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Authors

SCHWAB-STONE, MARY
CHEN, CHUANSHENG
GREENBERGER, ELLEN
et al.

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No Safe Haven II:
The Effects of Violence Exposure on Urban Youth

MARY SCHWAB-STONE, M.D., CHUANSHENG CHEN, PH.D., ELLEN GREENBERGER, PH.D.,
DAVID SILVER, M.ED., JUDITH LICHTMAN, PH.D., AND CHARLENE VOYCE, M.P.H.

ABSTRACT

Objectives: To examine the moderating effects of gender, grade level, and ethnicity on the associations between violence exposure and adolescents' internalizing symptoms and externalizing behavior and to explore whether such relationships persist over time. **Method:** A survey of adolescents' exposure to violence, internalizing symptoms, and externalizing behavior was administered to 2 cross-sectional samples of 6th, 8th, and 10th graders ($N = 2,748$ in 1994 and 2,600 in 1996) in an urban school system. Approximately 1,100 adolescents participated in both surveys and served as the longitudinal sample. **Results:** Structural equation models indicated that violence exposure was closely associated with both externalizing behavior ($r = 0.74–0.79$) and internalizing symptoms ($r = 0.36–0.38$). The strength of association was similar across gender and ethnic groups. However, violence exposure was more closely related with internalizing symptoms for younger adolescents than their older counterparts. The longitudinal analysis suggested that exposure to violence reported at time 1 was related to adolescents' internalizing symptoms and externalizing behavior 2 years later. **Conclusions:** These results document high levels of violence exposure for urban youths and indicate links to a range of psychiatric symptoms and indicators of poor adjustment. Such findings carry implications for direct clinical work with young people, as well as for program development and public policy. *J. Am. Acad. Child Adolesc. Psychiatry*, 1999, 38(4):359–367. **Key Words:** violence exposure, internalizing symptoms, externalizing behavior, adolescents.

Recent surveys have revealed an increasingly disheartening picture of violence in American adolescents' lives. From 1970 to 1991, the death rate from homicide for teenagers between 15 and 19 years of age increased 220% (Bureau of Justice Statistics, 1993). Consequently, homicide has become 1 of the top 2 leading causes of death for

that age group (Fingerhut et al., 1992). Homicide is, of course, the extreme form of violence and has direct effects only on a small but increasing portion of the population (approximately 10 teenagers per 100,000 residents). Other less extreme forms of violence, however, have been found to affect a much larger group of adolescents. Various national and regional large-sample surveys have revealed that approximately one third of junior high and high school students reported having been threatened with physical harm (American School Health Association, 1989; Centers for Disease Control, 1993), and a far larger proportion of adolescents witnessed violence (Campbell and Schwarz, 1996). According to several studies (e.g., Bell and Jenkins, 1993; Gladstein et al., 1992; Schubiner et al., 1993), more than 80% of inner-city adolescents have seen someone assaulted, one third to 40% have witnessed a shooting or stabbing, and an alarming 22% to 23% have reported seeing someone murdered. It should be noted that although adolescents are not alone in experiencing the increase of violence in our society, they are twice as likely to be victims of violence as adults over the age of 25 years according to a

recent national crime survey (Bureau of Justice Statistics, 1991; Finkelhor and Dziuba-Leatherman, 1994).

Given the prevalence of adolescents' exposure to violence, researchers have recently attempted to identify the potential consequences of such exposure for adolescents' psychological well-being. For example, Freeman et al. (1993) found that children who had experienced violence reported a higher level of depression. Campbell and Schwarz (1996) compared the prevalence and exposure to violence of suburban and urban 6th-grade students and found that those reporting higher levels of exposure had significantly more symptoms associated with depressive, posttraumatic stress, and somatization syndromes. More recent studies have reported a wider array of consequences of exposure to violence. In addition to increasing depressive symptoms and PTSD, violence exposure has been linked to low school achievement and to a high level of anger, anxiety, aggression, antisocial behaviors, and alcohol use (Boney-McCoy and Finkelhor, 1995; DuRant et al., 1995; Schwab-Stone et al., 1995; Singer et al., 1995).

