



Published in final edited form as:

J Community Psychol. 2009 May ; 37(4): 505–525. doi:10.1002/jcop.20310.

ADOLESCENTS' EXPOSURE TO COMMUNITY VIOLENCE: ARE NEIGHBORHOOD YOUTH ORGANIZATIONS PROTECTIVE?

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Abstract

Using data from the Project on Human Development in Chicago Neighborhoods (PHDCN), we identified a significant inverse association between the variety of youth organizations available at the neighborhood level and adolescents' exposure to community violence. We examined two non-competing explanations for this finding. First, at the individual level, we tested the hypothesis that access to a greater variety of neighborhood youth organizations predicts adolescents' participation in organized community-based activities, which, in turn, protects against community violence exposure. Second, at the neighborhood level, we tested the hypothesis that lower violent crime rates explain the inverse relation between neighborhood youth organization variety and community violence exposure. Our findings supported the latter of these two mechanisms.

Exposure to community violence is an all too common occurrence among urban adolescents (Buka, Stichick, Birdthistle, & Earls, 2001). Across studies of several major U.S. cities, roughly 40% of inner-city youth report exposure to a shooting, and many urban youth report exposure to less serious forms of community violence (Stein, Jaycox, Kataoka, Rhodes, & Vestal, 2003). Evidence suggests that exposure to community violence poses a serious threat to adolescents' well-being. Studies consistently document relations between exposure to community violence and adolescents' psychological and behavioral problems (Buka et al., 2001; Bingenheimer, Brennan, & Earls, 2005; Margolin & Gordis, 2000). Preventing exposure to community violence is, thus, an important part of efforts to promote healthy adolescent development.

Despite the fact that youths' neighborhoods provide the setting for community violence, few have examined the role that neighborhood-level resources and processes play in shaping youths' opportunities for community violence exposure (Buka et al., 2001). Extant studies more commonly focus on the role that individual- and family-level factors play in predicting and protecting against violence exposure (e.g., Barkin, Kreiter, & DuRant, 2001; Estrada & Nilsson, 2004; Gorman-Smith, Henry, & Tolan, 2004; Lynch & Cicchetti, 1998; Malik, Sorenson, & Anshensel, 1997; Stein et al., 2003). The present study addressed this gap in the literature and examined the relation between the provision of neighborhood youth organizations—a neighborhood resource with particular relevance for adolescents—and adolescents' exposure to community violence.

Neighborhood Youth Organizations and Exposure to Community Violence

Neighborhood youth organizations (e.g., Boys and Girls Clubs, YMCAs) were introduced to the childcare landscape roughly 100 years ago. The original and primary goal of these organizations was to protect youth from the dangers lurking in their communities during

non-school hours (Bodilly & Beckett, 2005; Halpern, 2002). Although the goals of modern youth organizations are much more diverse (e.g., improving academic performance, skill building, preventing problem behavior), protecting youth against exposure to community violence remains an important goal, and concerns about youth safety continue to motivate calls to increase the supply of neighborhood youth organizations. To our knowledge, however, no one has directly tested the premise that neighborhood youth organizations play a role in protecting youth against exposure to community violence. The present study addressed this question. We tested the hypothesis that exposure to community violence occurs less frequently among youth who live in neighborhoods with a relatively greater variety of youth organizations. We also explored two non-competing explanatory mechanisms. The first is a youth-level mechanism rooted in the conventional wisdom that often inspires calls to increase access to neighborhood youth organizations. Proponents of this mechanism would argue that when more neighborhood youth organizations are available, youth are more likely to participate in organized community-based activities¹ and, thus, less likely to be exposed to community violence. The second, less commonly considered mechanism draws on sociological theory and operates at the neighborhood level. This hypothesized mechanism is based on the expectation that neighborhood youth organizations protect against community violence exposure by deterring crime. We discuss each of these two mechanisms below.

The Influence of Neighborhood Youth Organizations on Youth-Level Processes

The proposed youth-level mechanism makes two assumptions. The first is that youth who live in neighborhoods with a greater, versus lesser, variety of youth organizations are more likely to participate in organized community-based activities. Though intuitively appealing, this assumption has not been adequately tested. We identified only one study that explicitly examined the link between access to youth organizations and youths' participation in community-based activities (Quane & Rankin, 2006). In a study of urban African American families, Quane and Rankin found that access to a greater variety of youth organizations (e.g., organized sports, YMCA programs, etc.) was positively associated with participation in organized activities among adolescents who lived in disadvantaged census tracts (Quane & Rankin). Findings from other studies, however, suggest that the link between access to youth organizations and youth participation is tenuous. A recent review of the literature indicates that after-school programs are often underutilized; in many programs, there are more available slots than participating youth (Bodilly & Beckett, 2005). Thus, physical access to youth organizations may not always translate into youth participation. Consistent with these findings, research indicates that barriers such as poor access to transportation, costly participation fees, conflicting responsibilities (e.g., employment, caring for younger siblings), and a lack of interest often prevent youth from participating in the activities that are available to them (Bodilly & Beckett; Lauver, Little, & Weiss, 2004). Consequently, providing a greater variety of neighborhood youth organizations may not necessarily increase the odds of youth participation.

The above-described youth-level mechanism also assumes that participation in organized community-based activities protects against community violence exposure. To our knowledge, this question has not been directly examined in prior research. Indirect evidence on the potential direction of the relation between participation in organized activities and exposure to community violence is equivocal. Extant findings may be used to support the possibility of either inverse *or* positive relations between these two variables.

¹The phrase, *organized activities*, refers to all adult-supervised, structured youth activities (e.g., sports teams, music/arts, community service) or programs (e.g., after-school program) that meet regularly during the nonschool hours (Mahoney et al., 2005).

