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Adolescents Who Witness Community Violence: Can Parent Support and Prosocial Cognitions Protect Them From Committing Violence?

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This longitudinal study investigated the effects of witnessing violence on committing violence among diverse urban middle school students (11–15 years old) over a 1-year period ($N = 1{,}599$). It examined parent support and prosocial cognitions as moderators that might interact with one another in buffering adolescents from the effects of witnessing violence. The study also explored gender and ethnicity differences across these protective processes. According to the results, both average and high levels of parent support may offer male adolescents who witness violence protection against committing subsequent acts of violence. Adolescent females who witness violence appear to be uniquely protected from committing acts of violence if they have highly prosocial cognitions. Applications to resilience and competency models are discussed.

In the 1990s, community violence was characterized as a public health epidemic in the United States (Bell & Jenkins, 1993), and numerous studies reported that urban adolescents were witnessing disturbingly high rates of violence in their communities (Fitzpatrick & Boldizar, 1993; Osofsky, Wewers, Hann, & Fick, 1993; Richters & Martinez, 1993; Schwab-Stone et al., 1995). The rates of violence exposure for urban youth remain high, and the events witnessed can be severe. Schwab-Stone et al. (1999) reported that 40% of urban adolescents had witnessed a shooting or stabbing in the past year. Furthermore, Gorman-Smith, Henry, and Tolan (2004) reported that virtually all of the urban adolescent boys sampled had witnessed at least three types of violence in their lifetime. In another sample of urban adolescents, almost all (98%) had witnessed another person being victimized by violence (Rosenthal, 2000).

Just as alarming as these statistics is the danger that adolescents who witness violence will continue the cycle of violence (Widom, 1989) in their communities by perpetrating violence themselves. Bandura (1986) proposed that such exposure to violence can teach new aggressive behaviors to children as well as reduce inhibition to act in a violent manner. Indeed, witnessing violence, such as seeing someone being chased, threatened, attacked, wounded, or killed, is among the most consistent predictors of the subsequent use of aggressive behavior and violence (Farrell & Bruce, 1997; Miller, Wasserman, Neugebauer, Gorman-Smith, & Kamboukos, 1999; Schwab-Stone, Jones, Henrich, Leckman, & Rochkin, 2003), even after controlling for previous levels of aggression (Gorman-Smith & Tolan, 1998). In a recent study, Gorman-Smith et al. (2004) found that higher levels of violence exposure in middle adolescence were related to an increased rate of violence perpetration in late adolescence, though this relation changed with family functioning.

Processes of Protection

Despite the widely documented association between witnessing violence and perpetrating violence, not all adolescents living in communities with high rates of violence engage in violent acts. Researchers characterize these youth as resilient because despite exposure to a high-risk environment, they have achieved adaptive success (Luthar, 1991; Masten, 1999). Yet, researchers differ on how to operationalize this success and whether children must achieve ''unexpectedly positive trajectories'' (Luthar, Cicchetti, & Becker, 2000b) or a pattern of average (''ordinary'') or better functioning (Masten et al., 1999) to be classified as resilient. A greater understanding of how best to understand this adaptive success can help researchers design more effective interventions, either aiming for the highest levels of functioning or promoting average levels of

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competency (Masten, 2001). Furthermore, understanding the processes that protect some youth from perpetrating violence despite living in violent communities can help identify the protective factors most amenable to intervention efforts. Therefore, this study examined the processes by which parent support and prosocial cognitions may work independently and in concert to buffer the link between violence exposure and violence perpetration.

Supportive Parent–Adolescent Relations

The quality of parent–adolescent relations is a widely cited factor shown to promote protection despite high adversity (Department of Health and Human Services, 2001; Garmezy, 1991). Supportive parent–child relationships characterized by parent–child communication, parent concern, and parent connectedness have been linked to reductions in externalizing behavior, including violence (Blum, Ireland, & Blum, 2003; O'Donnell, Schwab-Stone, & Muyeed, 2002; Resnick et al., 1997). Although such main effect models provide useful direction in studying parent support as a protective factor, they may not fully account for the relation between parent support and successful adolescent adaptation. Resilience does not arise from fixed attributes within an individual or environment but rather from the dynamic interplay between the individual and environment (Masten, 1999) so that it may be more precise to examine resilience in terms of moderation effects.

Studies that have considered parenting as a moderator, however, have produced inconsistent results. Pearce, Jones, Schwab-Stone, and Ruchkin (2003) reported that although parent involvement was negatively associated with conduct problems, there were no buffering effects of parent involvement on the association between witnessing violence and conduct problems. Miller et al. (1999) found that boys who witnessed violence were actually more vulnerable to engaging in antisocial behavior if their families had low levels of conflict. Similarly, Gorman-Smith and Tolan (1998) indicated that family functioning (i.e., dependability, support, and intolerance for deviancy) moderated the effects of rates of violence exposure on aggressive behavior, such that in the context of high levels of family structure, violence exposure was more strongly associated with increases in adolescent aggressive behavior over time.