Although the prevalence and correlates of adolescents' exposure to violence have been well-documented in the literature, our understanding of the consequences of violence for the well-being of adolescents is limited in at least 3 respects. First, previous studies have paid little attention to the possibility that there may be individual differences in the effects of violence exposure. For example, the effects may differ depending on characteristics of the adolescents such as age, gender, and ethnicity. These demographic factors have typically been included in regression analyses as control variables rather than as moderators. By ignoring the possible moderating effects of those demographic variables, previous researchers may have failed to identify groups of adolescents who are especially vulnerable or resilient to exposure to violence. It is possible that because of differential distribution of power in our society, females, minority groups, and younger children may be more vulnerable to negative outcomes of violence exposure than their counterparts. For example, gender differences in adolescents' vulnerability to stressors, at least under some conditions, have been identified by several researchers (Gore et al., 1993; Werner and Smith, 1992), with girls appearing to be more negatively affected. In a review of the literature on sex differences in adolescent depression, Peterson et al. (1991) concluded that "girls have shown the most negative reaction to life events in almost all the studies

that have found significant gender differences in such reactions" (p. 252).

The second limitation of previous research is methodological in nature. Researchers in this area have often used multiple measures of exposure to violence and of psychological well-being and analyzed them separately, making it difficult to discern larger patterns of meaning in the data. Structural equation modeling, which integrates the data in terms of latent constructs and takes into account measurement errors, is needed to obtain a clearer and more accurate picture of the connection between exposure to violence and adolescents' psychological well-being. The third limitation of previous research is a lack of longitudinal (panel) data that can help ascertain whether the effects of violence exposure persist over time.

In this article, we report a 2-year longitudinal study of a large community sample of adolescents in which we attempt to overcome these limitations. Using structural equation modeling techniques, a method that organizes individual scales in terms of their presumed underlying constructs, we examine how exposure to violence is related to externalizing behaviors and internalizing symptoms (Fig. 1). The objectives of this study are to examine the moderating effects of gender, grade level, and ethnicity on such associations and to investigate whether the relationship between violence exposure and child problems persists over time. As shown in Figure 1, the 3 latent constructs—exposure to violence, externalizing behaviors, and internalizing symptoms—were each assessed with 2 or 3 measures (see a later section for a description of these measures).

METHOD

Participants

This study is part of an ongoing project that aims to assess risk and protective factors for adolescents' adjustment. In 1994, a survey was administered to students in the 6th, 8th, and 10th grades in an Eastern, urban public school system. Of the 3,872 enrolled students for those grades, 2,885 completed the survey. Because of missing data and other reporting problems, 137 cases were excluded from further analyses. The final sample included 2,748 students (71% of total student enrollment). The survey was repeated in 1996. Of the 4,006 enrolled students for those grades, 2,793 completed the survey. A final sample of 2,600 (65%) students remained after 193 cases were excluded because of missing data and other reporting problems.

Procedures

All students from the 170 classes of 6th, 8th, and 10th grades in 19 middle and high schools in the district were surveyed unless they
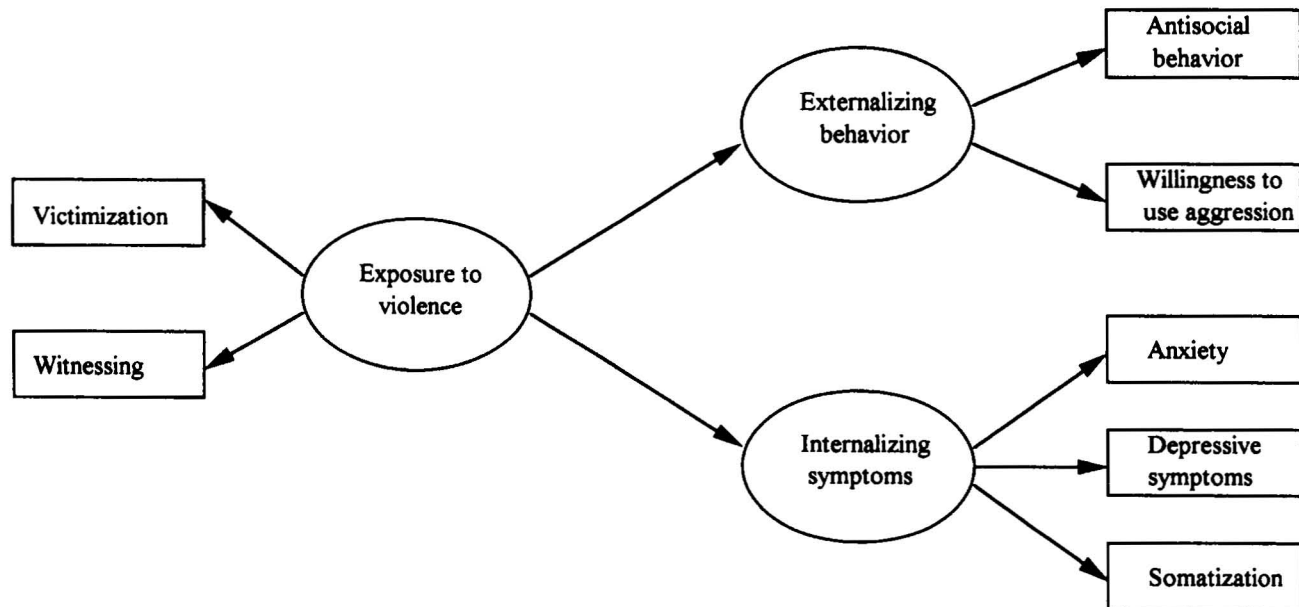
Fig. 1 Structural equation model.

