Published in final edited form as:

J Adolesc Health. 2010 August ; 47(2): 198–205. doi:10.1016/j.jadohealth.2010.01.020.

Violence Exposure in Multiple Interpersonal Domains: Cumulative and Differential Effects

Gayla Margolin, PhD^a, Katrina A. Vickerman, MA^a, Pamela H. Oliver, PhD^b, and Elana B. Gordis, PhD^c

^a Department of Psychology, University of Southern California

^b Department of Child and Adolescent Studies, California State University, Fullerton

^c Department of Psychology, University at Albany, State University of New York

Exposure of youth to violence in their families and communities is a serious societal problem because of the number of youth who experience violence and the documented toll of violence on youth's physical, emotional, and academic adjustment [1]. Approximately 5–16% of youth are recipients of parent's severe aggression or abuse, and over 50% experience minor parental aggression including corporal punishment [2]. Interparental aggression is experienced by 29% of youth in two-parent households [3], whereas community violence is directly experienced by 30–50% and witnessed by over 90% of youth [4].

The need for integrated approaches to examining violence exposure arises from mounting evidence that children who experience violence in one domain have an increased likelihood of violence in other domains [5,6,7]. Hundreds of studies examining separate types of violence exposure show wide ranging negative outcomes including aggression and delinquency, emotional and mood disorders, post-traumatic stress symptoms, risk-taking behaviors, and compromised cognitive performance [8]. However, the compartmentalization of literatures on exposure to marital aggression, parent-to-child aggression, and community violence has limited our overall understanding of the impact of violence. The present study integrates these three interpersonal domains of violence exposure in two ways. First, using frequency counts, we examine whether different interpersonal domains of violence exposure are uniquely associated with specific symptoms. Second, we assess the impact of cumulative violence exposure that sums presence vs. absence of violence across domains and years.

Direct comparisons linking specific violence exposure types with specific outcomes are relatively rare. In a study of youth receiving mental health services, community violence and maltreatment contributed uniquely to conduct disorders, whereas domestic violence did not, and community violence, but not maltreatment and domestic violence, predicted externalizing behavior [9]. In a sample of youth identified by child protective services, harsh physical discipline was associated with externalizing, whereas witnessing home violence was associated with internalizing behaviors [10]. A school-based study [11] examining school, home and neighborhood violence reported that school and home exposure predicted internalizing symptoms whereas only home exposure predicted delinquency and overt

Corresponding Author: Gayla Margolin, Ph.D., University of Southern California, Psychology Department-SGM 930, 3620 McClintock, Los Angeles, CA 90089-1061, Telephone: 213-740-2308, FAX: 213-746-9082, margolin@usc.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

aggression. Additional attention to unique consequences of different types of exposure is needed to inform our understanding of mechanisms of violence exposure impact.

Another under-studied and perhaps crucial dimension of violence exposure is overall pervasiveness across violence types. From developmental risk-resilience perspectives, higher risk is anticipated when violence disrupts multiple interpersonal domains of children's lives for a longer time frame. Dose-response theories for toxic social environments [12,13,14] parallel the more widely-recognized dose-response models for developmentally toxic environmental chemicals in several ways: (a) the risk may be accumulating steadily even if it is at "clinically silent exposure levels" [14]; (b) brains and bodies of youth, compared to adults, may be more vulnerable to disturbing events [12]; (c) youth often experience intermittent exposure, and do not fall into consistent or dichotomous categories of exposed versus non-exposed; (d) the occurrence of violence exposure and the presence of subtle psychological and behavioral outcomes may be below threshold for detection, or at a level that does not alarm parents or teachers, but still may disrupt developmental trajectories; and (e) the full impact of exposure may become apparent only with additional challenges to functioning or at later developmental stages.

