Title: Exploring the Role of Community Assets in Youth Violence

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Abstract

Violence involvement during adolescence can place youth at risk for poor health and social outcomes. Researchers have examined potential factors that contribute to youth violence in an attempt to gain a greater understanding of how to prevent or intervene. From a developmental-ecological perspective, individual development is influenced by the multiple settings (e.g., family, school, and neighborhood) in which the adolescent lives (Bronfenbrenner, 1979). Applying this to youth violence, risk and protective factors for violence can be present within the family, peer network, schools and communities. Risk factors are conditions associated with a higher likelihood of negative outcomes (Kazdin et al, 1997), whereas promotive factors (i.e., individual assets and contextual resources) operate to enhance healthy development (Fergus & Zimmerman, 2005). Neighborhood disadvantage may be a risk factor for youth violence, while presence of youth serving organizations may support healthy development. Using individual-level data from the Flint Adolescent Study, and community-level data from the U.S. Census and InfoUSA, we sought to determine the effect of neighborhood disadvantage and availability of organizational resources on violent behavior in a sample of urban youth (N = 727; M^{Age} = 15.9; 81.4% African American; 51.3% female). We combined these data into a spatial regression model that controls for spatial dependencies. After controlling for individual demographics, and individual-level risk and promotive factors, we tested the effect of neighborhood disadvantage and density of school and youth serving organizations near the home address in modifying the relationship of the contextual variables with youth violent behavior. Neighborhood disadvantage was associated with higher levels of violence. Among the six organization variables tested (churches, youth organizations, higher education organizations, parks, other learning organizations, schools), number of youth organizations and schools within ¼ mile of the home were associated with less violent behavior. Number of youth organizations and schools within ¼ mile of the home modified this association indicating that greater proximity to these organizations increased the association between neighborhood disadvantage and violence. That is, for youth in neighborhoods with higher disadvantage, higher concentrations of schools and youth organizations were associated with more violence. Our results suggest that, in disadvantaged areas, schools and youth organizations may offer positive opportunities and resources for youth; yet, places youth congregate may also be associated with aggressive and violent behavior. The present analyses do not account for organizational characteristics (e.g., size of organization, accessibility). We are currently exploring whether organizational characteristics influence the relationship between organizational resources and youth violence. Our analysis was based on home residence only; place-based risks and assets in locations where youth spend time should also be considered.

Exploring the Role of Community Assets in Youth Violence

Researchers have examined potential factors that contribute to youth violence in an attempt to gain a greater understanding of how to prevent or intervene. From a developmental-ecological perspective, individual development is influenced by the multiple settings (e.g., family, school, and neighborhood) in which the adolescent lives (Urie Bronfenbrenner & Urie, 1979). Applying this to youth violence, risk and protective for violence can be present at the individual level (M. Resnick, Ireland, & Borowsky, 2004), but also may be present within the family, peer network, schools and neighborhoods (Brookmeyer, Fanti, & Henrich, 2006; Gorman-Smith, Henry, & Tolan, 2004). Risk factors are conditions associated with a higher likelihood of negative outcomes (Kazdin, Kraemer, Kessler, Kupfer, & Offord, 1997), whereas promotive factors (i.e., individual assets and contextual resources) operate to enhance healthy development (Fergus & Zimmerman, 2005). Common risk factors include attention and learning problems, witnessing violence, family aggression, attitudes that are favorable to the use of violence to solve problems, and associating with peers who are involved in delinquency, violence and crime (Bolland, 2003; Cedeno, Elias, Kelly, & Chu, 2010; Farrell et al., 2010; M. Resnick et al., 2004; Youngblade et al., 2007). Whereas, prosocial skills, supportive relationship with parents, connections to school, and involvement with prosocial peers have been identified as protective – contributing to a reduced likelihood of participation in violence. Yet simply exploring intrapersonal and interpersonal factors will not allow for a comprehensive understanding of this public health issue; investigating community-level, or neighborhood-level, factors is critical as well. The purpose of the present study is to examine the influence of potential community-level risk and promotive factors on youth violent behavior above and beyond individual level risk and promotive factors.

