

# Witnessed Community and Parental Violence in Relation to Substance Use and Delinquency in a National Sample of Adolescents

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*This study examined whether witnessed community and parental violence represented risk factors for substance use and delinquency among adolescents, beyond the contribution of direct violence and other risk factors. We also examined the role of violence characteristics. Participants were a national sample of 3,614 adolescents. Structured telephone interviews assessed demographics, trauma history, witnessed violence, delinquency, and substance use. While accounting for trauma history and other risk factors, witnessed community and parental violence were associated with delinquency. Community violence was associated with substance use. Chronic violence, knowing the perpetrator, and violence outside of school were correlated with substance use and delinquency among adolescents who witnessed community violence. These findings highlight the importance of targeting witnessed violence in prevention and intervention efforts.*

At least two in five adolescents have witnessed domestic or community violence (Kilpatrick, Saunders, & Smith, 2003; Margolin & Gordis, 2000), and these experiences are associated with increased risk of a wide range of psychiatric symptoms and problem behavior (see reviews by Buka, Stichick, Birdthistle, & Earls, 2001; Edleson, 1999; Kitzmann, Gaylord, Holt, & Kenny, 2003; Osofsky, 2003). For example, witnessed *community* violence is related to adolescents' substance use, aggression, anxiety, depression, and antisocial behavior (Buka et al., 2001; Kilpatrick et al., 2003; Margolin & Gordis, 2000; Overstreet, 2000). Witnessed *parental* violence is associated with aggression, conduct problems, and other externalizing and internalizing symptoms (Edleson, 1999; Kitzmann et al., 2003; Margolin & Gordis, 2000). Studies by

Fergusson and Horwood (1998) and Trocki and Caetano (2003) have demonstrated a link between witnessed parental violence and substance use in adulthood. However, limited research has examined these relations in adolescence. Furthermore, few studies have examined community and parental violence simultaneously or controlled for co-occurring direct trauma exposure.

Adolescent delinquency and substance use are of particular concern because they can set the stage for a pattern of chronic violent offending in adulthood (Thornberry, Huizinga, & Loeber, 1995). Furthermore, initiation of substance use in adolescence has been linked to increased use and abuse later in life (e.g., Everett et al., 1999; Hawkins et al., 1997). It is also associated with greater likelihood of violent behavior, school absenteeism,

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and other problem behavior (Gruber, DiClemente, Anderson, & Lodico, 1996). Therefore, it is important to understand the relation between witnessed violence and adolescent problem behaviors to identify populations at risk for a host of adverse outcomes.

Although prior studies support an association between witnessed violence and adolescent risk behaviors, it is conceivable that the effects of witnessed violence can be attributed to co-occurring direct trauma exposure. Evidence suggests a significant overlap among witnessed violence and direct violence exposure, including child physical and sexual abuse (Edleson, 1999; Lynch & Cicchetti, 1998; Osofsky et al., 1993; Richters & Martinez, 1993). Direct physical and sexual victimization in childhood has often been linked to substance use and delinquent behavior (Kendall-Tackett, Williams, & Finkelhor, 1993; Kilpatrick et al., 2000; Kolko, 1992; Margolin & Gordis, 2000). It is therefore imperative that researchers account for direct trauma and other associated risk factors to determine whether witnessed violence makes unique contributions to the prediction of adolescent substance use and delinquency. An understanding of risk factors among violence-exposed youth is essential to determining appropriate targets for prevention and intervention efforts. Furthermore, establishing a unique link between witnessed violence and adolescent risk behavior would potentially increase the number of youth identified as at-risk, highlighting the need to broaden the focus of intervention efforts from direct to indirect forms of violence.

To date, only two studies using representative samples of adolescents have found witnessed violence to relate to substance abuse/dependence (Kilpatrick et al., 2000) and violent offending (Nofziger & Kurtz, 2005), beyond the effects of physical/sexual assault and demographic variables. The study conducted by Kilpatrick et al. (2000) relied on a different dataset than the current study and did not examine delinquency as an outcome. In addition, the Nofziger and Kurtz study (2005) did not include an assessment of nonviolent delinquent behaviors. Neither study separated out the effects of witnessed community from witnessed parental violence. Finally, no known studies have examined characteristics of witnessed violence that are associated with substance use and delinquency.