However, more recent publications using multidimensional measures of family functioning have offered more cohesive results and illustrated that supportive parenting can attenuate the relations between violence exposure and externalizing behavior over time. Gorman-Smith et al. (2004) found that adolescent males exposed to high rates of violence from exceptionally functioning families were less likely to perpetrate violence than those from less well-functioning families. Additionally, Kliewer et al. (2004) sampled African American early adolescents using both child surveys and direct observations of caregiver–child interactions to show that the quality of the parent–child relationship was protective against externalizing symptoms for both males and females who had witnessed violence.

Building from these two studies, which used multidimensional aspects of parenting, we use a composite measure to define supportive parenting, which includes survey measures of parent involvement and parent supervision. In prior research (e.g., Henrich, Schwab-Stone, Fanti, Jones, & Ruchkin, 2004; O'Donnell et al., 2002), this measure has been shown to represent reliably the overall quality of parent–child relations.

Prosocial Cognitions

Theorists contend that the family environment is linked to youth's interpretations and perceptions of the social world, which have important behavioral consequences (Dodge, Petit, Bates, & Valente, 1995). Specifically, the development of hostilely biased social cognitions may originate within the family environment (Cicchetti, Ackerman, & Izard, 1995; Schultz, Izard, & Ackerman, 2000) because frequent and consistent exposure to adult anger may cause youth to attend defensively to anger and hostility cues and neglect relevant nonhostile cues (Dodge et al., 1995). Consequently, youth may develop social cognitions that are biased by more frequently attributing hostility to others, even when such interpretations are unwarranted (Dodge et al., 1995).

Furthermore, the family environment may teach youth to rely on aggressive responses to provocation because such responses have shown to be effective within the family (Bandura, 1986; Dodge, Bates, & Petit, 1990). Indeed, research has shown that such hostilely biased cognitions are linked to aggressive behavior (Dodge et al., 1995; Perry, Perry, & Rasmussen, 1986; Quiggle, Garber, Panak, & Dodge, 1992; Schwartz & Proctor, 2000) and have been identified as a risk factor for involvement in youth violence (Lipsey & Derzon, 1998). Conversely, less hostilely biased processing has been associated with more successful social outcomes (Selman et al., 1992). Evidence suggests that youth aggression may be connected to family processes and patterns of cognition, but less is known about the links between

positive family relationships and the development of prosocial cognitions. In the present study, prosocial cognitions were conceptualized as protective factors that are theoretically linked to the family environment and may further buffer youth from the effects of violence exposure. We also investigated whether parent support and prosocial cognitions work in concert to exert interactive effects on buffering adolescents from the impact of witnessing violence.

Exploring Gender and Ethnicity Effects

According to Luthar and colleagues (Luthar, 1991; Luthar, Cicchetti, & Becker, 2000a), the construct of resilience is not unidimensional or stable across multiple contexts but rather refers to adaptation to and engagement within specific environmental contexts. This study offers insight into whether youth, across the demographic contexts of gender and ethnicity, benefit similarly from the protective factors of parent support and prosocial cognitions. Furthermore, processes of understanding and responding to risk are likely to differ by gender and ethnicity given cultural variation in socialization experiences and social norms (Bronfenbrenner, 1989).

Indeed, research consistently finds gender differences in the frequency with which youth witness and commit acts of violence (Office of Juvenile Justice and Delinquency Prevention, 1999). Males have been shown to be more likely to witness violence than females (Fitzpatrick & Boldizar, 1993) and are held responsible for more violent crimes committed overall (Office of Juvenile Justice and Delinquency Prevention, 1999). In addition, Farrell and Bruce (1997) found in cross-sectional analyses that witnessing violence was linked to violent externalizing behavior for both males and females, but longitudinally, witnessing violence was related to changes in violent externalizing behavior only for females. In a study of males' violence exposure, Gorman-Smith et al. (2004) found that they were protected against violence perpetration when levels of family connectedness were high. Building from this extant research, which reveals that the experience of violence exposure may be distinct for males and females, we investigated whether processes of protection work differently within the context of gender.

Research findings also indicate that patterns of violent behavior vary by ethnicity (Brener, Simon, Krug, & Lowry, 1999; Center for Disease Control [CDC], 2004; Department of Health and Human Services, 2001). Gorman-Smith et al. (2004) found that, as compared with Hispanic youth, African American youth lived in more violent neighborhoods and were more likely to perpetrate violence. Furthermore, Ozer and Weinstein (2004) found that although both African American and Hispanic youth experienced high rates of witnessing violence, African Americans were more likely to witness certain kinds of violence (e.g., seeing someone they know beaten up) and Hispanic youth more likely to witness others (e.g., seeing a stranger shot or killed). Such research findings emphasize the need to disentangle the larger contextual processes through which some ethnic groups are disproportionally affected by violence and how protection may operate uniquely by ethnicity.

Hypotheses

This study investigated how parent support and prosocial cognitions may act to protect adolescents who witness community violence from committing acts of violence by following a group of urban adolescents for 1 year. We expected that witnessing violence would be associated with increases in committing violence over time and parent support and prosocial cognitions would be associated with decreased levels of committing violence over time. We hypothesized that parent support and prosocial cognitions buffer the effects of witnessing violence, such that the effects of witnessing violence on committing violence are attenuated, and we investigated whether parent support and prosocial cognitions interact with one another in buffering adolescents from the effects of witnessing violence. Finally, gender and ethnicity differences in the buffering processes of the consequences of witnessing violence were explored.