Evidence for an inverse relation between participation in organized activities and community violence exposure comes from two sources. First, one recent study found that, after enrolling in an after-school program, middle school students (sixth–eighth graders) spent significantly more time in constructive activities than they did before enrolling (Gottfredson, Gerstenblith, Soule, Womer, & Lu, 2004). The investigators also found that fourth and fifth graders who participated in an after-school program spent significantly less time in unsupervised self-care than those who did not participate in a program (the difference was in the expected direction but not significant for sixth–eighth graders; Gottfredson et al.). Thus, relative to youth who do not participate, youth who participate in organized activities may spend less unsupervised, idle time in their communities, and may, therefore, have fewer opportunities to witness violence. Second, evidence suggests that participation in organized community-based activities may protect against violence exposure by reducing youths' involvement in behaviors that put them at risk. For instance, several studies have identified inverse relations between participation in community-based activities and adolescents' substance use and delinquency (Gottfredson et al.; Hoffman & Xu, 2002; Marsh & Kleitman, 2002)—both of which have been identified as risk factors for exposure to community violence (Barkin et al., 2001; DuRant et al., 2000; Fehon, Grilo, & Lipschitz, 2001; Flannery, Singer, & Wester, 2001; Malik et al., 1997).

On the other hand, extant findings also indirectly support the possibility of *positive* associations between participation in community-based activities and youths' exposure to community violence. First, a study of Swedish youth centers that offered few structured activities (i.e., one of the primary activities was “hanging out” with friends) found that attendance, relative to non-attendance, was associated with higher rates of juvenile and later adult offending (Mahoney, Stattin, & Magnusson, 2001). Results of a similar study suggest that youth organizations that offer little structure attract high-risk youth and provide a place for antisocial peers to congregate (Mahoney, Stattin, & Lord, 2004). Thus, participating in poorly structured community-based activities may lead to behaviors and peer relationships that put youth at risk for community violence exposure. Second, to the extent that transit to and from youth organizations requires contact with the community, participating in community-based activities—particularly in very violent neighborhoods—may increase youths' risk for exposure to community violence. Qualitative findings support this perspective and suggest that although after-school activities are a refuge for some youth, others feel so threatened by their neighborhoods that they believe that staying at home after school is the only safe choice (Molnar, Roberts, Browne, Gardener, & Buka, 2005). Additionally, community violence exposure is suspected to be at the root of recent evidence that participation in community-based activities predicts internalizing problems among youth in high violence neighborhoods (Fauth, Roth, & Brooks-Gunn, 2007).

These findings highlight the potentially complicated relations among access to neighborhood youth organizations, youths' participation in organized community-based activities, and exposure to community violence. The associations among these variables clearly deserve less speculation and more empirical attention. The present study therefore attempted to discern whether the provision of a greater variety of neighborhood youth organizations does, in fact, lead to less frequent community violence exposure through increasing the odds of youth participation in organized community-based activities.

The Influence of Neighborhood Youth Organizations on Neighborhood-Level Processes

Among youth advocates, the perceived value of neighborhood youth organizations commonly lies in the positive experiences of youth who participate in them. To the extent that youth organizations shape the neighborhood-level conditions and processes that influence youth, however, the benefits of neighborhood youth organizations may not be limited to those who participate. Building on this premise, the present study explored the

possibility that neighborhood youth organizations protect youth against community violence exposure by deterring violent crime at the neighborhood level (violent crime is, not surprisingly, an important neighborhood-level risk factor for exposure to community violence; Selner-O'Hagan, Kindlon, Buka, Raudenbush, & Earls, 1998). More specifically, we tested the hypothesis that neighborhoods with a greater, versus lesser, variety of youth organizations are characterized by less violent crime. To our knowledge, this question has not been addressed in extant research. Our hypothesis is supported, however, by at least one study that identified an inverse relation between the supply of community recreation centers (which served all ages) and violent crime rates in poor neighborhoods (Petersen, Krivo, & Harris, 2000).

Hypotheses regarding the link between neighborhood youth organizations and violent crime draw on theories of collective efficacy—a construct that comprises both social cohesion (i.e., a sense of mutual trust and solidarity among residents) and informal social control (i.e., the willingness of residents to intervene for the sake of public order and the common good; Sampson, Raudenbush, & Earls, 1997; Sampson & Raudenbush, 1999). Petersen and colleagues (2000) argue that the absence of strong institutional resources (i.e., neighborhood organizations and resident services) limits opportunities for neighbors to form cohesive social networks devoted to conventional, mainstream values and, thereby, prevents the development of crime-deterring mechanisms of informal social control. To the extent that neighborhood youth organizations do, in fact, bring residents (e.g., youth participants, parents, volunteers, and employees) out of their homes and into the community to participate, an inversion of this theoretical position suggests that the provision of a wide variety of neighborhood youth organizations should provide opportunities for social exchange and the development of collective efficacy. Higher levels of collective efficacy, in turn, have been linked with less crime at the individual and neighborhood level (Molnar, Miller, Azrael, & Buka, 2004; Morenoff, Sampson, & Raudenbush, 2001; Sampson et al., 1997; Sampson & Raudenbush, 1999). Thus, we tested the hypothesis that higher levels of collective efficacy mediate inverse relations between neighborhood youth organization variety and violent crime rates.

The Present Study

Using a multilevel, longitudinal dataset, the present study addressed three specific sets of research questions. First, we tested the hypothesis that neighborhood youth organization variety is inversely associated with the frequency of youths' exposure to community violence, after controlling for individual-level risk factors. Second, we tested the proposed youth-level mechanism, which suggests that youths' participation in organized community-based activities mediates inverse associations between neighborhood youth organization variety and the frequency of youths' community violence exposure. Third, we tested the proposed neighborhood-level mechanism. After verifying that higher violent crime rates are, in fact, associated with youths' exposure to community violence, we tested the hypothesis that violent crime rates are lower in neighborhoods with a greater variety of youth organizations. Moreover, we tested the hypothesis that collective efficacy mediates inverse relations between neighborhood youth organization variety and violent crime.

METHOD

Data

Data for the present study were taken from the Project on Human Development in Chicago Neighborhoods (PHDCN). The PHDCN is a multilevel, longitudinal study designed to examine child and adolescent development in context (e.g., in the context of families,

neighborhoods, schools). The present study used both youth- and neighborhood-level data from the PHDCN.