Kitzmann et al. (2003), Osofsky (2003), and Edleson (1999) have highlighted the need to include multiple co-occurring stressors and contextual factors in models predicting children's behavior problems, as well as the need to understand the comparative effects of indirect versus direct victimization. The primary purpose of the current study is to determine whether witnessed community and parental violence are independently associated with adolescent substance use and delinquency, beyond the effects of direct trauma exposure and contextual factors. A secondary purpose of this study is to explore whether certain characteristics of witnessed violence heighten the risk for substance use or delinquency.

## METHOD

### Participants

The study sample was obtained from the 2005 National Survey of Adolescents-Replication Project. The full sample included a national household probability sample as well as an oversample of urban-dwelling youth aged 12 to 17 years. Sampling methodology and data collection procedures were similar to the previous (1995) National Survey of Adolescents (see Kilpatrick et al., 2000). During recruitment, 6,694 of contacted households resulted in completed parent interviews and identification of at least one eligible adolescent. Of these, 1,268 (19%) parents refused adolescent participation. In 188 cases (3%), the parent consented but the adolescent refused to be interviewed, and in 119 (2%) cases the adolescent interview was initiated but not completed. In 1,505 cases (22%) a parent interview was completed but the identified eligible adolescent was either inaccessible after 20 callbacks or was not contacted due to having fulfilled sample quotas. The remaining 3,614 cases resulted in completed parent and adolescent interviews. This included 2,459 adolescents in the national cross section and an oversample of 1,155 urban-dwelling adolescents. All variables for the current study, except poverty status, were derived from the adolescent interview.

Completers were compared to noncompleters on demographic variables, including child age, child gender, household size, geographic stratum, race/ethnicity, parent marital status, parent employment status, household income, and parent education. Due to the large sample size, a cutoff of  $p < .01$  was used. Adolescent completers were older ( $M = 14.6$  years,  $SD = 1.7$ ) than noncompleters ( $M = 14.5$  years,  $SD = 1.7$ ),  $t(6691) = 3.65$ ,  $p < .01$ . Completers were more likely than noncompleters to report lower household income,  $\chi^2(2, N = 6,031) = 16.36$ ,  $p < .01$ . Among completers, the parent completing the parent interview was more likely to be female (72%), in comparison to noncompleters (67%),  $\chi^2(1, N = 6,694) = 19.10$ ,  $p < .01$ . No other comparisons yielded significant differences.

### Measures

Race and ethnicity were assessed using standard questions employed by the U.S. Bureau of the Census (1988). Four dummy-coded variables defined each of the following groups: Black, non-Hispanic ( $n = 464$ , 13%); Asian American, non-Hispanic ( $n = 90$ , 3%); Native American ( $n = 89$ , 3%); and Hispanic ( $n = 373$ , 10%). White, non-Hispanic participants ( $n = 2,488$ , 69%) served as the reference group. Participants chose from 10 categories to reflect their estimated household income. These categories were collapsed to create a dichotomous variable to represent poverty (household income less than \$15,000;  $n = 281$ , 8%). Mean age at time of survey was 14.5 years ( $SD = 1.7$ ). The gender distribution was 1,851 (51%) boys and 1,763 (49%) girls.

Trauma history was assessed using a module based on the Trauma Assessment for Adults, which has been widely used to screen community and medical populations for trauma history in face-to-face and telephone interviews (Kilpatrick et al., 2000; Resnick, 1996). Validity of this measure has been supported through high correspondence with other structured assessments of traumatic events, as well as consistency with stressor events recorded in archival records of mental health patients (Saunders, Kilpatrick, Resnick, & Tidwell, 1989). Several behaviorally specific questions assessed lifetime exposure to each of four types of events (serious accident, physical assault, sexual assault, natural disaster). These items were used to create a dichotomous variable representing lifetime direct trauma history. Physical assault was defined as (a) experiencing an attack with or without a weapon in which the participant was badly injured or beaten up; and/or (b) being threatened with a dangerous weapon (i.e., gun or knife). Sexual assault was defined as (a) forced anal, vaginal, and/or oral sex; (b) forced digital and/or object penetration; and/or (c) forced touching of genitals.