The importance of multiple risks in the social environment has been well documented [15,16], but more is known about overall adversity than about risks uniquely associated with cumulative violence. Studies incorporating violence exposure into wide-ranging measurements of childhood adversity show that high adversity generally is associated with more negative outcomes [17]; however, linear relations are not always found [18], are found at low but not high levels of exposure [19], or at high but not low levels [15]. Studies that sum across a variety of victimization events show that exposure to multiple violent events, compared to single events, is associated with worse consequences [5]. Some two-way combinations, e.g., maltreatment and community violence [20] show additive effects, but other combinations, e.g., child abuse and domestic violence [21] show mixed results. In a study on school, home and neighborhood violence, cumulative violence showed weak but significant linear effects for externalizing behaviors, and for internalizing behaviors, a steep linear effect at low-to-moderate exposure but a tapering off at high cumulative exposure [11]. That study underscored the salience of studying multiple contexts, but was limited by a cross-sectional design and by adolescents as sole reporters of violence exposure and adjustment.

The current study aims to investigate distinct as well as cumulative effects of three interpersonal domains of violence exposure—parent-to-youth aggression, marital physical aggression, and community violence—that represent common types of violence seen in community samples. As contrasted with several other studies, the current study measured violence exposure at three intervals over a 3-year time frame, and the sample here was not receiving child protective services or treatment for violence exposure. We first examine differential contributions of violence domains to specific outcomes while statistically controlling for other violence domains. We then test the hypothesis that the pervasiveness of violence exposure across multiple interpersonal domains and multiple years increases the risk for adverse youth outcomes. We hypothesized dose-response effects with cumulative violence exposure increasing: (a) separate risks of somatic, psychological, behavioral, and educational problems; and (b) risk for co-morbid symptoms. The research design controlled for pre-existing symptoms, parents' psychopathology, and financial stress when examining differential and cumulative effects.

Methods

These data come from Waves 1–3 of a prospective, longitudinal study evaluating effects of family and community violence on family processes and children's adjustment. The 119 families who participated in Wave 1 assessments were recruited through flyers, advertisements, and word-of-mouth, and met inclusion criteria that: (a) one child aged 9–10 resided with two parents; (b) if a parent was non-biological, s/he must have resided with the youth for at least three years; and (c) family members could complete the protocol in English. Two follow-up assessments occurred at approximately one-year intervals [$M=1.1$ ($SD=0.3$) year for Wave 2 and 1.3 ($SD=0.3$) for Wave 3]. The procedures used here were consistent across waves and were embedded in comprehensive 3–4 hour assessment batteries involving participation by all three family members. Our university Institutional Review Board approved this study. At each assessment, both parents gave consent for their own and the youth's participation, and the youth gave assent.

Participants

This study included the 103 families who participated in Wave 3; 98 of those participated in all three assessments and 5 participated in only Waves 1 and 3. Children (40.8% female) averaged 10.0 years ($SD=.6$) at Wave 1 and 12.4 ($SD=.8$) at Wave 3. Sample ethnicity was 37.9% Latino/Hispanic. Racial composition was 1.0% American Indian, 18.4% African-American/Black, 7.8% Asian/Pacific-Islander, 34.0% Caucasian, 29.1% multi-ethnic and 9.7% unstated. Family incomes were wide-ranging (9.7% <\$25,000; 20.4% at \$25,000–\$49,999; 48.5% at \$50,000–\$100,000; 22.4% >\$100,000). At Wave 1, parents had been married on average 12.2 years ($SD=5.7$); two participating families had separated/divorced by Wave 2, and two more by Wave 3. The only significant difference between returning and non-returning families on violence exposure and demographic variables was that non-returners had more children [$M=3.5$ vs. 2.7, $t(117)=2.0$, $p<.05$].

Assessment of Violence Exposure

Measures on each violence domain assessed the previous 12-months, were identical across assessment waves, and were obtained from three reporters (each parent and the child). Adult and child versions differed slightly for age appropriateness in wording and response scale complexity. We reconciled reporter differences by using the maximum reported score for each question because under-reporting of violence tends to be more likely than over-reporting [9,22]. Because violence data may be prone to reporting biases, i.e., certain family members may be more aware of or willing to report different events, maximizing information across reporters can provide the best measure.

Using a subset of items from the Conflict Tactics Scale—Parent/Child (test-retest reliabilities=.49–.80) [2], we assessed *parent-to-youth aggression* through six items. Respondents rated each item on a 7-category scale ranging from *never* to *21+ times*. We assessed *marital physical aggression* through 15 items (for children, the scale was truncated to the 5 more common and less severe items) of the Domestic Conflict Inventory (test-retest reliabilities=.63–.70) [23], which incorporates physical aggression items from the Conflict Tactics Scale [24]. Parents used a 6-category scale ranging from *never* to *>once/week* to report their own and their partner's aggression. We assessed *youth community violence exposure* through 13 items from a modified version of the Survey of Children's Exposure to Community Violence, which assesses violence victimization and witnessed violence in the neighborhood; test-retest reliability = .81 on the original scale [4]. Respondents rated items on a 4-category scale ranging from *never* to *3+ times*.

