-based urban sample predicted community ETV in Grades 7 and 8 controlling on Grade 6 exposure and found increases with time in terms of prevalence of witnessing and victimization. This finding is in keeping with research on higher levels of community violence exposure at older ages. Further study is required on the stability and change in ETV over time across samples.

### **Summary and Future Directions on the Multilevel Correlates and Causes of ETV**

A range of correlates of exposure to physical interpersonal violence have emerged. More study on neighborhood correlates (e.g., concentrated disadvantage) is needed as correlates of ETV and especially of polyvictimization or multiple violence exposures. More details are available in extant literature on family and individual factors than neighborhood conditions. Family structure and economics are associated with parent-to-child physical aggression, witnessing violence in families, and violence co-occurrence. More research on family risk dynamics (e.g., trajectories of poverty) would be informative in prevention efforts. Socio-demographic factors including race/ethnicity, gender, and age suggest minority children are at particular risk for community violence exposure, males are at higher risk for polyvictimization, and older youth tend to have higher levels of community violence exposure and polyvictimization. Further research on potential socio-demographic patterns of specific types of violence cooccurrences is needed. Emerging support for violence interconnections concurrently and over the life course is consistent with a stress process perspective. Further research on how types of violence exposures are interconnected may advance prevention and intervention efforts.

### **Immediate and Long-Term Consequences of ETV**

Pervasive effects of violence exposure are found among children and adolescents (Macmillan 2001; Margolin and Gordis 2000). Below, we summarize the effects of each of the three forms of violence exposure on children and adolescents' behavioral, academic, and transitional outcomes as indicated by path b in Fig. 1. This approach facilitates the comparison of the generality vs. specificity of types of ETV effects. The stress process literature predicts general effects of ETV as a form of stress on various outcomes. By contrast, more specificity in ETV effects is predicted by the cycle of violence literature and social learning theory. These perspectives predict ETV will affect externalizing responses more strongly than other forms of behavior problems. We highlight recent developments on the influence of multiple exposures where applicable and studies using longitudinal data.

#### **Parent–Child Physical Aggression**

Reviews document the pervasive immediate and long-term associations of violent victimization including parent-to-child maltreatment on children's internalizing, externalizing, and academic problems (Boney-McCoy and Finkelhor 1995; Malinosky-Rummell and Hansen 1993; Margolin and Gordis 2000). A comprehensive review of the

long-term effects of physical abuse in childhood indicates a range of influences, including the perpetration of violence in subsequent relationships (Malinosky-Rummell and Hansen 1993). In a study inclusive of victimizations across multiple domains, child maltreatment had the strongest relative effects on depression and anger/aggression among a national sample of 2–9-year olds and on depression among 10–17-year olds (Turner et al. 2006). Similarly, results from a national sample of youth aged 10–16 years indicated that physical assault by a parent showed the strongest effect on an outcome measure of trouble with a teacher out of seven other realms of violent victimization assessed (Boney-McCoy and Finkelhor 1995). While findings are more consistent on behavioral outcomes, findings on educational outcomes are not as coherent. The results of a longitudinal study from New Zealand found retrospectively reported child sexual and physical abuses were associated with educational decrements in early adulthood; however, these associations were largely explained by family and individual factors (Boden et al. 2007). More longitudinal research on diverse samples will illuminate long-term associations between maltreatment and educational outcomes.

Studies are beginning to emerge on the role of the timing and duration of violence exposure on children in the area of child maltreatment. Theoretical arguments have been forwarded for more detrimental effects of each of early and later maltreatment exposures, respectively. *Early exposures* are posited as more detrimental due to the interruption of fundamental developmental task completion that will disadvantage children throughout life. Support for the early timing perspective was found with growth analyses of behavior problems on a prospective longitudinal community sample of children where early physical harm (prior to age 5) was associated with higher levels of problem behaviors over time than was later harm (after age 5) (Keiley et al. 2001). However, the *later exposure* hypothesis posits that more proximal events in the life course may be more salient than distal experiences (Ireland et al. 2002). More pervasive detrimental effects (i.e., on official and self-reported delinquency and parent reported behavior problems) of adolescence-only maltreatment than exposures in childhood were found using a longitudinal data set with substantiated cases of maltreatment (Thornberry et al. 2001; Ireland et al. 2002). Furthermore, highlighting the role of the duration of maltreatment, persistent maltreatment increased the odds of teen pregnancy, drug use and general delinquency (Thornberry et al. 2001) and chronic offending (Ireland et al. 2002). These results suggest the need to differentiate persistent from intermittent maltreatment.

Semi-parametric mixture models were used to study child maltreatment in a large birth cohort of children with contact with the Queensland (Australia) child protection system and six qualitatively distinct trajectories were identified including those chronically victimized, those with low victimization, and those with peaks during key schooling transitions (Stewart et al. 2008). Maltreatment trajectories were associated with juvenile justice system contacts such that children in the childhood-only maltreatment groups had lower rates of offending than did those whose maltreatment extended into adolescence. These results also suggest a salience of adolescent maltreatment for adolescent offending. Further understanding of child maltreatment trajectories would benefit from using other measures of child maltreatment in general population samples. Furthermore, application of the semi-parametric mixture methodology to other forms of violence exposure beyond child maltreatment would further our understanding of the longitudinal life course dynamics of violence exposure over time and its influences (Nagin 1999; Nagin and Tremblay 2001).

## Domestic Violence

Reviews document the pervasive detrimental links between domestic violence exposure and behavior problems (Edleson 1999; Evans et al. 2008; Graham-Bermann and Edleson 2001; Kitzmann et al. 2003; Margolin and Gordis 2000; Wolfe et al. 2003). With a national

sample, taking into account multiple violence exposures and adversities, witnessing violence in the home had a significant net detrimental association with mental health among children aged 2–17 (Turner et al. 2006; see also Fredland et al. 2008 for similar results). Witnessing violence in the home had stronger associations than witnessing violence in the community (Fredland et al. 2008).