declined to participate or their parents had objections (<1.0%). Students completed the survey in one class period during the regular school day. Trained administrators of the survey read all questions aloud while students followed along with their copy of the survey, reading questions to themselves and circling responses in the booklet. Surveys were administered in English and Spanish.

Measures

The Social and Health Assessment, developed by Weissberg et al. (1991), served as the basis for the survey. This survey includes both new scales developed specifically for this study and scales available from the literature that have been used with similar populations. Total scores were the simple sums of the items for true-false scales (false = 0, true = 1) and the average item score for Likert scales.

Victimization by Violence. Students were asked whether they had ever been beaten up or mugged, threatened with serious physical harm by someone, shot or shot at with a gun, attacked or stabbed with a knife, chased by gangs or individuals, or seriously wounded in an incident of violence. This 6-item true-false scale was a subset of a scale developed by Richters and Martinez (1993a) and had a moderate level of internal consistency (Cronbach α = .52 in 1994 and .63 in 1996).

Witnessing Violence. This is a parallel measure of victimization by violence. Students were asked whether they had seen someone being victimized by the same 6 types of violence. Cronbach α values for this scale were .73 (1994 study) and .76 (1996 study). Richters and Martinez's (1993b) study of first and second graders reported a 1-week test-retest reliability of r = 0.81. To examine further the validity of adolescent reports of witnessing violence, we plotted a density map of adolescents' reports of witnessing someone shot or stabbed and compared that map to homicide location data from the police department. Results showed a match of areas where reported witnessing was high and homicide locations.

Depressive Symptoms. Depressive symptomatology was assessed by the 13-item, true-false Depression subscale of the Behavioral Assessment System for Children (BASC) (Reynolds and Kamphaus,

1992). Sample items include "Nothing about me is right" and "Life is getting worse and worse." Cronbach α values of this scale were .83 in 1994 and .82 in 1996. Reliability statistics for this and other scales from the BASC (see below) are consistent with those reported in the BASC Manual (Reynolds and Kamphaus, 1992).

Anxiety. Also a subscale of the BASC (Reynolds and Kamphaus, 1992), this measure had 14 true-false items such as "I am afraid of a lot of things" and "I worry about what is going to happen." Cronbach α values for the scale were .82 in 1994 and .83 in 1996.

Somatization. Somatization was measured with 11 items from the BASC (Reynolds and Kamphaus, 1992). Sample items are "I have fainting spells," "I often have headaches," and "Sometimes my ears hurt for no reason." Cronbach α values for the scale were only moderate: .56 in 1994 and .61 in 1996.

Antisocial Behavior. This scale measures the frequency of occurrence of adolescent antisocial behaviors (e.g., fighting, arrest, vandalism, theft, carrying a gun, etc.) during the past year. Students responded on a 5-point scale (0 = zero times, 1 = once, 2 = twice, 3 = three or four times, 4 = five or more times). This scale had Cronbach α values of .79 in 1994 and .78 in 1996.

Willingness to Use Physical Aggression. Four items from the National Adolescent Student Health Survey (American School Health Association et al., 1990) were used to assess adolescents' willingness to use physical aggression in conflict situations. Students were asked whether they thought they should fight if someone insulted them in front of their friends, insulted a member of their family, stole something from them, or hit them (1 = no, 2 = probably no, 3 = probably yes, 4 = yes). The Cronbach α for this scale was .79 in both years.