Method

Participants

Data were collected using the Social and Health Assessment (SAHA), a 300-item self-report that assessed adolescents' attitudes about school, family, and high-risk behaviors (Schwab-Stone et al., 1995). The SAHA has been administered annually or biennially since 1992 to more than 70% of sixth and eighth graders in a large Northeastern urban public school system. In the present study, data collected in 2000 and 2001 were examined. In 2000, 2,268 sixth- and eighth-grade adolescents completed the SAHA; in 2001, 1,599 (71%) completed it. Analyses were conducted on the 1,599 adolescents with both years of data (see the Results section for more detail on attrition analyses). Females and males were almost

equally represented (51% females, 49% males). The adolescents were predominately minority and of low socioeconomic status (SES). In 2000, 61% of the adolescents were African American, 26% were Hispanic, and 12% were White. Fifty-seven percent of the adolescents were eligible for free school lunch, and 68% were eligible for free or reduced-price lunch, both markers of economic disadvantage. In terms of other factors related to low SES, 11% of adolescents reported that their parents did not complete high school, 40% lived in single-parent households, and 8% reported two or more household moves in the last year.

Procedure

Sixth- and eighth-grade adolescents in 14 middle schools in the district completed the SAHA unless they declined to participate or their parents voiced objections (<1.0%). This participation rate was possible because the SAHA was developed at the request of the school district for monitoring the behavioral and emotional status of their middle and high school population. The findings are used to develop the district's social developmental curriculum and comprehensive school planning process. Parents are informed of the SAHA by district officials during school registration and are provided with information on how to decline participation. The authors received and analyzed deidentified SAHA data from the district.

During SAHA administration, one trained administrator read questions aloud while adolescents recorded their responses in booklets, and a second administrator was available to answer the adolescents' questions. To protect the confidentiality of adolescent responses, teachers were not involved with the actual administration but remained in the classroom during the administration procedure. Surveys were administered in both English and Spanish. Makeup questionnaires were administered at each school within 1 month of the original administration to include absentee students. For more information on the procedures for the administration of the SAHA, see Schwab-Stone et al. (1995; Schwab-Stone et al., 1999) and O'Donnell et al. (2002).

Measures

All three community-based violence measures—witnessing violence, victimization by violence, and committing violence—were modified from Richters and Martinez's (1993) Survey of Children's Exposure to Community Violence. The SAHA violence measures were designed to focus on violence occurring within adolescents' communities and did not solicit information on violence at home or in school.

Witnessing violence. This study used the witnessing community violence questions from the 2000 SAHA. The index consisted of seven items, and the responses were scored on a 5-point scale (0 times, 1–2 times, 3–5 times, 6–9 times, 10 or more times) denoting the frequency with which adolescents witnessed different types of violence. Each severity category was scored from 0 to 4 and summed so that scores ranged from 0 to 28 (a score of 0 indicated no witnessing and a score of 28 indicated witnessing of all indexes with maximum frequency). Adolescents were prompted to consider "things that may happen to people in your community." The questions included such items as "in the past year I have seen someone else getting beaten up or mugged" and "in the past year I have seen someone get shot or shot at with a gun." Cronbach's alpha for this scale was .85.

Victimization by violence. This study used the victimization by community violence questions from the 2000 SAHA. The victimization by violence index was designed to be a parallel measure to the witnessing violence index. The index consisted of seven items, and the responses were scored on a 5-point scale (0 times, 1–2 times, 3–5 times, 6–9 times, 10 or more times) denoting the frequency with which the adolescents were victimized by different types of violence. Each severity category was scored from 0 to 4 and summed so that scores ranged from 0 to 28 (a score of 0 indicated no victimization and a score of 28 indicated victimization on all indexes with maximum frequency). The victimization by violence scale includes such items as "in the past year I have been beaten up or mugged" and "in the past year I have been shot or shot at with a gun." Cronbach's alpha for this scale was .74.

Committing violence. This study used the committing community violence questions from the 2000 and 2001 SAHA administrations. The commission of violence scale was a sum of six scored items designed to resemble the content of the witnessing violence and victimization by violence scales. The item responses were scored on a 5-point scale (0 times, 1 time, 2 times, 3–4 times, 5 or more times of committing violence). The scale included items such as "in the last year have you started a fist fight or shoving match" and "in the past year have you hurt someone badly in a physical fight so that they had to be treated by a doctor or nurse." Each severity category was scored from 0 to 4 and summed so that scores ranged from 0 to 24 (a score of 0 indicated no

committing and a score of 24 indicated committing violence on all indexes with maximum frequency). Cronbach's alpha for this scale was .79 in both 2000 and 2001.

Parent support. Parent support was constructed as a composite measure of six parent involvement items (characterizing the emotional climate of the relationship as well as specific behaviors around parental communication and involvement in parent–adolescent activities) and four parent supervision items (characterizing specific parental behaviors and practices around adolescent monitoring) from the 2000 SAHA (Henrich et al., 2004; O'Donnell et al., 2002). The scale's six parent involvement items were scored on a 4-point scale ranging from 1 (*definitely not true*) to 4 (*definitely true*) and included items such as "I have a parent or guardian I feel close to." The scale's four parent monitoring items were scored on a 4-point scale ranging from 1 (*almost never*) to 4 (*almost always*) and included items such as "when you go home in the afternoon, there is an adult at home." Cronbach's alpha for this composite parent support scale was .75.