Developments in research design further advance the understanding of intimate partner violence exposure. A study using maternal retrospective reports of domestic violence on five-year-old twin pairs in the U.K. (Jaffee et al. 2002) found that net of genetic factors and other environmental influences, domestic violence accounted for 2% of the variance in children's internalizing behavior problems, and 5% of the variance in their externalizing problems. This study rules out competing hypotheses regarding the misattribution in prior research of genetic influences to social, and establishes domestic violence as an environmental influence on children's behavior problems.

Reviews have identified the need for research to attend to the long-term effects of ETV, and in particular of witnessing violence (Rossman 2001). Using a prospective longitudinal design, a study examined the timing of domestic violence effects on children's behavior problems net of physical abuse exposure and a range of control variables (Yates et al. 2003). This study found evidence of long-term prospective effects of exposure to parental violence in the home during the preschool period on girls' internalizing behavior problems at age 16, and on externalizing behavior problems at the same age in the full sample. However, parental violence in middle childhood was not influential on children's later outcomes net of preschool exposure and physical abuse (Yates et al. 2003). Contemporaneous effects were also observed in boys with middle childhood parental violence exposure on externalizing behaviors at that time. This set of findings suggests particular components of ETV may have different effects over time than immediately.

In research that attends to *both* child maltreatment and witnessing domestic violence, Margolin and Gordis' (2004) observation still holds that research has not yet fully clarified if exposures to multiple types of violence increase the risk of negative effects for children. Using longitudinal data with a modest size sample of Israeli children from family services agencies, Sternberg et al. (2006) examined the prospective effects in adolescence of witnessing domestic violence, being a victim of physical violence and being a combined witness/victim on behavior problems as reported by three informants. The results of this study were complex and mixed in patterns observed by reporter. They warrant further prospective investigation with multiple informants and larger samples. Wolfe et al. (2003) find small effect sizes, albeit from four studies, in the direction of poorer behavioral functioning for those exposed to combined family violence (i.e., witnessing and victimization) than witnessing alone. Kitzmann et al. (2003) found the effect sizes for children exposed to combined family violence did not differ significantly from those witnessing violence. However, results from a mega-analysis, involving the raw data from 15 different studies, afforded more powerful tests than previously available (Sternberg et al. 2006a): being both witnesses of violence between their parents and direct victims of physical abuse increased the odds of clinically significant levels of internalizing problems compared to either form on its own, in support of the "double whammy" hypothesis (Hughes et al. 1989). The results of the mega-analysis were less clear, however, for externalizing problems. In terms of the relative effects of either *type* of family violence exposures, the predicted stronger effect of physical abuse victimization compared to witnessing violence on clinically significant levels of problem behaviors was not supported. In fact, on clinical levels of internalizing problems, witnessing parental violence had a stronger elevating influence than physical abuse. Finally, in a French-Canadian school-based sample of 15–19-year olds, the double whammy hypothesis was supported using youth reports on violence

exposure on both internalizing and externalizing problems, albeit with a low study response rate (Bourassa 2007). While some evidence supports that multiple exposures to violence in the family domain lead to worse outcomes for children, it is not fully consistent.

### Community Violence

In addition to family violence, reviews further comprehensively document the pervasive effects of community violence exposure on children and youth over a range of outcomes (Buka et al. 2001; Lynch 2003, 2006; Margolin and Gordis 2000). Empirical study is now emerging on children's violence exposure cumulatively across contexts and as modifying other exposures (Mrug et al. 2008). However, further study is required on moderation effects across outcomes as research, considering interaction terms involving community violence in the forms of witnessing and victimization, showed no interaction effects on academic achievement (Henrich et al. 2004). Recent studies have also addressed curvilinear effects or the "desensitization hypothesis" (Mrug et al. 2008; McCart et al. 2007; Ng-Mak et al. 2004) and findings are also emerging on the effects of the timing of community violence exposure (Spano et al. 2006).

Within the community ETV literature, consistent effects have been found on externalizing forms of behavior problems over different age groups and studies. Several studies in fact have found effects of community violence only on externalizing problems, but not on internalizing behavior problems (Cooley-Quille et al. 1995; Farrell and Bruce 1997). Using propensity stratification methodology with longitudinal data on 12- and 15-year olds from the Project on Human Development in Chicago Neighborhoods data, Bingenheimer et al. (2005) found evidence for links between exposure to firearm violence and subsequent violence perpetration (firearm violence exposure doubles the probability of perpetrating serious violence in the next two years). This methodology takes prior violence exposure and numerous other factors into account in forming the propensity score and then within propensity strata the focal relationship above was examined, a process which reduces selectivity biases. Furthermore, a study of predominantly male early adults aged 18–23 years found witnessing community violence in the previous year was associated with early adulthood criminal activity net of adolescent deviance (Eitle and Turner 2002).

Although consistent effects of violence exposure are observed on externalizing problems as predicted by social learning theories, the range of results favor more general effects consistent with a stress process perspective. Results from a highly disadvantaged sample of 11- to 15-year-old youth further indicated that community violence exposure was associated with symptoms of post-traumatic stress disorder (PTSD) net of control variables (Mazza and Reynolds 1999). Subsequent analyses in this study indicated PTSD mediated the association between community ETV and depression and suicidal ideation. Another study found an association between witnessing a stabbing and knowing someone who was murdered with both suicidal ideation and attempts among urban adolescents (Pastore et al. 1996). However, this same study did not find an association between violence exposure and clinically significant levels of depression. In addition to the externalizing effects, community ETV was linked to internalizing problems over time in a study of adolescent males (Gorman-Smith and Tolan 1998). Furthermore, in a disadvantaged sample of 7-year-old African-American youth and their caregivers, ETV in the community was associated with children's reports of depression or anxiety but not with parent or teacher assessments (Hurt et al. 2001).

