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Effect of Violence Exposure on Health Outcomes Among Young Urban Adolescents

Author(s): Fredland, Nina M.; Campbell, Jacquelyn C.; Han, Haera

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Nina M. Fredland, PhD, is Assistant Professor, School of Nursing, University of Texas at Austin.

Jacquelyn C. Campbell, PhD, is Professor; and **Haera Han, PhD, RN,** is Assistant Professor, School of Nursing, Johns Hopkins University, Baltimore, Maryland.

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Corresponding author: Nina M. Fredland, PhD, School of Nursing, University of Texas at Austin, 1700 Red River, Austin, TX 78701 (e-mail: nfredland@mail.nur.utexas.edu).

Abstract

Background: Although youth are exposed to many forms of violence, most studies have been concentrated on only one type of violence exposure and focused on older adolescents or very young children. Little is known about direct and indirect effects of violent stressors on

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  - Children Exposed to Violence: The Scope of the Problem
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  - Peer or Personal Violence
  - Adolescent Development
  - Violence Exposure and Adolescent Health Outcomes
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    - Endogenous Latent

the health of African American adolescents in urban middle schools or the cumulative effect of multiple forms of exposures.

Objective: To test theoretically derived relationships between the types and levels of violence exposure and experiences; coping; and physical, behavioral, and mental health outcomes.

Methods: A structural equation modeling approach was used in this cross-sectional predictive correlational model testing design. Youth's experiences with exposure to and witnessing of violence were examined on three levels-community, family, and peer-in relation to physical, behavioral, and mental health outcomes. The sample (n = 309) consisted almost entirely of African American seventh graders from four urban middle schools. Forty-two percent of students were boys. More than 80% said that they had been in a boyfriend or girlfriend relationship, and 55% were currently in such a relationship.

Results: Eight of the 15 paths tested in the hypothesized model were found to be statistically significant, indicating an average fit ($[chi]^2$ = 133.06, df = 40, ratio of 3.3, p <.001, root mean square error of association =.087, normed-fit index =.89, comparative-fit index =.92, goodness-of-fit index =.93). Removing nonsignificant paths statistically improved model fit, resulting in an adequate fit ($[chi]^2$ = 146.78, df = 47, $[chi]^2$ / df = 3.1, p <.001, root mean square error of association =.083, normed-fit index = .88, comparative-fit index =.91, goodness-of-fit index =.93). Although coping did not demonstrate a mediating effect on health outcomes, it had a direct effect on physical and mental health.

Dependent Variables

- Statistical Analysis

- Results
  - Results of Model Estimation
  - Direct and Indirect Paths

- Discussion
  - Effect of Community Violence Exposure on Health
  - Effect of Home Violence Exposure on Health
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Discussion: The findings partially support the hypothesized model. Violence at home, personal violence, and coping had significant direct effects on health outcomes. Community violence did not have a significant effect, and coping was not an intermediary variable in this sample.

Youth in the United States are exposed to violent stressors, such as parental violence, child maltreatment, peer violence, and community violence, and these exposures can have direct or indirect effects on health. Most of the research on youth violence exposure has neither distinguished the type of exposure nor considered the cumulative effect. Rather, studies have been concentrated on one type of exposure, with focus typically on older youth or very young children. Few studies have been focused on middle-school youth and not many on African American adolescents. This research increases the understanding of the effect of violence on health by looking at different forms of exposure in the same study.

Children Exposed to Violence: The Scope of the Problem

Youth exposed to family violence are at higher risk for using violence, being abused themselves, and becoming perpetrators in the future (Straus & Gelles, 1990). One form of exposure to or experiences of family violence is witnessing parental intimate partner violence (IPV). Children may witness IPV by direct observation, overhearing violent episodes, acting as a barrier, and being used as a pawn in controlling tactics (Edleson, 1999).

Youth are also exposed to peer violence, including bullying, in their school and community and to community violence in their neighborhoods (Pepler et al., 2006). Empirical studies have been focused mostly on family, peer, or community violence separately rather than

- Table 3
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considering the differential or cumulative impact of these forms of violence. There is evidence that cumulative exposure to multiple types of violence can have additive adverse effects on an adolescent's behavior (O'Keefe, 1997). Consequently, there is a need for further study that considers the multiple ways youth experience violence and how this affects not only behavioral outcomes but also physical and mental health.