Adolescents were also asked to provide information about their parents' educational level. The 5 alternatives were "some grade school or high school," "graduated from high school," "some college or training after high school," "graduated from college," and "don't know." When this scale was used as an ordinal scale, adolescents who responded "don't know" were excluded from analyses and responses for both parents (if available) were averaged. Another index of socioeconomic status used in this study was students' participation in the

subsidized lunch program. School administration provided information about each student's status in that program.

RESULTS

Descriptive Statistics

Characteristics of the 2 samples are shown in Table 1. The diversity of the family demographic characteristics reflects the composition of this public school system. Of the 1,546 8th and 10th graders in the 1996 study, 1,139 (74%) participated in the 1994 survey when they were in the 6th and 8th grades, respectively. After the exclusion of the 46 (4%) problematic cases, the final longitudinal sample included 1,093 students. To determine the representativeness of the longitudinal sample, we compared its demographic characteristics and means on the major study variables with those of the adolescents who

TABLE 1
Sociodemographic Characteristics of the Study Sample

	1994 Survey (n = 2,748)	1996 Survey (n = 2,600)
Gender (%)		
Male	48	48
Female	52	52
Grade level (n)		
6	1,099	1,092
8	1,044	936
10	605	572
Ethnicity (%)		
African-American	51	52
White	14	13
Latino	23	25
Other	12	10
Parents' marital status (%)		
Married	44	44
Divorced	22	22
Never married	14	13
Remarried	14	15
Separated	3	2
Widowed	4	4
Father's education (%)		
Grade school	9	9
High school	21	22
Some college	11	14
College or advanced degree	23	21
Don't know	37	33
Mother's education (%)		
Grade school	9	11
High school	24	23
Some college	16	22
College or advanced degree	28	25
Don't know	24	19
Free or subsidized lunch status	57	49

participated in the 1994 survey but did not participate in the 1996 study.

The follow-up sample did not differ significantly from the sample that could not be followed up with respect to ethnic composition, fathers' and mothers' education, and adolescents' levels of depressive symptoms, anxiety, and somatization. However, there were more females (53%) and more adolescents with married parents or guardians in the longitudinal sample (48%) than among those who did not participate in the follow-up study (47% females and 39% with married parents or guardians) ($\chi^2_{1,2130 \text{ and } 5, 2047} = 8.21$ and $22.12, p < .01$). We speculate that this was most likely due to the differential rate of mobility and school dropout by gender and family demographics.

In addition, compared with the students who did not participate in the follow-up study, the follow-up sample reported having witnessed fewer types of violence (mean = 2.97 versus 2.58), less victimization (mean = 0.72 versus 0.50), less involvement in antisocial behavior (mean = 0.59 versus 0.35), and less willingness to use physical aggression (mean = 2.85 versus 2.68) ($F_{1,2084-2109} = 19.57-68.56, p < .001$). These sampling biases, however, did not substantially affect our estimates of the association between exposure to violence and adolescents' internalizing symptoms and externalizing behaviors. Correlations between violence exposure and externalizing behavior were 0.74 for the whole 1994 sample and 0.75 for that portion of the time 1 sample that subsequently continued its participation in the study. The corresponding correlations between violence exposure and internalizing symptoms were 0.38 (for the whole 1994 sample) and 0.40 (for the follow-up sample).

The level of exposure to violence, externalizing behaviors, and internalizing symptoms, and how these vary by gender, grade, and ethnicity are described in Table 2. More than one third of the adolescents (36% in both 1994 and 1996) had experienced at least one type of violent act. An item-level analysis revealed that in each year's survey, 18% of the adolescents reported that they had been chased by a gang or individual, 18% reported being threatened with physical harm, and between 5% and 10% reported each of the following experiences: being attacked or stabbed with a knife, being beaten or mugged, being seriously wounded, or being shot or shot at. On average, adolescents in our sample reported witnessing nearly 3 different types of violence. Approximately half of the adolescents (48%–63%) had seen

TABLE 2
Level of Exposure to Violence, Externalizing Behaviors, and Internalizing Symptoms