Witnessed violence was assessed using a modified version of the violence assessment module from the original National Survey of Adolescents (surveys can be obtained by contacting the authors). Items were selected to emphasize severe forms of witnessed violence. Parental violence was measured with five questions that followed a prefatory statement, "Sometimes parents get angry and argue or even fight with each other. I would like to ask you some questions about times you might have seen or heard your parents argue, fight, or even get violent with each other." The five items and their prevalence were "Have you ever seen or heard one of your parents punch or hit the other one with their fist or kick them real hard?" ( $n = 217$ , 6%); "Have you ever seen or heard one of your parents choke the other?" ( $n = 80$ , 2%); "Have you ever seen or heard one of your parents beat up the other so that they were hurt pretty bad?" ( $n = 86$ , 2%); "Have you ever seen or heard one of your parents hit the other with an object like a bat, pan, or lamp and they were hurt pretty bad?" ( $n = 59$ , 2%); and "Have you ever seen or heard one of your parents threaten the other with a gun, knife, or other weapon?" ( $n = 59$ , 2%). A series of follow-up questions about violence characteristics was asked when at least one of these items was endorsed. Due to low base rates of the different forms of witnessed parental violence, the parental violence items were collapsed into one dichotomous variable ( $n = 322$ , 9%).

Community violence was assessed using six questions, which were introduced as follows: "Some young people tell us they have seen one person violently attack, beat up, or even kill another person. The people involved in the attack may have been strangers, or people you knew like friends, acquaintances, neighbors, or relatives. We want to know about attacks against other people you actually saw at school, in your neighborhood, or in the community, not just heard about. We do not want to know about events that may have happened to you personally, just incidents you saw. And, we mean seeing violent attacks in real life, not on TV, in

movies, or on video games." The six questions and their prevalence were "Have you ever seen someone actually shoot someone else with a gun?" ( $n = 116$ , 3%); "Have you ever seen someone actually cut or stab someone else with a knife?" ( $n = 262$ , 7%); "Have you ever seen someone being molested, sexually assaulted, or raped?" ( $n = 76$ , 2%); "Have you ever seen someone being mugged or robbed?" ( $n = 334$ , 9%); "Have you ever seen someone threaten someone else with a knife, a gun, or some other weapon?" ( $n = 685$ , 19%); "Have you ever seen someone beaten up, punched, or kicked such that they were hurt badly enough that they needed medical attention?" ( $n = 1023$ , 28%).

Violence incident characteristics were based on the first violent incident that the adolescent witnessed in his or her lifetime. For community violence, characteristics included multiple incidents witnessed (yes/no;  $n = 354$ , 26%), age of onset ( $M = 12.0$ ,  $SD = 4.1$ ), age at last incident ( $M = 13.6$ ,  $SD = 2.5$ ), location of the incident (home [ $n = 50$ , 4%], school [ $n = 603$ , 44%], neighborhood [ $n = 471$ , 35%], or "somewhere else" [ $n = 230$ , 17%]), and relationship to the victim (relative [ $n = 80$ , 6%], known non-relative [ $n = 654$ , 48%], or stranger [ $n = 86$ , 10%]). For parental violence, characteristics included multiple incidents witnessed ( $n = 129$ , 50%), age of onset ( $M = 7.7$ ,  $SD = 4.1$ ), age at last incident ( $M = 9.8$ ,  $SD = 4.1$ ), and perpetrator gender ( $n = 157$ , 65% male).

Past year delinquency was assessed with a series of nine items relating to crime index offenses as defined by the Federal Bureau of Investigation's (FBI's) Uniform Crime Reports. The delinquency module was modified from a scale used by Elliott, Huizinga, and Ageton (1985) in the National Youth Survey. Items assessed the following delinquent acts: (a) beating up or physically attacking someone else, (b) selling drugs, (c) invading a home with intent to steal, (d) stealing a motor vehicle, (e) using force to obtain money or objects, (f) attacking someone with a weapon, (g) attacking someone with intent to seriously kill or injure, (h) being arrested, and (i) being sent to jail or juvenile detention. Participants were classified as delinquent if they endorsed one of these items ( $n = 443$ , 12%). Cronbach's alpha for this sample was .79.