Social cognitive processes. In 2000, adolescents' social cognitive processes were assessed through a measure of adolescents' hostile attributional styles toward peers. The index has been adapted from the Home Interview, originally developed by Dodge (1986, as cited in Aber, Brown, & Jones, 2003). The measure was originally used with children but has since been shown to be reliable in assessments with early adolescents (Aber et al., 2003) and significantly positively correlated with conduct problems and aggressive fantasies (Aber, Jones, Brown, Chaudry, & Samples, 1998). Cronbach's alphas ranged from .74 to .78. The measure included six hypothetical vignettes in which adolescents were asked to imagine themselves as the recipient of a causally ambiguous peer provocation. Adolescents were then asked about the cause of the provocation by selecting one of four possible causal attributions. Responses were coded by labeling peer intentions as either 0 (hostile) or 1 (prosocial/benign), and responses were summed to calculate a total score, ranging from 0 through 6. Cronbach's alpha for this scale was .72.

Poverty risk index. An index used to calculate total economic risk for families of adolescents in the study was adapted from a measure by Henrich et al. (2004). The index included indicators of low maternal or low parental education, single-parent status, more than two or more household moves in the last year, and eligibility for the free or reduced lunch program at school. To calculate total economic risk, the presence of each risk factor was given a score of 1, and each response was summed to yield a total score. Twenty-five percent of adolescents had no risks, 40% had one risk, 28% had two risks, 6% had three risks, and 1% had all four risks.

Results

Attrition Analyses

Analyses were conducted to see whether the 1,599 adolescents who completed the SAHA in 2000 to 2001 differed significantly from the 669 adolescents who completed it only in 2000. Results showed that males were less likely to complete it in 2001 than females, $\chi^2(1, 2268) = 16.92$, $p < .01$. Additionally, those without 2001 data were more likely to be either White or Hispanic than African American, $\chi^2(3, 2268) = 10.38$, $p < .05$. There was no significant difference in poverty risk scores. Across key variables, adolescents without 2001 data had witnessed more violence, $t(2266) = 5.01$, $p < .01$, $d = .24$; were victimized more, $t(2266) = 3.75$, $p < .01$, $d = .17$; committed more acts of violence, $t(2266) = 8.47$, $p < .01$, $d = .39$; and had lower levels of parent support $t(2266) = 4.36$, $p < .01$, $d = .19$. For a list of mean differences between the two groups, see Table 1. All of the preceding variables were added into a logistic regression predicting whether adolescents completed the SAHA in 2001. According to the Cox and Snell R^2 with a Nagelkerke adjustment, the set of variables accounted for an estimated 5.6% of the variance in attrition. Data requested from the district provided information on only 33 of the 636 students who did not take the SAHA in 2001. Of the 33, some had moved to a new district, but most were labeled as "no shows," indicating they had stopped attending school in the district.

Descriptive Statistics

Means and standard deviations are presented in Table 2 for males and females. As indicated by the

Table 1
Mean (Standard Deviation) Differences Between Groups in Attrition Analyses

Measured variable	Students in 2000 ($N = 669$)	Students in 2000 and 2001 ($N = 1,599$)
Poverty risk 2000	1.24 (0.95)	1.17 (0.89)
Witnessing 2000	6.11 (5.90)	4.88 (5.07)
Victimization 2000	1.38 (2.71)	.98 (2.10)
Committing 2000	2.87 (4.24)	1.53 (3.04)
Parent support 2000	2.90 (0.61)	3.01 (0.55)
Cognitions 2000	2.66 (1.88)	2.71 (1.88)

Table 2
Mean (Standard Deviation) Scores for Males and Females on Each Measured Variable

Measured variable	Females ($N = 866$)	Males ($N = 733$)
Poverty risk 2000	1.21 (0.90)	1.11 (0.88)
Witnessing 2000	4.26 (4.50)	5.61 (5.57)
Victimization 2000	0.60 (1.28)	1.43 (2.70)
Committing 2000	0.95 (2.00)	2.22 (3.81)
Committing 2001	1.25 (2.60)	2.56 (4.20)
Parent support 2000	3.05 (0.56)	2.96 (0.54)
Cognitions 2000	2.80 (1.94)	2.60 (1.81)

means, females reported higher levels of parent support, $t(1565.65) = 3.36$, $p < .01$, $d = .16$, and more prosocial cognitions, $t(1597) = 2.16$, $p < .05$, $d = .12$ in 2000. Females also had a slightly higher poverty risk index score, $t(1563.29) = 2.05$, $p < .05$, $d = .11$, in 2000. Males, however, committed more acts of violence than did females in 2000, $t(1597) = 8.13$, $p < .01$, $d = .43$, as well as in 2001, $t(1597) = 7.56$, $p < .01$, $d = .38$. In 2000, males also witnessed more violence, $t(1597) = 5.38$, $p < .01$, $d = .27$, and were victimized more, $t(1597) = 8.08$, $p < .01$, $d = .40$.