Variables	Mean	SD	Scheffé Contrasts		
			Gender	Grade	Ethnicity
Victimization by violence					
1994 survey	0.62	1.03	M > F***	NS	NS
1996 survey	0.64	1.08	M > F***	NS	NS
Witnessing violence					
1994 survey	2.83	1.98	M > F***	8, 10 > 6***	A, L > W***
1996 survey	2.91	1.96	M > F***	8, 10 > 6***	A, L > W***
Antisocial behaviors					
1994 survey	0.47	0.69	M > F***	8 > 10 > 6***	A > W**
1996 survey	0.39	0.61	M > F***	8, 10 > 6***	A > W*
Willingness to use physical aggression					
1994 survey	2.78	0.82	M > F***	8, 10 > 6***	A, L > W***
1996 survey	2.77	0.81	M > F***	8, 10 > 6***	A, L > W***
Depression					
1994 survey	2.49	2.85	F > M**	NS	L > A, W***
1996 survey	2.40	2.81	NS	NS	L > A, W***
Anxiety					
1994 survey	5.80	3.58	F > M***	NS	L > A, W***
1996 survey	5.37	3.60	F > M***	6 > 8**	L > A, W***
Somatization					
1994 survey	4.08	1.82	F > M***	6 > 8, 10***	L > A, W***
1996 survey	4.05	1.87	F > M***	6 > 8, 10***	L > A > W***

Note: M = male; F = female; A = African-American; W = white; L = Latino; NS = not significant.
* $p < .05$; ** $p < .01$; *** $p < .001$.

someone else being chased by a gang or individual, threatened with physical harm, beaten or mugged, or wounded seriously. Moreover, 46% of the adolescents in 1994 and 39% in 1996 reported having seen someone shot or shot at. More than 1 out of 4 adolescents (27% in 1994 and 29% in 1996) reported having seen someone being attacked or stabbed with a knife.

Victimization by violence differed by gender but not by grade level or ethnicity, whereas witnessing violence differed by gender, grade level, and ethnicity. Males were more likely to be victimized by violence, and older and minority adolescents were more likely to witness violence (Table 2). Multivariate analyses of variance revealed no significant interactions among gender, grade level, and ethnicity in terms of exposure to violence.

Adolescents' externalizing behavior and internalizing symptoms also differed by gender, grade level, and ethnicity. Female, younger, and white adolescents were less likely to exhibit externalizing behaviors than their male, older, and ethnic minority counterparts. In terms of internalizing symptoms, 6th graders reported a higher level of somatization than 8th and 10th graders in both years. Females and Latinos were also more likely to

report internalizing symptoms than their male and African-American and white counterparts.

To determine whether the apparent ethnic differences in internalizing symptoms and externalizing behaviors were the result of differences in socioeconomic status of the various groups, we conducted multivariate analyses of covariance with parental education and enrollment in the subsidized lunch program as covariates. Although parental education was a significant and negative correlate of externalizing behavior, and subsidized lunch program status was a significant and positive correlate of internalizing symptoms, ethnic differences in both externalizing behavior and internalizing symptoms were still significant ($F_{4-6, 3604-4367}$ = 9.70–14.13, $p < .001$).

Structural Equation Modeling

The structural equation model proposed in Figure 1 generally fits the data of the total 1994 sample (χ^2_{12}, $N=2,563$ = 265.34, $p < .001$, goodness-of-fit index [GFI] = 0.97 and comparative fit index [CFI] = 0.92). Examination of the residuals, however, made it apparent that the goodness of fit could be greatly improved when anxiety, an internalizing symptom, was also allowed to have a

path from the latent construct of externalizing behavior (Fig. 2). The coefficient for that path was negative, indicating that the anxiety aspect of internalizing symptoms showed mutual exclusivity, rather than comorbidity, with externalizing behavior. The new model showed significantly better fit with the data ($\chi^2_{11, N=2,563} = 133.56, p < .001$, GFI = 0.99 and CFI = 0.96, that is, a reduction of 131.78 in χ^2 with 1 $df, p < .001$). Another modification that further improved the model was the addition of a correlation between the error variances of victimization and antisocial behavior (Fig. 2). This significant correlation indicates that the covariance between victimization and antisocial behavior could not be completely accounted for by the link between the latent constructs of violence exposure and externalizing behavior. That unique portion of covariance may be due to the co-occurrence of victimization and "fighting back" (the latter is a component of our measure of antisocial behavior). The goodness of fit of the final model with modifications was very good ($\chi^2_{10, N=2,563} = 65.72, p = .00$, GFI = 0.99 and CFI = 0.98).