Also on internalizing outcomes, results from a sample of adolescents (aged 14–19 years) attending inner city schools found community violence exposure was associated with depression among females but not among males (Moses 1999). However, in the same study, ETV was associated with hostility symptoms among both males and females. A study of the



impact of serious violence exposure against a family member in study of adolescents in Columbia, South America indicates strong effects on internalizing symptoms (Kliewer et al. 2001). A large-scale survey study of students in the 6th, 8th, and 10th grades found positive associations between exposure to community violence and both internalizing and externalizing behavior problems (Schwab-Stone et al. 1999). This study found the age of children moderated the association between ETV and internalizing problems, where younger children were more likely to respond with internalizing problems than were older youth.

The research reviewed above indicates more pervasive evidence for the general effects of violence exposure on internalizing and externalizing domains of children's and youths' functioning. However, some evidence indicates specific types of effects for certain types of violence exposures. For example, in a sample of preschool children, both child reports (cartoon-based) and parental reports of community ETV produced a similar pattern of findings, where witnessing violence was associated with internalizing problems, but victimization was associated with externalizing problems (Shahinfar et al. 2000). Evidence of specific patterns of effects for witnessing violence and victimization were also found in a study of 9- to 15-year olds (Howard et al. 2002). In that study, witnessing violence was associated with intrusive thoughts/feelings from past, vigilance and avoidance, and distraction. However, victimization was associated with despondency about the future and a lack of belongingness (Howard et al. 2002). Further research is required as to the specificity and generality of both the outcomes and types of ETV influencing children.

Lynch's (2006) review of community violence exposure effects points to mixed patterns regarding academic outcomes with detrimental effects found in some but not all studies. A recent study examined the impact of a child report of community violence exposure on a measure of reading ability and IQ scores among urban children aged 6–7-years old (Delaney-Black et al. 2002). Results indicated that net of a range of control variables, including caregiver IQ and socioeconomic status, violence exposure decreased children's IQ scores. A second analysis found that net of controls and prenatal alcohol exposure, violence exposure in the community decreased children's scores of reading ability (Delaney-Black et al. 2002). A cross-sectional study of a sample of disadvantaged youth further explored the association between community violence victimization and school record information among urban children in grades 3, 4, and 5 (mean age of 9.5 years) (Schwartz and Gorman 2003). In a latent variable model, victimization in the community decreased academic functioning; however, this effect was fully mediated by behavior problems (Schwartz and Gorman 2003). Yet, with a disadvantaged urban sample of adolescents studied prospectively over grades 6–8, a longitudinal effect of witnessing community violence exposure was found on changes in academic achievement, net of violence commission, although victimization did not have a net effect (Henrich et al. 2004). While the cross-sectional negative association of witnessing violence on academic achievement was partially mediated by depressive symptoms, the longitudinal effect was in contrast not mediated by these symptoms.

Also in support of a direct association, the results of a study with a disadvantaged sample of 7-year-old African-American youth and their caregivers found that higher exposure to community violence was associated with a lower grade point average and more days of school absence (Hurt et al. 2001). In a study with a prospective longitudinal sample transitioning to adulthood, Macmillan and Hagan (2004) found direct personal victimization in adolescence was negatively associated with GPA and highest grade completed, net of delinquency involvement. This finding draws further attention to adolescent victimization for educational attainments. Ideally, research on educational outcomes would simultaneously take into account multiple forms of violence exposure similar to emerging research on behavior problems to better specify the long-term effects.

Other outcomes considered in Fig. 1 and in some research on ETV are a set of transitional outcomes (Hagan and Wheaton 1993; Hagan and Foster 2001). These include dropping out of school, suicidal ideation, running away from home, and teenage pregnancy. The influence of other violence exposures on transitional outcomes is found with national data on adolescents where physical and sexual assault as well as witnessing violence are associated with suicidal ideation (Waldrop et al. 2007). Further analyses in other samples of these transitional outcomes with multiple violence exposures would be informative. Developmental parallels of these serious outcomes in adolescence should also be developed in analogous forms among younger children, for example, in terms of school absence (e.g., Hurt et al. 2001) instead of school dropout, or in social withdrawal rather than suicidal ideation, or in running away from home at younger ages rather than early home leaving among older youth.

### Summary and Future Directions on Consequences of ETV for Children

**Cumulative Contributions**—Multiple child outcomes are affected by parent-to-child physical aggression, domestic violence, and community violence. Some research inclusive of multiple victimization shows child maltreatment may have the strongest relative effects on depression, yet research is not fully consistent. Further research on the timing and duration of child maltreatment would clarify findings to date on early versus later influences. Persistent maltreatment is emerging as particularly harmful, but more longitudinal research is needed on child maltreatment histories. Pervasive short- and long-term influences of domestic violence are also found, net of other violence exposures. Some studies suggest witnessing violence between parents and direct physical abuse increases the odds of internalizing problems compared to either form on their own. Further study is required for definitive conclusions of this combination across types of outcomes. Finally, support for detrimental influences of community violence is found across outcomes including externalizing problems, internalizing problems, and academic outcomes.

Pressing future research directions involving community violence is built on the “double whammy” hypothesis (Hughes et al. 1989) in family violence research regarding the combined and potentially more potent effects of co-occurring child and domestic violence. Empirical study on this hypothesis has yielded mixed results. Research shows that more victimization exposures are associated with higher levels of children’s depression and anger/aggression (Turner et al. 2006). The latter study also highlights that specific victimizations generally retain net effects on children’s mental health when measured simultaneously.

