The Multiple Contexts of Socialization:

Neighborhood and School Effects on Urban Adolescent Violence [*]

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Abstract

Although neighborhood economic structure is a robust predictor of both neighborhood violence rates and individual self-reports of violence among resident youth, the mechanisms accounting for this link remain elusive. We argue that the literature examining neighborhood context effects on violence has largely omitted a key socialization context—the school. In this research, we address this gap using a unique data set that links subject information from the Project on Human Development in Chicago Neighborhoods with demographic and survey data from the Chicago Public Schools subjects attended. We employ multilevel latent-trait models to investigate the respective contributions of individual, family, neighborhood, and school factors to violence perpetration for a sample of youth ages 8 to 17. Results indicate that school economic structure explains a substantial proportion of the association between neighborhood economic context and individual-level violent behavior. In turn, measures of school social climate (teacher collective responsibility and the prevalence of disciplinary problems) partially account for the link between school economic structure and violence. School factors also explain a substantial proportion of the African American-White disparity in violence. These findings point to the importance of simultaneously considering multiple developmentally relevant contexts in explaining adolescent well-being.

Why are youth who live in poor neighborhoods more likely to exhibit behavior problems? This question—and its implicit identification of "neighborhood" as a key source of both variability and explanatory significance—has its roots in the sociological discipline's emergence. Shaw and McKay's (1969) early efforts to explain variation in delinquency and crime directed attention away from the characteristics of spatially clustered poor families to the structural aspects of the urban neighborhood contexts in which they lived. The macro-level framing of their classic "social disorganization" model and its emphasis on the criminogenic effects of neighborhood economic disadvantage, residential instability, and ethnic/racial heterogeneity set in motion decades of elaboration and testing intended to flesh out the structural determinants of intra-urban variability in crime (Bursik 1988).

More recently, in tandem with significant theoretical and methodological advancements, investigation of "neighborhood effects" on youth development has expanded rapidly (Duncan and Raudenbush 1999; Sampson, Morenoff, and Gannon-Rowley 2002). Contemporary urban theorists (Sampson, Raudenbush, and Earls 1997; Wilson 1987, 1996) have articulated more conceptually refined models of the process by which residential neighborhoods influence youth outcomes. Notably, Sampson and colleagues have reformulated the social disorganization model of neighborhood structural effects on crime to emphasize the role of *collective efficacy*—or the community-level capacity to mobilize on behalf of the public good—as the key process linking neighborhood structure to behavioral outcomes, particularly violence (Sampson, Raudenbush, and Earls 1997).

The shift in emphasis from the structural origins of neighborhood effects to the intervening social processes through which neighborhoods influence key outcomes has followed mounting evidence supporting the basic structural claims of the social disorganization perspective. Indeed,

the now extensive literature examining neighborhood structural influences on violent behavior has established a consistent association between neighborhood economic structure (and to a lesser extent residential instability) and indicators of violence (Sampson, Raudenbush, and Earls 1997; Baumer et al. 2003). Recent multilevel efforts to examine the relationship between neighborhood structure and individual-level violence perpetration have also offered evidence of an association between economic disadvantage and violence (Stewart, Simons, and Conger 2002; Haynie, Silver, and Teasdale 2006; Sampson, Morenoff, and Raudenbush 2005; Peeples and Loeber 1994). In response, researchers have focused increasing attention on the possible explanatory mechanisms linking neighborhood structural factors to violent behavior.