Youth Symptoms at Wave 3

The seven adverse outcomes were dichotomous [child met/did not meet] variables based on criterion levels of T -scores ≥ 60 (1 SD above the mean) from normative samples, or, for over-arousal, from the current sample; the academic failure cut-off represents the presence of failing grades, suspension, or expulsion. *Depression, anxiety, and over-arousal* symptoms were youth reports because parents may have difficulty recognizing these conditions [22,25]. We assessed depression through the 27-item Child Depression Inventory (test-retest reliability=.82) [26], anxiety through the 20-item Trait Scale of the State-Trait Anxiety Inventory for Children (test-retest=.65-.71) [27] and over-arousal using 5-items representing post-traumatic stress arousal symptoms in the DSM-IV (Cronbach's α =.85). Criterion levels ($T \geq 60$) for *somatic complaints, aggressive behaviors, and delinquent behaviors* derive from parents' reports and youth self-reports on the Child Behavior Checklist (CBCL; test-retest reliabilities=.86-.95 for parents and .65-.79 for youth) [28,29]. The *academic failure* criterion represents youth endorsement of failing grades or school suspension, or parents' report of suspension/expulsion.

Parents' Psychopathology

Each parent reported general psychiatric symptoms through the 90-item Global Severity Index of the Symptom Checklist-90 Revised (SCL-90-R; test-retest reliability=.78-.90) [30].

Statistical Analysis

In analyses examining unique effects of separate violence domains and cumulative violence, we computed adjusted relative risks ($ARRs$) and confidence intervals (CI s) for each of the seven youth symptoms using Poisson regression with robust error variance estimation. Our $ARRs$ statistically controlled for: (a) *youth's initial adjustment* through Wave 1 T -scores on each outcome to better establish temporal connections between violence exposure and associated symptoms, as contrasted with pre-existing symptoms; (b) *Wave 1 family income*, a frequently used marker of wide-ranging risk factors associated with poverty and financial stress [31]; and (c) *parents' psychopathology*, through the mean of mother's and father's Wave 1 SCL-90-R T -scores to account for associations due to intrafamilial transmission of psychopathology [32]. In the analysis on *co-morbidity of symptoms*, because the number of criterion-level symptoms is ordinal, not dichotomous, we used ordered logistic regression analyses with a negative log-log function to examine how cumulative exposure relates to the number of criterion thresholds met (0–7). We examined quadratic as well as linear effects to explore curvilinear effects.

Results

Descriptive Statistics

Endorsement of violence at least once across the three assessments was 86.4% for parent-to-youth aggression, 59.2% for physical marital aggression and 50.5% for community violence. Table 1 lists the three most commonly endorsed items in each violence domain and percent reporting exposure across 0–3 years. Presence versus absence of violence exposure was not consistent across the assessments. For example, 9.7% reported community violence at all 3 waves whereas another 12.6% reported it at two waves and 28.2% reported it at only one wave. Additional details about stability and co-occurrence of violence exposure in this sample are reported elsewhere [33].

Separate Domains of Violence Frequency in the Past Year and Separate Youth Outcomes

Table 2 presents data examining whether each violence domain contributed unique variance above the other violence domains. We calculated $ARRs$ by simultaneously entering Wave 3

raw frequency data for the three domains of violence in the same equation, controlling for Wave 1 income, youth symptoms, and parents' psychopathology. For depression, none of the separate violence domains contributed unique variance whereas, for academic failure, all three domains showed statistically significant *ARRs*. In addition, parent-to-youth aggression significantly accounted for unique variance in somatic complaints, aggressive behaviors, and delinquent behaviors. Physical marital aggression significantly accounted for unique variance in anxiety, over-arousal and delinquent behaviors, and community violence accounted for unique variance in over-arousal.