Research on combined exposures includes study by Finkelhor et al. (2007a) on “polyvictimization” defined as four different types of victimization experiences in the previous year. Using two waves of a national sample with children aged 2–17 years, their research establishes that previous year polyvictimization increases traumatic symptoms (anger, depression, anxiety) net of prior lifetime victimization and prior trauma symptoms. This study rules out several competing hypotheses for the observed association in cross-sectional research between polyvictimization and trauma symptoms (Finkelhor et al. 2007c). Schilling et al. (2007) find longitudinal effects of childhood adversities in a sample of high school seniors, including violence exposure, on a range of mental health outcomes in the transition to adulthood supporting the generality of these effects. Furthermore, the latter results show net influences of violence exposures (e.g., witnessing injury/murder, physical and sexual assault) on depression, drug use, and antisocial behavior taking into account other exposures and lifetime adversities. Finally, a cumulative index indicates that more stress exposure is associated with worse mental health outcomes (Schilling et al. 2007).

To date, the majority of studies on combined exposures have examined children’s behavior problems. Research is now emerging on academic outcomes. Holt et al. (2007) found among

a diverse school-based sample of 10- to 12-year olds canvassing a range of victimizations (e.g., child maltreatment, sexual victimization, witnessing, and indirect victimization, peer victimization) that multiply victimized youth had higher levels of psychological distress and lower academic grades than minimally victimized youth and those primarily victimized by their peers.

Building on emerging findings in domestic violence research on the timing of exposure, a study with community violence exposure with a disadvantaged longitudinal sample has similarly found more proximal rather than distal exposure has a greater impact on adolescent violent behavior (Spano et al. 2006). Although the relative effects of recent compared to prior exposures is a central issue, it is additionally important from a stress process perspective to trace the direct and indirect pathways from violence exposures over the life course to various outcomes including violent behavior. The total effects of early exposure will include both direct and indirect pathways through later exposures that will more fully illuminate interconnections among stressors and thus the processes involved.

**Modification**—Buka et al.'s (2001) review points to two competing hypotheses regarding the modifying effects of family and community violence exposure: *exacerbation and protection* (see also Lynch 2003, 2006). Most recently, a school-based study of predominantly African-American adolescents (average age 13.2 years) investigated the influence of witnessing violence and violence victimization in home, school, and community contexts on internalizing and externalizing problems (Mrug et al. 2008). Violence exposure was most common at school, followed by the community, and then the home environment. Net of violence exposure in other contexts and numerous controls, violence exposure at the school and home were associated with internalizing behavior problems and violence exposure in the neighborhood was associated with aggressive fantasies. Results from this study further supported moderating combinations of violence exposures and cumulative risks where, for example, an interaction was found between violence exposure at home and in the community on internalizing problems where high levels of violence exposure at home had less of an impact in neighborhoods with high violence exposure. Furthermore, an index of cumulative risk or total exposure across contexts was associated with both internalizing and externalizing problems.

**Curvilinearity/ Desensitization**—Research is emerging on curvilinear or quadratic effects of violence exposure on child behavior problems (Ng-Mak et al. 2004; McCart et al. 2007; Mrug et al. 2008). *Desensitization*, or curvilinear associations, have been supported for internalizing problems while ETV tends to have linear associations with externalizing problems. Evidence supporting these patterns was found with an innercity sample of sixth graders, labeled “*pathological adaptation*” to exposure to community violence (Ng-Mak et al. 2004). This pattern suggests that youth exposed to high levels of community violence experience emotional numbing and desensitization and experience lower levels of internalizing problems; however, the desensitization also promotes aggressive behavior leading to the pathological adaptation pattern (Ng-Mak et al. 2004). Results for community violence support a linear positive association between this form of violence exposure on aggressive behaviors alongside a quadratic effect for psychological distress, net of multiple control variables. However, patterns vary by the type of violence exposure considered. For family violence, a pattern of “*maladaptation*” was supported for both psychological distress and aggressive behaviors where both outcomes increased in response to this form of violence exposure. Ng-Mak et al.'s (2004) third posited pattern of “*adaptation*,” or quadratic effects of violence exposure on both outcomes was not supported. The implication of this study is that youth become desensitized to community violence exposure in terms of distress while also becoming more aggressive. While the above results shows patterns varied by the type of violence exposure, others support for the desensitization pattern was also found in a

school-based study of multiple violence exposures through the use of a cumulative violence exposure index (includes violence in the family and community) with a negative quadratic effect found on internalizing problems: anxiety and depression increased with additional exposure but leveled off and decreased with additional exposures (Mrug et al. 2008).

However, less clear support for desensitization is found in research on violence exposure with other samples (McCart et al. 2007). With a national sample of youth aged 12–17 years, McCart et al. (2007) found positive linear effects of community violence on post-traumatic stress disorder symptoms (PTSD), with an additional negative curvilinear effect found among girls. A curvilinear association was also found for family violence among girls. Although these curvilinear effects are significant among girls, they explain little variance in PTSD symptoms. Furthermore, linear effects of community and family violence exposure were found on males' and females' delinquency, but for girls a positive quadratic term was also detected indicating even higher levels of delinquency at higher levels of exposure. The authors interpret these results as providing minimal support for desensitization with more consistent linear risk effects found for higher levels of violence exposure. More study on the desensitization hypothesis conducted so far with cross-sectional samples is still needed with longitudinal data, inclusive of a range of violence exposures to test the extent to which desensitization occurs across contexts, and a range of child-and parent-reported internalizing and externalizing mental health outcomes.