Youth-level data—Youth-level data were collected as part of the PHDCN Longitudinal Cohort Study. Participants were recruited using a multi-stage sampling strategy. First, findings from cluster analyses of 1990 U.S. Census data, knowledge of Chicago neighborhoods, and observations of geographic boundaries (e.g., railroad tracks, parks, freeways) were used to assign each of Chicago's 847 census tracts to one of 343 neighborhood clusters (NCs). The resulting NCs were then stratified by ethnic composition (7 categories) and SES (3 categories: high, medium, and low), yielding 21 strata. Roughly equal numbers of NCs were randomly selected from all but three empty strata—low SES primarily White NCs, high SES primarily Latino NCs, and high SES primarily Black and Latino NCs. This yielded a final representative sample of 80 NCs. Approximately 35,000 households within these 80 NCs were randomly selected and screened for eligibility (eligible households had children within 6 months of one of seven target ages). This resulted in a sample of 6,234 children and adolescents in seven age groups (ages 0, 3, 6, 9, 12, 15, and 18 years), or cohorts, for the first wave of data collection. Wave 2 and 3 assessments were administered at approximately 2- to 2½-year intervals. Retention rates were relatively high; 86% of the original sample enrolled at Wave 2 and 77% of the original sample enrolled at Wave 3 (Martin & Schoua-Glusberg, 2002). At each assessment, youth and primary caregivers completed measures of functioning in a wide variety of physical, social, psychological, behavioral, and academic domains.

The youth-level sample for the present study, which focuses exclusively on adolescents, was drawn from the 12- and 15-year-old cohorts (i.e., those who were 12 or 15 at Wave 1; $N = 1,517$). We limited the analytic sample to youth who were assessed at each of the two time-points included in our analyses (i.e., Waves 1 and 2). Additionally, we included only youth of Latino, African American, and European American descent. Youth of Asian or Pacific Islander, Native American, and other racial/ethnic backgrounds were not present in sufficient numbers to permit generalizable conclusions about these groups (combined, these youth constituted less than 4% of the sample). The remaining 1,196 youth were, on average, 13.49 years old ($SD = 1.52$) at Wave 1 and 15.53 years old ($SD = 1.62$) at Wave 2. The sample was diverse with respect to gender, ethnicity, and a variety of other demographic indicators (see Table 1 for descriptive statistics on demographic and all other study variables).

To determine whether attrition between Waves 1 and 2 introduced a source of bias, we used univariate tests to compare the demographic composition of the analytic sample to the full sample of Latino, African American, and European American youth from Cohorts 12 and 15. These analyses did not reveal significant differences between the two samples with respect to gender composition, cohort composition, family structure, maternal education, annual household income, or family size.

Neighborhood-level data—Data on neighborhood structural characteristics (e.g., poverty, crime) were taken from the 1990 U.S. Decennial Census and from 1995 Chicago police records. Neighborhood-level data on community organizations and collective efficacy were taken from the PHDCN Community Survey. The Community Survey was administered in 1995 to an independent sample of 8,782 adults (18 years or older) living within Chicago's 343 NCs. Approximately 50 people were sampled within each of the focal 80 NCs. Respondents rated their neighborhoods on a variety of dimensions including, but not limited to, social cohesion, informal social control, and resource availability.

Using these data, we constructed neighborhood measures at the level of the census tract ($N = 170$). We constructed tract, rather than NC-level, measures to reduce collinearity among neighborhood-level predictors; measures constructed at the tract level tend to be less highly inter-correlated than measures constructed at the NC level.

MEASURES

Youth-Level Variables

Exposure to community violence—Youth completed the My Exposure to Violence scale (My ETV; Kindlon et al., 1996; Kuo, Mohler, Raudenbush, & Earls, 2000; Selner-O'Hagan et al., 1998), which is an expanded version of the Survey of Exposure to Community Violence (Richters & Martinez, 1993), at each wave of data collection. We constructed a dependent measure of community violence exposure using data collected at Wave 2. Youth indicated whether and where (i.e., home, someone else's home, school, youth's own neighborhood, or another neighborhood) they witnessed each of the following eight types of violence during the 12 months preceding the interview: threats of serious injury; a chase with the possibility of serious injury; minor assault (slapping, punching, or beating); the sound of gunfire (excluding gunfire heard at a shooting range, while hunting, or during a celebration); an attack with a weapon like a knife or bat; an attempted shooting; a shooting; and a murder. A response to a given type of violence was assigned a score of 1 if participants reported that they had witnessed that type of incident in the community—i.e., in their neighborhood or another neighborhood—during the prior 12 months.² A response was assigned a score of 0 if participants indicated that they had not been exposed to the incident during the preceding 12 months, or had only been exposed in a noncommunity setting (i.e., at home, at someone else's home, or at school). The resulting binary variable for each type of violence was multiplied by a corresponding past year frequency score (i.e., $1 =$ witnessed once, $2 =$ witnessed two to three times, $3 =$ witnessed four to nine times, or $4 =$ witnessed 10 or more times). This yielded a past year frequency score for each type of violence (range: 0 to 4).³ Frequency scores were then averaged across all eight types of violent incidents to yield a composite measure of the frequency of past year community violence exposure. Because the distribution for this variable was skewed to the right, we computed and use the natural log in all analyses.

Participation in organized community-based activities—At Wave 2, youth indicated whether (i.e., $1 =$ yes, $0 =$ no) they participated in each of six types of community-based activities during the prior year. These included church/religious groups, community activities like the YMCA or Boys and Girls Clubs, volunteer work, organized sports teams, arts activities, and “any other activities outside of school.” The item referring to church groups was excluded from variable construction because the neighborhood-level measure of youth organizations (described below) did not ask respondents to report on the presence of religious institutions. Additionally, the item that referred to “any other activities” was excluded because the wording was not specific enough to ensure that affirmative responses referred to participation in organized youth activities (i.e., participants might have included non-organized or unstructured youth-directed hobbies). The remaining 4 items more clearly referenced participation in organized activities. We used responses to these items to

²Reports of violence exposure both in youths' own neighborhoods and in “other” neighborhoods were considered endorsements of exposure to community violence. The area that an individual defines as his or her “neighborhood” is often smaller than a census tract. Thus, we were concerned that excluding violence witnessed in “other” neighborhoods might result in the exclusion of violent incidents that occurred within youths' own census tracts.