Youth violence is a significant social issue. In 2015, 22.6% of high school students nationwide reported having been in a physical fight in the past year and 16% reported carrying a weapon in the past 30 days (CDC, 2016). For some adolescents, violent behaviors progress from physical fighting during early adolescence to more lethal forms, such as violence with a weapon, during later adolescence (Dahlberg & Potter, 2001). Violence during adolescence is a potent risk factor for ongoing violence in young adulthood (Borowsky, Widome, & Resnick, 2008; Dahlberg & Potter, 2001; Herrenkohl et al., 2000). Members of specific demographic groups, especially males and African Americans, are at particular risk for involvement in serious forms of violence and related negative sequelae (e.g., homicide, incarceration) (CDC, 2012; Herrenkohl et al., 2000). Homicide is the leading cause of death among African American youth (CDC, 2016). In 2014, the youth homicide rate was 6 times higher among males than females and the homicide rate among African American youth age 10 to 24 are 3 to 14 times higher than rates for other groups of youth (CDC, 2016). Males experience greater levels and more serious forms of violence than females (Loeber & Stouthamer-Loeber, 1998). Yet, rates of violence and delinquency are increasing among females (Zahn et al., n.d.)(Zahn et al, 2008). In addition, females may participate in less physical but more relational aggression than males (Crick & Grotpeter, 1995).

Conceptual Underpinnings

The current study was grounded in theories that suggest that where an adolescent lives, and factors within their social context, may play a role in the violence involvement (i.e., socio-ecological theory and social disorganization theory; (U. Bronfenbrenner, 1977; Sampson & Raudenbush, 1997), as well as a theory related to positive assets and resilience (i.e., resiliency theory; (Fergus & Zimmerman, 2005). S*ocial ecological* theory (U. Bronfenbrenner, 1977) and

social (dis)organization (Sampson & Morenoff, 1997) theory focus on the influences of social and structural factors and highlight the interdependence of contexts and the people who live there. *Social ecological theory* focuses on environmental influences centered on individual development and posits that individual development is influenced by the social settings in which the adolescent lives, and emphasizes the need to examine how these multiple contexts influence individual development (i.e., family, school, neighborhood, larger society; (Urie Bronfenbrenner & Urie, 1979). Aspects of the physical and social environment play an important role in adolescent development and influences behavior choices that can affect their health and well-being. Social factors such as income, education, race/ethnicity, and living conditions may influence the availability of social support and community resources, which may interfere with the ability to support youth in their families and communities (McLoyd, 1998; Pinderhughes, Nix, Foster, Jones, & The Conduct Problems Prevention Research Group, 2007).

Social (dis)organization theory focuses on neighborhood contextual factors associated with social interactions and posits that neighborhoods are of primary importance because they can support or hinder the formation of neighborhood social controls (Sampson & Morenoff, 1997; Sampson & Groves, 1989). Neighborhood context may have positive or negative influences on youth development through both structural characteristics (i.e., neighborhood SES, residential instability) and social processes (i.e., social organizational aspects of neighborhoods such institutional resources) (Leventhal & Brooks-Gunn, 2000; Sampson & Raudenbush, 1997). While the consequence of a less supportive and nurturing community may be increase youth violence and delinquency, factors such as community resource/community assets may have the opposite effect by creating more cohesive and socially organized communities. Together, these

theoretical perspectives suggest that where an adolescent lives, and factors within their social context, may play a role in their violence involvement.

R*esiliency* theory posits that a variety of factors in childhood and adolescence influence the likelihood of an individual's participation in behaviors that can either positively or negatively affect their health and well-being (Fergus & Zimmerman, 2005). Risk factors (e.g., exposure to community violence) are conditions associated with a higher likelihood of negative outcomes (Kazdin et al., 1997), whereas promotive factors (i.e., individual assets and contextual resources) operate to enhance healthy development (Fergus & Zimmerman, 2005). Promotive factors can counteract the negative impact of risk through a direct, compensatory route (Fergus & Zimmerman, 2005). As such, individual assets or external resources may directly decrease the likelihood of negative behavior like violence. Research on youth violence includes intrapersonal and interpersonal risk and promotive factors that increase or decrease the likelihood that young people will engage in violence (Borowsky et al., 2008; Brookmeyer et al., 2006; Flannery, Wester, & Singer, 2004; Gorman-Smith et al., 2004; Resnick, Bearman, Blum, et al., 1997; Resnick et al., 2004; Sampson & Raudenbush, 1997; Valois, MacDonald L., Fischer, & Wanzer Drane, 2002). Yet simply exploring intrapersonal and interpersonal factors will not allow for a comprehensive understanding of this public health issue. Investigating community-level, or neighborhood-level, factors within a resilience framework is critical to advance our understanding of youth violence.

