Article

Journal of Interpersonal Violence
2020, Vol. 35(17-18) 3264–3285

DOI: 10.1177/0886260517708404
journals.sagepub.com/home/jiv
SAGE

The Longitudinal Relation Between Community Violence Exposure and Academic Engagement During Adolescence: Exploring Families' Protective Role

Caitlin Elsaesser, LCSW, PhD,[1]
Deborah Gorman-Smith, PhD,[2]
David Henry, PhD,[3] and Michael Schoeny, PhD[4]

Abstract

Few published studies have examined the interaction between community violence exposure, academic engagement, and parental involvement, despite theory suggesting that these three domains of development are interrelated during adolescence. This study had two related objectives: (a) to assess the temporal ordering of the relation between community violence exposure and academic engagement over the course of mid-adolescence and (b) to examine whether the pattern of these relations varies by level of parental involvement. The study sample included 273 ethnic minority males (33.4% Latino and 65.6% African American) and their caregivers living in impoverished urban neighborhoods. The present study drew on data collected through in-home surveys on violence exposure, school experiences, and family functioning at

[1]University of Connecticut, West Hartford, USA
[2]The University of Chicago, IL, USA
[3]The University of Illinois at Chicago, USA
[4]Rush University, Chicago, IL, USA

Corresponding Author:
Caitlin Elsaesser, School of Social Work, University of Connecticut, 1798 Asylum Avenue, West Hartford, CT 06117, USA.
Email: caitlin.elsaesser@uconn.edu

three time points during mid-adolescence. Cross-lagged model results suggest that at Time 1 (*M* age = 13.5), community violence exposure predicted lower academic engagement at Time 2 (*M* age = 14.8). Between Time 2 and Time 3 (*M* age = 15.8), it was academic engagement that predicted lower community violence. Parental involvement moderated these relations such that academic engagement at Time 2 only reduced the risk of violence exposure at Time 3 in the presence of families with high levels of involvement relative to others in the sample. Findings suggest that practitioners might seek to promote positive school experiences as youth move into high school to reduce risk of violence exposure. Results also indicate the importance of designing interventions that target both positive family and school functioning.

Keywords
youth violence, community violence, family issues, adolescent development

Research over the last 20 years has well documented the high rates of exposure to community violence among youth living in disadvantaged neighborhoods, with as many as 96% of youth in these areas exposed, and an average of 16 experiences of victimization by fifth grade (Ceballo, Dahl, Aretakis, & Ramirez, 2001; Stein, Jaycox, Kataoka, Rhodes, & Vestal, 2003). Exposure to community violence—which includes knowing someone who has been the victim of violence, witnessing a violent incident, and being directly victimized (Kennedy & Ceballo, 2014)—is associated with posttraumatic stress disorder, externalizing problems, and internalizing outcomes (Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009; Margolin & Gordis, 2000). In addition, youth exposed to violence are at higher risk of perpetrating violence themselves (Gorman-Smith, Henry, & Tolan, 2004).

Previous research has also linked community violence exposure to low academic achievement (Henrich, Schwab-Stone, Fanti, Jones, & Ruchkin, 2004), of particular concern as high school completion is among the most important tasks of adolescence (Cutler & Lleras-Muney, 2006; Kenkel, Lillard, & Mathios, 2006). Two cross-sectional studies of African American adolescents found that violence exposure was connected to higher school problems (McGill et al., 2014) and lower academic performance (Mathews, Dempsey, & Overstreet, 2009). Longitudinal work supports this finding; for example, Henrich and colleagues (2004) found in a sample of low-income urban ethnically diverse adolescents that witnessing community violence in sixth grade predicted lower academic achievement in eighth grade. However, the majority of studies conducted in this area are cross-sectional—precluding

causal inference—and assume a direction of effect from violence exposure to academic functioning, when the opposite may be the case.

Although little work has examined the impact of academic experiences on risk of violence exposure, several studies have identified a link between positive school connections and experiences closely associated with exposure to violence. In a sample of urban boys, lower school bonding at age 12 was related to greater involvement in delinquent behavior 1 year later (O'Donnell, Hawkins, & Abbott, 1995). Similarly, among a sample of low-income urban youth, school bonding at age 15 predicted lower risk of violence perpetration at age 18 (Herrenkohl et al., 2003). We identified two studies that examined the impact of academic engagement on community violence exposure; in a sample of urban adolescents, Mrug and Windle (2009) found that low school connectedness at age 11 was unrelated to violence exposure at age 13. In addition, in a multiethnic sample of 118 adolescents, school engagement at age 13 significantly predicted community violence exposure at age 15 (Borofsky, Kellerman, Baucom, Oliver, & Margolin, 2013). Both studies were limited, however, in that they only evaluated this relation at two waves, precluding the ability to examine how these processes might change over time.