Several items assessed past year alcohol abuse and nonexperimental substance use. Alcohol abuse was assessed based on criteria according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* (American Psychiatric Association, 1994). The threshold for meeting criteria for substance use problems was use of drugs nonmedically on four or more occasions, consistent with the psychometrically supported approach we have used elsewhere (Kilpatrick et al., 2000, 2003). The assessment of substance use problems targeted a range of substances (e.g., alcohol, tranquilizers, sedatives, amphetamines, opioids, steroids, marijuana, cocaine, hallucinogens, inhalants, and club drugs, such as Ecstasy, GHB—the "date rape" drug, Ketamine, Rohypnol). A 12-month time span was used for the purpose of ensuring consistency with *DSM-IV* substance abuse criteria. Four-hundred seven

participants endorsed past year alcohol abuse or nonexperimental drug use (11%).

## Procedure

Participants were selected using a multistage, stratified, random-digit dial (landline only) procedure within each region of the country. The structured telephone interview averaged 43 minutes. The interview was administered by trained interviewers employed by Schulman, Ronca, and Bucuvalas, Inc. (New York, NY), a survey research firm. A computer-assisted interview system prompted interviewers with each question consecutively on a computer screen, and supervisors conducted random checks of interviewer adherence and data entry accuracy. Parental and adolescent permission were obtained prior to the interview and participants received \$10 for completion. The institutional review board at the Medical University of South Carolina approved all study procedures.

## Data Analysis

Two logistic regression analyses examined the unique contributions of witnessed violence in predicting delinquency and substance use problems. Variables were entered in two hierarchical steps (or blocks). Demographic variables (age, gender, race/ethnicity, poverty) and direct trauma history were entered as control variables in the first step. To evaluate the independent contribution of witnessed violence variables to each outcome, witnessed violence variables were entered as a second block in the final model. Chi-square analyses determined whether the block of witnessed violence variables significantly contributed to the prediction of each outcome, beyond the inclusion of the initial block of control variables. A second set of analyses examined predictors of delinquency and substance use among those who witnessed violence. These analyses included variables that were statistically significant in the primary analyses, as well as characteristics specific to those who witnessed violence. Data were weighted according to 2005 U.S. Census estimates on age, gender, and urban location. Analyses were conducted using SUDAAN statistical software (Research Triangle Institute, 2005).

## RESULTS

### Witnessed Violence in Relation to Delinquency and Substance Use

Results from the hierarchical logistic regression analyses demonstrated that the addition of witnessed violence variables in the second step accounted for unique variance in past year delinquency, beyond the model including demographic and other risk factors for delinquency,  $\chi^2(6, N=3,088) = 192.91, p < .001$ . In the final model, witnessed parental violence, witnessed shooting

or stabbing, witnessed mugging, witnessed threat with a weapon, and witnessed beating, were significant correlates of past year delinquency (see Table 1). Other significant risk factors included older age at time of assessment, male gender, Black race, Native American race, Hispanic ethnicity, and direct trauma history.

The second set of hierarchical logistic regression analyses evaluated the additive value of witnessed violence variables in relation to past year substance use problems. The addition of witnessed violence variables in the second step accounted for a significant amount of additional variance, beyond the initial model,  $\chi^2(6, N=3,082) = 120.44, p < .001$ . Of the witnessed violence variables, three types of community violence were significantly associated with substance use in the final model: witnessed mugging, witnessed threat with a weapon, and witnessed beating (Table 1). Witnessed parental violence was not associated with substance use problems. Of the demographic variables, older age, Native American racial identification, and direct trauma history were associated with increased substance use, whereas Black race was associated with lower substance use. For both sets of analyses, the variance inflation factor was less than 1.5 and tolerance was greater than 0.6, indicating no concerns regarding multicollinearity among the data.

### Violence Characteristics in Relation to Delinquency and Substance Use

We examined violence characteristics among two subgroups of adolescents: (a) those who witnessed parental violence, and (b) those who witnessed community violence (Tables 2–5). No parental violence characteristics emerged as significant predictors of substance use or delinquency (Tables 2 and 3). Adolescents who witnessed community violence, repeated exposure, older age during the most recent incident, violence occurring in the neighborhood, perpetration by a relative, and perpetration by a known nonrelative were associated with increased risk for delinquency (Table 4).