Neighborhood Disadvantage and Violence

Researchers have reported a strong link between poverty and violence, with violence being more prevalent within poor neighborhoods, regardless of race or ethnic makeup of the neighborhood (Kroneman, Loeber, & Hipwell, 2004; Valois et al., 2002). Both males and

females living in disadvantaged neighborhoods are exposed to a greater number of risk factors, including exposure to family and community violence, than their peers in more advantaged neighborhoods. Youth living within disadvantaged neighborhoods may also experience fewer opportunities for positive relationships and pro-social role models (Brooks-Gunn et al., 1997). Due to numerous factors, youth living in poverty are at increased risk for involvement in violence.

Neighborhood Assets/Resources and Violence

The availability of youth serving organizations (resources) within a community contributes to the prevention of violence among youth (Molnar, Cerda, Roberts, & Buka, 2008; Sampson & Raudenbush, 1997). Gardner & Brooks-Gunn (2011) found that the presence of a variety of youth organizations in a neighborhood was negatively correlated with both youths' exposure to community violence and the amount of violent crime in the neighborhood. Similarly, using a 14 item scale that assessed the presence of local resources such as parks, youth centers, after-school programs, and mentoring and counseling services, Molnar and colleagues (2008)(Molnar et al., 2008) found that a higher concentration of organizations was associated with lower odds of aggression among the youth participants. Yet, Zimmerman, Welsh, and Posick, (2014)(Zimmerman, Welsh, & Posick, 2014) found that the odds of engaging in violent behavior were unaffected by the availability of neighborhood youth organizations but that the presence of neighborhood youth organizations attenuates the relationship between low self-control and violent crime.

Yet, it may not just be the presence of community organizations, but also the utilization. Researchers have linked adolescents' utilization of community resources with less violent behavior. For youth living in urban at-risk communities, utilization of community resources,

such as after-school programs, may help youth avoid times and locations of peak violence (e.g., after school in public locations; (Richards et al., 2015). More time spent engaged in afterschool activities reduced the likelihood of youth aggression and delinquency among youth not exposed to violence (Jain & Cohen, 2013). In addition, Jain & Cohen found that meaningful participation in school and after-school activities modified the association between youth exposure to violence and later aggression and delinquency. Additionally, youth who attended church more often were less likely to report involvement with recent violent behavior (and less weapons involvement) (Clubb et al., 2001).

Although research is limited, the presence and utilization of community resources appears to have positive effects on youth violence involvement. This demonstrates the importance of accessible resources within a community in helping deter youth violence. Yet, the majority of previous work has established the presence and availability of services and organizations based on adult residents' self-report (Gardner & Brooks-gunn, 2011; Molnar et al., 2008; Zimmerman et al., 2014). While this approach has its merits, we posit that an objective measure of these assets, specifically databases and location data, will better identify the concentration of resources that are accessible to study participants, expanding upon prior literature.

Purpose

Drawing from resiliency, socio-ecological, and social (dis)organization theories, the purpose of this study was to examine the influence of place on violent behavior during adolescence within a resiliency framework. More specifically, we examined the effect of place-based risk factors and neighborhood assets on violent behavior on a sample of 10th grade urban youth. In a previous study we examined the effects of individual-level cumulative risk and

cumulative promotive factors on violent behavior (Stoddard, Zimmerman, & Bauermeister, 2012). The present study advances this work by examining the effect of neighborhood-level characteristics, both risks and resources, on violent behavior.

Method

Overview of Study. This study uses data collected by the Flint Adolescent Study, a longitudinal study of youth from mid-adolescence through adulthood (1995 – 2011). Data were collected from 850 adolescents at risk for high school dropout at the beginning in 9th grade in four public high schools. Participants were surveyed annually through 12th grade, and then annually from approximately age 20-24, and again annually from age 28-32. The initial sample was 80% African American and 50% male. To be eligible for the study, participants had a grade point of 3.0 or lower at the end of the 8th grade, were not diagnosed by the school as having emotional or developmental impairments, and self-identified as African American, White, or Bi-racial (African American and White). A threshold for grade point average (3.0 or lower) was selected to include those students most at risk for leaving school before graduation. This cross-sectional study focused on data collected when participants were in 10th grade (M^{age} = 15.88, SD = .63).