The purpose of this study was to test theoretically derived relationships among the types and levels of violence exposures or experiences; coping; and physical, behavioral, and mental health outcomes in a sample of young urban adolescents. The model was structured to include three forms of violence exposure, to predict the effect of each form on adolescents' health, and to consider the magnitude of the effect of community and home violence and personal violence experience in relationship to each other and in the context of the full model.

Community Violence

Astoundingly high prevalence rates, especially in urban environments, have been reported in studies documenting youth exposure to community violence. In the most recent Youth Risk Behavior Surveillance Survey, a nationally representative sample of high-school youth, it was reported that 43.4% of the boys and 28.1% of the girls admitted physically fighting in the previous 12 months (Centers for Disease Control and Prevention, 2006). Of those who fought, 4.8% of the boys and 2.4% of the girls were injured. A third (29.8%) had property stolen or damaged while at school. Another 6% avoided school at least once in the prior month because they felt unsafe at school or traveling to or from school. Minority (Black, 8.7%; Hispanic, 10.2%) and younger students in ninth grade (7.7%) were most affected. The most common exposure to community violence was witnessing someone beaten, with prevalence rates ranging from 39% to 85% (Stein, Jaycox, & Katoda, 2003). A classic study about younger adolescents (7-15 years old) found that 78.4% of youth (*n* = 500) in a low-income Midwestern urban area reported witnessing someone beaten, 30% witnessed a stabbing, and 26.3% witnessed a shooting (Bell & Jenkins, 1993). The same investigators screened a second group of 10- to 19-year-olds and found that 55% had witnessed a robbery; 35%, a shooting; and 24%, a homicide. The same youth were also victimized: A total of 23% were threatened with a knife, 4% were stabbed, 11% were shot at, and 3% were shot. The National Youth Survey (*n* = 468), a population-based survey of youth 11-17 years old, found that 27% reported having been beaten by someone other than a parent (Fagan, 2003). Those who experienced violence were mostly boys from urban neighborhoods.

Family or Home Violence

Most prevalence estimates of child exposure to violence in the home are inferred from population-based studies of domestic violence. Actual exposure in terms of seeing or hearing the violence itself or its effects is not clear. Conservative estimates of two children per household approximate that 3 million children, aged 3 to 17, are exposed in the United States annually or 51-81% of children in homes where parental IPV exists (Fantuzzo & Mohr, 1999; Straus, 1979). Thus, it is reasonable to conclude that children most likely are present in at least 50% of households experiencing IPV.

Peer or Personal Violence

Two forms of peer violence commonly studied are bullying and dating violence (DV). Overall prevalence rates for bullying behaviors vary from 29% to 76% both worldwide and in the United States (Nansel et al., 2001). The DV prevalence among middle- and high-school students ranged from 9% to 46% (Glass et al., 2003). Victimization rates, encompassing both physical and sexual violence, ranged from 30% to 39.4% (Foshee, 1996; Halpern, Oslak, Young, Martin, & Kupper, 2001; Malik, Sorenson, & Aneshensel, 1997). Most research combines young middle-school aged adolescents with high-school adolescents, making it difficult to compare across studies.

Adolescent Development

Because most youth violence emerges during the second decade of life (Patterson, Forgatch, Yoerger, & Stoolmiller, 1998), it is important to focus on the very young adolescent. In addition, evidence suggests that early manifestations of personal victimization, such as bullying, may be replaced by DV in late adolescence (Pepler et al., 2006). Bullying in early adolescence may coincide with emerging sexual identity and individual differences in pubertal development, thus providing opportunities for teasing related to sexual vulnerabilities. The current study is consistent with the Healthy People 2010 agenda (U.S. Department of Health and Human Services, 2007), which calls for the reduction of "injuries, disabilities, and deaths due to… violence" (p. 15-3) in adolescents.

Violence Exposure and Adolescent Health Outcomes

The overlap between parental IPV and child maltreatment is recognized, with prevalence rates ranging from 30% to 60% across studies (Edleson, 1999). A longitudinal study of eighth and ninth graders (n = 1,291) found that being hit by an adult and having a friend who experienced DV predicted DV victimization for both sexes (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004). For boys, physically fighting with a peer was also predictive of DV victimization. In cross-national samples, associations were found between physically aggressive behavior and

perpetrating physical DV during adolescence for boys (Broidy et al., 2003). Roberts and Klein (2003), using the National Longitudinal Study of Adolescent Health data, found that both sexes were significantly more likely to demonstrate violent perpetration if they had a personal history of IPV. The Adverse Childhood Experiences study confirms higher risks for girl victimization and boy perpetration of DV for those exposed to childhood physical abuse, sexual abuse, or parental IPV (Whitfield, Anda, Dube, & Felitti, 2003). The same researchers found a link between Adverse Childhood Experiences scores and increased mortality from leading causes of death in adults (Felitti et al., 1998).