## Multi-level Mediators and Moderators

We have considered how violence exposures may combine in influencing children's mental health and academic outcomes. The stress process model and literature on stress and coping further suggests the utility of identifying coping responses to address particular stressors (Thoits 1995; Pearlin 1999) (e.g., ETV). Effective coping may also rely on the use of co-occurring resources drawing from multiple domains of children's lives (Herrenkohl et al. 2005). A review of factors that mediate and moderate children's violence exposure will inform both our understanding of coping mechanisms in the stress process as well as synthesizing study across ecological contexts that may inform prevention and intervention efforts (Aisenberg and Herrenkohl 2008; Feerick and Sliverman 2006; Ozer et al. 2004; Zielinski and Bradshaw 2006). The lower middle conceptual box in Fig. 1 lists the macro- and micro-level domains of coping resources investigated in relation to children's violence exposure.

Mediating pathways specify the routes through which violence influences children's outcomes. In our model, coping resources may mediate the effects of ETV on children's mental health and academic outcomes to the extent that they account for the association between these variables (Baron and Kenny 1986). In Fig. 1, a mediating pathway from ETV to children's problem outcomes is traced through paths c and f. Mediation is empirically supported if the direct association between ETV and children's outcomes is reduced, or partially explained when coping resources are taken into account. A moderating resource differs in instead affecting the direction and/or strength of the relation between ETV and child mental health and academic outcomes (Baron and Kenny 1986). Path (d) in Fig. 1 represents the moderating influence of factors in the lower middle conceptual box in Fig. 1 that may decrease or "buffer" the influence of ETV. Statistical evidence supporting moderation is obtained by testing interaction effects between ETV and coping resources on children's outcomes.

We next review research on family, neighborhood, school, and individual factors that may mediate or moderate the impact of ETV in children's lives. More of the research on coping resources to date explores family and individual factors, with research on more macro-level

factors (e.g., neighborhood resources) emerging. Moderating factors may also include socio-demographic factors also identified as correlates of ETV in the first conceptual box of Fig. 1, for example, child age and gender. However, in their potential roles as moderators they would condition the effects of violence exposure on child outcomes, where males and females may be differentially affected by community violence, for example.

### Family Factors

Family factors include stressors and coping resources that mediate violence exposure effects on children. Family stressors related to maltreatment further explain the process by which maltreatment affects children's academic outcomes (Eckenrode et al. 1995). For example, residential and school mobility mediates the effects of child maltreatment on academic outcomes including grades, grade repetitions, and test scores. Eckenrode et al.'s (1995) research points to the potentially protective role of stability in living conditions in reducing child maltreatment influences on academic outcomes. Research also supports a meditational role for maternal distress. Among young children, maternal distress explains the association between maternal reports of community ETV and child behavior problems (Linares et al. 2001). More recently with a small sample of adolescent (age 11–14 years) Latino youth and mothers ( $n = 47$  dyads), Aisenberg et al. (2007) also found mediating effects of maternal distress in the community violence exposure-child behavior problems association. Further research on family instability and maternal distress with various age groups will further inform the generalizability of these mediating patterns across developmental stages.

Family stressors and coping resources also moderate the effects of violence exposure on children's outcomes (Hanson et al. 2006; Self-Brown et al. 2006). On the exacerbating influence of stress, parental drug use was found to moderate victimization on major depressive episode in that these associations were higher under conditions of parental drug use (Hanson et al. 2006). A similar potentiating influence of parental mental health was found in a study of violence exposure influences on post-traumatic stress symptoms among early adolescents from high risk neighborhoods in a Southern city (Self-Brown et al. 2006). Family processual factors (e.g., functioning, parent support) have also been supported as buffers or moderators in reducing of the influence of ETV on children's outcomes. As Margolin and Gordis (2000) review, evidence from studies of child abuse and marital violence support the protective role of the availability of a supportive relationship from a parent or other important caretaker (see also Osofsky 1999).

Recent scholarship on community violence also examines the role of family factors following Luthar et al. (2000) distinctions among types of interaction effects: "protective-stabilizing" and "protective-reactive effects" (see review by Proctor 2006). In brief, *protective stabilizing* processes are akin to classic *stress-buffering* influences (Li et al. 2007). In this form of moderation, a variable exerts a positive effect on children's outcomes even in the presence of increasing risk (Luthar et al. 2000; Proctor 2006). For example, in a disadvantaged longitudinal sample of minority males, family cohesion decreased the effects of community violence exposure on youth's anxiety and depression, and living in an exceptional compared to moderately functioning family attenuated the positive association between exposure to community violence and violence perpetration (Gorman-Smith et al. 2004; Gorman-Smith and Tolan 1998).

Stress-buffering influences are also found for parental/ guardian support with some mixed patterns by child gender and age. With a longitudinal diverse sample of 11–15 year olds, parental support (i.e., a composite measure of parental involvement and supervision) attenuated the positive association of witnessing community violence with violence perpetration, although this association was further contingent upon gender, operating among



males but not females (Brookmeyer et al. 2005). Yet, guardian support was found to buffer the effects of community victimization on delinquency among females but not males (Rosario et al. 2003). Furthermore, with longitudinal data, guardian support also decreased the influence of victimization on girls' depressive symptoms, but further interacted with coping strategies among males. Boys exposed to community violence experienced more internalizing symptoms when guardian support decreased over time and their defensive (e.g., went somewhere by a different route) or confrontational coping strategies (e.g., plan to get back at someone) increased (Rosario et al. 2008). Kliewer et al. (2001) found in a large epidemiological study of adolescents (ages 12–18) in Columbia, South America that family cohesion buffered the effects of violence against a family member on anxiety symptoms among females but not males. This gendered pattern also emerged for disclosure of feelings to mothers on feelings on hopelessness. Protective stabilizing or stress-buffering effects of time spent with family for girls of witnessing violence on anxiety symptoms were supported in a study of adolescents, while daily support reduced the influence of victimization on depressive symptoms for boys (Hammack et al. 2004). Yet Ozer (2005) found that perceived maternal helpfulness buffers the effect of indirect and direct community violence exposure on changes on both males' and females' adolescent aggressive behavior. More study on family social support influences by gender and age across forms of violence exposure and internalizing and externalizing outcomes would further clarify these patterns.