Cumulative Violence Exposure and Separate Youth Outcomes

Because there is no standard metric for measuring violence exposure, nor any precedent for combining across types, we assigned a 0 (no violence) or 1 (some violence) score for each year and for each violence domain. The *cumulative violence exposure index*, which sums across three assessments and three violence domains, has a 0–9 range. As presented in Table 3, significant *ARRs* showed a graded progression of risk related to cumulative exposure over and above Wave 1 symptoms, family income, and parents' psychopathology for five of seven youth outcomes. With each one-point increase on the exposure index, there was an increased risk of over 50% for meeting criterion levels of depressive symptoms and anxiety, and 10–25% for somatic complaints, delinquent behaviors, and academic failure. Although the *ARRs* are based on one-point increases, we grouped youth into low (0–3), moderate (4–6), and high (7–9) exposure for illustrative purposes. Of those youth who experienced high (7–9) cumulative violence exposure (i.e., multiple years of exposure and in all three domains), the percentage meeting symptom criterion levels ranged from 18% for depressive symptoms to 76% for delinquent behaviors.

Cumulative Violence Exposure and Co-Morbidity of Adverse Outcomes

We examined co-morbidity of adverse outcomes (number of criterion-level outcomes met) as another indication of risk associated with cumulative violence exposure. Adjusted odds ratios (*AORs*) controlled for income and parents' psychopathology. Beyond a significant linear effect (*AOR*=1.32; 95% *CI*=1.17–1.49; *p*<.001), cumulative violence exposure showed a significant quadratic effect (*AOR*=1.04; 95% *CI*=1.00–1.08; *p*<.05). Further evaluation of this curvilinear effect evidenced significant increases in negative outcomes for violence exposure scores > 4 (*AOR*=1.63; 95% *CI*=1.31–2.02; *p*<.001), but not for lower (≤ 4) scores (*AOR*=1.13; 95% *CI*=.89–1.42; *p*=.32). Figure 1 shows the mean number of criterion-level outcomes met for each score on the cumulative violence exposure index. Youth who scored higher (7–9) on the cumulative violence exposure index, on average, met threshold on 3.35 criterion symptom levels, compared to 1.18 and .82 respectively for moderate (4–6) and lower (0–3) violence exposure. Percent of youth who met criterion on 3 or more outcome symptoms was 76%, 36% and 7% respectively for high, moderate and low violence exposure.

Discussion

Previous research shows that separate types of violence exposure have similar, wide-ranging adverse effects on youth but frequently fails to take account of recent evidence that children often experience multiple domains of violence. The current study extends previous findings by showing the negative impact of the pervasiveness of violence exposure over three interpersonal domains and over three years. These data show that different types of violence exposure, jointly, can have different and more serious effects than one type. Direct comparisons of three violence domains illustrate commonalities and differences in symptoms associated with exposure domain.

Whereas some adverse symptoms were linked to several domains of violence exposure, others were more distinctly related to one violence domain. Academic performance was disrupted by exposure in any domain, a finding extending previous research on the vulnerability of youth's ability to perform at school in relation to violence [25,34]. Delinquent behaviors are significantly linked to parent-to-youth aggression and physical marital aggression. In support of recent theories about interparental conflict specifically creating concerns in children about their own safety and the wellbeing of the family [35], anxiety was related only to physical marital aggression, an uncontrollable situation for youth in which one caregiver aggresses against the other and both caregivers may be less available to the youth. Parent-to-youth aggression distinctly emerged as related to somatic complaints and aggressive behaviors. The distinction between marital aggression and parent-to-youth aggression parallels previous findings [10] that witnessed family home violence predicted internalizing whereas physical discipline predicted externalizing behaviors.

Even after controlling for prior symptom levels, family income, and parents' psychopathology, cumulative violence exposure showed anticipated dose-response effects with significant risk ratios for somatic complaints, depressive symptoms, anxiety, delinquent behavior, and academic failure. Depressive symptoms were significantly associated only with cumulative violence, not with any one type of violence. Moreover, contrasted with previous cross-sectional findings of symptoms tapering with higher cumulative violence [11] and high adversity [19], our longitudinal data indicated the opposite pattern in the significant curvilinear effect--a steep increase in criterion symptoms for youth experiencing high violence exposure. Of youth with high cumulative violence (scores representing violence over multiple years and in all three interpersonal domains): (a) 76% met criterion levels for three or more symptoms; (b) 50% met criteria for somatic complaints, aggressive behaviors and delinquent behaviors; and (c) twice as many meet criterion for depressive symptoms, anxiety, over-arousal, and delinquent behaviors, compared to youth with moderate exposure. This extent of symptoms is noteworthy, particularly in a sample not receiving clinical services.