The following characteristics were associated with increased substance use among adolescents who witnessed community violence: repeated exposure, older age at last violent incident, violence occurring in the neighborhood, violence occurring in a location other than school or neighborhood, and perpetration by a relative (Table 5).

## DISCUSSION

This study had two goals: (a) to examine whether witnessed parental and community violence were associated with increased risk for delinquency and substance use after controlling for other key demographic and direct trauma variables known to be associated with these outcomes, and (b) to explore specific characteristics of witnessed violence that might be associated with delinquency

**Table 1.** Results of Hierarchical Logistic Regression Analyses Relating Witnessed Parental and Community Violence to Delinquency and Substance Use

Predictor	Delinquency ( <i>N</i> = 3,088)					Substance use ( <i>N</i> = 3,082)				
	<i>B</i>	<i>SE</i>	Wald	OR	95% CI	<i>B</i>	<i>SE</i>	Wald	OR	95% CI
Step 1										
Age	0.21	0.04	35.12	1.24***	1.15–1.33	0.53	0.04	142.73	1.69***	1.55–1.85
Male gender	0.72	0.13	31.93	2.06***	1.60–2.64	0.04	0.13	0.09	1.04	0.81–1.34
Black	0.70	0.16	17.79	2.01***	1.45–2.78	–0.74	0.22	11.67	0.47***	0.31–0.73
Native American	0.99	0.31	9.94	2.69***	1.45–4.97	1.07	0.35	9.49	2.91**	1.47–5.75
Asian American	–1.19	0.63	3.56	0.30	0.09–1.05	–0.25	0.43	0.34	0.78	0.33–1.81
Hispanic	0.50	0.18	7.57	1.65**	1.15–2.36	0.17	0.21	0.69	1.19	0.79–1.78
Poverty < \$15K	0.40	0.20	4.20	1.49*	1.02–2.19	0.22	0.23	0.91	1.24	0.79–1.97
Trauma history	1.33	0.15	74.03	3.81***	2.81–5.17	1.31	0.16	68.57	3.72***	2.73–5.08
Step 2										
Age	0.12	0.04	9.36	1.13**	1.01–1.23	0.49	0.05	104.10	1.64***	1.49–1.80
Male gender	0.59	0.14	18.58	1.81***	1.38–2.37	–0.12	0.14	0.82	0.88	0.67–1.16
Black	0.44	0.18	6.04	1.55*	1.09–2.21	–1.06	0.24	20.17	0.34***	0.22–0.55
Native American	0.77	0.35	4.76	2.17*	1.08–4.36	0.90	0.36	6.18	2.47**	1.21–5.04
Asian American	–1.42	0.69	4.26	0.24*	0.06–0.93	–0.43	0.53	0.68	0.65	0.23–1.81
Hispanic	0.38	0.19	3.88	1.47*	1.00–2.14	0.01	0.22	0.00	1.01	0.65–1.56
Poverty < \$15K	0.29	0.22	1.80	1.33	0.87–2.05	0.13	0.25	0.27	1.14	0.69–1.88
Trauma history	0.89	0.17	28.61	2.44***	1.76–3.38	0.92	0.17	29.82	2.52***	1.81–3.52
Witnessed parental violence	0.57	0.18	9.75	1.77**	1.24–2.53	0.20	0.21	0.91	1.23	0.80–1.87
Witnessed community violence: shooting/stabbing	0.64	0.19	11.75	1.90***	1.31–2.74	0.24	0.21	1.29	1.27	0.84–1.91
Witnessed community violence: sexual assault	0.06	0.34	0.03	1.06	0.54–2.08	0.58	0.34	2.86	1.79	0.91–3.53
Witnessed community violence: mugging	0.50	0.18	7.37	1.65**	1.15–2.37	0.49	0.19	6.35	1.63**	1.11–2.39
Witnessed community violence: threat w/ weapon	0.56	0.16	11.96	1.74***	1.27–2.39	0.68	0.18	14.98	1.98***	1.40–2.79
Witnessed community violence: beating	0.76	0.15	26.17	2.15***	1.60–2.88	0.61	0.15	15.25	1.83***	1.35–2.49

Note. Reference groups for predictor variables were as follows. Racial/ethnic groups: White; poverty: income > \$15,000; trauma history: no history of direct trauma; witnessed violence categories: no exposure to each type of witnessed violence. OR = odds ratio; CI = confidence interval.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

and substance use among subgroups reporting witnessed violence. Consistent with hypotheses, witnessed parental violence and most forms of witnessed community violence were significantly related to delinquent behavior. In contrast, three forms of witnessed community violence were associated with substance use problems, but not witnessed parental violence.