Exposure to violence was closely associated with adolescents' externalizing behavior ($r = 0.74, p < .001$) and, to a somewhat lesser degree, internalizing symptoms ($r = 0.38, p < .001$). These results were replicated with 1996 data, with the respective correlations being 0.79 and 0.36 ($p < .001$). Furthermore, multiple-group structural equation models revealed that the measurement models

for the 2 waves of data were not significantly different for either exposure to violence ($\chi^2_{2, N=4,971} = 0.97, p = .62$, GFI = 1.00 and CFI = 1.00) or for externalizing behavior and internalizing symptoms ($\chi^2_{13, N=4,971} = 23.08, p = .04$, GFI = 1.00 and CFI = 1.00). In addition, it should be pointed out that the latent constructs of internalizing symptoms and externalizing behavior were modestly related to each other, with a correlation of 0.28 for both waves of data.

Gender, Grade Level, and Ethnicity as Moderators

To assess the potential moderating effects of gender, grade level, and ethnicity, we first examined whether the measurement models were similar for the various subgroups. Multiple-group structural equation models revealed that there were only some minor variations in the measurement models of the latent constructs by gender and grade level, but not by ethnicity. For example, victimization had a somewhat higher coefficient from violence exposure for males (0.47 in 1994 and 0.51 in 1996) than for females (0.25 in 1994 and 0.29 in 1996). Also, antisocial behavior had a higher coefficient from externalizing behavior for males than for females, whereas anxiety had a higher coefficient from internalizing symptoms for females than for males. The varying minor differences in the measurement models notwithstanding, the association between exposure to violence and adolescents' externalizing behavior was very strong
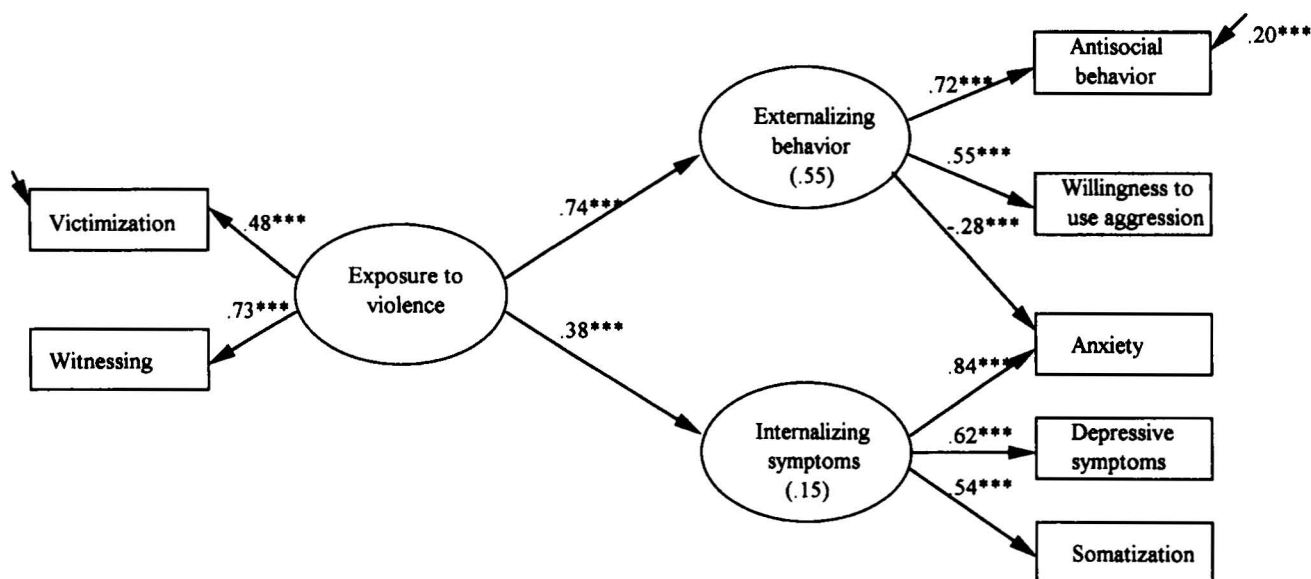
Fig. 2 Estimated parameters (standardized) for the structural equation model fitted to the data collected in 1994. R^2 values are reported in parentheses for the endogenous variables. See text for goodness-of-fit statistics. *** $p < .001$.