Although it can be argued that the pared down simplicity of the violence exposure index ignores important violence dimensions (e.g., severity and frequency), the number of significant findings with this index highlights the importance of violence pervasiveness. These data have both theoretical and practical implications for the assessment of violence exposure. Regardless of actual frequency, exposure that reoccurs over a several year time span and occurs in multiple interpersonal domains is linked to deleterious adolescent symptoms.

A relevant question concerns the clinical significance of symptoms reported here. Prior studies examining the impact of violence also used a cut-off of $T \geq 60$ for CBCL data on child symptoms [34], although discrimination between referred and non-referred samples typically is $T = 67$ [29]. Criterion levels used here do not identify diagnosable conditions, but they may hold consequences for youth's current functioning and later adjustment. Reaching our criterion on depression, for example, requires at least moderate endorsement of sadness, pessimism, self-depreciation, and irritability. If we consider functional impairment, school failure and delinquent behaviors may set youth on pathways toward increasingly compromised performance on current developmental tasks, and can impact future capabilities as young adults.

Co-morbidity of symptoms may be another indication of functional impairment, especially if different symptoms are mutually precipitating and maintaining, and disrupt multiple spheres of functioning. Adolescents, in particular, show unique types of co-morbidity with over-arousal and depression associated with acting-out, risk-taking behaviors, all of which can

impair academic performance and interpersonal relations. These interacting and potentially cascading symptoms are informed by recent conceptualizations of complex traumas [36], which result from chronic interpersonal abuses that occur as part of everyday experience and that lead to emotional dysregulation, self-blame, distrust, and self-destructive behaviors. The co-morbid symptoms reported here, albeit less severe, are similar to the combination of over-controlled and under-controlled behaviors associated with complex traumas.

Although our results contribute substantially to conceptualizing violence exposure and its impact on young adolescents, several limitations warrant consideration. First, because of the longitudinal design and the extensive assessment of all three family members, this study is based on a relatively small, non-randomly selected sample. By design, this study was not intended to provide information about the prevalence of violence exposure or of youth symptoms, but rather the relation between exposure and outcomes. Nonetheless, a larger sample would have allowed for increased power to identify additional potential associations between certain violence domains and specific symptoms, and for exploration of possible moderating effects, such as gender. Second, although we obtained detailed and comprehensive measures of violence exposure on multiple outcomes through multiple reporters, multiple items, and at multiple time points, we do not differentiate item severity nor do we consider all types of violence exposure, e.g., sexual abuse and media violence. Third, even with longitudinal data, we cannot rule out bidirectional relationships between symptoms and exposure, e.g., aggressive youth seeking out dangerous situations or eliciting aggression from others. Fourth, although we controlled for family income and parents' psychopathology, other psychosocial and environmental factors may influence the effects of violence on youth's adjustment, particularly a chaotic home and compromised parenting [6,13,16,21]. Relatedly, this study raises questions about what biological, genetic, social, and emotional variables moderate the effects of cumulative violence exposure. Our goal here was to evaluate the differential and combined effects of cumulative exposure with further research needed to examine other variables, particularly quality of parenting.

Despite limitations, these data highlight the importance of conceptualizing violence from a dose-response perspective with consideration for accumulation of exposure over time and across multiple domains of adolescents' everyday interpersonal experiences. Many adolescents are exposed to some form of violence. Indeed, as shown in this sample--which was not identified for violence exposure--over 50% of youth experienced exposure in each violence domain at some point in the three years. These findings are a reminder that even though violence may be common, it is a mistake to think of violence exposure as "ordinary" or "commonplace." Even ordinary violence, when allowed to accumulate, appears to contribute to adolescents' symptoms. These data have practical implications: If multiple domains of violence are not recognized when adolescents are referred for clinical services for common presenting problems, or if treatment focuses solely on alleviating symptoms and not on violence as a possible precipitating factor, exposure levels may continue to accumulate and to disrupt adolescents' development.