Individual-level variables

Violent Behavior. Four items were used to assess how often participants engaged in violent behaviors during the preceding 12 months (e.g., *hurt someone badly enough to need bandages or a doctor;* 1=*0 times* to 5=*4 or more times; α = .63-.76).* Response options ranged from 1 (*0 times)* to 5 (*4 or more times).* These four items were averaged to create the outcome variable. Higher scores indicated more violent behavior.

Risk and promotive composite indices. Promotive and risk factor indices include individual characteristics and peer and parental/familial influences previously identified in the adolescent violence literature (Borowsky et al., 2008; Henrich, Brookmeyer, & Shahar, 2005; Herrenkohl et al., 2000; M. D. Resnick, Bearman, & Blum, 1997; M. Resnick et al., 2004; Sampson & Raudenbush, 1997; Valois et al., 2002). Promotive factors included: self-acceptance, positive attitude about school, school relevance, future expectations, friends' support, friends' positive influences, friends' participation in positive activities, parent support, and family participation in recreational or fun events. Risk factors included: approval of violence, observed violence, victimization, hopelessness about the future, non-violent delinquency, weapon carrying, friends' negative influence, friends' aggressive or delinquent behaviors, friends who are suspended from school, weapon carrying by resident adults, and weapon carrying by non-family adults. Composite indices for risk and promotive factors were created by summing the selected variables; for a more detailed description, see Stoddard et al, 2012. The range for the cumulative promotive factor is 0 to 18, and the range for the cumulative risk factors is 0 to 22.

Demographic characteristics. In 9th grade, participants reported their birth month and year. We computed their age by subtracting the date of the interview from the birth month and year. Participants also reported their sex (male = 1, female = 0). Participants self-reported their race as Black/African American, White/Caucasian, or Mixed (African-American and White).

Neighborhood-level Variables

Neighborhood Assets/Resources. The presence of positive neighborhood assets/resources were identified through InfoUSA, a database of businesses that includes both for-profit and non-profit organizations. We identified the following organizational categories: churches, youth organizations (boys and girls clubs, sports clubs, etc), higher education organizations, parks,

other learning organizations (tutoring centers, etc), and schools. Each business was geo-coded (i.e., latitude and longitude) using available online geocoding software. Participants' home address was also geo-coded. Using the geocodes for the organizations and participants' home address, variables capturing the number of organizations within a ¼ mile were created for each category of community asset (i.e., youth organizations, churches, schools). We chose the ¼ mile radius to represent a "walkably close" area, as justified in Goldstick et al, 2016(Goldstick et al., 2016). A smaller score would indicate closer proximity to an organization; or closer proximity to ten organizations.

Neighborhood Disadvantage. A concentrated disadvantage index [or neighborhood disadvantage] which included percent below poverty line, percent female-headed households, percent of individuals over 16 years old who are unemployed, percent population under age 16; and percent African American. These measures were obtained from the 2000 US Census at the block group level. To obtain a parsimonious measure of concentrated disadvantage, we combine these measures using the factor analysis shown in Sampson et al (1997) and averaging the measures, weighted by their factor loadings, as suggested in that same paper.

Data Analyses

Descriptive statistics and correlations for the full sample are reported in Table 1.

We addressed the central research question by using linear regression, augmented with a non-parametrically estimated thin-plate spline function of the spatial coordinates used to remove any residual spatial autocorrelation from the data, thereby providing the independent errors required for proper statistical inference. This approach is analogous to that used in Goldstick et al, 2016(Goldstick et al., 2016). For this model, spatial location was represented by the Universal

Transverse Mercator (UTM) coordinates, which are localized projection of the spherical coordinates (lat/long) to two dimensions where distances between points are represented by the Euclidean distance between the coordinates. Our study site is located in UTM zone 17.

We used a hierarchical approach to examine the effects of community assets and negative neighborhood characteristics. We began with an individual-level model analogous to that of Stoddard et al, 2012, including basic demographics (age, gender, race), the composite scores for risk and promotive scores, and their interaction. In the second stage, we added the neighborhood disadvantage score described above. In the third stage, we added each of the six measures capturing density of community-level assets near the individuals' homes. Due to concerns about collinearity among these measures, they were entered and tested one at a time. In the final stage, for full community-level analogy with the baseline model, we tested the interaction between the measures of community-level assets and the neighborhood disadvantage score. Similarly to the previous stage, each interaction was tested one at a time.