To date, most investigations have been focused on physical and mental health symptoms such as depression, suicide ideation, unintentional pregnancy, and sexually transmitted infections with respect to girls who experienced physical violence (Glass et al., 2003). Little attention has been focused on boys who experienced physical violence and perpetration related to health. Interviews were used in a recent study (n = 116) to identify differences in typologies of adolescent male and female DV perpetration, uncovering the need for clearer definitions of self-defense, accidental, and "playful" violent acts (Foshee, Bauman, Linder, Rice, & Wilcher, 2007). Although pathways to victimization and perpetration are not clear, studies support the premise that childhood exposures may lead to long-term effects of continued violence and other negative health effects warranting additional investigation. Furthermore, most studies on adolescent DV lack a theoretical model that allows for the complexities of adolescent victimization and perpetration (Foshee et al., 2007). Adult IPV feminist models and social cognitive theory, most often employed in this area of research, lack the ecological and developmental perspective critical to studying these phenomena in adolescent populations.

Theoretical Model

The model for this study (Figure 1) was derived from the phenomenological variant of ecological systems theory (PVEST), a dynamic combination of ecological systems, developmental processes, and risk characteristics that predict either positive or negative health outcomes in adolescents (Spencer, 1995). The model offers a comprehensive framework for considering the adolescent within a social environmental context. Risk contributors (gender, race, poverty, and maturation) interact with stressors (e.g., family violence, child abuse, peer violence, and neighborhood violence). The combination of stress engagement and risk contributors (biological and contextual factors) influences coping mechanisms that result in either adaptive or maladaptive responses. The PVEST was developed specifically for ethnically diverse youth and has been used extensively with African American people.

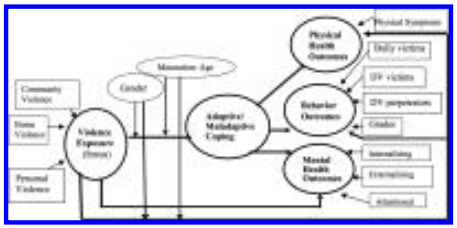

FIGURE 1. Theoretical model. DV = dating violence.

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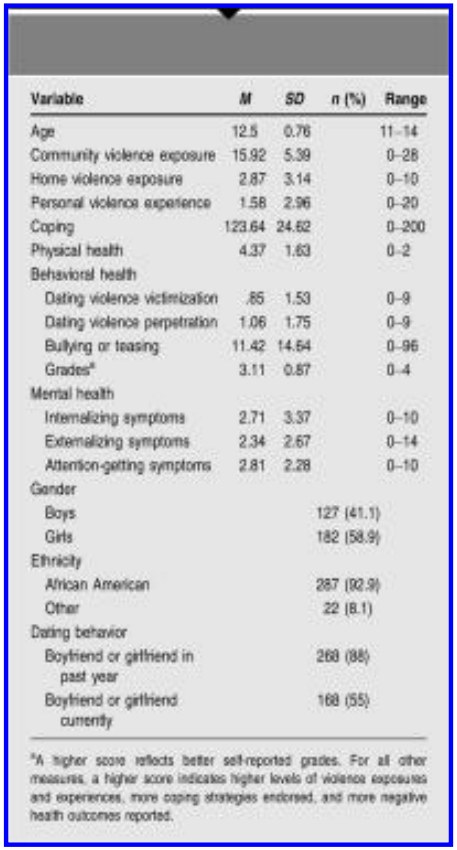
Methods

Design

Because a significant amount of exploratory research already exists, a cross-sectional predictive correlational model testing design, specified in Figure 1, was used to test theoretically proposed relationships between adolescent violence exposure and health outcomes.