Acknowledgments

Funding for this study came from NIH-NICHD Grant R01 HD046807 awarded to Margolin, Gordis, and Oliver, and from the David & Lucile Packard Foundation Grant 00-12802 awarded to Margolin. Work also was supported by NIMH NRSA F31 MH074201 awarded to Vickerman, and K23 HD041428 awarded to Gordis. We are grateful to the families who generously participated in the study. We also appreciate the efforts of other members of the USC Family Studies Project, including Mona Elyousef, Angèle Fauchier, Monica Ghalian, Catherine Delsol Haudek, Esti Iturralde, Adabel Lee, Deborah Chien Liu, Anna Marie Medina, Laura Proctor, Michelle Ramos, Martha Rios, Sarah Duman Serrano, Lauren Spies, Molly Swanston, and Jennifer Wall.

References

1. Krug, EG.; Dahlberg, LL.; Mercy, JA., et al. World Report on Violence and Health. Geneva: WHO; 2002.
2. Straus MA, Hamby SL, Finkelhor D, et al. Identification of child maltreatment with the Parent Child Conflict Tactics Scales: Development and psychometric data for a national sample of American parents. *Child Abuse Negl* 1998;22:249–70. [PubMed: 9589178]
3. McDonald R, Jouriles EN, Ramisetty-Mikler S, et al. Estimating the number of American children living in partner-violent families. *J Fam Psychol* 2006;20:137–42. [PubMed: 16569098]
4. Richters JE, Martinez PE. Violent communities, family choices, and children's chances: An algorithm for improving the odds. *Dev Psychopathol* 1993;5:609–27.
5. Finkelhor D, Ormrod RK, Turner HA. Poly-victimization: A neglected component in child victimization. *Child Abuse Negl* 2007;31:7–16. [PubMed: 17224181]
6. Herrenkohl TI, Herrenkohl RC. Examining the overlap and prediction of multiple forms of child maltreatment, stressors, and socioeconomic status: A longitudinal analysis of youth outcomes. *J Fam Viol* 2007;22:553–62.
7. Slep AMS, O'Leary SG. Parent and partner violence in families with young children: Rates, patterns, and connections. *J Consult Clin Psychol* 2005;73:435–44. [PubMed: 15982141]
8. Margolin G, Gordis EB. The effects of family and community violence on children. *Annu Rev Psychol* 2000;51:445–479. [PubMed: 10751978]
9. McCabe KM, Lucchini SE, Hough RL, et al. The relation between violence exposure and conduct problem among adolescents: A prospective study. *Am J Orthopsychiatry* 2005;75:575–84. [PubMed: 16262515]
10. Maikovich AK, Jaffee SR, Odgers CL, et al. Effects of family violence on psychopathology symptoms in children previously exposed to maltreatment. *Child Dev* 2008;79:1498–512. [PubMed: 18826538]
11. Mrug S, Loosier PS, Windle M. Violence exposure across multiple contexts: Individual and joint effects on adjustment. *Am J Orthopsychiatry* 2008;78:70–84. [PubMed: 18444729]
12. Landrigan PJ, Kimmel CA, Correa A, et al. Children's health and the environment: Public health issues and challenges for risk assessment. *Environ Health Perspect* 2004;112:257–65. [PubMed: 14754581]
13. Repetti RL, Taylor SE, Seeman TE. Risky families: Family social environments and the mental and physical health of offspring. *Psychol Bull* 2002;128:330–66. [PubMed: 11931522]
14. Weiss, B. Workshop to identify critical windows of exposure for children's health: Neurobehavioral work group summary. *Environmental Health Perspectives Supplements* 2000;108; Number S3 [Online]. [Accessed July 20, 2006]. Available at: <http://www.ehponline.org/members/2000/suppl-3/375-381weiss/weiss-full.html>
15. Rutter, M. Protective factors in children's responses to stress and disadvantage. In: Kent, MW.; Rolf, JE., editors. *Primary prevention of psychopathology: Vol.3. Social competence in children*. Hanover, NH: University Press of New England; 1979. p. 49-74.
16. Trentacosta CJ, Hyde LW, Shaw DS, et al. The relations among cumulative risk, parenting, and behavior problems during early childhood. *Child Psychol Psychiatry* 2008;49:1211–9.
17. Anda RF, Croft JB, Felitti VJ, et al. Adverse childhood experiences and smoking during adolescence and adulthood. *JAMA* 1999;282:1652–8. [PubMed: 10553792]
18. Flaherty EG, Thompson R, Litrownik AJ, et al. Effect of early childhood adversity of child health. *Arch Pediatr Adolesc Med* 2006;160:1232–8. [PubMed: 17146020]
19. Morales JR, Guerra NG. Effects of multiple context and cumulative stress on urban children's adjustment in elementary school. *Child Dev* 2006;77:907–23. [PubMed: 16942497]
20. Lynch M, Cicchetti D. An ecological-transactional analysis of children and contexts: The longitudinal interplay among child maltreatment, community violence, and children's symptomatology. *Dev Psychopathol* 1998;10:235–57. [PubMed: 9635223]
21. Kitzmann KM, Gaylord NK, Holt AR, et al. Child witnesses to domestic violence: A meta-analytic review. *J Consult Clin Psychol* 2003;71:339–52. [PubMed: 12699028]