The other pattern of familial moderation is “*protective-reactive*” where a variable “generally confers advantages but less so when stress levels are high than low” (Luthar et al. 2000, p. 547; Proctor 2006). Li et al. (2007) rename the latter effect as “*overwhelming risk*” since the protective factor can be overwhelmed at high levels of risk. In one study, family structure was protective but less so under conditions of high ETV (Gorman-Smith and Tolan 1998) and in another parental monitoring exerted a protective effect on depression (under conditions of low ETV), but under high levels of ETV, parental monitoring protective effects are fully attenuated (Ceballo et al. 2003).

Proctor's (2006) review of family moderation of community violence exposure found support across studies for both the protective-stabilizing and protective-reactive patterns. For social support, protective-stabilizing effects tended to be supported where high levels weakened the association between community violence exposure and child distress (e.g., Ozer and Weinstein 2004). For parenting practices, however, evidence supports both types of moderation. Protective-reactive effects were found for parental monitoring, yet protective stabilizing effects were supported in studies of parental discipline (Proctor 2006). Thus the direction of modification is not consistent for family processes. In recent empirical study with African-American youth in Grades 5–8, Li and colleagues (2007) found community victimization was a risk factor for internalizing and externalizing problems, however both types of family moderation effects involving family support and family helpfulness were supported. Protective-stabilizing or stress-buffering effects were more commonly found for externalizing problems while protective-reactive or overwhelming risk effects were supported for internalizing problems (Li et al. 2007). Additional research on both types of family moderating patterns will establish the generality of these patterns across samples and outcomes.

### School Related Factors

School level factors as well as child level factors related to the schooling domain have been supported as protective on ETV influences on antisocial behavior and academic outcomes. The focus on school factors is particularly promising in that schools may provide a structured environment, exposure to role models, social support, and opportunities to develop in prosocial ways (Crooks et al. 2007; Heller et al. 1999; Zielinski and Bradshaw 2006).

Research on the role of the school context in moderating child maltreatment effects is less common than research on family effects (Zielinski and Bradshaw 2006). However, a recent promising study by Crooks et al. (2007) analyzed data on students in Grade 9 nested in Canadian schools, one half of which were randomly assigned to receive a school-based violence prevention program. School-level perceived safety was protective against violent delinquency, net of student factors. Similarly, research with a major national data set of adolescents (Add Health) also found aggregate positive life expectancies among youth in the school are protective against violence (Harris et al. 2002), as is school climate (Brookmeyer et al. 2006). Crooks et al. (2007) further found that the positive effect of childhood maltreatment on violent delinquency was modified by the school condition, where the impact was reduced in the intervention group (involving a skills and relationship-focused program) compared to the control group of schools. This result suggests school interventions and multi-level protective factors more generally may reduce the impact of child maltreatment on antisocial behavior, consistent with path d of Fig. 1. More research on the moderating effects of school level variables on various forms of young people's violence exposure is needed.

Focusing next on adolescent/child individual level resources related to the schooling domain, support is found for several factors. First, in a longitudinal sample of maltreated and non-maltreated children, school commitment and importance (e.g., youth are satisfied with and value their education, spend time studying) reduced antisocial behavior in both groups (Herrenkohl et al. 2005). Second, Macmillan and Hagan (2004) add to the range of mediating mechanisms involved in violence exposure effects on academic outcomes by investigating the role of educational self-efficacy. In change score models of grade point average they found educational self-efficacy fully mediated the negative association of adolescent victimization on later GPA. This study supports their theoretical model that victimization decreases domain specific forms of self-efficacy or agency and may lead youth away from investing in future-oriented activities. Third, students in schools perceived to be safe had slightly higher levels of adaptive functioning at high levels of community violence exposure than those in schools perceived as less safe (Ozer and Weinstein 2004).

School connectedness has also been examined (Ozer 2005; Brookmeyer et al. 2006). Brookmeyer and colleagues found buffering effects of adolescent perceived school and parental connectedness on the positive association of ETV with violent behavior. Consistent with Fig. 1 (path e), school connectedness has been linked to social structural correlates as well as school disciplinary policies (McNeely et al. 2002) and therefore represents a potentially socially modifiable coping resource.

Other research on protective factors in the school domain include teacher and peer influences. In a diverse middle school-based sample teacher helpfulness was promotive of adaptive functioning (e.g., teacher ratings of how hard the student is working; how much he or she is learning) as community violence exposure (witnessing and direct victimization) increased, net of controls including stress in the form of daily hassles, a "protective enhancing" effect (Ozer and Weinstein 2004). In a study of several domains of social support in children's lives (ages 10–15), self-rated classmate support was found to attenuate the influence of African-American children's exposure to community violence on peer-reported aggressive behavior while teacher, close friend, and parent support did not have stress-buffering effects (Benhorin and McMahon 2008). More systematic study of correlates of classmate support may inform prevention and intervention efforts.

## Community Processes

Few studies have examined the moderating or mediating effects of community-level processes on the influence of community and family violence on child and youth outcomes.