Together, this work suggests the experience of community violence exposure and academic engagement may be bidirectional, yet important questions remain. As several reviews of the community violence exposure literature indicate (Fowler et al., 2009; Horn & Trickett, 1998), longitudinal studies covering substantial periods of child development are needed to fully understand how violence exposure interacts with outcomes at different developmental periods. It is especially important to identify this relation during mid-adolescence, a developmental period when interest in school decreases (Archambault, Janosz, Morizot, & Pagani, 2009) and risk behaviors associated with exposure to violence such as gang involvement start to emerge (Ander, Cook, Ludwig, & Pollack, 2009). The present study addresses this gap by assessing the bidirectional relation between academic engagement and violence exposure during mid-adolescence.

The influence of school experiences on adolescent risk taking occurs in the context of other environments, and the family is among the most important influences of adolescent development. Regardless of where one lives, parental involvement influences child development, yet parents living in neighborhoods with high levels of violence face additional challenges associated with protecting their children from harm (Horowitz, McKay, & Marshall, 2005). Parental involvement has been conceptualized in numerous ways, but is commonly conceived as a multidimensional construct reflecting parents' involvement in their child's school and home (Lee & Bowen, 2006). High parental involvement in children's activities strengthens the parent-child bond and

increases parents' awareness of youth behavior (Loeber & Stouthamer-Loeber, 1986). Studies of ethnic minority families have found that high parental involvement can protect youth from risky activities, including delinquency, violence perpetration, and poor school performance (Davidson & Cardemil, 2009; Jeynes, 2003 C. Smith & Krohn, 1995; Wang & Eccles, 2012).

Conceptually, it is intuitive that parents who are involved in their youth's lives might also protect them against exposure to violence, and provisional evidence supports this contention. A cross-sectional study found that multiethnic urban adolescents who were not exposed to violence reported higher levels of parental communication and parental supervision—constructs closely related to parental involvement—compared with those who were not exposed (O'Donnell, Schwab-Stone, & Muyeed, 2002). However, more prospective work is needed to assess whether parental involvement reduces violence exposure over the course of adolescence.

Also missing from these studies is an examination of parental involvement in conjunction with other developmental domains. In communities with high levels of violence, parental involvement alone may not be enough to protect youth against exposure to violence. Evidence suggests that when positive experiences with parents, such as high involvement, are reinforced through experiences in the broader community, their influence can be strengthened. In a study of multiethnic adolescents, when adolescents' own parents and friends' parents were authoritative (a multidimensional construct of parenting practices that includes high levels of involvement), the influence of friends' parents on the youth development was augmented (Steinberg, Darling, & Fletcher, 1995). As extended to academic engagement and violence exposure, it may be that when youth are positively engaged in school *and* have highly involved parents, youth are more likely to be protected against exposure to community violence.

This work is guided by the developmental-ecological model (Szapocznik & Coatsworth, 1999) and the social development model (Catalano, Oesterle, Fleming, & Hawkins, 2004; Hawkins & Weis, 1985). The developmental-ecological model underscores that development reflects a bidirectional process such that the environment not only influences children but children in turn influence their environment. The social development model suggests that youth learn both prosocial and antisocial behavior from their social environment; this model has widely been used to conceptualize the influence of academic experience on youth behaviors (Bond et al., 2007; Hawkins, Kosterman, Catalano, Hill, & Abbott, 2005). Applied to this study, youth with positive relationships with prosocial adults and who see success in school as valuable may be less likely to engage in the risky activities that might increase risk of violence exposure (Catalano et al., 2004). Importantly, according to this model, academic engagement—a youth's active behavioral,

emotional, and cognitive involvement in school (Fredricks, Blumenfeld, & Paris, 2004)—is a more direct measure of a young person's social bond to school than grades or other traditional measures of academic performance.

Moreover, the developmental-ecological model emphasizes that family relationships regulate the experiences of children as they move through childhood to adolescence and that family influence occurs in the context of other developmental domains. The stronger and more complementary the relationship is between family and experiences in other developmental systems, the more influential on child development. Accordingly, when a young person has positive experiences in both family and school, the influence is likely more powerful than if the experience occurs in only one domain.