Sample Demographic Characteristics

Each seventh-grade student (*n* = 890) enrolled at the time of data collection in four urban middle schools in a large mid-Atlantic city was given the opportunity to participate in a health questionnaire and given a consent form to take home. Three hundred and fifty-seven students (40.1%) returned parental or guardian consent. Students who also gave assent were given the questionnaire. Of those, 328 (92%) completed the health questionnaire. The four schools had an overall response rate ranging from 26% to 76%, with a mean of 42.7%. There were no significant demographic differences in the students who were eligible to take the survey compared with those who did not obtain parental consent or were absent. Of those who took the survey, 95.1% satisfactorily completed it by answering most questions for all major variables, yielding a sample size of 312. Three 15-year-olds in the sample were eliminated as nonrepresentative outliers, yielding a final sample of 309 youth, aged 11-14 years (Table 1).



Variable	*M*	*SD*	*n* (%)	Range
Age	12.5	0.76		11–14
Community violence exposure	15.92	5.39		0–28
Home violence exposure	2.87	3.14		0–10
Personal violence experience	1.58	2.96		0–20
Coping	123.64	24.62		0–200
Physical health	4.37	1.63		0–2
Behavioral health				
Dating violence victimization	.85	1.53		0–9
Dating violence perpetration	1.06	1.75		0–9
Bullying or teasing	11.42	14.64		0–96
Grades[a]	3.11	0.87		0–4
Mental health				
Internalizing symptoms	2.71	3.37		0–10
Externalizing symptoms	2.34	2.67		0–14
Attention-getting symptoms	2.81	2.28		0–10
Gender				
Boys			127 (41.1)	
Girls			182 (58.9)	
Ethnicity				
African American			287 (92.9)	
Other			22 (8.1)	
Dating behavior				
Boyfriend or girlfriend in past year			268 (88)	
Boyfriend or girlfriend currently			168 (55)	

[a]A higher score reflects better self-reported grades. For all other measures, a higher score indicates higher levels of violence exposures and experiences, more coping strategies endorsed, and more negative health outcomes reported.

TABLE 1. Sample Demographic Characteristics (*n* = 309)

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The sample mean age was 12.5 years, 41.1% were boys, and 95.7% chose African American for their ethnicity. The four schools were similar in demographics and socioeconomic status. The majority were from poor families, with 80% qualifying for free (72.5-82.6%) or reduced (5.5-8.2%) lunch. Most (*n* = 268, 88%) reported having a boyfriend or girlfriend in the past year.

Measures

Exogenous Latent Variables

Exposure to violence was assessed via self-report using instruments to ascertain exposure to and experience of community, peer or personal, and

home violence. To measure community violence, students were asked to report on the frequency of six events they may have seen or heard in the community or neighborhood in the past year using a 5-point Likert scale (*never*, *1 time*, *2 times*, *3 times, or many times*; coefficient *[alpha]* =.76). Sample items included the following: "I have seen somebody arrested," "I have seen drug deals," and "I have seen a dead body on the street."

Personal violence exposure assessed victimization. Five items asked youth to report if they had been beaten; shot or stabbed; or threatened with being shot, stabbed, or killed using the same scale (coefficient *[alpha]* =.77). Both measures were adapted from *Things I've Seen or Heard* and are used widely in the literature (Richters & Saltzman, 1990).

Home violence exposure assessed physical violence between parents or other grown-ups in the home in the form of hitting, pushing, grabbing, or throwing objects. This 5-item measure was modified from the Conflict Tactics Scale, physical violence subscale (coefficient *[alpha]* =.79; Straus, 1979). Response choices were *never*, *sometimes*, and *often*.

Endogenous Latent Intermediary Variable

Coping, defined as a conscious cognitive or behavioral response to decrease or manage stress (Patterson & McCubbin, 1987), was hypothesized as a mediator between exposures to violence and health outcomes. The Adolescent Coping for Problem Experiences (Patterson & McCubbin, 1987) measure was modified to reduce participant burden by using 9 of 12 subscales. The shorter version was supported in the literature and was reliable in this study (coefficient *[alpha]* =.89; Phuphaibul, Thanooruk, Leucha, Sirapo-ngam, & Kanobdee, 2005). Youth were asked in 40 items about how they handled difficult situations. Sample items included the following: "get angry and yell," "apologize," and "try to reason with parents." Response choices were *never*, *hardly ever*, *sometimes*, *often*, and *most of the time*. Negative items were reverse scored. A higher score indicated a more adaptive coping response.