In synthesizing research in this area, Zielinski and Bradshaw 2006 point out the majority of study on community factors examine risks for child maltreatment, with less work on community moderating factors. At the community level of analysis, several studies have found support for neighborhood collective efficacy (i.e., the linkage of mutual trust and a willingness to intervene for the common good) in mediating the influence of community structural contexts on forms of violence (Browning 2002; Sampson et al. 1997) and that collective efficacy is important in children's lives (Sampson et al. 1998). Collective efficacy should be further evaluated as a community or macro-level mediator and moderator of children's ETV in the household and community. Community level factors may also work in concert with family level factors in conditioning family processes that in turn affect child outcomes. That is, community resources may offset or compensate for family risks, or families may buffer neighborhood conditions on children. More study on how family and community factors may combine in protecting children from ETV would advance ecologically focused preventions and interventions (Gorman-Smith and Tolan 2003).

At the individual level of analyses, several perceptions related to the community domain have been investigated as moderators and mediators of community violence exposure effects with minority samples. A recent study of African-American youth found that positive parental perceptions of the neighborhood moderated the effects of community victimization on adolescent externalizing symptoms in Grades 5–8 consistent with the protective-stabilizing or stress-buffering pattern in that the association between victimization and externalizing symptoms was almost twice the magnitude under conditions of low positive neighborhood perceptions than under high positive neighborhood conditions (Li et al. 2007; see also Kliewer et al. 2004). While individual perceptions of neighborhoods represent a promising resource in modifying the effects of violence on children, more study is needed on the macro-level processes and resources that may also contribute.

### Other Child Factors

An integrative approach to coping with violence, consistent with Fig. 1, is found in a recent study of parent–child dyadic discussion about a film clip depicting community violence exposure (Kliewer et al. 2006). Parental coaching and child coping strategies with the violence from this parent–child social interaction were coded. They found with their African-American sample that child coping (age 9–13 years) was associated with social structural correlates in the form of caregiver education. Higher maternal education was associated with children's problem-focused coping strategies with community violence. Active care-giver coaching was also associated with child problem-focused coping. Subsequent analyses showed children's problem-focused coping in turn was associated with increases in grades and decreases in internalizing problems. However, problem-focused coping was also associated with increases in externalizing symptoms. Future study should expand this synthetic approach taking into account social structure, parental factors, and child factors in the study of coping. For prevention and intervention, this study implies that increasing caregiver education and coaching parents on coping with violence may affect child-adaptive coping responses to violence and later academic adjustment and reduction of internalizing symptoms. A consideration of neighborhood influences on parent and child coping strategies with community violence would further expand the model (Kliewer et al. 2006).

Among adolescents, levels of stress and types of coping strategies have been examined as moderators of community violence effects on internalizing and externalizing problems. A “potentiating” or exacerbating moderating role of adolescent stressors has been identified as conditioning the violence exposure association with parent-reported internalizing and externalizing adolescent behavior problems (Self-Brown et al. 2004). This study found that at lower levels of adolescent daily stress, there is no relationship between violence exposure

and behavior problems; however, at higher levels of stress, violence exposure is positively associated with them. The findings of Self-Brown et al. (2004) based on a small convenience sample of 80 adolescent/parent dyads are suggestive of further research directions that engages other forms of stress as moderators. A potentiating role is also supported for forms of confrontational coping for both boys and girls (Rosario et al. 2003; Rosario et al. 2008). Avoidant coping also has this role among girls but was protective (stress-buffering) among boys (Rosario et al. 2003).

Stress-buffering coping strategies of community violence exposure have also been identified among adolescents. In a longitudinal study of minority males in Chicago the influence of community violence exposure on later violent behavior, net of earlier violent behavior, depended upon the coping strategies used (Brady et al. 2008). The risk effect of community violence on youth violent behavior was attenuated among those who used more effective coping strategies such as proactive and potentially beneficial methods (e.g., engaging in esteem-enhancing activities) rather than less effective methods (e.g., doing nothing, feeling bad). The moderating role of coping strategies has also been supported with an African-American sample of adolescents in Virginia where a risk index (composed of measures of direct and indirect community victimization and peer delinquency) was associated with externalizing problems but this link was attenuated with the use of problem-focused coping strategies. However, none of the coping strategies reduced the impact of the risk variables on internalizing problems (McGee 2003). Furthermore, on externalizing problems, emotion-focused coping strategies instead accentuated the connection between community violence exposure and externalizing problems. These results suggest problem focused strategies are promising for the prevention of externalizing behaviors among youth exposed to community violence.

Individual's perceived safety further mediates the effects of community violence on children's internalizing outcomes. In a study of children aged 8–13 years in Cape Town, South Africa, ETV decreases safety perceptions which in turn increase distress across multiple domains of violence exposure including witnessing in the community, school violence, police, and gang violence (Shields et al. 2008). Overstreet and Braun (2000) similarly found a mediating effect of safety perceptions in mediating community violence influences on children's post-traumatic stress symptoms with a disadvantaged sample. These cross-sectional studies provide a foundation for further longitudinal research investigating contemporaneous as well as long-term effects of safety perceptions.

The issue of differential vulnerability to risk factors is raised in developmental and stress process research (Aneshensel 1992; Moffitt et al. 2001). Socio-demographic factors of age and gender are also modifiers of ETV suggestive of differential vulnerability. Mixed findings are evident regarding ETV effects by gender of the child (Buka et al. 2001). The interparental violence literature suggests heightened effects in boys (Yates et al. 2003; Evans et al. 2008) while some other study finds no evidence for gender moderator effects (Wolfe et al. 2003). Other studies find no gender differences in ETV effects on aggression (Guerra et al. 2003) or internalizing or externalizing behavior problems (Sternberg et al. 2006a). The latter study is particularly notable in using mega-analytic techniques with individual raw scores from multiple studies of children aged 4–14 years yielding sufficient power for testing potentially subtle effects. Chronological age was also found in this mega-analysis to modify the effects of family violence exposure on externalizing problems with violence exposure having greater effects at older ages again suggesting the importance of timing of exposure (Sternberg et al. 2006a).