Present Study

Drawing on a developmental framework, the present study addresses gaps in the literature by examining the interplay between violence exposure and academic engagement at three time points during mid-adolescence. Based on previous studies indicating a reciprocal relation, as well as the social development and developmental-ecological models, we hypothesized a bidirectional relation between violence exposure and academic engagement, such that youth who were exposed to high levels of community violence would be less engaged in school, and youth who were highly engaged in school would be less likely to be exposed to community violence. Given previous studies indicating parents' influence may be reinforced through positive experiences in other developmental domains, we further hypothesized that the positive influence of highly involved parents would amplify the positive influence of academic engagement. We examine these relations among urban Latino and African American male youth, who are disproportionately at risk of high dropout rates (Stark & Noel, 2015) and violence exposure (Rosario, Salzinger, Feldman, & Ng-Mak, 2003). This study responds to calls in the literature for longitudinal research that evaluates the changes in both exposure to community violence and school functioning over time (Fowler et al., 2009; Mrug & Windle, 2009), as well as the role that family functioning may play in these patterns (Aisenberg & Herrenkohl, 2008; Proctor, 2006).

Method

Participants

Data from the Chicago Youth Development Study (CYDS), a longitudinal study designed to evaluate risk of involvement in delinquent behavior among urban adolescent males, were used to address our research questions (Tolan

& Gorman-Smith, 1991). Adolescents were recruited from fifth- and seventh-grade classrooms in 17 Chicago public schools. Active parental permission and child assent to screen children was secured from 92% of the fifth- and seventh-grade boys in these schools. After getting parental permission, boys were selected for participation in the longitudinal study such that 50% of them were considered at "high risk" of development of serious aggression, based on teacher reports of aggressive behavior (Achenbach, 1991). After those high-risk individuals were identified, the remaining individuals were randomly selected from the remainder of those screened. Seventy-five percent of the eligible participants completed interviews during the first wave of interviews (N = 341). Participants were interviewed in their homes or in a mutually agreed on location by trained interviewers. Parent and youth self-reports were collected through separate interviews with the target boy and his caregiver. The study sample was limited to youth who completed at least two interviews between Wave 2, when exposure to violence was first measured, and Wave 4 (waves were collected 1 year apart). Data from 273 participants met these requirements. In the final sample, youth had a mean age of 13.5 years at Wave 2 and were 65.6% African American and 33.4% Hispanic. Fifty-nine percent of the boys lived in households where the mother completed a high school degree or less. Sixty percent of families had incomes below US$20,000 per year.

Measures

Community violence exposure. Exposure to community violence was measured at Waves 2, 3, and 4 using the violence exposure subscale within the CYDS Stress and Coping Interview (Tolan & Gorman-Smith, 1991). Youth reported their exposure during the past year to six violent events, including how often the youth saw anyone beaten up and how often the youth saw someone shot or killed. The internal consistency for items assessing these six violent events was .58. These six items were summed, and then to reduce skew and the impact of outliers, as well as increase the consistency of measurement over time, the total sum was ordinalized to the same five-point scale at Waves 2, 3, and 4, such that 0 = *exposure to zero violent events*, 1 = *one event*, 2 = *two to three violent events*, 3 = *four to five violent events*, and 4 = *six or more violent events*.

Academic engagement. Caregiver reports of youth academic engagement were obtained. Caregivers used a Likert-type scale to rate their son on four aspects of academic engagement: *he likes school*, *he tries in school*, *he finishes his homework*, and *grades are important to him*. Response options,

ranging on a scale from one to four, were as follows: *strongly disagree*, *neither agree nor disagree*, *agree*, and *strongly agree.* These four items had a Cronbach's alpha of .83.

Parental involvement. Caregiver reports of involvement were obtained using the CYDS Parenting Measure (Gorman-Smith & Tolan, 1998). Caregivers reported on 12 items including when was the last time that you discussed your son's plans for the coming day and how often do you have time to listen to your son when he wants to talk to you. Items were summed and then divided by 12, the number of items in the scale. Response options for the final scale ranged from 1.5 to 5. Internal consistency of the scale was .78.

Youth delinquency. Involvement in past year delinquent behavior was measured at Wave 1 using the Self-Report of Delinquency (SRD; Elliott, Dunford, & Huizinga, 1987; Huizinga, Loeber, & Thornberry, 1995). Youth reported on 36 items assessing delinquency, including the number of times the individual carried a hidden weapon as well as the number of times the individual attacked someone with a weapon to hurt or kill. A scale was created weighting the legal seriousness of each item, consistent with previous studies within the field (Elliott et al., 1987; Loeber, Stouthamer-Loeber, Raskin, & White, 1999; Tolan, Gorman-Smith, & Henry, 2003). There is a considerable body of literature reporting good reliability and validity of the SRD (Elliott, Huizinga, & Ageton, 1985; Huizinga et al., 1995; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998).