The collective efficacy approach has been among the more popular models for understanding the pathway between neighborhood structure and behavioral outcomes, with an increasingly wide range of studies investigating the mediating roles of community social capital and mobilization capacity in regulating the prevalence of violence (Sampson, Morenoff, and Raudenbush 2005; Sampson and Wikström 2008; Mazerolle, Wickes, and McBroom 2010). Although macro-level investigations have yielded evidence of the mediating effect of collective efficacy in the link between structure and violent crime rates (Sampson, Raudenbush, and Earls 1997; Morenoff, Sampson, and Raudenbush 2001; Sampson and Wikström 2008; Mazerolle, Wickes, and McBroom 2010), the model has been less successful in capturing the mechanisms by which neighborhood structure affects *individual-level* violence perpetration. Specifically, tests of the collective efficacy approach have offered limited evidence of its salience for explaining community socioeconomic status effects on violence among neighborhood-resident youth (Sampson, Morenoff, and Raudenbush 2005; see also De Coster, Heimer, and Wittrock 2006).

These findings leave open the question of why residential neighborhood structural disadvantage predicts the individual-level violent behavior of urban youth.

In what follows, we draw on recent developments in "activity space" approaches to contextual exposures and the relatively neglected institutional component of extant neighborhood theory (Leventhal and Brooks-Gunn 2000; Sampson, Morenoff, and Gannon-Rowley 2002; Kwan et al. 2009) in an effort to explain neighborhood structural effects on individual violent behavior. Specifically, we argue that the overwhelming emphasis of contemporary neighborhood research on *residential* neighborhood contexts has artificially limited the range of social, spatial, and institutional contexts that may be relevant in explaining variation in adolescent behavior. We focus specifically on the school environment, both as a uniquely significant context for understanding youth violence and as a potential explanation of as-yet poorly understood neighborhood structural influences on this outcome. We employ data on urban youth from the Project on Human Development in Chicago Neighborhoods matched to administrative and survey data on Chicago Public Schools to disentangle the effects of neighborhood and school environments.

COLLECTIVE EFFICACY AND NEIGHBORHOOD SOCIAL PROCESS-BASED THEORIES OF MEDIATION

As initially conceived, social disorganization theory (Shaw and McKay 1969) highlighted the impact of neighborhood-level structural disadvantage – as indexed by economic disadvantage, residential instability, and ethnic heterogeneity –on the capacity of communities to act on shared goals. Shaw and McKay offered extensive empirical support for the claims of social disorganization theory—particularly the effects of key structural factors in influencing crime

rates, independent of the racial and ethnic composition of neighborhoods. Nevertheless, the perspective was criticized for imprecision in the articulation and operationalization of the concept of disorganization, as distinct from the outcome it was intended to explain (Bursik and Grasmick 1993; Bursik 1988).

An important advance on the original social disorganization perspective has been offered by Sampson and colleagues (e.g., Sampson, Raudenbush, and Earls 1997; Sampson and Wilson 1995) who argue that the three key components of neighborhood structural disadvantage combine to limit resources to sustain local social ties and foster participation in, and proliferation of, local voluntary organizations. These dimensions of social capital are associated with the capacity of communities to mobilize on behalf of shared objectives. The concept of *collective efficacy*--or the level of mutual trust, solidarity, and expectations for pro-social action—captures this shared capacity. With respect to crime, research on collective efficacy has particularly emphasized shared expectations regarding the informal social control of public space within residential neighborhoods (Sampson, Raudenbush, and Earls 1997). Collective efficacy has been demonstrated to follow from the structural factors identified in social disorganization theory (Sampson, Raudenbush, and Earls 1997). In turn, evidence suggests that collective efficacy is powerfully associated with homicide (Morenoff, Sampson, and Raudenbush 2001; Browning, Feinberg, and Dietz 2004) and violent victimization rates (Sampson, Raudenbush, and Earls 1997; Mazerolle, Wickes, and McBroom 2010), and mediates a substantial proportion of the effects of structural indicators on these outcomes (Sampson, Raudenbush, and Earls 1997).