³Participants were not asked to provide frequency data separately for each type of location (e.g., neighborhood versus home). Thus, frequency scores are not entirely specific to community violence. Studies often find, however, that youth who report violence exposure in one context report it in others. (See Margolin & Gordis, 2000, for review.) We, therefore, believe this to be a reasonable proxy for the frequency of youth's exposure to community violence.

construct a dichotomous measure of youths' participation in organized community-based activities ($1 = \textit{participation in at least one of these 4 activities}$, $0 = \textit{no participation}$).

Youth-level control variables—Analyses included controls for standard youth-level demographic characteristics including gender ($1 = \textit{male}$, $0 = \textit{female}$), age group ($\textit{cohort 15} = 1$, $\textit{cohort 12} = 0$), race/ethnicity (2 dummy variables: Latino, African American versus white), family structure ($1 = \textit{intact two biological parent families}$, $0 = \textit{other family structures}$), maternal education ($1 = \textit{less than high school}$ to $5 = 4 \textit{ year college degree or higher}$), annual household income ($1 = \textit{less than } \$5,000$ to $7 = \$50,000 \textit{ or more}$), and family size (i.e., the number of household residents). Because theory and research suggest that juvenile delinquency is both a strong predictor of exposure to violence (DuRant et al., 2000; Fehon et al., 2001; Flannery et al., 2001) and a possible outcome of residence of in high poverty, low resource neighborhoods (Loeber & Wikström, 1993; Peeples & Loeber, 1994; Sampson & Groves, 1989), we also constructed a control for juvenile delinquency. At Wave 1, participants reported the number of times during the past year that they had committed each of 32 delinquent acts. These acts included status offenses (e.g., truancy), non-violent offenses (e.g., damaging property, burglary, drug offenses), and violent offenses (e.g., hitting someone, aggravated assault, robbery). Because reliability decreases as the estimated frequency of offending increases (e.g., Huizinga & Elliott, 1986), we recoded raw frequency scores such that $0 = \textit{never}$, $1 = \textit{once}$, and $2 = \textit{twice or more}$. Recoded frequency scores were then averaged across items to yield a composite measure of the frequency of youths' involvement in juvenile delinquency at Wave 1.

Neighborhood-Level Variables

Violent crime rates—We used police-records from 1995 to compute the number of serious violent crimes (i.e., murder, rape, robbery, aggravated assault) committed in each tract per 100,000 residents (data on population size were from the 1990 U.S. Census). The resulting variable was skewed to the right; thus, we computed and used the natural log in our analyses.

Variety of neighborhood youth organizations—We used data from the PHDCN Community Survey to construct a measure of the variety of youth organizations available in each neighborhood. Survey respondents were asked to indicate whether (i.e., $1 = \textit{yes}$, $0 = \textit{no}$) children and youth in their neighborhood had access to each of six resources including youth centers, recreation programs, after school programs, mentoring/counseling programs, mental health services, and crisis intervention services. Items on mental health and crisis intervention services were excluded from variable construction; these items refer to treatment facilities and do not tap into the kind of youth organizations of interest in the present study. Responses to the remaining four items were summed to yield a measure of the variety of youth organizations available in the neighborhood (range: 0 to 4). Variety scores were then averaged across survey respondents within each census tract. Higher tract-level scores reflect residents' collective perceptions of a wider array of available youth organizations.

Collective efficacy—We constructed a measure of collective efficacy using data from the social cohesion and informal social control scales administered as part of the Community Survey. The social cohesion scale consists of five conceptually related statements that reflect residents' willingness to support each other (sample item: "people around here are willing to help their neighbors"). Survey respondents indicated how strongly they agreed or disagreed with each statement ($1 = \textit{strongly disagree}$ to $5 = \textit{strongly agree}$). The informal social control scale assessed respondents' perceptions of their neighbors' willingness ($1 = \textit{very unlikely}$ to $5 = \textit{very likely}$) to intervene in five potentially harmful situations: children

defacing a building, a child behaving disrespectfully, children skipping school, people fighting, and threats of budget cuts at a nearby fire station. A three-level item response model was used to construct a measure of collective efficacy using all 10 of these items. This model adjusted for missing data and item severity at level one and a host of person-level characteristics at level two.⁴ We used the standardized empirical Bayes residual from this model as our final measure of collective efficacy. Empirical Bayes estimates account for differences in the reliability of adjusted collective efficacy scale scores across neighborhoods via regressing ordinary least-squares (OLS) scale score residuals toward the grand mean by a factor proportional to the unreliability with which they have been estimated (Raudenbush & Bryk, 2002).

Neighborhood-level control variables—To account for the possibility that the provision of neighborhood youth organizations is a proxy for neighborhood disadvantage (which is a risk factor for violence exposure; Buka et al., 2001), analyses included controls for neighborhood-level socioeconomic status. Previously published factor analyses of 1990 U.S. Decennial Census data identified three dimensions of neighborhood socioeconomic structure: concentrated poverty, residential stability, and immigrant concentration (Sampson et al., 1997). Results of a principal components analysis conducted for the present study were consistent with these findings. We identified the following components of neighborhood socioeconomic structure: (a) a concentrated poverty component defined by the percentage of residents living below the poverty level, the percentage of residents on public assistance, the percentage of female-headed households, and the percentage of unemployed residents; (b) a residential stability component defined by the percentage of residents in owner-occupied houses and the percentage of residents living in the same home over a five year period; and (c) an immigrant concentration component defined by the percentage of foreign-born residents and the percentage of Latino residents. To reduce collinearity among neighborhood-level predictors, however, final models only included a control for concentrated poverty (i.e., concentrated poverty factor scores). Preliminary analyses with and without controls for residential stability and immigrant concentration did not reveal marked differences in results.