Correlations between the study variables are presented for males and females in Table 3. For males, correlation analyses revealed no relation between parent support in 2000 and victimization by violence in 2000, no relation between social cognitions in 2000 and committing violence in 2000 or 2001, no relation between social cognitions in 2000 and parent support in 2000, and no relation between poverty risk index in 2000 and parent support in 2000. For females, correlation analyses revealed no relation between poverty risk index in 2000 and committing violence in 2001, no relation between victimization by violence in 2000 and poverty risk index in 2000, no relation between social cognitions in 2000 and parent support in 2000, and no relation between social cognitions in 2000 and committing violence in 2001. Most significant correlations between the variables were relatively small with the exception of the violence indexes—commission in 2000 and 2001, witnessing in 2000, and victimization in 2000—which were moderately to highly associated with one another. Testing the magnitude of the correlations across gender using Fisher's z' transformation (Cohen & Cohen, 1983) finds significant differences between several violence indexes—witnessing in 2000 and commission in 2001, victimization in 2000 and commission in 2001, commission in 2000 and witnessing in 2000, commission in 2000 and victimization in 2000, witnessing in 2000 and victimization in 2000—with correlations being significantly stronger for males than for females in the sample ($p < .05$). These comparisons were designed to be exploratory; caution should be taken in their interpretation because of possible capitalization on Type I error.

Hierarchical Regression Analysis

To investigate how the resilience factors of parent support and prosocial cognitions may protect adolescents exposed to violence from committing violence, a hierarchical regression analysis was performed. In this regression, committing violence in 2001 was regressed on five blocks of independent variables from 2000 (Davis, 1985). Control variables, including committing violence in 2000, poverty risk index in 2000, and victimization in 2000, were entered into the first block. The second block of the analyses consisted of a dummy-coded variable for gender (1 = male), witnessing in 2000, and the protective factors of social cognitions in 2000 and parent support in 2000. In the third block, 6 two-way interactions were entered following the guidelines of Aiken and West (1991). The buffering interactions of

Table 3
Correlations Among the Measured Variables for Males (N = 733; Above Diagonal) and Females (N = 866; Below Diagonal)

	1.	2.	3.	4.	5.	6.	7.
1. Poverty risk 2000	–	.12**	.19**	.11**	.13**	−.02	−.13**
2. Committing 2001	.06	–	.38[a]**	.30[a]**	.51**	−.20**	−.06
3. Witnessing 2000	.12**	.26**	–	.48[a]**	.54[a]**	−.14**	−.13**
4. Victimization 2000	.05	.28**	.39**	–	.43[a]**	−.05	−.08*
5. Committing 2000	.08*	.46**	.41**	.32**	–	−.20**	−.07
6. Parent support 2000	−.03	−.18**	−.17**	−.15**	−.23**	–	.04
7. Cognitions 2000	−.16**	−.05	−.19**	−.15**	−.11**	.11**	–

[a]Magnitude of correlation coefficient is significantly different between males and females ($p < .05$).
*$p < .05$. **$p < .01$.

Witnessing × Parent Support, Witnessing × Social Cognitions, and Parent Support × Social Cognitions were entered in this third block, as were the exploratory gender interactions. In the fourth block, the three-way Parent Support × Social Cognitions × Gender interaction was included to test for possible gender differences in the proposed buffering effects. The Witnessing × Parent Support × Social Cognitions interaction was included to test the joint buffering effect on witnessing violence. The three-way Witnessing × Social Cognitions × Gender interaction and Witnessing × Parent Support × Gender interaction were included to explore gender differences in the moderating effects of parent support and social cognitions. Finally, the fifth step of the interaction included the four-way Witnessing × Social Cognitions × Parent Support × Gender interaction. Race/ethnicity main effects and interactions were analyzed similarly to gender but are not reported here because none reached statistical significance. The regression results are presented in Table 4.

The block of control variables explained 28% of the variance in committing violence in 2001. Committing violence in 2000, poverty risk index in 2000, and victimization in 2000 were all positively related to committing violence in 2001. Block 2, consisting of main effects, accounted for an additional 2% of the variance. Adolescents who witnessed more violence were more likely to commit acts of violence over time ($\beta = .10$, $p < .01$). Males committed more acts of violence in 2001 than did females ($\beta = .07$, $p < .01$). Social cognitions were not associated with committing violence, but parent support was negatively related to committing violence ($\beta = -.09$, $p < .01$), such that adolescents with higher levels of parent support reported committing less violence over time.

The third block of the regression, which included the two-way interaction effects, accounted for 1% of the total variance of committing violence in 2001. None of the interactions with gender between parent support and social cognitions reached significance. The Witnessing × Parent Support buffering interaction did reach significance ($\beta = -.06$, $p < .01$); how-

Table 4
Predictors in 2000 of Committing Violence in 2001 (N = 1,599)