The relative success of the collective efficacy approach in explaining variation in neighborhood-level rates of violence has prompted efforts to extend the model to individual-level patterns of participation in violence (Sampson, Morenoff, and Raudenbush 2005; DeCoster,

Heimer, and Wittrock 2006). As noted, multilevel approaches have demonstrated relatively consistent associations between neighborhood economic structure and self-reported violence (Haynie, Silver, and Teasdale 2006; Sampson, Morenoff, and Raudenbush 2005; Peeples and Loeber 1994), arrest (Kirk 2008; Ludwig, Duncan, and Hirschfield 1998), and conduct disorder (Aneshensel and Sucoff 1996). Moreover, neighborhood structural characteristics appear to partially explain the African American-White disparity in violence perpetration (Sampson, Morenoff, and Raudenbush 2005; Haynie, Silver, and Teasdale 2006) . Multilevel tests of the collective efficacy approach, however, have not yielded evidence that collective efficacy (or broader social capital measures) serves to mediate the effects of neighborhood structure on the violence-perpetration behavior of individual neighborhood-resident youth (Sampson, Morenoff, and Raudenbush 2005; De Coster, Heimer, and Wittrock 2006; Kirk 2008).

The reigning explanation for the apparently distinct influence of collective efficacy on violence by level of analysis has centered on the potential for situational, but not enduring or socialization-based, effects of collective efficacy (Kirk 2009; Sampson 2006). That is, high levels of collective efficacy may lead to more effective regulation of the violent behavior of actors occupying neighborhood public space, but the effects of this regulatory potential may not extend to youths' behavioral orientations beyond the borders of their neighborhoods. High levels of neighborhood collective efficacy, in this view, are effective not because they instill in youth a set of durable normative orientations and an appraisal of consequences that deter violence perpetration outside the neighborhood setting. Rather, collective efficacy exerts influence only because it provides the capacity to manage local criminogenic street-level situations. The regulatory capacity of collective efficacy is thus rooted in the neighborhood context, a context to which resident youth may be variably exposed.

This insight challenges the assumption of equivalent exposure to neighborhood environments among resident youth that underlies the majority of conventional neighborhood effects research. Heavily supervised youth, for instance, may spend substantial amounts of time within the confines of their household (Browning, Leventhal, and Brooks-Gunn 2005; Coley and Hoffman 1996; Furstenberg et al. 1999). Other youth may participate in routine activities such as sports or visiting friends and family that extend beyond the borders of their neighborhoods (Kwan et al. 2009; Osgood and Anderson 2004; Cohen and Felson 1979). This evidence suggests that the seeming inability of neighborhood collective efficacy to explain variation in individual residents' self-reported violence may not be a failure of the construct so much as a misspecification of the force and reach of its expected protective effect. The observed effect of collective efficacy on violent crime *rates* is due to the fact that both phenomena are spatially linked. In contrast, the violent acts of individual residents may or may not occur in the neighborhood; therefore, neighborhood collective efficacy should be most effective in reducing the violence of young residents who are embedded in neighborhood life (and less effective for those who spend considerable time elsewhere).

Indeed, recent research provides evidence that collective efficacy's effects on individual violence become apparent for adolescents whose developmental stage (Browning et al. 2005, 2008; Burrington 2009) and life activities draw them into the local environment. Maimon and Browning (2010), for instance, found that the regulatory effects of collective efficacy on violence perpetration behavior were apparent for those youth who were more involved in unstructured socializing with peers—activities that are more likely to take place in the public space of urban neighborhoods. Moreover, collective efficacy exhibited lagged effects, suggesting that its impact may have socialization consequences that extend beyond the direct

exposure to informal social control processes within the confines of a neighborhood. These findings suggest that the long-term protective effect of collective efficacy on individual-level violence may be contingent on the degree of exposure to neighborhood domains in which informal social control norms are conveyed.

In short, the extent of exposure to residential neighborhood contexts in which levels of collective efficacy are instantiated (and become apparent) are likely to vary significantly across individual youth. More broadly, the conventional approach to neighborhood effects research assumes that neighborhood *geographic* contexts are equivalent to the significant *social* contexts affecting people without assessing where individuals actually spend time while engaged in daily activities (Kwan et al. 2009). Thus, contextual effects analysis requires a more comprehensive assessment of the actual "activity spaces" of urban youth and an acknowledgement of the potential for a broad array of contextual influences beyond those characterizing residential neighborhoods.