Analytic Strategy

Analyses proceeded in three parts. First, we tested the hypothesis that youths' exposure to community violence occurs less frequently in neighborhoods with a greater, versus lesser, variety of youth organizations. Second, we tested the proposed youth-level mechanism linking neighborhood youth organizations and youths' community violence exposure. We examined the extent to which youths' participation in community-based activities mediated relations between neighborhood youth organization variety and youths' exposure to community violence. Third, we tested the hypothesis that neighborhood-level processes explain observed associations between neighborhood youth organization variety and exposure to community violence. After verifying that neighborhood violent crime rates predict youth's exposure to community violence, we examined the relation between neighborhood youth organization variety and violent crime rates. We also tested the hypothesis that collective efficacy mediates relations between neighborhood youth organization variety and violent crime.

We used OLS regression in SPSS 14.0 to conduct analyses that included only neighborhood-level variables, and multilevel linear and logistic models in HLM 6.0 to conduct analyses

⁴Nine characteristics of Community Survey respondents were included as person-level covariates at level 2: gender, age, race/ethnicity, education level, employment, marital status, homeownership, years of neighborhood residence, and number of moves in the last 5 years.

that included both youth- and neighborhood-level variables. In all multilevel models, youth participants and neighborhoods (i.e., census tracts) constituted the units of analysis at levels 1 and 2, respectively. Predictors at both levels were centered around their grand means.

RESULTS

Direct Relations: Neighborhood Youth Organizations and Community Violence Exposure

Prior to examining the direct association between neighborhood youth organizations and youths' exposure to community violence, we conducted preliminary analyses to verify that scores on community violence exposure varied across neighborhoods. We estimated a two-level unconditional model predicting youth's exposure to community violence at Wave 2 (see Equations 1 and 2). At Level 1 (see Equation 1), the natural log of the frequency of community violence exposure, Y , for each individual i in neighborhood j was modeled as a function of a Level-1 intercept, β_{0j} (the average score on community violence exposure within neighborhood j) and a Level-1 error term, r_{ij} . At Level 2 (see Equation 2), the Level-1 intercept, β_{0j} ,

$$Y_{ij} = \beta_{0j} + r_{ij} \quad (1)$$

$$\beta_{0j} = \gamma_{00} + \mu_{0j} \quad (2)$$

was modeled as a function of a Level-2 intercept, γ_{00} (the average score on community violence exposure across j neighborhoods; $\gamma_{00} = 0.403$, $se = 0.013$) and a Level-2 error term, μ_{0j} .

This model yielded individual- (σ^2) and neighborhood-level variance (τ) estimates for youths' exposure to community violence ($\sigma^2 = 0.111$ and $\tau = 0.010$). A chi-square test revealed that the neighborhood-level variance term, τ , was significantly different from zero ($\chi^2[170] = 266.357$, $p < .001$). In other words, exposure to community violence varied significantly across neighborhoods. Additionally, we computed an intra-class correlation coefficient, ρ (see Equation 3), and found that 8.00% of the total

$$\rho = \frac{\tau}{\tau + \sigma^2} \quad (3)$$

variance in the frequency of youths' exposure to community violence existed at the neighborhood level. This is consistent with evidence that neighborhood characteristics typically account for no more than 5% to 10% of the variance in child and adolescent outcomes (Leventhal & Brooks-Gunn, 2000).

After identifying significant neighborhood-level variation in our dependent variable, we examined the association between neighborhood youth organization variety and youths' community violence exposure using the two-level model represented by Equations 4, 5a, and 5b.

$$Y_{ij} = \beta_{0j} + \sum_{q=1}^9 \beta_{qj} r_{ij} \quad (4)$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{ORG}) + \gamma_{02}(\text{CONPOV}) + \mu_{0j} \quad (5a)$$

$$\beta_{qj} = \gamma_{q0} \quad (5b)$$

At Level 1 (see Equation 4), the natural log of community violence exposure, Y , for each person i in neighborhood j was modeled as a function of a Level-1 intercept, β_{0j} , the slopes, β_{qj} , of $q = 9$ youth-level control variables (i.e., gender, cohort, African American versus white, Hispanic versus white, biological intact versus other family types, maternal education, annual household income, family size, and Wave 1 delinquency), and a Level-1 error term, r_{ij} . At Level 2, the Level-1 intercept, β_{0j} , was modeled as a function of a Level-2 intercept, γ_{00} , the slope, γ_{01} , of neighborhood youth organization variety (ORG), the slope, γ_{02} , of neighborhood concentrated poverty (CONPOV), and a Level-2 error term, μ_{0j} (see Equation 5a). The slopes, β_{qj} , for all Level-1 predictors were fixed across census tracts (see Equation 5b; Level-2 error was not modeled for Level-1 slopes). In this two-level model, γ_{01} can be interpreted as the “main effect” of neighborhood youth organization variety on community violence exposure after controlling for youth-level predictors at Level 1 and concentrated poverty at Level 2.

As shown in Table 2, Level-1 and Level-2 predictors of community violence exposure were added to the model represented by Equations 4, 5a, and 5b in three steps. First, we added youth-level control variables at Level 1. Although adding these predictors to the model reduced the value of ρ ($\tau = 0.003$, $\sigma^2 = 0.089$, $\rho = 3.26\%$), the estimate for τ remained statistically significant ($\tau = 0.003$, $\chi^2[167] = 202.555$, $p < .05$; see Table 2, Model 1). That is, community violence exposure varied significantly across neighborhoods even after entering youth-level controls. Thus, we added neighborhood youth organization variety to the Level-2 model as a predictor of violence exposure. We found that neighborhood youth organization variety was significantly and inversely associated with youths' exposure to community violence ($\gamma_{01} = -0.038$, $se = 0.018$, $t = -2.174$, $p < .05$; see Table 2, Model 2). Moreover, adding neighborhood youth organization variety to the model accounted for all of the remaining neighborhood-level variance in youths' community violence exposure (i.e., adding neighborhood youth organization variety to the model rendered τ non-significant). Nonetheless, we entered a control for neighborhood concentrated poverty to more conservatively test the association between neighborhood youth organization variety and exposure to community violence. We found that, even after controlling for concentrated poverty, the inverse relation between neighborhood youth organization variety and youths' exposure to community violence remained significant ($\gamma_{01} = -0.041$, $se = 0.016$, $t = -2.526$, $p < .05$; see Table 2, Model 3).