Endogenous Latent Dependent Variables

Physical health outcomes were operationalized with items about physical symptoms such as colds, flu, headache, stomachache, aches or pains, fatigue, and sleep disturbances rather than diagnosed conditions. For continuity, the anchors for physical health matched the psychosocial items (*never*, *sometimes*, and *very often*) except for asthma and diabetes, which were yes-or-no responses.

Mental health was operationalized as symptoms and not diagnosis criteria using the Pediatric Symptom Checklist (Jellinek et al., 1988). Items represented internalizing, externalizing, and attention-getting symptoms. The overall Pediatric Symptom Checklist had good reliability

(.92), with reliabilities of subscales.77,.76, and.72, respectively, in this study.

Behavioral outcomes were operationalized with items measuring bullying or teasing behaviors, DV victimization or perpetration, and grades. The DV was measured using the Peer Dating Violence Scale, an instrument based on PVEST (Spencer, 1995) informed by focus groups and individual interviews and used with African American youth. Nine items were used to assess the prevalence of DV victimization (coefficient *[alpha]* =.77), and parallel items assessed DV perpetration (coefficient *[alpha]* =.80). For example, youth were asked if they had ever been slapped in the face, pushed or shoved, hit or beaten, hurt, or threatened with a weapon by a boyfriend or girlfriend. Psychological abuse items included name calling, threatening someone they cared about, and being disrespected.

The Childhood-Adolescent Teasing Scale (Vessey, 2003), having 32 items in four subscales (personality-behavior, school-related, family-environment, and physical size), is used to measure bullying or teasing victimization and has been tested on more than 684 children. The instrument has good reliability and adequate construct validity. In this sample, coefficient alpha was .94. Youth were asked about how often they were teased about a certain thing, such as "being a dork," "not knowing answers in class," their "brand of shoes," or their "weight." Response choices were *never*, *sometimes*, *often*, or *a whole lot*.

Procedures were reviewed and approved by two institutional review boards, and the city school system granted researchers permission to conduct the study in four selected schools. Active parental or guardian consent and youth assent were obtained for all participants. Questionnaires were administered in a location based on school preference and completed within 45 min.

Statistical Analysis

The two-step approach to structural equation modeling (SEM) recommended by Anderson and Gerbing (1988) was used to test the solidity of the measurement models first. Fit indices such as the $[chi]^2$ test, the goodness-of-fit index (GFI), and the root mean square error of association (RMSEA)provided associated probabilities. In the second step, the structural model was tested. Respecification of the measurement models was guided by theory and statistical consideration.

In the original specified model (Figure 1), exposure to violence was conceptualized as the overall latent construct, with community violence, home violence, and personal violence as subconstructs. However, the model did not hold as either a second-order measurement model ($[chi]^2$ = 839.29, *df* = 206, RMSEA = 1.00, GFI =.80) or as a first-order model ($[chi]^2$ = 1583.86, *df* = 230, RMSEA =.17, GFI =.62). Therefore, in the

conservative approach, each type of violence exposure was treated as a separate exogenous latent construct. The structural model specifying the relationships among the different types of violence exposure variables and health outcomes was tested using LISREL 8.72. Model fit was estimated by maximum likelihood estimation using the sample covariance matrix. Several indices assessed fit in addition to the $[chi]^2$ index, which is sensitive to sample size (Joreskog & Sorbom, 2001).

Incremental fit indices evaluate model improvement and have values ranging from 0 to 1, with values over.90 indicating adequate fit with the sample data (Byrne, 1998). The RMSEA is one of the most important estimates of fit. Although a perfect fit (i.e., RMSEA = 0) is not realistic, values less than.05 are considered a good fit. However, more relaxed criteria classify an RMSEA of.08 to.10 as a mediocre or adequate fit (Byrne, 1998). Scores above.10 reflect a poor fit.

Results

A cumulative index was created to ascertain exposure and experiences with multiple forms of violence. The range of scores is 0 to 3. An index score of 0 indicates that a student was not exposed to any of the three forms of violence (home, community, or personal), and scores of 1 to 3 indicate multiple exposures. For example, a score of 1 in home violence indicates that a student was exposed to some form of home violence, that is, at least one of the five items measuring home violence. This scoring was repeated for community violence and personal violence exposure. Less than 1% (*n* = 18) reported no violence exposure. Twenty-three percent (*n* = 72) were exposed to one form, 45% (*n* = 140) to two forms, and 31% (*n* = 95) to three forms.