Results

Results for each model of violent behavior are shown in Table 3. Model 1 examined the protective effect of individual-level cumulative risk factors, individual level promotive factors, the risk by promotive interaction term and individual-level demographics (gender, race, and age) on violent behavior. This is the model presented in Stoddard et al. 2012 (Stoddard et al., 2012)and a full description is available there.

Model 2 examined the effect of neighborhood disadvantage on violent behavior after accounting (or adjusting) for individual-level risk factors, individual-level promotive factors, the risk by promotive interaction term and individual-level demographics (gender, race, and age). Higher neighborhood risk was associated with more violent behavior ($b = 0.18$, $p < .05$).

Model 3 tested the compensatory or direct effects of neighborhood assets by examining the main effect of each asset after accounting for the individual-level variables and neighborhood disadvantage. Among the six organization variables tested (churches, youth organizations, higher education organizations, parks, other learning organizations, schools), number of youth organizations and schools within ¼ mile of the home were associated with violent behavior ($b = .27$, $p < .05$, $b = 0.05$, $p < .05$, respectively).

Model 4 tested the protective effect of the neighborhood assets by examining the neighborhood disadvantage by neighborhood asset interaction terms after accounting for the individual level variables, neighborhood disadvantage, and neighborhood asset. A separate interaction term was recreated for each asset; each asset/interaction term was modeled one at a time. Number of youth organizations and schools within ¼ mile of the home modified this association indicating that greater proximity to these organizations increased the association between neighborhood disadvantage and violence ($b = .66$, $p < .05$; $b = .10$, $p < .05$, respectively). The graphs (Figures 1 and 2) depict the relationship between neighborhood disadvantage and neighborhood assets. In areas with lower levels of disadvantage, schools (1) and youth orgs (2) are not significant but in more disadvantaged areas, they are actually risk factors.

Discussion

The current results do not support our hypothesis that organizational resources are protective against youth violence. In fact, we found that greater proximity to schools and youth organizations were risk factors for youth violence for youth living in more disadvantaged neighborhoods. Several factors may contribute to our findings. First, places youth congregate, such as schools and youth organizations, may be associated with aggressive and violent

behavior. Second, due to the cross-sectional nature of our study, our findings only provide insight into the association between proximity to organizational resources and youth violence at a single point in time, and we do not know if changes in proximity to organizational resources in a neighborhood are related to changes in levels of youth violence. For example, does adding additional organizations lead to decreases in youth violence? Third, the present analyses do not account for organizational characteristics (e.g., size of organization, accessibility). Accessibility, both in terms of youth feeling welcome and engaged, and issues such as potential financial barriers, may also influence youth's participation in organizations. Future research should explore whether organizational characteristics influence the relationship between organizational resources and youth violence. In addition, we do not know if participants use organizational resources. Finally, our analysis was based on home residence only; place-based risks and assets in locations where youth spend time should also be considered. Future research should explore place-based risks and assets in locations where youth spend time.

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Table 1. Correlations, means, and standard deviations of study variables (n = 850)

Variables	1	2	3	4	5	6	7	8	9	10
1. Violent behavior	1.00									
2. Cumulative risk factors (individual level)	**.65***	1.00								
3. Cumulative promotive factors (individual level)	**-.15***	**.39***	1.00							
4. Neighborhood disadvantage	**.12***	**.09***	**.04***	1.00						
5. Churches	**.09***	.05	.02	**.31***	1.00					
6. Youth organizations	**.07***	.03	-.03	.01	.05	1.00				
7. Higher education organizations	-.02	-.02	.02	-.03	**.09***	.05	1.00			
8. Parks	.04	-.01	.06	**.11***	**.24***	-.03	-.04	1.00		
9. Other learning organizations	.02	.04	-.01	-.03	**.08***	-.04	**.14***	.05	1.00	
10. Schools	.06	-.004	.01	-.06	-.01	**.09***	-.02	.03	**.13***	1.00
M	**1.51**	**10.65**	**9.62**	**1.54**	**2.46**	**.03**	**.07**	**.04**	**.08**	**.53**
SD	**.71**	**3.12**	**3.32**	**.37**	**2.22**	**.17**	**.30**	**.21**	**.26**	**.87**