Youth-Level Mechanism: Mediated Associations between Neighborhood Youth Organizations and Exposure to Community Violence

In a second set of analyses, we tested the hypothesis that youths' participation in community-based youth activities mediated the inverse relation between neighborhood youth organization variety and community violence exposure. We followed Baron and

Kenny's (1986) steps for testing mediation, which require (a) a significant relation between the independent and dependent variable (established above), (b) a significant relation between the independent variable and the mediator, (c) a significant relation between the mediator and the dependent variable while controlling for the independent variable, and (d) a significant decrease in the strength of the relation between the independent and dependent variables when the mediator is included as a predictor in the model.

In keeping with these guidelines, we first tested the relation between neighborhood youth organization variety and youths' participation in organized community-based activities. Using a logistic version of the two-level model represented by Equations 4, 5a, and 5b, we modeled youths' participation in community-based activities as a function of all nine youth-level controls, a neighborhood-level control for concentrated poverty, and neighborhood youth organization variety. We found that neighborhood youth organization variety was a significant, positive predictor of youths' participation in organized community-based activities ($\gamma_{01} = 0.245$, $se = 0.121$, $t = 2.028$, $p < .05$; see Table 3, Model 1). We then tested the association between youths' participation in organized community-based activities and exposure to community violence. Youth participation in community-based activities was entered as an additional Level-1 predictor in the two-level linear model that was used to predict community violence exposure (Equations 4, 5a, and 5b). This model did not reveal a significant association between participation in organized community-based activities and exposure to community violence (see Table 3, Model 2). Moreover, including participation in community-based activities as a predictor of community violence exposure did not eliminate the significant inverse association between neighborhood youth organization variety and exposure to community violence ($\gamma_{01} = -0.045$, $se = 0.017$, $t = -2.709$, $p < .01$; see Table 3, Model 2). These results, therefore, do not support the hypothesis that participation in organized community-based activities mediates the association between neighborhood youth organization variety and youths' exposure to community violence.

Neighborhood-Level Mechanism: Mediated Associations Between Neighborhood Youth Organizations and Violent Crime

Before testing the associations between neighborhood youth organization variety and neighborhood violent crime rates, we tested the association between neighborhood violent crime rates and youths' exposure to community violence using a two-level model similar to that represented in Equations 4, 5a, and 5b. This model controlled for all nine youth-level characteristics at Level 1. As expected, we found a significant, positive association between neighborhood violent crime rates and exposure to community violence ($\gamma = 0.090$, $se = 0.020$, $t = 4.406$, $p < .001$; see Table 4).

Next, using OLS regression, we tested the hypothesis that neighborhood youth organization variety is inversely associated with violent crime rates and that this relation is mediated by greater collective efficacy. Following Baron and Kenny's (1986) steps, we first tested the direct relation between neighborhood youth organization variety and the natural log of violent crime rates. We found that the variety of youth organizations in a neighborhood was significantly and inversely associated with violent crime ($\beta = -0.174$, $se = 0.057$, $t = -3.059$, $p < .01$; see Table 5, Model 1), even after controlling for neighborhood concentrated poverty. Second, we examined the relation between neighborhood youth organization variety and collective efficacy. Controlling once again for concentrated poverty, we found a significant positive association between neighborhood youth organization variety and collective efficacy ($\beta = 0.225$, $se = 0.096$, $t = 2.338$, $p < .05$; see Table 5, Model 2). Third, we regressed violent crime rates on collective efficacy, controlling for neighborhood youth organization variety and concentrated poverty. These analyses, however, did not reveal a significant relation between collective efficacy and violent crime rates (see Table 5, Model 3). Moreover, the direct relation between neighborhood youth program variety and violent

crime remained significant after including collective efficacy as a predictor of violent crime rates ($\beta = -0.158$, $se = 0.057$, $t = -2.760$, $p < .01$; see Table 5, Model 3). Thus, collective efficacy did not mediate the inverse relation between neighborhood youth organization variety and violent crime.

DISCUSSION

Our findings suggest that exposure to community violence occurs less frequently among adolescents who live in neighborhoods that offer a greater, versus lesser, variety of youth organizations. These findings resonate with common perceptions regarding the protective role of neighborhood youth organizations. The mechanism that explains the inverse relation between neighborhood youth organization variety and exposure to community violence is not, however, entirely consistent with conventional wisdom. Most assume that the benefits of neighborhood youth organizations operate primarily through youths' participation in enriching, organized activities that both diminish the amount of time spent in idle, unsupervised activities and promote positive development (see Lerner et al., 2005; Roth, Brooks-Gunn, Murray, & Foster, 1998 for discussion of organized activities and positive youth development). Our findings suggest that the protection against violence exposure afforded by neighborhood youth organizations operates at a different level. Participation in organized community-based activities does not appear to protect youth from violence exposure; rather, youth organizations may protect against violence exposure by deterring violent crime at the neighborhood level. We explore this new contribution as we discuss the answers to our research questions in greater depth.

To explain the significant inverse association between neighborhood youth organization variety and youths' exposure to community violence, we first tested the hypothesis that youths' participation in organized community-based activities played a mediating role. We found that neighborhood youth organization variety was, in fact, significantly and positively associated with youths' participation in community-based activities. Converting the coefficient for this association to an odds ratio, however, demonstrates that each unit increase in youth organization variety was only associated with a 28% increase in the odds of participation in community-based activities. Increasing the supply of neighborhood youth organizations may, thus, play a part in boosting youth participation in organized activities, but the modest size of the association is consistent with evidence that logistical barriers (e.g., lack of transportation, cost, conflicting responsibilities) often prevent youth from participating in the organizations that are available to them (Bodilly & Beckett, 2005; Lauver et al., 2004). Moreover, participation in organized community-based activities was not associated with exposure to community violence, and accounting for the influence of participation did not diminish the strength of the inverse association between neighborhood youth organization variety and exposure to community violence. Participation in community-based activities thus did not mediate the inverse relation between neighborhood youth organization variety and violence exposure.