TABLE 3
Path Coefficients From Violence Exposure to Externalizing Behaviors and Internalizing Symptoms

	Externalizing Behavior		Internalizing Symptoms	
	1994	1996	1994	1996
Gender				
Male	0.73 (0.08)	0.72 (0.09)	0.45 (0.06)	0.41 (0.05)
Female	0.78 (0.10)	0.84 (0.12)	0.46 (0.05)	0.45 (0.06)
Grade level				
6	0.74 (0.09)	0.74 (0.09)	0.55 (0.06)	0.45 (0.06)
8	0.76 (0.11)	0.77 (0.11)	0.34 (0.06)	0.39 (0.06)
10	0.64 (0.13)	0.82 (0.23)	0.15 (0.06)†	0.09 (0.07)†
Ethnicity				
African-American	0.72 (0.09)	0.77 (0.11)	0.39 (0.05)	0.39 (0.06)
White	0.73 (0.13)	0.85 (0.19)	0.50 (0.10)	0.50 (0.10)
Latino	0.69 (0.12)	0.71 (0.12)	0.31 (0.07)	0.29 (0.07)

Note: All coefficients were significant at the .001 level, except for the two marked with a dagger. Standard errors indicated by parentheses.

for every subgroup, and such an association was not moderated by gender, grade level, or ethnicity (all t values < 1.90 for group differences in coefficients). Table 3 presents the standardized path coefficients (i.e., correlations) and associated standard errors by group.

Exposure to violence was also significantly related to internalizing symptoms, and the strength of the association did not differ significantly by gender or ethnicity. Grade level, however, was found to moderate the effects of violence exposure on internalizing symptoms. The coefficient was significantly larger for 6th grade than for 10th grade (t = 4.71 in 1994 and 3.68 in 1996, p < .001). The association for 8th graders was also significantly different from that for 10th graders (t = 2.24 in 1994 and 3.25 in 1996, p < .05) and that for 6th graders in 1994 (t = 2.47, p < .05). These results tend to suggest that younger adolescents were more likely than older adolescents to report internalizing symptoms when exposed to violent acts.

Longitudinal Analyses

Data were analyzed separately for the younger group (6th graders in 1994 who became 8th graders in 1996) and the older group (8th graders who became 10th graders in 1996). Results showed that exposure to violence reported during the first wave of data collection—i.e., exposure that occurred prior to 1994—was still significantly correlated with adolescents' externalizing behavior 2 years later (r = 0.68 for the younger group and 0.61 for the older group, p < .001) and with the internalizing symptoms of the younger group (r = 0.43, p < .001) but not the older group (r = 0.17, not significant).

Although it would be ideal to determine whether the persistent effect of violence exposure was due to the stability of the exposure to violence, we were not able to do that because the questionnaire items regarding exposure to violence in both 1994 and 1996 surveys asked only for the cumulative number of *types* of violence to which youths had been exposed. The 2 surveys, however, revealed very similar levels of exposure to violence, and the stability of externalizing behaviors and internalizing symptoms was high (0.60–0.70).

DISCUSSION

Urban youths today, especially those living in the inner city, are no strangers to violence. As this and other studies have made clear, the majority of urban youths have witnessed or been victims of violent behavior. The objective of this study, which used both cross-sectional and longitudinal data, was to examine grade level, gender, and ethnic differences in the possible consequences of violence exposure for urban adolescents. Correlates of interest were adolescents' involvement in antisocial behavior (a composite mainly reflecting overt antisocial, aggressive behavior) and readiness to engage in aggression and the levels of symptoms of anxiety, depression, and somatization. Unlike many studies in which findings are only reported measure-by-measure, we used, in addition, structural equation modeling techniques that organize individual scales in terms of the presumed underlying constructs.

The structural equation model developed and tested in this study captured the general pattern of associations among exposure to violence, internalizing symptoms,

and externalizing behavior in all age and ethnic groups and for both males and females. However, important differences in the strength of these associations emerged. Mainly, the link between exposure to violence and the latent construct, internalizing symptoms, was much stronger among early adolescents (i.e., 6th graders) than among older adolescents. It is possible that the strength of this link is due to the 6th graders' having less-developed cognitive resources for understanding social relationships and less effective strategies for coping with stress (Compas et al., 1988). More powerful reactions to violence, in the form of more symptoms of internalized stress, also might be due to concurrent exposure to multiple stressors for the early adolescents. In addition to pubertal changes, a substantial number of early adolescents (i.e., 6th graders) in this school system have undergone an important school transition that involves changes in the proximal peer group and in teachers' academic expectations, as well as heightened social pressures of various kinds (Eccles et al., 1993; Simmons and Blyth, 1987).

The modest correlation between measures of constructs related to internalizing symptoms and externalizing behavior ($r = 0.28$) is somewhat lower than that usually reported between separate measures of each type of behavior. The lower correlation we reported may be due to differences in methods of generating the estimate (i.e., latent constructs versus single measures) and in the format of various surveys (e.g., in our study, questions about internalizing and externalizing symptoms were physically separated in the questionnaire, and participants' responses were recorded on different response scales).