Table 2. Spatial Regression Model

Variable	Model 1 Individual-Level Model	Model 2 Risk Model	Model 3 Promotive Model
Intercept	-2.26 (0.64)***	-2.57 (0.66)***	(not shown)
Gender (ref=Male)	-0.11 (0.04)**	-0.11 (0.04)**	(not shown)
Race (ref=Black)			
Race=White	0.04 (0.06)	0.10 (0.07)	(not shown)
Race=Mixed race	-0.07 (0.11)	-0.05 (0.11)	(not shown)
Age	0.04 (0.03)	0.04 (0.03)	(not shown)
Risk Factors	0.29 (0.04) ***	0.30 (0.04)***	(not shown)
Promotive Factors	0.09 (0.04) *	0.09 (0.04)*	(not shown)
Risk x Promo	-0.01 (0.00)*	-0.01 (0.00)**	(not shown)
Neighborhood disadvantage		0.18 (0.07)*	(not shown)
School ¼ mile			0.05 (0.02)*
Youth Organizations ¼ mile			0.27 (0.12)*
Churches ¼ mile			0.01 (0.01)
Higher Education Centers ¼ mile			-0.00 (0.01)
Other Learning Centers ¼ mile			0.01 (0.08)
Parks ¼ mile			0.17 (0.09)

Note: Due to collinearity considerations, the organizational variables in model 3 were tested one at a time. Each of the variables in model 2 were controlled for in those models but, for brevity, the corresponding estimates are not known. The omitted estimates are qualitatively very similar to those shown in Model 2, with an average change in the coefficient estimate of less than 4%. For other learning center p = .06.

Table 3. Spatial regression results for Model 4/Protective Model

Variable	Model 4 Protective Model
School ¼ mile	-0.09 (0.07)
Neighborhood disadvantage	0.14 (0.08)
School x disadvantage interaction	**0.10 (0.05)***
Youth Organizations ¼ mile	-0.71 (0.43)
Neighborhood disadvantage	**0.17 (0.07)***
Youth organization x disadvantage interaction	**0.66 (0.28)***
Churches ¼ mile	0.05 (0.04)
Neighborhood disadvantage	0.20 (0.09)
Church x disadvantage interaction	-0.02 (0.03)
Higher Education Centers ¼ mile	-0.19 (0.20)
Neighborhood disadvantage	**0.17 (0.08)***
Higher education x disadvantage interaction	0.14 (0.15)
Other Learning Centers ¼ mile	0.00 (0.26)
Neighborhood disadvantage	**0.18 (0.08)***
Other Learning Centers x disadvantage interaction	0.00 (0.17)
Parks ¼ mile	-0.23 (2.25)
Neighborhood disadvantage	**0.17 (0.07)***
Parks x disadvantage interaction	0.23 (1.28)

Note: Each of the variables in model 2 were controlled for in those models but, for brevity, the corresponding estimates are not displayed. Due to collinearity considerations, the organizational variables and their interaction with neighborhood disadvantage in model 4 were tested one at a time. The omitted estimates are qualitatively very similar to those shown in Model 2, with an average change in the coefficient estimate of less than 4%.

Figures. Risk-Protective Model (Model 4) results for school and youth organizations.

Figure 1. Risk-Protective model for schools

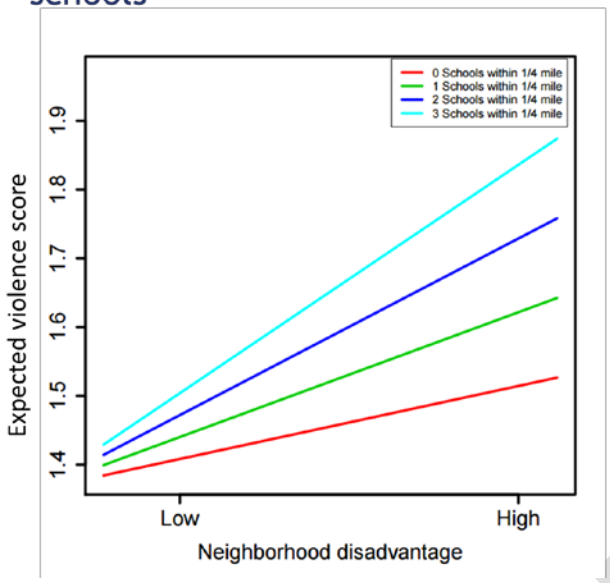

Figure 2. Risk-Protective model for youth organizations