SCHOOL AS INSTITUTIONAL MEDIATOR OF THE NEIGHBORHOOD STRUCTURE-ADOLESCENT VIOLENCE LINK

Youth vary in their levels of exposure to their residential neighborhood contexts, rendering knowledge of the spatial location of a child's home residence only a first step in understanding the nature and extent of neighborhood influence. Nevertheless, for the vast majority of urban youth, home address is a critically important determinant of exposure to a potentially vital social context—the school. The geographic location of a youth's residence influences both which school he or she will attend as well as aspects of local schools' structure and social climate. First, students who attend public schools are typically assigned to individual schools on the basis

of residential address, and a student's residential location assures him or her priority in the allocation of available spots in the assigned school. Residential neighborhoods thus feed a substantial proportion of youth in a given "catchment area" or "attendance boundary" to local schools. Some parents select their neighborhood of residence based on characteristics of the local school or opt out of local schools. However, material and social constraints facing many urban parents limit their choices of residential contexts as well as the extent to which they can decouple their geographic context from characteristics of the schools their children attend. Indeed, neighborhood school attendance remains the default model of school choice in a number of large U.S. urban centers (Lauen 2007).

Second, characteristics of neighborhoods have significant implications for the structure and quality of local schools in which resident youth are enrolled. Despite the relative neglect of school context in the work of Shaw and McKay (1969), influential restatements of the social disorganization perspective have acknowledged the implications of neighborhood structural context for the functioning of a variety of socialization institutions, including schools (Bursik and Grasmick 1993; Kornhauser 1978). Kornhauser (1978) argued that economically disadvantaged, residentially unstable, and ethnically heterogeneous neighborhoods are hampered in their capacity to (1) help sustain the resource base of local schools, (2) promote long-term investments of residents in effective school functioning; and (3) avoid within-school conflicts reflecting local ethnic/racial cleavages. In turn, resource strapped, conflict-afflicted schools that lack social connection and normative articulation with local communities are likely to face significant challenges in educating and socializing their student populations. Social capital theorists also highlight the potential association between social organizational features of communities (including intergenerational closure [Coleman 1990]) and school quality. Although

more recent neo-institutionalist approaches incorporate recognition of the wide-ranging extra-local economic and political forces that shape school characteristics, demographic and organizational characteristics of local communities nevertheless remain significant sources of influence on school functioning (Arum 2000).

Extant research demonstrates the extent to which neighborhood and school disadvantage overlap. Gershoff and Aber (2006), for instance, find that residence in an economically disadvantaged neighborhood is associated, on average, with attendance at more economically disadvantaged and lower-quality schools. Crosnoe (2005, 2009) finds that children who reside in poor areas are more likely to attend schools characterized by a higher proportion of low-income students, a concentration of minority students, and lower levels of teacher experience. In turn, the many demands on teachers in economically disadvantaged schools in combination with more limited experience and higher personnel turnover are likely to have important implications for teacher motivation, cohesion, and, ultimately, effective school functioning (Gottfredson and Gottfredson 1985).

To the extent that residential neighborhood characteristics structure school attendance patterns and quality—with consequences for youth development—schools may operate to mediate neighborhood effects on youth outcomes. In the absence of simultaneous consideration of both contexts, the mechanisms linking neighborhood characteristics to adolescent well-being may remain unknown. As noted, however, a school's disadvantage is unlikely to straightforwardly mirror the residential disadvantage of its students. Although schools are partially shaped by community environments, highlighting their potential role in mediating the effects of community context on youth outcomes, they do not vary as a strict function of such environments. Extra-local political and institutional factors may contribute to exogenous

variation in school environments, highlighting the possibility of additive influence on behavioral outcomes beyond that rooted in residential neighborhood structure. Thus simultaneous consideration of both neighborhood and school contexts in models of adolescent outcomes is warranted (Kirk 2009, Arum 2000, Reiss 1995; Teitler and Weiss 2000).[1]