	Committing violence, 2001		
	B at entry	*SE B*	β at entry
Block 1			
Committing	.53	.03	.46**
Poverty risk	.13	.09	.03
Victimization	.20	.04	.12**
Block 2			
Gender (male)	.46	.15	.07**
Social cognitions	.03	.04	.01
Witnessing	.07	.02	.11**
Parent support	−.54	.14	−.09**
Block 3			
Witness × Gender	.05	.03	.06
Par support × Gender	−.23	.28	−.02
Social Cognitions × Gender	−.06	.08	−.02
Witness × Parent Support	−.07	.03	−.06**
Witness × Social Cognitions	.02	.01	.04
Social Cognitions × Parent Support	−.01	.07	−.01
Block 4			
Witness × Social Cognitions × Gender	.04	.02	.08*
Witness × Parent Support × Gender	−.13	.05	−.08*
Parent Support × Social Cognitions × Gender	−.02	.15	−.01
Witness × Parent Support × Social Cognitions	.01	.01	.02
Block 5			
Witness × Social Cognitions × Parent Support × Gender	−.02	.03	−.03

Note. $R^2 = .28$ for Step 1 ($p < .01$); $\Delta R^2 = .02$ for Step 2 ($p < .01$); $\Delta R^2 = .01$ for Step 3 ($p < .01$); $\Delta R^2 = .01$ for Step 4 ($p < .01$); $\Delta R^2 = .00$ for Step 5. Race/ethnicity terms and interactions were analyzed but are not reported because none was statistically significant.
*$p < .05$. **$p < .01$.

ever, it was nested in a three-way interaction described next.

The fourth block of variables accounted for an additional 1% of the variance in committing violence in 2001. The three-way Witnessing × Social Cognitions × Gender interaction was statistically significant ($\beta = .08$, $p < .05$), as was the Witnessing × Parent Support × Gender interaction ($\beta = -.08$, $p < .05$). Neither the buffering Witnessing × Parent Support × Social Cognitions interaction nor the Parent Support × Social Cognitions × Gender interaction was statistically significant. The fifth block of variables accounted for no additional variance in committing variance in 2001, and the four-way interaction did not reach statistical significance.

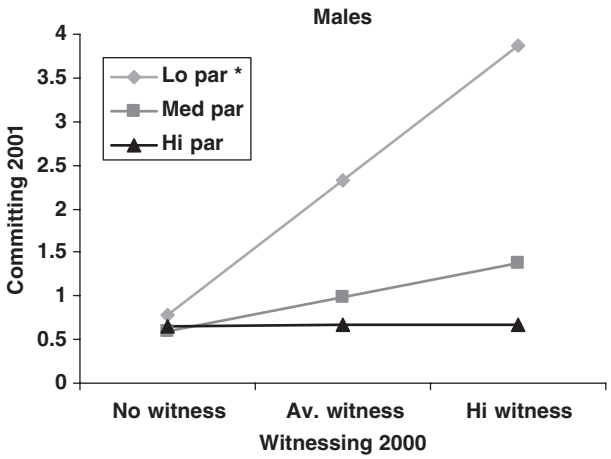

Figure 1. Interaction of 2000 levels of witnessing and parent support predicting violence commission in 2001 for males, regressed on ethnicity and controlling for violence commission, poverty risk, and victimization in 2000. Lo par = low (1 *SD* below the mean) levels of perceived parental support; Av par = average (mean) levels of perceived parental support; Hi par = high (1 *SD* above the mean) levels of perceived parental support. Only the slope with the asterisk is statistically significant, $p < .05$.

Probing the Three-Way Interactions

To explicate the 2 three-way interactions (Witnessing × Parent Support × Gender, Witnessing × Social Cognitions × Gender), regression analyses were conducted separately by gender.

Witnessing × Parent Support × Gender. For males, the Witnessing × Parent Support interaction was statistically significant ($\beta = -.12$, $p < .01$). However, the Witnessing × Parent Support interaction was not significant for females ($\beta = .03$, $p = .30$). To investigate further the significant interaction between witnessing and parent support for males, committing violence in 2001 was regressed on ethnicity, witnessing in 2000 for males, controlling for commission in 2000, poverty risk index, and victimization in 2000.

This statistically significant interaction term for males indicates the presence of significant differences in the relationship between witnessing and committing violence across the range of scores for parent support. Three levels of parent support were computed to explore differing definitions of resilient outcomes by investigating which level(s) of the moderator served as a buffer between witnessing and committing violence. The three-way interaction was further probed in accordance with the guidelines set forth by Aiken and West (1991). The mean ± 1 *SD* deviation of the buffer variable was used to create groups of high, average, and low parent support levels.

Results of this regression revealed that there was a statistically significant positive relationship between witnessing and committing violence when males had low levels of perceived support from parents ($\beta = .32$, $p < .01$) and approached significance when males had average levels of parent support ($\beta = .09$, $p = .06$), even though the regression coefficient was substantially smaller. There was no relationship between witnessing and committing violence when males had high levels of parental support ($\beta = .01$, $p = .97$). This statistically significant Witnessing × Parent Support interaction for males is depicted in Figure 1.

Witnessing × Social Cognitions × Gender. For females, the Witnessing × Social Cognitions interaction was statistically significant ($\beta = -.13$, $p < .01$). However, the Witnessing × Social Cognitions interaction was not significant for males ($\beta = .01$, $p = .82$). To investigate further the significant interaction between witnessing and social cognitions for females, committing violence in 2001 was regressed on ethnicity, witnessing in 2000 for females, controlling for commission in 2000, poverty risk index, and victimization in 2000.