On an individual level, 58% (*n* = 180) responded positively to at least one home violence item, 48.9% (*n* = 151) experienced violence personally, and virtually all students (*n* = 306) were exposed to community violence. In comparison of various subtypes, it was found that most students (76%) reported exposure to more than one instance of such violence. Commonly endorsed items included the following: hearing gunshots (94.5%), witnessing an arrest (94.2%), and witnessing someone beaten (91.6%).

Bivariate analysis (Table 2) demonstrated low correlations between all variables (*r* = -.16 to.49), with the exception of the internalizing and externalizing subscales for mental health (*r* =.58). This finding was expected and did not affect model estimation.

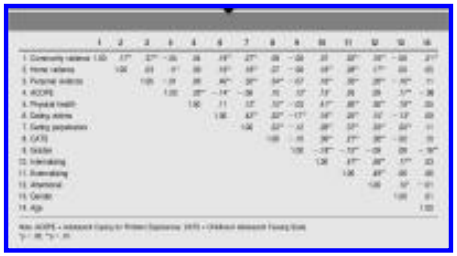

TABLE 2. Bivariate Correlations of Study Variables

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Results of Model Estimation

The main objective of fitting or estimating a model is to determine the goodness of fit of the hypothesized model and the sample data (Byrne, 1998). After specifying the model based on theoretical knowledge, the sample data were used to test the model. Fit indices for the full structural model and two variations are reported in Table 3. Having several models is useful for comparison in addition to the theoretical model of greatest interest (Bentler & Bonnett, 1980).

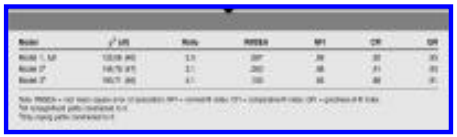

TABLE 3. Model Comparisons (Nested)

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The full theoretical model (Figure 2) includes both significant and nonsignificant pathways and reports completely standardized parameter estimates and significance levels. Fit indices for this model ($[chi]^2$ = 133.06, df = 40, ratio of 3.3, $p < .001$, RMSEA = .087, normed-fitindex = .89, comparative-fit index = .92, GFI = .93) indicated a mediocre or adequate fit (Byrne, 1998). A direct significant effect of home and personal violence on physical, behavioral, and mental health was demonstrated. Coping did not mediate in the full model as none of the mediated paths were significant; however, coping had a direct and independent effect on physical and mental health.

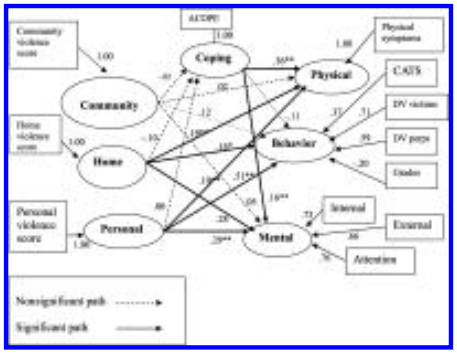

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FIGURE 2. Estimated structural model of violence exposure on health outcomes with standardized values (full model). DV = dating violence; ACOPE = Adolescent Coping for Problem Experiences; CATS = Childhood-Adolescent Teasing Scale. *p < .05; **p < 01.

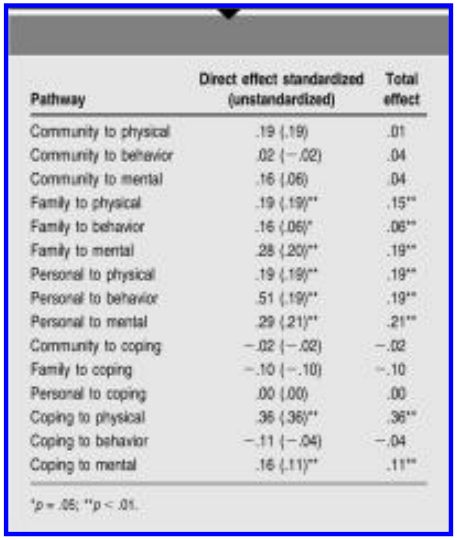
A revised model based on the statistical outcome of the full model was tested subsequently. The full model was trimmed by constraining all nonsignificant paths to 0, essentially removing the paths. The $[chi]^2$ difference test is appropriate for determining the best-fitting model if the models are nested; that is, both models must be equivalent and possess all of the same free paths at the outset (Bentler & Bonnett, 1980). Then, one of the models can constrain (fix) some of the paths, becoming more restricted. The combination of the $[chi]^2$ statistic and SEM fit indices to supplement the parameter estimates and significance information available in the LISREL output is recommended to statistically evaluate the fit of competing models (Bentler & Bonnett, 1980). In the reduced model, all paths from community violence, paths from home and personal violence to coping, and the pathway from coping to behavior were all constrained to 0. (LISREL was not used to estimate these paths in the restricted model.) Fit indices for the reduced model ($[chi]^2$ = 146.78, df = 47, $[chi]^2$ / df = 3.1, p < .001, RMSEA =.083, normed-fit index =.88, comparative-fit index =.91, GFI =.93) indicated an adequate fit (Byrne, 1998). The $[chi]^2$ difference test [DELTA]$[chi]^2$ (7, n = 309) = 13.72, p = .056 demonstrated that the additional paths did not improve model fit significantly. Statistically, the more parsimonious model (the one constraining nonsignificant paths) would be selected as the final model. However, the p value was just past significance (p =.056), and the model is well-grounded on theory. Thus, a theoretical argument supports keeping the full model as the final model.