SCHOOL STRUCTURE, SCHOOL CLIMATE, AND ADOLESCENT VIOLENCE

How might school contexts influence the occurrence of violent behavior? We suggest that schools constitute a critically relevant activity space for adolescent youth, the socialization consequences of which are dependent on aspects of school climate—specifically, teacher collective responsibility and the prevalence of school disciplinary problems. First, youth spend a significant amount of time in school; during the school year, U.S. adolescents spend approximately one-third of their waking hours in the school context (Downey, von Hippel, and Broh 2004, Hofferth and Sandberg 2010). Indeed, exposure to school contexts is mandated for youth who have not reached the legal age to drop out. In contrast to neighborhood exposures (e.g., to street and other public spaces) which may vary substantially across youths, schools may be understood as *structured-exposure* contexts.

Second, just as neighborhoods constitute arenas within which collective supervision and socialization processes occur (Jencks and Mayer 1990; Sampson, Raudenbush, and Earls 1997; Gephart 1997), schools are contexts in which behavioral orientations are learned and reinforced

[1] Moreover, *individual* youth may not necessarily attend their "neighborhood" school (Lauen 2007). A variety of factors may result in modification of the traditional neighborhood school-assignment model, including legal mandates related to school desegregation and school "choice" policies that free parents to select non-neighborhood schools for children. For youth who do not attend neighborhood schools, attendance patterns are, nevertheless, likely to be heavily influenced by geographic considerations (i.e., proximity to the neighborhood of residence). In urban contexts characterized by economic and race/ethnic segregation, the association between residential neighborhood characteristics and school structure and quality may be evident even for students attending non-neighborhood (but typically geographically proximate) schools (Saporito 2003).

(Sampson and Laub 1993; Felson et al. 1994; Barber and Olson 1997; Elliott, Hamburg, and Williams 1998; Hawkins, Farrington, and Catalano 1998). Indeed, schools may be uniquely situated to serve as sources of informal social control and socialization. In the school setting, students are subject, in theory, to nearly continuous monitoring in an institutional context with a fundamental interest (and state-legitimated role) in maintaining order (Gottfredson and Hirschi 1990; Sampson and Laub 1993).

Nevertheless, the extent to which schools ultimately translate into socialization consequences relevant to the perpetration of violence is contingent on more proximal aspects of school climate. Teachers are the principal source of disciplinary control and socialization in the school environment and are likely most effective when standards of behavior are shared and predictably enforced (Skiba and Peterson 2000; Gottfredson, Gottfredson, and Hybl 1993). A key component of the shared inclination to regulate student behavior is a willingness to engage in disciplinary activity outside of the classroom. Teachers who collectively take responsibility for sanctioning student misconduct beyond the class context will encourage students to recognize and abide by school behavioral expectations (Gottfredson et al. 1993). Because students experience high levels of exposure to school, behavioral expectations inculcated in school contexts may carry over to non-school settings when consistently emphasized. Moreover, the cumulative impact of exposure to school contexts with effectively enforced conduct norms may have socialization consequences not only beyond school boundaries, but in the long term as well (Durkheim 1956, Arum and Beattie 1999, Arum and LaFree 2008).