22. Howard DE, Cross SI, Li X, et al. Parent-youth concordance regarding violence exposure: relationship to youth psychosocial functioning. *J Adolesc Health* 1999;25:396–406. [PubMed: 10608579]
23. Margolin G, John RS, Foo L. Interactive and unique risk factors for husbands' emotional and physical abuse of their wives. *J Fam Violence* 1998;13:315–44.
24. Straus MA. Measuring intrafamily conflict and violence: The Conflict Tactics (CT Scales). *J Marriage Fam* 1979;41:75–88.
25. Hurt H, Malmud E, Brodsky NL, et al. Exposure to violence: Psychological and academic correlates in child witnesses. *Arch Pediatr Adolesc Med* 2001;155:1351–6. [PubMed: 11732955]
26. Kovacs, M. *Children's Depression Inventory*. North Tonawanda, NY: Multi-Health Systems; 1992.
27. Spielberger, CD.; Edwards, CD.; Lushene, RE., et al. *Preliminary manual for the State-Trait Anxiety Inventory for Children*. Palo Alto, California: Consulting Psychologists Press; 1973.
28. Achenbach, TM. *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. Burlington, Vermont: University of Vermont; 1991.
29. Achenbach, TM. *Manual for Youth Self-Report and 1991 Profile*. Burlington, Vermont: University of Vermont; 1991.
30. Derogatis, LR. *SCL-90-R. Administration, scoring and procedures manual-II for the revised version*. Towson, Maryland: Clinical Psychometric Research; 1977.
31. Evans GW. The environment of childhood poverty. *Am Psychol* 2004;59:77–92. [PubMed: 14992634]
32. Kendler KS, Dais CG, Kessler RC. The familial aggregation of common psychiatric and substance use disorders in the National Comorbidity Survey: a family history study. *Br J Psychiatry* 1997;178:841–8.
33. Margolin G, Vickerman KA, Ramos MC, et al. Youth exposed to violence: Stability, co-occurrence, and context. *Clin Child Fam Psychol Rev* 2009;12:39–54. [PubMed: 19238543]
34. Lansford JE, Dodge KA, Pettit GS, et al. A 12-year prospective study of the long-term effects of early child physical maltreatment on psychological, behavioral, and academic problems in adolescence. *Arch Pediatr Adolesc Med* 2002;156:824–30.
35. Davies PT, Woitach MJ. Children's emotional security in the interparental relationship. *Curr Dir Psychol Sci* 2008;17:269–74.
36. Cook A, Spinazzola J, Ford J, et al. Complex trauma in children and adolescents. *Psychiatric Annals* 2005;35:390–8.

Figure 1. Cumulative violence exposure scores and mean number of negative outcomes reaching criterion levels
Youth potentially could be over the criterion level cutoff on 7 outcomes, including Somatic Complaints, Depressive Symptoms, Anxiety, Over-arousal, Aggressive Behavior, Delinquent Behavior, and Academic Failure. Error bars represent standard error of the mean.