Moving beyond this issue, it is important that we address the negative association between one specific variable, anxiety, and adolescent reports of externalizing behavior. Unlike other types of internalizing symptoms assessed in this study (i.e., depressive and somatic symptoms), assessment of anxiety showed an *inverse* association with externalizing behaviors. Youths who describe themselves as more anxious and fearful are less likely to describe themselves as "combat-ready" or to have engaged in aggressive and other antisocial behavior, a finding that appears to be in accord with recent studies of autonomic arousal and antisocial behavior (Raine et al., 1995, 1997).

Finally, our data indicate that prior exposure to violence was substantially associated with both externaliz-

ing behaviors and internalizing symptoms over a period of 2 years. This persistent effect is even more striking in light of the fact that some of the exposure might have occurred years ago because our measure included exposure in lifetime. These findings emphasize the need for more longitudinal research that examines the relations between exposure to violence and adolescent behavior that may have both short- and long-term consequences for the individual and for society. Among the crucial issues for future research, we underscore the need for measures that allow for assessments of both environmental stability (e.g., stability of exposure to violence, which were not available in the current study) and individual stability (e.g., stability of externalizing and internalizing behaviors, which were available in this study). It is also essential for researchers to use better measures of violence exposure, including the age when events occurred and the frequency of such events within the period since previous assessment.

Clinical Implications

These results document high levels of violence exposure for urban youths and suggest links to a range of psychiatric symptoms and indicators of poor adjustment. Such findings carry implications for direct clinical work with youths, as well as for program development and public policy. Clinical evaluations of children in urban settings should include inquiry into violence exposure and associated symptoms. From a policy perspective, prevention and early intervention efforts for children growing up in cities should include efforts to facilitate the capacity of exposed youths to cope with feelings and fears aroused by exposure to violence in their neighborhoods. The findings also suggest that there may be stages of increased vulnerability for the development of internalizing symptoms in relation to violence exposure and that, for example, school-based mental health screening efforts, as well as positive health promotion programming, should be informed by the particular vulnerability of children in the early middle school years. Finally, as consultants to school personnel and police departments, clinicians can emphasize the importance of identifying and referring symptomatic children who have been exposed to community violence. In these contexts they can also educate those who interact with children about the broad impact of community violence on the development of children.

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Declining Severity Adjusted Mortality: Evidence of Improving Neonatal Intensive Care. Douglas K. Richardson, MD, MBA, James E. Gray, MD, MS, Steven L. Gortmaker, PhD, Donald A. Goldmann, MD, DeWayne M. Pursley, MD, MPH, Marie C. McCormick, MD, ScD

Objectives: Declines in neonatal mortality have been attributed to neonatal intensive care. An alternative to the "better care" hypothesis is the "better babies" hypothesis; ie, very low birth weight infants are delivered less ill and therefore have better survival. *Design:* We ascertained outcomes of all live births <1500 g in two prospective inception cohorts. We estimated mortality risk from birth weight and illness severity on admission and measured therapeutic intensity. We calculated logistic regression models to estimate the changing odds of mortality between cohorts. *Patients and Setting:* Two cohorts in the same two hospitals, 5 years apart (1989–1990 and 1994–1995) (total n = 739). *Results:* Neonatal intensive care unit mortality declined from 17.1% to 9.5%, and total mortality declined from 31.6% to 18.4%. Cohort 2 had lower risk (higher birth weight, gestational age, and Apgar scores and lower admission illness severity for newborns ≥750 g). Risk-adjusted mortality declined (odds ratio, 0.52; confidence interval, 0.29–0.96). One third of the decline was attributable to "better babies" and two thirds to "better care." Use of surfactant, mechanical ventilation, and pressors became more aggressive, but decreases in monitoring, procedures, and transfusions resulted in little change in therapeutic intensity. *Conclusions:* Mortality decreased nearly 50% for infants <1500 g in 5 years. One third of this decline is attributable to improved condition on admission that reflects improving obstetric and delivery room care. Two thirds of the decline is attributable to more effective newborn intensive care, which was associated with greater aggressiveness of respiratory and cardiovascular treatments. Attribution of improved birth weight specific mortality solely to neonatal intensive care may underestimate the contribution of high-risk obstetric care in providing "better babies." **Pediatrics** 1998;102:893–899.