Caregiver report of crime in the neighborhood. Caregiver report of crime in the neighborhood was measured using the perceptions of crime subscale of the CYDS Community Survey. Ratings on four items on a scale of *strongly agree* to *strongly disagree* that an issue is a problem in the neighborhood were summed. Items included gangs, graffiti, drugs, and violent crime. Internal consistency of the scale was .80.

Ethnicity. Participant's ethnicity was gathered from caregiver reports.

Analytic Plan

Statistical analyses were performed using structural equation modeling (SEM) in Mplus 7.0 (Muthén & Muthén, 1998) with full information maximum likelihood (FIML) estimation. A cross-sectional confirmatory factor analysis was conducted to assess the strength of the academic engagement latent construct. Following this, a longitudinal confirmatory factor analysis

tested the strength of academic engagement as a construct over time, assessing tests of configural, weak, and strong invariance (Little, 2013). The χ^2 statistic, root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), and comparative fit index (CFI) were used to assess model fit. Model fit was considered excellent when the coefficient for CFI is greater than .95 and adequate if the coefficient was greater than .90 (Byrne, 2011; Hu & Bentler, 1999). For the RMSEA and SRMR, a coefficient less than .05 indicates excellent fit and a coefficient below .08 acceptable fit (Browne & Cudeck, 1993).

A cross-lagged model examined the bidirectional relation between violence exposure and academic engagement. Autoregressive paths were included for violence exposure and academic engagement; the model allowed violence exposure and academic engagement to covary at each time point. Cross-lagged paths between violence exposure and academic engagement were estimated between Waves 2, 3, and 4. As recommended by Little (2013) and Byrne (2011), covariates at Wave 1 were added, and after a final model was identified, nonsignificant paths were removed to maximize parsimony.

A multigroup model assessed whether the relation between violence exposure and academic engagement varied by parental involvement. To facilitate a group-based analysis, a standardized *z*-score scale of parental involvement at Wave 2 was calculated to denote families with very high levels of involvement (0.5 standard deviations above the mean). An initial multigroup model was run allowing the structural model to be freely estimated for both lower and high involvement groups. Next, a fully constrained model with every path held constant across the two groups formally tested the significance of difference between the two models. If the multigroup model was not invariant (if unconstrained model showed a better fit than the constrained model in a chi-square test), follow-up analyses investigated these differences by freeing a single path at a time and comparing models with the fully constrained model using a chi-square difference test.

Missing data were accounted for using the FIML estimation in Mplus 7.0. After Wave 1, more than 90% of participants were interviewed at each subsequent wave. Attrition analyses based on previous studies that similarly limited the CYDS sample found no significant differences between those completing only Wave 1 and those continuing to participate in subsequent waves (Gorman-Smith et al., 2004; Sheidow, Gorman-Smith, Tolan, & Henry, 2001).

Results

The mean level of past year exposure to violent events was highest at Wave 3, with an average report of exposure to 4.8 violent events in the past year.

Table 1. Observed Means and Standard Deviations on Measured Variables.

	Wave 2	Wave 3	Wave 4
Age	13.5	14.8	15.8
Past year violence exposure, mean no. of events	4.2 (7.4)	4.8 (9.1)	4.4 (8.6)
Son likes school	3.7 (1.0)	3.7 (1.1)	3.5 (1.2)
Son tries hard in school	3.5 (1.1)	3.5 (1.1)	3.4 (1.2)
Son usually finishes his homework	3.6 (1.0)	3.5 (1.2)	3.3 (1.2)
Son's grades are important to him	3.6 (1.0)	3.5 (1.2)	3.4 (1.2)
Parental involvement	4.18 (0.57)	4.15 (0.61)	4.09 (0.72)

Academic engagement as reported by caregivers decreased over time. Average parental involvement remained relatively stable over time, with reports averaging 4 on a scale of 5 over Waves 2, 3, and 4 (see Table 1). Bivariate correlations between the academic engagement items, exposure to violence, and parental involvement are reported in Table 2. Academic engagement was negatively, and significantly, correlated with exposure to violence. For the longitudinal confirmatory factor analysis of academic engagement, results indicated an excellent fit to the data, with $\chi^2(df) = 70.54(51)$ ($p = .04$); RMSEA = .04; SRMR = .07; TLI = .98; CFI = .99.