Schools that foster the extension of teacher collective responsibility to educational goals as well as student conduct may also provide a source of indirect school influence on violence inclinations. The shared expectation that teachers will actively encourage high academic

standards and take responsibility for student academic advancement promotes student achievement and signals teacher investment in student outcomes. In turn, students are likely to better recognize the value of academic performance and the costs associated with a variety of behaviors (including violence) that may threaten long-term educational success. As students develop an increased commitment to academic performance, they may be more likely to adhere to student role obligations so as not to risk the withdrawal of support and valued resources (grades, reference letters, opportunities, awards) from teachers and administrators (Kornhauser 1978, Nye 1958, Toby 1957). A normatively coherent approach among teachers ensures that students receive consistent messages linking their adherence to these role obligations with valued rewards. Indeed, school climate measures capturing a school's communal organization—a construct that incorporates measures of the collective sense of responsibility for student conduct and achievement—and teachers' interest in students have been demonstrated to exert significant influence on academic outcomes, above and beyond individual- and family-level influences (Bryk and Thum 1989, Bryk and Driscoll 1988). Moreover, teachers' collective responsibility for student outcomes has been employed as one indicator of a school's professional community, a mechanism through which a school's climate of relational trust has been found to affect student academic outcomes (Bryk and Schneider 2002).

Teacher collective responsibility for student conduct and academic performance thus closely parallels the informal social control component of neighborhood collective efficacy; specifically, expectations for intervention on behalf of shared neighborhood goals, including the social control of public space. However, as a structured-exposure context, schools may provide a more consistent source of extra-familial monitoring and socialization than neighborhoods, pointing to the potential for unique effects of teacher collective responsibility on violence among youth.

In contrast, schools in which disciplinary problems are rife may foster a climate in which the strength of pro-social conduct norms is called into question. The extent of student behavioral problems and the associated reliance on formal disciplinary procedures may signal an environment in which informal behavioral norms among students are attenuated. As Anderson (1999) highlights in discussing disadvantaged neighborhood environments in which crime is widespread, violent or potentially violent postures may be adopted in the school context as a defensive strategy under the assumption that sources of security are limited or unreliable. Indeed, school contexts in which teacher collective responsibility is low will lack consistent reinforcement of behavioral norms, potentially increasingly the prevalence and severity of disruptive behavior and the need to rely on more formal disciplinary procedures to sanction students. In turn, teacher inclinations to take on responsibility for the academic success and conduct of students may be further diminished, resulting in a vicious cycle of student behavioral problems and teacher regulatory withdrawal (Lorion 1998; Leitman and Binns 1993; Bryk, Lee, and Holland 1993).[2] Economically disadvantaged schools are likely most in need of collectively invested personnel capable of maintaining effective disciplinary control but least likely to possess these characteristics. Aspects of school climate, then, may partially explain school economic disadvantage effects on individual-level violence perpetration.

A number of studies have examined the joint effects of schools and neighborhoods on adolescent outcomes (Barber and Olsen 1997; Cook et al. 2002; Elliott et al. 2006; Garner and Raudenbush 1991; Kirk 2009; Teitler and Weiss 2000). However, few have assessed problem behavior specifically. Teitler and Weiss (2000) examined neighborhood and school influences

[2] Although we cannot empirically assess the reciprocal relationship between teacher collective responsibility and disciplinary problems at the school level, we nevertheless acknowledge their potential interdependence in the context of describing our model of the process by which economically disadvantaged schools likely influence individual-level violence proclivities.

on sexual onset among Phildelphia adolescents, finding evidence of school normative climate effects on sexual transitions. Moreover, after school controls, they found no evidence that neighborhood directly influenced sexual onset beyond its influence on the schools adolescents attended. In analyses of school and school-neighborhood effects in Chicago, Kirk (2009) found evidence of school social processes effects on both arrest and school dropout. Although no direct neighborhood effects were observed, neighborhood collective efficacy moderated the impact of school social processes on both outcomes.[3] To our knowledge, only one other study has examined both neighborhood and school structural and social process effects on adolescent problem behavior using longitudinal data (Cook et al. 2002). Assessing effects of neighborhoods, schools, families, and peers simultaneously, these authors found minimal evidence of school or neighborhood effects on change in problem behavior outcomes assessed over a 19-month period. However, controls for possible mediators of school and neighborhood effects (particularly peer contexts) may have obscured their total indirect effects on the outcomes considered. Thus evidence on the effects of neighborhood and school contexts on youth remains limited, but points to the potential importance of both contexts in explaining adolescent behavioral outcomes.