This statistically significant interaction term for females indicates the presence of significant differences in the relationship between witnessing and committing violence across the range of scores for social cognitions. In this regression, the sample was divided into three groups of high, average, and low social cognition levels by again adding and subtracting 1 *SD* from the mean of social cognition. Results of this regression indicated no relationship between witnessing and committing violence for females with prosocial levels of social cognitions ($\beta = .11$, $p = .07$), whereas for females with mean levels of social cognitions, the relationship was positive ($\beta = .12$, $p < .05$). There was also a statistically significant negative relationship between witnessing

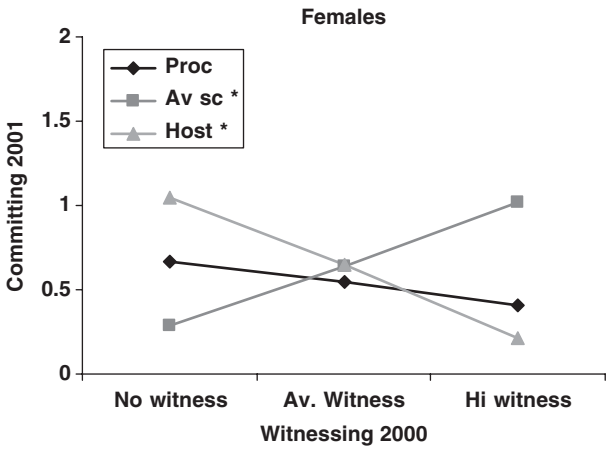

Figure 2. Interaction of 2000 levels of witnessing and social cognitions predicting violence commission in 2001 for females, regressed on ethnicity and controlling for violence commission, poverty risk, and victimization in 2000. Host = hostile (1 *SD* below the mean) social cognitions; Av sc = average (mean) levels of social cognitions; Proc = prosocial or benign (1 *SD* above the mean) social cognitions. Only the slopes with the asterisks are statistically significant, $p < .05$.

and committing violence for females with hostile cognitions ($\beta = -.19$, $p < .05$). However, the bivariate correlation between 2000 witnessing and 2001 committing was not significant for females with hostile cognitions, $r(203) = .13$, $p = .07$, suggesting that this negative partial slope may be the result of suppression by the other variables in the model (Cohen & Cohen, 1983). The Witnessing × Social Cognitions interaction for females is depicted in Figure 2.

Discussion

This study's finding that witnessing violence is a predictor of subsequent violence commission is consistent with previous research in this sample (Ruchkin, Jones, Henrich, Vermeiren, & Schwab-Stone, 2004) and other samples of adolescents (Farrell & Bruce, 1997; Gorman-Smith et al., 2004; Gorman-Smith & Tolan, 1998; Miller et al., 1999). Our findings also elucidate the roles of protective processes in buffering adolescents who have witnessed violence from subsequent violence commission. However, a different pattern of protective processes resulted across gender, suggesting that the impact of violence exposure may not be consistent for both male and female adolescents.

Parent support may be a particularly effective protective process for males in buffering the effects of violence exposure. Only when males reported low (1 *SD* below the mean) levels of parent support relative to the rest of the sample was there a positive association between witnessing and committing violence. In this way, males who witness violence and have low levels of parent support appear to be at increased risk for committing violence over time. However, these findings also suggest that both average and high levels of parent support appear to be offering male adolescents who witness violence protection against committing subsequent acts of violence. These results are consistent with the findings of Gorman-Smith et al. (2004), which suggest that well-functioning families may provide a protective buffer against risk for violence perpetration. Both our findings and the findings of Gorman-Smith et al. suggest that when males have lower levels of family functioning, they are at increased risk for committing more violence over time when exposed to violence. It may be that typically well-functioning families offer a safe haven or secure base to which adolescent males can return for support after witnessing violence in the community and discuss this violence with their parents, thereby buffering adolescents from the link between witnessing violence and subsequent commission (Henrich et al., 2004).

Our findings imply that average levels of parent support may be enough to buffer against violence commission for adolescent males who witness community violence. Instead of a resilience model, then, where unusually positive trajectories are necessary to predict resilient outcomes, a competency model in which attributes not need to be above average levels to foster positive outcomes (Masten, 2001; Masten & Coatsworth, 1998) may more aptly describe the findings. This interpretation could offer optimistic avenues for intervention because extraordinary processes may not necessarily be a prerequisite for positive outcomes in the face of witnessing community violence. Indeed, encouraging and nurturing attributes already present as well as reducing risks may offer promising avenues for intervention efforts (Masten, 2001).

Key implications for male adolescents living in dangerous neighborhoods may also emerge from these results. Because parenting behavior can be compromised and strained by living in poorer, high-crime neighborhoods (Ceballo & McLoyd, 2002), it is particularly vital to focus on improving the quality of parent–adolescent relations in these contexts to bring parent support up to at least average levels. Previous research has shown that when interventions include both the parents and the adolescent (e.g., Smith et al., 2004), they are more effective in decreasing adolescent crime behavior than when efforts target only the adolescent (Farrington & Welsh, 1999). This study informs these types of

efforts by suggesting that male adolescents in particular may benefit from parent support interventions.