In general, these findings highlight the unique relation between adolescents' risk behavior and their history of witnessed violence, beyond the contribution of direct trauma exposure (i.e., sexual/physical violence, natural disaster, serious accident) and other predisposing factors. Whereas prior studies have suggested a link

between witnessed violence and negative outcomes (e.g., Buka et al., 2001; Kitzmann et al., 2003), the current study clarifies that this relation is not solely accounted for by co-occurring direct trauma exposure. Furthermore, both community and parental violence represented independent correlates of delinquent behavior that included both violent and nonviolent acts. Although witnessed parental violence has been linked to adult substance use (Fergusson & Horwood, 1998; Trocki & Caetano, 2003), we did not replicate this finding among adolescents. This may be due to the fact that other studies did not control for direct trauma exposure, or that the mechanisms responsible for adult substance use

**Table 2.** Results of Logistic Regression Relating Parental Violence Characteristics to Delinquency Among Adolescents Who Witnessed Parental Violence ( $N = 233$ )

Predictor	<i>B</i>	<i>SE</i>	Wald	OR	95% CI
Age	0.17	0.09	3.42	1.19	0.99–1.44
Male gender	0.71	0.34	4.24	2.03*	1.03–3.97
Black	1.00	0.40	6.27	2.74**	1.24–6.05
Native American	−0.81	1.10	0.55	0.44	0.05–3.80
Asian American <sup>a</sup>	—	—	—	—	—
Hispanic	0.18	0.49	0.13	1.19	0.46–3.11
Trauma history	1.20	0.55	4.71	3.31*	1.12–9.75
Multiple incidents of witnessed parental violence	−0.03	0.41	0.01	0.97	0.43–2.18
Age at first incident	0.01	0.06	0.04	1.01	0.89–1.15
Age at last incident	0.02	0.06	0.06	1.02	0.90–1.15
Perpetrator gender	0.32	0.35	0.81	1.38	0.69–2.76

Note. Reference groups for predictor variables were as follows. Racial/ethnic groups: White; trauma history: no history of direct trauma; multiple incidents of witnessed violence: one incident of witnessed violence; perpetrator gender: female. OR = odds ratio; CI = confidence interval.

<sup>a</sup>Only four Asian Americans were included in the analysis and none endorsed past year delinquency.

\* $p < .05$ . \*\* $p < .01$ .

(e.g., coping with distress) differ from the mechanisms most often associated with adolescent substance use (e.g., peer influence).

Regarding the relations between violence characteristics and risky behavior, several factors predicted delinquency and substance use in adolescents who witnessed community violence. These included chronic violence exposure, knowing the perpetrator, and violence occurring outside of the school setting. These findings suggest that repeated exposure to violence that is perpetrated by peers and relatives in adolescents' neighborhoods and communities increases the likelihood of engaging in delinquency and substance use. It appears that troubled adolescents may be engaged in lifestyles characterized by violence. This includes socialization with peers and relatives who model risky behavior, and residence in disorganized communities that present opportunities to engage in substance use and delinquency. Fewer social controls in the community as opposed to school settings may account for the relation between violence outside of school and problematic outcomes. Furthermore, violence in the neighborhood was more severe than witnessed school violence in the current dataset, and violence at home began at a younger age. These factors may help explain why location was an important variable.