In summary, we view urban adolescents' exposure to their residential neighborhood environments as dynamic, variable, and subject to agentic exigencies that may render neighborhood social process effects limited or contingent (Kwan et al. 2009, Sharkey 2006). Residence in an economically disadvantaged neighborhood, however, has important implications for the quality of the schools urban youth attend—particularly with respect to economic

[3] Kirk's (2009) analyses employed data from both the Project on Human Development in Chicago Neighborhoods and the Chicago Consortium on School Research. We employ these data sources as well; however, our analyses differ in that we examine neighborhood of residence effects (as opposed to neighborhoods immediately surrounding schools) on violence in longitudinal context.

resources, teacher efficacy, and disciplinary/behavioral climate. In contrast to neighborhoods, schools constitute a largely structured-exposure activity space and are likely to play an important role in cumulatively shaping behavioral orientations among youth. Thus, we expect that any observed effects of economic disadvantage at the neighborhood level will be partially mediated by variation in school economic disadvantage and, in turn, levels of teacher collective responsibility and school disciplinary problems.

DATA AND MEASUREMENT

Individual-Level Data

The PHDCN collected data on child and adolescent development through a three-wave longitudinal cohort design (the "Longitudinal Cohort Study" or LCS). Using a multi-stage sampling process, seven cohorts of children and adolescents (ages 0, 3, 6, 9, 12, 15, and 18 years) were recruited from 80 Chicago neighborhood clusters (NCs; aggregates of 2-3 census tracts each) between 1995 and 1996. These NCs were selected from a larger sample of 343 NCs that were stratified by ethnic composition (7 categories) and SES (i.e., high, medium, and low). Nearly equal numbers of NCs were selected from the resulting 21 strata, yielding a representative sample of 80 NCs. Over 6,000 children and adolescents were recruited from these 80 NCs during the first wave of data collection. Extensive in-home interviews and assessments were conducted with these children and their primary caregivers at three points in time over a 7-year period, at roughly 2-year intervals (Wave 1 in 1995-1996; Wave 2 in 1997-2000; and Wave 3 in 2000-2002). Our sample includes respondents in the ages 9, 12 and 15 cohorts (ranging in age from 7.8 to 16.9 at Wave 1). These data include extensive information on family

background and child experiences, including data on the child's involvement in a range of different violent events.

Neighborhood-Level Data

Neighborhood-level data were drawn from the PHDCN Community Survey (CS) and 1990 Census data. PHDCN investigators conducted a Community Survey in 1995 intended to assess the social environments of residential neighborhoods. The survey, which was conducted independently from the longitudinal cohort study, used a three-stage sampling strategy. First, city blocks within Chicago's 343 neighborhood clusters were randomly selected. Second, households within these blocks were sampled randomly. Finally, individuals within households (one adult age 18 years or older per household) were randomly selected to complete the survey questionnaire. In order to allow estimation of neighborhood characteristics on the basis of aggregate individual-level data, roughly 25 cases were collected per NC. The average *n* within the 80 target NCs was about 50 respondents. We employ the census block group to construct neighborhood measures under the assumption that smaller areas of aggregation (encompassing a population of about 1,000 residents) would more accurately capture the relevant public space for children and adolescents (Elliott et al. 2006).[4] The Community Survey is used to construct measures of neighborhood social processes. We attach Community Survey and 1990 Census data measuring structural characteristics of neighborhoods—including economic advantage, residential stability, immigrant concentration, and racial composition—to data from the PHDCN-LCS to conduct analyses of the determinants of adolescent violence.

[4] Evidence suggests that aggregated characteristics of neighborhoods vary in their effects by the unit of analysis employed (Hipp 2007). Analyses at the census tract level revealed comparable associations between structural characteristics of neighborhoods and violent crime perpetration, with the exception of residential stability (which was significant only at the block group level). The mediating impact of school characteristics on neighborhood structural associations was also comparable between tract and block group levels.