These findings suggest that the mere presence of youth organizations in a neighborhood—regardless of whether youth participate in them—may in some way protect youth against exposure to violence. Consistent with this perspective, we found that neighborhood youth organization variety was significantly and inversely associated with violent crime at the neighborhood level. Neighborhood youth organizations may thus protect against violence exposure by limiting opportunities for observing violent crime. The mechanism for the relation between neighborhood youth organizations and violent crime remains unclear, however. Collective efficacy did not play a mediating role. Although access to a greater variety of neighborhood youth organizations predicted greater collective efficacy, collective efficacy was not significantly associated with violent crime when controlling for youth

organization variety. Moreover, accounting for the effects of collective efficacy did not eliminate the significant inverse relation between youth organization variety and violent crime rates.⁵

It is conceivable that the inverse relation between neighborhood youth organization variety and violent crime is direct, rather than indirect. Sociological perspectives suggest that the physical characteristics of neighborhoods may directly affect individuals' willingness to engage in crime. For instance, proponents of the "broken windows" theory have long asserted that signs of physical disorder in neighborhoods (e.g., broken windows, graffiti, garbage in the streets, etc.) cue potential offenders to residents' indifference toward the activities that occur in their neighborhoods and, consequently, encourage crime (see Sampson & Raudenbush, 1999; 2004 for discussion). Although there is some skepticism regarding the causal role of disorder (Sampson & Raudenbush, 1999), studies do find positive associations between neighborhood disorder and crime (e.g. Kelling & Coles, 1996; Molnar et al., 1990). If we invert "broken windows" theory, it seems plausible that the existence of a wide variety of neighborhood youth organizations could cue potential offenders to the strength of residents' interests in supporting prosocial activities and, thereby, deter violent crime. It would be premature to accept this explanation based solely on the results of the present study, however. Additional analyses, which were beyond the scope of this study, are needed to rule out other potential intervening mechanisms (e.g., more street activity or greater police presence in neighborhoods with more youth organizations).

It is also important to consider our findings in the context of several important limitations. First, our measure of the supply of neighborhood youth organizations captured the variety of different types of organizations available to youth rather than the number of such organizations. Data on the number of youth organizations in each neighborhood were not available. Such measures should, however, be included in future neighborhood studies. Examining different dimensions of the supply of youth organizations would permit clearer conclusions about the nature of the relation between these organizations and violence exposure (i.e., whether it is more important to increase the number, versus the variety of types, of organizations). Additionally, our measure relies on residents' *perceptions* of the variety of youth organizations available in their neighborhoods. Replication of our findings using objective measures of the variety and number of youth organizations is thus an essential next step for future research.

Second, our measures of youth organization variety and youths' participation in organized activities do not account for the quality of these organizations or activities. These data were not available in the PHDCN. Several studies, however, highlight the developmental risks associated with participation in poor quality activities (e.g., Mahoney & Stattin, 2000; Smith & Smoll, 1997; Vandell, Shumow, & Posner, 2005). Additionally, as stated in the introduction, extant research (Mahoney et al., 2001, 2004) indirectly suggests that the direction of the relation between participation in youth organizations and violence exposure may depend on the provision of well-supervised, highly structured activities. Participation in community-based organizations that offer more, versus fewer, supervised, structured activities may provide more protection against exposure to community violence. Thus, future investigations should consider whether supervision and structure moderate the

⁵This does not mean that collective efficacy does not deter crime. There is ample evidence to the contrary (Morenoff et al., 2001; Sampson & Raudenbush, 1999; Sampson et al., 1997). Moreover, when youth organization variety is removed from our model, we find a significant inverse relation between collective efficacy and violent crime. Our findings simply suggest that collective efficacy does not transmit the influence of neighborhood youth organizations on violent crime rates.

relations between participation in community-based organizations and activities and violence exposure.

Third, dichotomous measures of participation in organized activities obscure differences in the types of activities that youth participate in (e.g., sports versus arts activities) and the intensity and duration of their participation. Recent findings suggest that differences along these dimensions of participation have important implications for youth outcomes (Darling, 2005; Darling, Caldwell, & Smith, 2005; Fredricks & Eccles, 2005, 2006; Gardner, Roth, & Brooks-Gunn, 2008; Mahoney, Harris, & Eccles, 2006; Marsh & Kleitman, 2002). Although limitations of the PHDCN data and the scope of the analyses prevented this kind of nuanced investigation in the present study, this is an important direction for future research.

Finally, it is important to point out that our findings cannot be used to draw definitive conclusions about causality. At the individual level, we controlled for a variety of youth and family risk factors for violence exposure, but it is never possible to completely eliminate selection bias in non-experimental research. That is, statistical methods cannot completely correct for the fact that families of youth who are at greater, versus lesser, risk for violence exposure (e.g., disadvantaged families) may be less likely to take up residence in resource rich neighborhoods that offer a wide variety of youth organizations. Additionally, at the neighborhood level, high rates of violent crime may deter the establishment of neighborhood youth organizations, rather than the reverse. Studies using longitudinal data to document relations between changes in neighborhood conditions over time are needed to make a stronger case for the direction of the association between these neighborhood-level variables.

In spite of these limitations, our findings highlight an important new direction for research on the protective role that neighborhood youth organizations play in the lives of urban adolescents. Conventional wisdom assumes that the benefits of youth organizations are limited to those who participate in them. A large body of literature does indeed suggest that youth who attend organized activities derive a variety of academic, psychosocial, and behavioral benefits from participation (see Feldman & Matjasko, 2005; Mahoney, Larson, & Eccles, 2005). Our findings suggest, however, that the protection against community violence exposure afforded by neighborhood youth organizations may extend to participants and non-participants alike. Neighborhood youth organizations may deter violent crime and, thereby, limit opportunities for violence exposure among all neighborhood youth. More research is needed to replicate and explain these findings, but our results provide preliminary evidence that youth organizations play an important role in shaping the neighborhood conditions that impact urban adolescents' safety and well-being.

Acknowledgments

This research was generously supported by a grant from the National Institute of Child Health and Human Development (Grant #R01 HD049796). The authors also thank Holly Foster for her comments on the preliminary analyses for this paper, Christopher Browning for his comments on the preliminary analyses for this paper and his work on our collective efficacy variable, and Yange Xue for her work on our neighborhood violent crime variable.