Except for the relation between parental violence and delinquency, parental violence and parental violence characteristics were not salient independent correlates of adolescent behavior prob-

**Table 3.** Results of Logistic Regression Relating Parental Violence Characteristics to Substance Use Among Adolescents Who Witnessed Parental Violence ( $N = 237$ )

Predictor	<i>B</i>	<i>SE</i>	Wald	OR	95% CI
Age	0.40	0.12	11.52	1.49***	1.18–1.87
Black	−0.79	0.49	2.54	0.45	0.17–1.20
Native American	−0.65	1.17	0.31	0.52	0.05–5.17
Trauma history	0.10	0.50	0.04	1.11	0.41–2.97
Multiple incidents of witnessed parental violence	0.34	0.47	0.52	1.40	0.56–3.51
Age at first incident	0.64	0.55	1.33	1.89	0.64–5.58
Age at last incident	0.51	0.47	0.01	1.05	0.41–2.67
Perpetrator gender	0.27	0.39	0.50	1.32	0.61–2.82

Note. Reference groups for predictor variables were as follows. Racial/ethnic groups: White; trauma history: no history of direct trauma; multiple incidents of witnessed violence: one incident of witnessed violence; perpetrator gender: female. OR = odds ratio; CI = confidence interval.

\*\*\* $p < .001$ .

lems. This may be indicative of peer influence being a more powerful factor in determining adolescent substance use and delinquency. For example, social factors such as peer group practices have been found to be more important than familial risk in initiation of substance use (e.g., Dobkin, Tremblay, Masse, & Vitaro, 1995; Joseph, Augustyn, Cabral, & Frank, 2006). Therefore, community violence, which likely entails more peer involvement, appears to be a more relevant predictor of risky behavior than parental violence. Future research should control for the influence of peer delinquency and substance use to better understand the specific impact of parental violence.

## Limitations

In addition to the many strengths of this study, including use of a large population-based sample, structured interview, behaviorally specific measure of witnessed violence, and diagnostic-level outcomes, several limitations warrant mention. The study design was cross-sectional and relied on retrospective self-report measures. Therefore, findings could have been influenced by recall bias, intervening events, and/or underreporting of sensitive information such as violence exposure, substance use, and delinquency. Due to the correlational nature of the study, causal relations between variables cannot be established. In addition, the focus on severe forms of witnessed violence limits generalizability to adolescents who have witnessed incidents of lower severity (e.g., verbal threats). Because the sample relied on a national cross-section, generalizability to at-risk populations and low income minorities is limited. The use of first incident data to analyze violence characteristics may not have captured the most severe incidents for adolescents

**Table 4.** Results of Logistic Regression Relating Community Violence Characteristics to Delinquency Among Adolescents Who Witnessed Community Violence (*N* = 1,345)

Predictor	<i>B</i>	<i>SE</i>	Wald	OR	95% CI
Age	-0.04	0.06	0.34	0.96	0.84-1.09
Male gender	0.72	0.16	20.35	2.05***	1.50-2.79
Black	0.35	0.19	3.42	1.43	0.98-2.08
Native American	0.26	0.40	0.43	1.30	0.59-2.89
Asian American	-1.35	0.65	4.31	0.26*	0.07-0.92
Hispanic	0.58	0.22	6.86	1.78**	1.16-2.75
Trauma history	0.76	0.21	12.91	2.15***	1.41-3.26
Multiple incidents of witnessed community violence	1.09	0.16	45.12	2.96***	2.16-4.07
Age at first incident	0.00	0.02	0.00	1.00	0.96-1.04
Age at last incident	0.16	0.05	9.31	1.17**	1.06-1.29
Violence occurred at home	0.06	0.50	0.01	1.06	0.40-2.82
Violence occurred in neighborhood	0.47	0.18	6.91	1.60**	1.13-2.28
Violence occurred in other location	0.24	0.22	1.11	1.27	0.81-1.97
Victim was a relative	0.37	0.43	0.76	1.45	0.63-3.34
Victim was a known nonrelative	0.13	0.17	0.59	1.14	0.81-1.60
Perpetrator was a relative	1.07	0.41	6.78	2.91**	1.30-6.52
Perpetrator was a known nonrelative	0.37	0.18	4.33	1.45*	1.02-2.05

Note. Reference groups for predictor variables were as follows. Racial/ethnic groups: White; trauma history: no history of direct trauma; multiple incidents of witnessed violence: one incident of witnessed violence; violence location: school; relationship to victim/perpetrator: stranger. OR = odds ratio; CI = confidence interval.