Another model revision, in this case based on theory, constrained only the coping pathways ($[chi]^2$ = 190.71, df = 46, $[chi]^2$ / df = 4.1, p < .001, RMSEA = .10, GFI = .91). Although this revision was justified because coping is an integral construct in the model, there was no support found

for mediation. The resulting [DELTA]$[chi]^2$ (6, n = 309) = 57.65, p < .001 indicates a significant improvement in fit by the added paths, further supporting the retention of the full model for the final model.

Direct and Indirect Paths

Significant direct and total effects (Table 4) were demonstrated in the full model for all paths between home violence and personal violence exposure and all health outcomes. The strongest direct effect of home violence related to mental health, with a standardized parameter estimate of.28 compared with.16 for behavior and.19 for physical health. The strongest direct effect of personal violence related to behavior (.51) compared with mental health (.29) and physical health (.19). None of the indirect paths indicated a significant effect. Coping did not act as a mediator. However, coping did have a significant direct and positive effect on physical health and mental health outcomes, though it did not demonstrate an effect on behavior in this sample. The strongest effect was on physical health, with a parameter estimate of.36 (mental health =.16). All paths from community violence were nonsignificant in this sample.



Pathway	Direct effect standardized (unstandardized)	Total effect
Community to physical	.19 (.19)	.01
Community to behavior	.02 (−.02)	.04
Community to mental	.16 (.06)	.04
Family to physical	.19 (.19)**	.15**
Family to behavior	.16 (.06)*	.06**
Family to mental	.28 (.20)**	.19**
Personal to physical	.19 (.19)**	.19**
Personal to behavior	.51 (.19)**	.19**
Personal to mental	.29 (.21)**	.21**
Community to coping	−.02 (−.02)	−.02
Family to coping	−.10 (−.10)	−.10
Personal to coping	.00 (.00)	.00
Coping to physical	.36 (.36)**	.36**
Coping to behavior	−.11 (−.04)	−.04
Coping to mental	.16 (.11)**	.11**

*p = .05; **p < .01.

TABLE 4. Full Model Direct and Total Effects

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Discussion

Effect of Community Violence Exposure on Health

The goal of this study was to test a model examining relationships among exposure to community, peer or personal, and home violence and its effect on the health of young urban adolescents. The finding that exposure to violence affects physical, mental, and behavioral health was supported partially in the model. None of the paths from community exposures had a significant effect on any of the health outcomes possibly because of the lack of variance in the community violence subscale in this sample because 99% were exposed to at least one instance of community violence. In this study, more than one item contributed to the high percentage of exposure to community violence. Specifically, witnessing someone arrested (94.1%), someone beaten (91.6%), or drug dealing (88%) and hearing gun shots (94.4%) were events common in the lives of these youth. The remaining items in the community scale happened less often but still at high rates of occurrence: seeing someone shot (47.9%) or stabbed (40.5%) or seeing a dead body on the street (31.4%). Rates of exposure to community violence are consistently high across other comparable studies (Bell & Jenkins, 1993; Jaycox et al., 2002; O'Keefe, 1997).