Reciprocal Effects of Exposure to Violence and Academic Engagement

The fit of an initial model that included all possible directional paths from Wave 2 to Wave 3 and from Wave 3 to 4 was very good, with $\chi^2(82, N = 186) = 104.41$ ($p \leq .05$), RMSEA = .04, SRMR = .06, TLI = .97, CFI = .98. Two of the cross-lagged paths were significant: Violence exposure at Wave 2 predicted academic engagement at Wave 3 and academic engagement at Wave 3 predicted violence exposure at Wave 4. Only at Wave 2 did academic engagement and violence exposure significantly covary with each other. Nonsignificant paths were pruned to maximize the parsimony of the model; neighborhood-level crime was nonsignificant as a control and was dropped from the model. Final model fit was very good, with $\chi^2(98, N = 273) = 117.83$ ($p \leq .08$), RMSEA = .03, SRMR = .06, TLI = .98, CFI = .99 (Figure 1).

The hypothesized bidirectional relation between academic engagement and violence exposure was partially supported. Violence exposure at Wave 2 predicted lower academic engagement at Wave 3, yet academic engagement at Wave 2 did not predict violence exposure at Wave 3. In addition, academic

Table 2. Bivariate Correlations, Main Study Variables at Wave 2.

		1	2	3	4	5	
1.	Son likes school	1					
2.	Son tries hard in school	.49[a]	1				
3.	Son usually finishes homework	.45[a]	.60[a]	1			
4.	Son's grades are important to him	.46[a]	.63[a]	.61[a]	1		
5.	Community violence exposure	−.08	−.19[a]	−.24[a]	−.20[a]	1	
6.	Parental involvement	.11	.10	.20[a]	.17[b]	−.03	1

[a]Significant at the .01 level. [b]Significant at the .05 level.

engagement at Wave 3 predicted lower levels of violence exposure at Wave 4, but exposure at Wave 3 did not significantly predict academic engagement at Wave 4. Reported coefficients are standardized.

Moderating Effects of Parental Involvement

The multigroup model (Figure 2) exhibited good fit, $\chi^2(210, N = 273) = 254.64$ ($p \leq .05$); RMSEA = .04; SRMR = .08; TLI = .97; CFI = .96. When invariance was imposed on the paths and factors across the two groups, the chi-square difference between the freely estimated model and the constrained model was statistically significant, difference $\chi^2(25, N = 273) = 64.11$, $p \leq .001$. The statistical difference of each cross-lagged path was then assessed by freeing one path at a time while holding all other paths and factor loadings invariant. Neither was the difference in the path from violence exposure at Wave 2 to academic engagement at Wave 3 statistically significant between the two groups, nor was the path between violence exposure at Wave 3 and violence exposure at Wave 4. However, the difference between the path from academic engagement at Wave 3 to violence exposure at Wave 4 path was statistically significant between the two groups ($p \leq .05$), such that a higher growth in academic engagement at Wave 3 was only associated with lower risk of violence exposure at Wave 4 among youth in families with higher parental involvement relative to others in the sample.

Discussion

Mid-adolescence is a developmental stage when interest in school starts to decline and engagement in risky behaviors associated with violence exposure increases (Ander et al., 2009; Archambault et al., 2009). This study evaluated the transactional relation between violence exposure and academic engagement

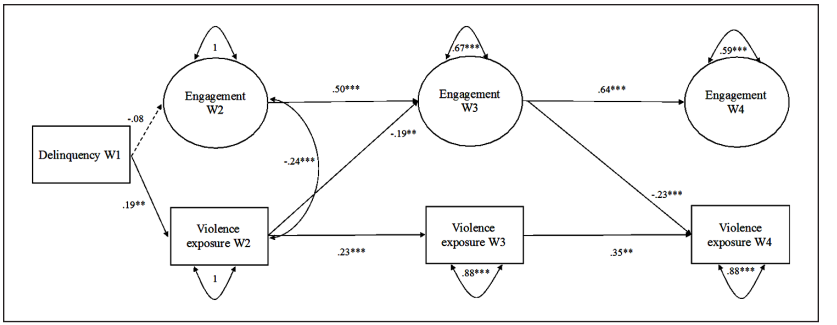

Figure 1. Pruned structural model with only significant covariates: $\chi^2(98, N = 273) = 117.83$ ($p = .08$); RMSEA = .03; SRMR = .06; TLI = .98; CFI = .99. ***Significant at the .001 level. **Significant at the .01 level.
Note. All parameter estimates are standardized.