A differential buffering effect occurred for females. Adolescent females who witnessed violence appeared to be uniquely protected from committing acts of violence if they had prosocial (1 *SD* above the mean) cognitions relative to the rest of the sample. For females with prosocial cognitions, there was no relation between witnessing and committing acts of violence, so that prosocial cognitions seem to be buffering female adolescents who witness violence protection from committing subsequent acts of violence. This protective effect is consistent with research suggesting that prosocial processing is associated with more successful social outcomes (Selman et al., 1992). When adolescent females use prosocial cognitions as a way of interpreting social interactions, they may be less likely to respond in a violent manner, even when living in communities with high rates of violence. The potential protective effect of prosocial cognitions for females could have important implications for intervention efforts because prosocial cognitions can be taught in school (e.g., Aber et al., 2003; Greenberg & Kusche, 1998) for relatively little cost (Henrich, Brown, & Aber, 1999).

These implications are tempered, however, by the inverse relationship between witnessing violence and committing acts of violence when females had hostile (1 *SD* below the mean) social cognitions. This result is inconsistent with the large body of research linking hostilely biased interpretations of situations to increased aggressive behavior (e.g., Dodge et al., 1995) and should be interpreted with caution because there were relatively few female adolescents who witnessed high levels of violence, committed high levels of violence, and had hostile cognitions. It has been noted by other resilience researchers (Luthar et al., 2000a) that findings on the extreme ends of the normal curve are often unstable. In other studies of resilience and competence (e.g., Luthar, 1991; Masten et al., 1999) this empty cell phenomenon has been observed pertaining to low-risk, low-competency youth.

These gender differences in protective processes indicate that witnessing violence may take on different meanings for males and females. In line with this idea, Farrell and Bruce (1997) also found gender differences in the factor loadings of violence exposure and violent behavior in response to violence, as well as in mean levels in the variables. Differential factor loadings by gender suggest qualitative differences in how males and females complete measures of violence exposure and respond to violence. According to our results, protective processes may take on different meanings across gender as well. One possible reason for these distinct buffering effects across gender could be differences in the type of aggression used and witnessed between males and females (Chesney-Lind, 2001). The surveys used in this study assessed overt types of aggression, such as violent behavior, but research has shown that females often engage in more indirect, relational forms of aggression, such as spreading rumors or friendship rejection (Crick, 1996; Crick & Grotpeter, 1995). Also, the dearth of effects for parent support and social cognitions working together to buffer adolescents from violent behavior may be a result of parent support and social cognitions operating differently across gender.

Ethnicity is often confounded with SES (McLoyd, 1998), especially in urban communities. Furthermore, many studies of urban adolescent violence do not examine the effects of ethnicity while accounting for SES (e.g., Farrell & Bruce, 1997; Fitzpatrick & Boldizar, 1993; Gorman-Smith, 2004) on outcomes. However, unlike the few studies of violence (Ozer & Weinstein, 2004) and resilience (Gerard & Buehler, 2004) that examine both ethnicity and SES, we did not find that processes of risk varied by ethnicity. This inconsistency could be related to our comprehensive measure of poverty risk or to the large proportion of ethnic minority students in the district, with White students representing only 12% of the student body.

Strengths of this investigation include a diverse and large number of urban sixth and eighth graders and a longitudinal design controlling for previous levels of violence commission and poverty risk indexes. Additionally, because of its large sample size, this study had adequate power to detect interaction effects (McClelland & Judd, 1993). However, these strengths must be considered in light of the limitations in the construct validity of the violence measures and the selective nature of attrition. The exposure measures gave the researchers only a limited scope of information about the nature of the violence. Additional questions pertaining to where the violence took place and the relationship between the respondent and others involved in the violence would shed more light on the meaning of the actual violence witnessed and committed. Also, all measures in the study were measured through adolescent self-report and would be more objective if accompanied by community crime rate data as well as teacher and parent report of protective factors. Furthermore, the addition of relational aggression assessments may help clarify gender differences. The selective attrition rate limits the external validity of

the study. However, such problems with attrition rates and selectivity are widespread among large-scale longitudinal studies of adolescents (Gonzalez, Cauce, Friedman, & Mason, 1996; Kliewer et al., 2004; Seidman, Allen, Aber, Mitchell, & Friedman, 1994; Sullivan, Kung, & Farrell, 2004). Finally, although the sizes of the interaction effects were not large in magnitude, even small effects can have substantial public health effects (Henrich et al., 2004; Rosnow & Rosenthal, 1989), especially given the high prevalence of adolescents witnessing violence.

Future avenues of research, in addition to addressing the preceding limitations, should include conceptualizing alternative definitions of resilience on a continuum (Luthar et al., 2000a), through a model hypothesizing steadily improving protective processes. Such a test of resilience frameworks would address the potential instability of statistical findings often found when considering both highly adaptive and highly adverse outcomes (Luthar et al., 2000a). Additionally, normed population measures of moderator variables would also offer stronger conclusions and greater generalizability regarding the effects of protective processes.

Overall, this study represents progress in elucidating the relation between adolescent witnessing of community violence and violence perpetration. Increased knowledge about the processes of parent support and prosocial cognitions from correlational studies such as this one can contribute both to the effectiveness of intervention efforts for adolescents living in violent neighborhoods and to the reduction of violence in communities to create safer places for adolescents to grow and thrive.

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