Significant bivariate relationships between community violence and victimization (r = .19, p < .01), perpetration (r = .27, p < .01), externalizing symptoms (r = .22, p < .01), and attention-getting symptoms (r = .18, p < .01) were found. In studies when community violence exposure has been separated from other exposures and health outcomes were reported, the focus has been related to posttraumatic stress disorder, depression, aggression, or externalizing and internalizing symptoms (Guerra, Huesmann, & Spindler, 2003; Jaycox et al., 2002; O'Keefe, 1997). In one of the few longitudinal studies with an ethnically diverse urban sample of young adolescents (aged 9-12 years, n = 4,458), the investigators found that community violence exposure increased subsequent aggression (Guerra et al., 2003). Malik et al. (1997) also found that exposure to community violence strongly predicted involvement in relationship violence. This study found a low correlation between community exposure and DV perpetration (r = .27, p < .01), although this effect was not demonstrated in the model. As previously stated, community exposure did not demonstrate a measurable effect on physical health in this sample. However, in two studies measuring the same variables used as indicators of physical health in this study(headache, stomach ache, sleep disturbances, and asthma), a relationship was found between physical health and community violence (Bailey et al., 2005; Cagney & Browning, 2004). Witnessing community violence predicted posttraumatic stress disorder, headaches, and sleep problems, whereas levels of victimization additionally predicted stomachaches (Bailey et al., 2005). Increased incidence of asthma was found in neighborhoods lacking collective efficacy (Cagney & Browning, 2004).

Effect of Home Violence Exposure on Health

Home violence significantly affected all paths to health. Physical, behavioral, and mental health were affected strongly by the witnessing of home violence (.19,.16, and.28, respectively). This is an important finding because 58% of the youth in this sample admitted witnessing at least one instance of home violence. Youth internalizing their experiences may exhibit actual or perceived physical illness. Several studies have documented the strong association between internalizing and externalizing symptoms, usually measured by maternal report (Grych, Jouriles, Swank, McDonald, & Norwood, 2000; Kaslow et al., 2003). This was consistent with findings in this sample (r = .47, p < .01). One of the few studies of low-income African American children examined the effect that family and community factors had on these symptoms, and a significant relationship was found between neighborhood factors and family adaptability (Kaslow et al., 2003). Similar to this study, neighborhood factors were not associated directly with mental health symptoms. However, maternal IPV and distress were associated with internalizing and externalizing symptoms. This association is consistent with home violence being more predictive of mental health. It is also possible that other factors not specified in this model may be mediating the effect between community violence exposure and health.

Strengths and Limitations

In this study, gaps in the literature were addressed, which are related to how different forms of violence studied together affect health outcomes. Major strengths of this research are the ecological developmental theoretical model and the SEM approach, which facilitated studying different forms of violence at the same time and allowed for measurement error. The focus on middle-school aged youth and adolescent development is important because these youth are young enough to alter pathways that have negative health consequences and cycles of continued violence can be curtailed. Once illnesses and behaviors manifest in adulthood, it is impossible to sort out the exact pathway and reverse the process.

Although the full model was only adequate, modifications to achieve a more perfect fit were not theoretically justified. The model was not modified on the basis of the data; therefore, even though not all paths were significant, a meaningful and interpretable model was accepted.

The cross-sectional nature of this data set is a limitation. Conducting an investigation in a troubled school system where resources are limited, faculty and staff turnover is high, parental support is often lacking, and youth have high rates of expulsion and suspension contributes to a less than desirable response rate. The low response rate is a serious limitation. Prior to data collection, members of the research team visited the schools almost daily for several weeks to encourage students to return consent forms, whether they were interested in participating or not. Persistent efforts on the part of administrators, teachers, and research team members raised the response rate to 42.7% from 26% and 30%, the rates from data collected in the 2 preceding years from these same schools. Active parental consent, a requirement of this study, contributed to

the low response rate. This is consistent with the range of response rates (30-60%) across studies using active parental consent (Tigges, 2003). This requirement potentially introduced sample bias in that those families with higher levels of home violence may have withheld consent. However, it is reasonable to suggest that the results if anything are underreported.

Implications for Future Research

Incorporating different forms of violence exposure in the same study with ethnically, geographically, and economically diverse groups of youth will advance the science. Further exploration related to boy's and girl's perceptions of how exposure to community violence affects their daily life and how the impact is different from other forms of violence exposure may explain pathways to health outcomes more fully. Interventions to prevent the deleterious effects of violence must consider the multiple ways youth are exposed and the cumulative effect.

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