during this critical period in a sample where violence exposure was common, and examined the role of parental involvement in these relations. The relation between violence exposure and academic functioning varied by developmental stage. Specifically, there was no relation between academic engagement and violence exposure during early adolescence, but later in adolescence, higher academic engagement predicted a lower likelihood of later exposure to violence. In addition, higher parental involvement moderated this relation: Academic engagement predicted lower rates of violence exposure in the presence of families with high parental involvement, but youth in families with lower levels of involvement did not experience the protective impact of academic engagement.

Our results extend previous findings in two significant ways. First, the results highlight the importance of considering developmental timing in understanding the relationship between exposure to community violence and academic engagement. A previous study evaluated the relation between academic functioning and violence exposure using two time points during the middle school period (Mrug & Windle, 2009) and found that school connectedness at age 12—when youth are in middle school—was unrelated to community violence exposure at age 13. Our study expands on these results to suggest that as youth enter mid-adolescence, the protective effect of academic engagement may become more important for exposure to violence.

Mid-adolescence includes the transition to high school, involving new friendship networks (Benner, 2011). Although our study cannot specifically identify timing of the transition to high school, it may be that high academic engagement during middle school does not protect against later risk of violence exposure because of the positive social networks associated with high

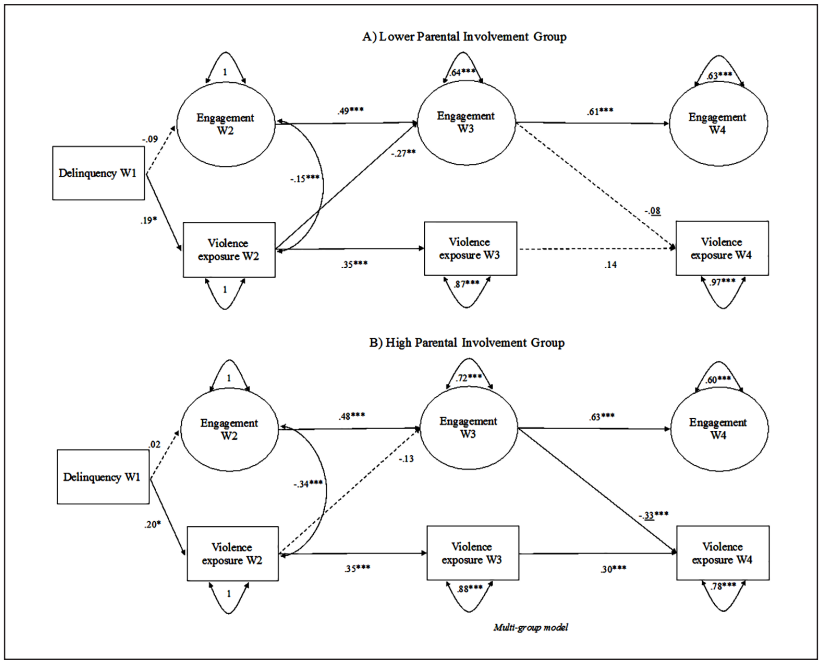

Figure 2. Multigroup model, parental involvement. $\chi^2(210, N = 273) = 254.64$ ($p = .02$); RMSEA = .04; SRMR = .08; TLI = .97; CFI = .96. ***Significant at the .001 level. **Significant at the .01 level. *Significant at the .05 level.

Note. Models were statistically significant different at the $p < .001$ level. Underlined parameter estimate indicates the path was statistically significantly different between the two models. All parameter estimates are standardized.

academic engagement when a youth enters high school. Youth who are highly engaged at the transition to high school may form connections with positively oriented peers who can protect against engagement in risky behaviors associated with violence exposure. This is a direction for future research.

A second key finding is the role of parental involvement in violence prevention. The interaction between academic engagement and parental involvement suggests that the influence of schools on youth development does not occur alone, and that studies that do not consider the family in conjunction with school experiences provide a limited picture. Here, the potential for academic engagement to lower the risk of violence exposure was only present among youth with especially high parental involvement; youth who were in families with lower levels of involvement did not experience the beneficiary protective impact of academic engagement on violence exposure. This

finding may reflect how difficult it is to protect youth against exposure in highly violent communities. Positive school experiences may need to be reinforced by positive interactions with parents to be able to overcome the overwhelming danger in the community.