## Summary and Future Directions on Coping

Support is found for family-level and individual moderating and mediating resources of the influences of ETV. Further research on family resources is needed to clarify patterns across gender and age groups. More research on macro-level resources is needed to complement study on family and individual factors.

Some coping resources stand out across forms of violence exposure. Social support is a modifier of child maltreatment, domestic violence, as well as community violence exposure as reviewed above (Benhorin and McMahon 2008; Margolin and Gordis 2000; Osofsky 1999; Heller et al. 1999; Rosario et al. 2003; Rosario et al. 2008). Support also emerged for a protective role of safety perceptions across contexts and domains of ETV. School-level-perceived safety moderates child maltreatment effects on delinquency (Crooks et al. 2007) and safety perceptions mediate community violence exposure influences on internalizing problems (Overstreet and Braun 2000; Shields et al. 2008). Socially supportive processes and perceived safety in family, school, and neighborhood domains may then hold particular promise for interventions with poly-victimized youth.

Furthermore, the contribution of considering multiple protective factors or combined resources in children's lives is starting to receive attention. In a study by Herrenkohl et al. (2005), the variance explained in adolescent antisocial behavior was the highest when considering a summary score of a range of protective factors on antisocial behavior rather than the role of specific resources examined separately. Research may also consider the relative influences of domains of coping resources for addressing ETV. For example, the study by Li and colleagues (2007) includes moderating factors of community victimization across contextual domains in the same study including self-confidence, family support, and positive neighborhood perceptions.

Drawing on research on the relative roles of family and neighborhood influences on children's behavioral and academic outcomes (Brooks-Gunn et al. 1997a), research should further examine how different realms of modifiers may be more influential at different ages. Research on the role of family and neighborhood economic strain on families and children found that family resources and strategies were more influential on children's adaptations than were neighborhood influences (Furstenberg et al. 1999). With an urban sample of youth, O'Donnell et al. (2002) found parent support predicted resilience in two waves of data cross-sectionally on research on community violence exposure but became less important over time. School support in contrast became more influential with time, suggesting that the school context may be more potent as adolescents age (Aisenberg and Herrenkohl 2008; O'Donnell et al. 2002). These developmentally sensitive protective sources could be further clarified where younger children may be more protected by the more proximal contexts involving family and school processes, but older children and adolescents may be especially sensitive to community processes with more time spent outside the home. Gendered patterns of coping should also be further explored as some protective factors are emerging as gender specific in buffering community violence effects.

## Future Research Directions on Exposure to Violence

We have reviewed four areas of research on children's ETV in a developmentally sensitive stress process framework. We have identified violence exposure as working in an overall process and highlighted our conceptual model in Fig. 1. This integrative approach adds an overall synthetic view of often disconnected components of the literature emphasizing the overall stress process where violence exposure and mediating and moderating coping resources combine to affect children's mental health, behavioral, and academic outcomes. The model emphasizes connections between social structural correlates of violence exposure



and of mediating and moderating coping resources, suggesting socially modifiable points of prevention and intervention. Future research with multilevel longitudinal data sets and diverse samples will facilitate the further investigation of these areas. In order to recap, we suggest that the following avenues of research and components of Fig. 1 need to be addressed in future studies on children's ETV:

### **Multi-Level Causes and Correlates**

- The systematic study of neighborhood, family, and individual correlates on children's exposure to violence and polyvictimization.
- Further research on gender and racial/ethnic differences in violence exposure with diverse samples.
- Longitudinal research examining connections among forms of violence exposure to illuminate processes involved as well as specific types of connections.

### **Violence Exposure**

- The further measurement of multiple violence exposures or polyvictimization in research studies is needed. While we have emphasized comprehensive interconnected processes and brought together relatively disconnected areas of research, further research could elaborate our model by encompassing the fuller range of violence exposures in children's lives including sexual and psychological violence.
- Developmentally comparative research is required on when which types of multiple victimizations may co-occur.

### **Consequences of Exposure to Violence**

More research is required on the range of outcomes affected by violence exposure including mental health problems, academic, and transitional outcomes. Future study with children and adolescents should also consider research on substance use and abuse as well as emerging research on physical health.

- Further longitudinal research is needed on violence exposure influences over time controlling for other adversities and prior behavior problems.
- More systematic research is required on whether and how multiple longitudinal or concurrent exposures are associated with worse child outcomes and the range of internalizing, externalizing, academic, and transitional outcomes.

### **Multi-Level Mediators and Moderators**

For purposes of prevention and intervention, more research is especially pressing on moderators of forms of violence exposure on children's outcomes (path d). In particular, further research on multi-leveled moderators including school and neighborhood factors would augment the range of resources to address ETV developing extant information on family factors.

- More studies should include consideration of coping resources across multiple domains of children's lives.
- Drawing on neighborhood effects research, the further investigation of how different realms of modifiers may be influential at different ages is warranted (i.e., relative effects of family vs. neighborhood factors).

- New research on mediators and moderators of multiple violence exposures or polyvictimization on child outcomes is needed.

Our theoretical perspective and conceptual model to guide further study is informed by the stress process paradigm with an emphasis on the interconnections among components of the model in influencing children's well-being. There is a further need for systematic comparison of interdisciplinary theoretical frameworks for understanding violence exposure processes to highlight their strengths and weaknesses and to maximize the potential of multi-disciplinary research and preventive/interventive efforts.

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**Fig. 1.**  
Conceptual stress process model of exposure to violence (ETV) among children and adolescents