Table 1
Percent Violence Endorsement for Each Domain and for the Three Most Commonly Reported Items in Each Domain

Violence Domains and Three Most Commonly Endorsed Items in Each Domain	Percent Reporting Exposure				
	Total Years of Exposure (0–3)				
	0	1	2	3	Any Exposure
Parent-to-Youth Aggression	13.6	10.7	23.3	52.4	86.4
Mother slapped child	25.2	20.4	21.4	33.0	74.8
Father slapped child	35.0	21.4	24.3	19.4	65.1
Father shook child	61.2	23.3	7.8	7.8	38.8
Physical Marital Aggression	40.8	18.4	20.4	20.4	59.2
Pushed, grabbed or shoved	50.5	29.1	8.7	11.7	49.5
Threw an object at partner	61.2	23.3	5.8	9.7	38.8
Hit or tried to hit with something	67.0	20.4	7.8	4.9	33.1
Community Violence	49.5	28.2	12.6	9.7	50.5
Child beaten up by someone not in family	68.0	23.3	7.8	1.0	32.1
Saw someone beat another person with hard object	78.6	19.4	1.9	0	21.3
Saw someone force their way into parent's car, own home, etc.	88.3	9.7	1.0	1.0	11.7

Table 2

Youth Outcomes and Frequency of Violence Exposure during Last Year by Violence Domain

	Parent-to-Youth Aggression	Physical Marital Aggression	Community Violence
Youth Outcomes	Adjusted <i>RR</i> (95% <i>CI</i>)	Adjusted <i>RR</i> (95% <i>CI</i>)	Adjusted <i>RR</i> (95% <i>CI</i>)
Somatic Complaints	1.03 (1.01,1.05)*	1.01 (.99,1.03)	1.03 (.99,1.08)
Depressive Symptoms	1.02 (.96,1.08)	1.001 (.94,1.06)	1.04 (.87,1.24)
Anxiety	1.003 (.94,1.07)	1.06 (1.03,1.09)***	1.05 (.92,1.19)
Over-arousal	1.01 (.99,1.04)	1.03 (1.004,1.06)*	1.12 (1.06,1.17)***
Aggressive Behavior	1.03 (1.01,1.06)**	.93 (.85,1.01)	1.04 (.998,1.08)
Delinquent Behavior	1.03 (1.004,1.05)*	1.04 (1.03,1.06)***	1.03 (.999,1.07)
Academic Failure	1.03 (1.02,1.05)***	1.03 (1.02,1.05)***	1.10 (1.06,1.14)***

Notes. Adjusted *RR* = risk ratios adjusted for Wave 1 outcomes, family income, and parents' psychopathology. Significant *ARRs* account for unique variance above and beyond other exposure domains, and the co-variables. *CI* = confidence interval.

*
 $p < .05$.

**
 $p < .01$.

 $p < .00$

Table 3

Cumulative Violence Exposure Index (0–9) and Youth Outcomes

Youth Outcomes	Percent Over Criterion Level by Level of Cumulative Exposure			Adjusted <i>RR</i> (95% <i>CI</i>)
	Low (0–3) <i>n</i> = 44	Moderate (4–6) <i>n</i> = 42 ^a	High (7–9) <i>n</i> = 17	
Somatic Complaints	25.0%	40.5%	70.6%	1.12 (1.003,1.24) *
Depressive Symptoms	0%	7.5%	17.6%	1.77 (1.43,2.19) ***
Anxiety	0%	12.2%	29.4%	1.58 (1.25,1.99) ***
Over-arousal	9.1%	17.5%	35.3%	1.17 (.93,1.47)
Aggressive Behavior	20.5%	33.3%	64.7%	1.14 (.99,1.31)
Delinquent Behavior	13.6%	28.6%	76.5%	1.25 (1.07,1.46) **
Academic Failure	13.6%	42.9%	41.2%	1.20 (1.06,1.36) **

Notes. Adjusted *RR* = risk ratios adjusted for Wave 1 outcomes, family income, and parents' psychopathology. *CI* = confidence interval.

^aFor Moderate(4–6) exposure, *n* = 41 for Anxiety and *n* = 40 for Depressive Symptoms and Over-arousal.

*
p < .05.

**
p < .01.

p < .001.