Our results therefore indicate that even as peers become an increasingly important influence on youth choices in adolescence (Steinberg & Morris, 2001), families are a source of stability as youth navigate a new school and peer contexts. Given these changes that occur in mid-adolescence, positive, stable parental involvement may allow a young person to benefit more fully from positive school experiences. Indeed, youth with highly involved parents demonstrate greater resilience following the transition to high school (Roderick, 2003). More broadly, these results suggest that understanding linkages between ecological contexts is important to identifying the range of youth outcomes.

Implications for Intervention

This work suggests multiple avenues for intervention to promote academic engagement and reduce exposure to violence among youth living in low resourced, highly violent communities. Consistent with the literature on interventions targeting the transition to high school, promoting academic engagement as youth enter mid-adolescence appears to be important. In one of the first studies to examine the impact of targeting the high school transition, a program that sought to increase social support at this time indicated that, compared with control students, participating students by the end of ninth grade had significantly better attendance, grade point averages (GPAs), and self-perception (Felner, Ginter, & Primavera, 1982).

Although the results of our study support calls in the literature to target parental involvement as a violence prevention strategy (Bradshaw, 2014), parental involvement often decreases as youth transition to high school (Eccles, 2007; Wang & Eccles, 2012), declines that may be more pronounced for minority males (Polite, 1994). As urban ethnic minority boys move through their education, their academic challenges mount. Concurrently, their parents often live in stressful environments where violence and poverty are prevalent. It is not surprising that many parents struggle to maintain involvement in their boy's education as they move into more demanding academic environments.

Interventions may therefore be most effective when seeking to increase support across both the school and family environments. Evidence from the high school transition literature suggests that interventions have been most effective when targeting multiple levels of support. A study using nationally

representative data investigated the effects of a full transition program that targeted both the youth as well as teachers and parents, compared with a partial transition program that targeted just one or two of these groups. After the transition to high school, youth in the full transition program experienced more academic success than those programs targeting just one supportive context (J. B. Smith, 1997). These findings also echo evidence from the violence prevention literature suggesting that interventions that aim to both improve family functioning and build academic skills are highly effective in reducing exposure to violence (Tolan, Gorman-Smith, & Henry, 2004).

A theme across these approaches is moving away from individual risk factors to focus on the complex contexts in which youth live. The developmental-ecological model emphasizes the interdependence of lives, such that changes in one person's life affect the lives of others (Szapocznik & Coatsworth, 1999). Interventions that support family involvement have the potential to improve a young person's transition to high school and reduce risk of exposure to violence.

Limitations and Future Research

Contributions of the present study should be viewed in light of its limitations. Our measure of violence exposure would have been enhanced by expanding the number and types of violent incidents included. For example, only one item ("been the victim of violent crime") captures direct victimization, collapsing a range of experiences, such as being shot at and being attacked with a weapon. Future work should aim to more fully assess the range of violence exposure. Our measure of community violence exposure also had a low level of internal consistency. However, as suggested by other researchers, a measure of internal consistency may not be appropriate to apply to scales of community violence exposure (Kennedy & Ceballo, 2016). Scales that measure the events or activities of daily living—such as community violence exposure—are not designed to reflect manifestations of an underlying hypothetical construct, as is the assumption in a measure of internal reliability (Streiner, 2003). Internal consistency for community violence exposure scales more reflects cumulative community violence exposure for a particular individual than reliability, as youth who have been exposed to a wider range of violent events in the community will have higher internal consistencies (Kennedy & Ceballo, 2016). For this reason, many studies using scales of community violence exposure do not report the level of internal consistency (Kennedy & Ceballo, 2016; Kliewer & Lepore, 2014; Ozer, 2005).

We lacked a strong measure of youth-reported academic engagement and so relied on caregiver reports of academic engagement. This limits inferences

about the role of academic engagement in these relations, as caregivers' perceptions of academic functioning likely reflect some bias. Future work should aim to include youth self-reports of academic engagement. Similarly, we relied on caregiver reports of parental involvement, which are subject to bias. Caregivers who reported low levels of involvement may be less reliable reporters of their youth's academic engagement. However, we reran our models using a youth report of parental involvement, and found using youth reports made no substantial difference in results.