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Table 1

Descriptive Statistics for all Youth- and Neighborhood-Level Variables

Variables	Descriptive statistics		Frequencies	
	M	SD	%	N
Individual-level variables				
<i>Key variables</i>				
W2 Community violence exposure (natural log)	0.41	0.35	–	–
W2 Participation in organized community activities				
Yes	–	–	62.5	747
No	–	–	36.9	441
<i>Control variables</i>				
Gender				
Male	–	–	48.7	583
Female	–	–	51.3	613
Cohort				
15	–	–	44.7	535
12	–	–	55.3	661
Ethnicity				
Black	–	–	36.8	440
Latino	–	–	47.7	571
White	–	–	15.5	185
Family structure				
Biological intact	–	–	45.2	540
Other family types	–	–	54.2	648
Maternal education	2.76	1.35	–	–
Household income	4.18	1.88	–	–
Family size	5.28	2.00	–	–
W1 delinquency	0.10	0.14	–	–
Neighborhood-level variables				
<i>Key variables</i>				
Violent crime rates (natural log)	8.62	0.67	–	–
Variety of neighborhood youth organizations	1.41	0.65	–	–
Collective efficacy (standardized score)	0.01	1.03	–	–
<i>Control variables</i>				
Concentrated poverty (factor score)	0.03	1.01	–	–

Note. W = wave.

Table 2

Predicting Youths' Community Violence Exposure as a Function of Neighborhood Youth Organization Variety

Predictors	Model 1	Model 2	Model 3
	γ (se)	γ (se)	γ (se)
<i>Individual Level</i>			
Male	0.097 (0.019)***	0.099 (0.019)***	0.097 (0.018)*
Cohort 15	0.044 (0.020)*	0.042 (0.020)*	0.044 (0.020)*
Black	0.172 (0.031)***	0.166 (0.031)***	0.115 (0.032)**
Hispanic	0.070 (0.030)*	0.063 (0.030)*	0.048 (0.029)
Intact family	0.002 (0.022)	0.001 (0.022)	0.003 (0.022)
Maternal education	-0.001 (0.009)	-0.001 (0.008)	0.002 (0.008)
Household income	-0.015 (0.006)*	-0.016 (0.006)**	-0.009 (0.006)
Family size	0.006 (0.005)	0.005 (0.005)	0.002 (0.005)
Wave 1 delinquency	0.977 (0.070)***	0.976 (0.070)***	0.971 (0.069)***
<i>Neighborhood Level</i>			
Intercept	0.421 (0.011)***	0.417 (0.010)***	0.423 (0.010)***
Youth organization variety	-	-0.038 (0.018)*	-0.041 (0.016)*
Concentrated poverty	-	-	0.061 (0.013)**
σ^2	0.089	0.089	0.089
τ	0.003*	0.002	0.000

Note. Each column is a separate multilevel linear model that predicts youths' exposure to community violence. - = not tested.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

Pathways Linking Neighborhood Youth Organization Variety, Youths' Participation in Community-Based Activities, and Youths' Exposure to Community Violence

Predictors	Model 1: Predicting participation in community activities	Model 2: Predicting exposure to community violence
	γ (se)	γ (se)
<i>Individual Level</i>		
Male	0.341 (0.134)*	0.096 (0.019)***
Cohort 15	-0.401 (0.141)**	0.046 (0.020)*
Black	-0.199 (0.239)	0.112 (0.032)**
Hispanic	-0.342 (0.216)	0.048 (0.029)
Intact family	0.067 (0.156)	0.005 (0.022)
Maternal education	0.282 (0.061)***	-0.001 (0.009)
Household income	0.032 (0.044)	-0.009 (0.006)
Family size	0.010 (0.036)	0.002 (0.005)
Wave 1 delinquency	0.465 (0.510)	0.964 (0.070)***
Participation in community activities	-	0.037 (0.020)
<i>Neighborhood Level</i>		
Intercept	0.639 (0.071)***	0.423 (0.010)***
Youth organization variety	0.245 (0.121)*	-0.045 (0.016)**
Concentrated poverty	0.182 (0.097)	0.061 (0.013)***
σ^2	4.333 ^I	0.089
τ	0.010	0.000

^IThe σ^2 estimate derived from Model 1 is based on a logistic model and is calculated differently than σ^2 estimates derived from linear models.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Note. Each column is a separate multilevel model that predicts the dependent variable specified by the column header. Model 1 is a logistic multilevel model. Model 2 is a linear multilevel model. - = not tested.

Table 4

Predicting Youths' Exposure to Community Violence as a Function of Violent Crime Rates

Predictors	γ (se)
<i>Individual Level</i>	
Male	0.094 (0.018)***
Cohort 15	0.045 (0.020)*
Black	0.108 (0.034)**
Hispanic	0.051 (0.030)
Intact family	0.001 (0.022)
Maternal education	-0.001 (0.008)
Household income	-0.010 (0.006)
Family size	0.004 (0.005)
Wave 1 delinquency	0.978 (0.069)***
<i>Neighborhood Level</i>	
Intercept	0.422 (0.010)***
Violent crime rates	0.090 (0.020)***
σ^2	0.089
τ	0.001

* $p < .05$.** $p < .01$.*** $p < .001$.

Table 5

Pathways Linking Neighborhood Youth Organization Variety, Collective Efficacy, and Violent Crime Rates

<i>Predictors</i>	<i>Model 1: Predicting violent crime</i>	<i>Model 2: Predicting collective efficacy</i>	<i>Model 3: Predicting violent crime rates</i>
	β (se)	β (se)	β (se)
Intercept	8.680 (0.039)***	0.001 (0.067)	8.680 (0.039)***
Youth organization variety	-0.174 (0.057)**	0.225 (0.096)*	-0.158 (0.057)**
Concentrated poverty	0.442 (0.040)***	-0.341 (0.067)***	0.418 (0.042)***
Collective efficacy	-	-	-0.069 (0.042)
R ²	0.411	0.141	0.419

Note. Each column is a separate linear model that predicts the dependent variable specified by the column header. – = not tested.

*
p<.05.

**
p<.01.

p<.001.