\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

**Table 5.** Results of Logistic Regression Relating Community Violence Characteristics to Substance Use Among Adolescents Who Witnessed Community Violence (*N* = 1,341)

Predictor	<i>B</i>	<i>SE</i>	Wald	OR	CI 95%
Age	0.19	0.07	6.99	1.21**	1.05-1.40
Black	-1.26	0.24	28.18	0.28***	0.18-0.45
Native American	0.73	0.43	2.88	2.08	0.89-4.86
Trauma history	0.60	0.21	8.16	1.82**	1.21-2.75
Multiple incidents of witnessed community violence	0.69	0.17	15.89	2.00***	1.42-2.82
Age at first incident	0.03	0.02	2.03	1.03	0.99-1.08
Age at last incident	0.21	0.06	13.26	1.24***	1.10-1.39
Violence occurred at home	0.97	0.51	3.65	2.65	0.97-7.21
Violence occurred in neighborhood	0.71	0.19	14.05	2.04***	1.40-2.96
Violence occurred in other location	0.54	0.23	5.49	1.72*	1.09-2.70
Victim was a relative	-0.46	0.40	1.34	0.63	0.29-1.38
Victim was a known nonrelative	0.22	0.19	1.37	1.25	0.86-1.80
Perpetrator was a relative	1.17	0.40	8.44	3.23**	1.46-7.11
Perpetrator was a known nonrelative	0.19	0.19	0.96	1.21	0.83-1.76

Note. Reference groups for predictor variables were as follows. Racial/ethnic groups: White; trauma history: no history of direct trauma; multiple incidents of witnessed violence: one incident of witnessed violence; violence location: school; relationship to victim/perpetrator: stranger. OR = odds ratio; CI = confidence interval.

\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

who witnessed multiple incidents, limiting the power of these variables. In addition, the substance use measure was limited in that it did not assess significant impairment or distress. The reliance on landline telephone interviews prohibited the assessment

of institutionalized adolescents as well as those living in households without landline telephones. Finally, other uncontrolled variables may represent potential confounds, including peer behavior, family/community environment, and mental health history.

## Implications for Research, Policy, and Practice

The findings from the current study suggest that exposure to violence perpetuates further violence, substance use, and participation in antisocial activities. This is concerning for several reasons. First, individuals who begin abusing substances in adolescence are at risk for substance abuse and dependence in adulthood (Everett et al., 1999; Hawkins et al., 1997). Substance abuse/dependence represents a significant public health burden with implications for illness, injuries, death, homelessness, and occupational functioning; it costs the United States more than \$484 billion per year (National Institute on Drug Abuse, 2008). Second, witnessed violence is associated with increased engagement in delinquent activities, which exposes others to violence and propagates the risk for negative outcomes among increasing numbers of direct and indirect victims. Similarly, through its association with delinquent activities and substance use, witnessed violence (particularly chronic violence exposure), may represent an important risk factor in the development of chronic, violent offenders.

Due to the adverse consequences of witnessed violence independent of direct trauma exposure, this research highlights the importance of investigating the effects of both direct and indirect forms of violence. Although prior empirical and clinical efforts have primarily focused on direct victimization, these findings suggest that indirect violence exposure deserves inclusion and increased attention. For example, intervention and prevention efforts should be comprehensive in targeting individuals who have witnessed violence, in addition to perpetrators and direct victims. Moreover, inclusion of witnessed violence in both research and clinical assessments could help identify those in need of early intervention to prevent problem behaviors and further violence. Finally, these findings add support for prevention models that entail building community capacity, developing effective social controls, and changing social norms (e.g., after-school programs, peer mentoring, programs that reward prosocial behaviors; Farrell & Flannery, 2006). Such interventions are of particular relevance for adolescents who are at increased risk for witnessing violence, including boys, ethnic minorities, and urban residents (Buka et al., 2001).

Whereas these data underscore the importance of attending to witnessed violence as a correlate of adolescent problem behavior, further research is necessary to understand causal linkages, as well as mediators and moderators of these relations. For example, additional studies could examine the roles of peer norms, community resources, school achievement, and adolescents' cognitive, affective, and behavioral responses to witnessing violence. More research is also necessary to further investigate the roles of contextual factors, such as characteristics of the violent episode, in determining eventual risky behavior. In addition, the specific effects of witnessed violence on other psychosocial outcomes should be evaluated. Future models should consider how both risk and

resiliency factors influence the long-term trajectory of adolescents who witness violence.

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