Our moderate sample size and homogeneous sample limited this study in multiple ways. At each wave, youth ranged in age by approximately 2 years. Given sample size limitations, it was not possible to break down analyses to identify the specific impact of grade level. Therefore, we caution that we were unable to identify the specific impact of the transition to high school; this is a fruitful focus for future research. The sample targeted boys at high risk of serious aggression and may have limited generalizability to other urban youth samples. However, this limitation is also a strength, as this study focuses on a group particularly important for understanding the developmental risks associated with violence exposure and academic disengagement.

Without an experimental design, the ability to make causal inference in this study was limited. It is possible that a third variable not measured in this study is correlated with the primary study constructs over time and provides an alternative explanation for our results. For example, we were unable to account for youth association with delinquent peers, and this construct is likely related to both academic engagement and community violence exposure over time. However, a strength of this study is that it draws on four waves of data, controlling for previous levels of functioning at each wave in addition to key confounding covariates. Longitudinal studies assessing the influence of violence exposure on youth development drawing on more than two waves of data are relatively rare; considering this limitation in the literature, our study contributes to the broader literature. More longitudinal studies are needed that track the influence of exposure to community violence exposure from childhood to late adolescence.

Several directions for future research emerge from this study. Repeated stressful experiences such as exposure to violence affect basic biological systems of functioning such as memory (Kliewer, Dibble, Goodman, & Sullivan, 2012) and executive functioning (DePrince, Weinzierl, & Combs, 2009). Identifying the mechanisms by which violence compromises academic engagement is an important step for work seeking to interrupt the negative consequences of violence.

Past work has suggested that parenting practices and their influence on youth development may differ between African American and Latino

families (East & Hokoda, 2015; Henneberger, Varga, Moudy, & Tolan, 2014). Although ethnic differences in this study were not a focus, more work is needed in this area, as most studies examining differences in parenting by ethnicity have compared youth of color with European American youth.

In addition, youth exposed to one form of violence are at high risk of exposure to other forms of violence (Finkelhor, Ormrod, & Turner, 2007), and understanding the co-occurrence of different forms of violence is critical to youth safety (Astor, Guerra, & Acker, 2010). The compartmentalization of violence in a single setting is artificial, given that youth exposed to community violence likely are also exposed in other domains of development (Margolin, Vickerman, Oliver, & Gordis, 2010). Understanding the interplay of exposures in these various settings is an important step toward identifying the relative and cumulative contribution of exposures across developmental contexts.

Conclusion

The present study indicates that the relation between community violence exposure and academic engagement is transactional and varies over the course of adolescence. We found that academic engagement only reduced risk of later violence exposure in the presence of highly involved families, and only around the age of 15, not before. This suggests that academic engagement as youth move into high school may be especially important for protecting against later exposure, but that academic engagement alone may not be enough to prevent later exposure to violence. Policy makers, practitioners, and researchers should consider the multiple, intersecting systems that reduce the likelihood of exposure to violence to promote effective strategies to improve the well-being of youth living in highly violent communities.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by funding from the National Institute of Mental Health (R01 MH48248), the National Institute of Child Health and Human Development (R01 HD35415), and the Centers for Disease Control and Prevention (R49CCR512739). Additional support was provided by a predoctoral interdisciplinary training fellowship from the U.S. Department of Education's Institute of Education Sciences to Caitlin Elsaesser (R305B140048).

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Author Biographies

Caitlin Elsaesser is an assistant professor at the School of Social Work at the University of Connecticut. She received her doctorate at the School of Social Service Administration. Her work takes a developmental approach to identifying the influence of stressful experiences—particularly violence and victimization—on adolescent development.

Deborah Gorman-Smith is the Emily Klein Gidwitz Professor at the School of Social Service Administration at the University of Chicago. Her research focuses on advancing knowledge about development, risk, and prevention of violence, with specific focus on minority youth living in poor urban settings. She is the principal investigator of the Chicago Center for Youth Violence Prevention, one of six national Academic Centers of Excellence funded by the Centers for Disease Control and Prevention. Her work has also been funded by the National Institute of Child Health and Human Development, the National Institute on Drug Abuse, the Centers for Disease Control and Prevention, the Substance Abuse and Mental Health Services Administration, and the W.T. Grant Foundation.

David Henry was a professor of psychiatry and psychology in the UIC College of Medicine and professor of health policy and administration in the School of Public Health. His research focused on child and adolescent development, violence prevention, and community-based prevention research. He was a respected scientist, an excellent teacher, and a thoughtful mentor.

Michael Schoeny is an assistant professor at Rush University's College of Nursing. His work focuses on violence prevention, aggression, and adolescent development. He has expertise in longitudinal quantitative analysis.