SCHOOL DATA

School-based aggregate measures are derived from Chicago Public Schools (CPS) annual administrative data on school demographic composition and surveys administered in 1994 and 1997 to teachers and students in grades 6, 8, and 10 in the CPS system by the Consortium on Chicago School Research (CCSR). In each of the two years, CCSR survey administration began with the selection of a representative analytic sample of schools via a serpentine sampling design with double-implicit stratification on both geographic area of Chicago and economic level (Consortium on Chicago School Research 1997). The response rate for sampled schools (schools selected as a part of the analytic sample) was 100%. In 1997, within-school student and teacher response rates ranged from a low of 51% for high school teachers to a high of 78% of sixth- and eighth-grade students. In addition to this analytic sample, all schools in the CPS were invited to participate in the surveys, yielding a volunteer sample; the response rate for all schools in 1997 (both analytic and volunteer sample schools) was 88% for elementary schools and 82% for high schools (Consortium on Chicago School Research 1997).

In our analyses, we use data from surveys administered at both analytic and volunteer sample schools, to retain as large a sample as possible (as our analyses follow from a matching process—described below—by which PHDCN subjects were linked to the schools they attended). To assess representativeness, the analytic and volunteer samples were compared to all other elementary or high schools in the CPS on three characteristics: percent low-income students, percent at or above national norms on the Iowa Test of Basic Skills in the prior year, and racial composition of students in the school. In addition, schools that participated in only one survey (e.g., student but not teacher) were compared to schools with both surveys as well as the overall population of Chicago Public Schools. These subsamples were comparable on key

measures, leading the CCSR to conclude that both the analytic and volunteer samples were demographically representative of the Chicago Public Schools (Consortium on Chicago School Research 1997).

PHDCN cohort subjects were matched to the public schools they attended over the period 1993 to 2001 by researchers at Chapin Hall at the University of Chicago through a process that compared students' names, birthdates, and addresses in CPS records with the same information provided at Waves 1 and 2 of the PHDCN Longitudinal Cohort Survey. That process matched 3,605 PHDCN respondents (from all cohorts) with a school attended at some point over that period. Of the PHDCN subjects in cohorts 9, 12, and 15 at Wave 1 who reported that they had attended a Chicago Public School at wave 1 or 2 (N = 1981 , 82% (or 1,633 respondents) were matched with at least one school through this method. We limit our sample to those in PHDCN cohorts 9, 12, and 15 who attended a Chicago Public School between 1994-1997 and were non-missing on our Wave 3 measure of violence (N = 1383). To address school- and item-missing data, we employ multiple imputation (Allison 2001; Rubin 1987) using WINMICE to construct imputed datasets (an imputation software package specifically designed to impute data with a hierarchical structure).[5] All analyses were adjusted for attrition using inverse probability weighting.[6]

Dependent Measure

The dependent measure used in the analysis is a scale combining eight items from the Wave 3 PHDCN LCS on the occurrence of violence in the last year. Respondents were asked whether

[5] Multiple imputation of nested data using standard MI routines may underestimate variance components at higher levels (Jacobusse 2005). Five imputed data sets were generated and imported into HLM 6 to estimate three-level Rasch models of violence perpetration (see Analytic Strategy).

[6] Wave 3 attrition resulted in a loss of some 30% of the Wave 1 sample. The probability of attrition is based on a logit model of attrition status at Wave 3 (details available upon request).

they had engaged in any of the following: (1) hit someone outside of the house; (2) thrown objects such as rocks or bottles at people; (3) carried a hidden weapon; (4) maliciously set fire to a building, property, or car; (5) snatched a purse or picked a pocket; (6) attacked someone with a weapon; (7) used a weapon to rob someone; or (8) been in a gang fight (Sampson, Morenoff, and Raudenbush 2005).

INDEPENDENT MEASURES—INDIVIDUAL LEVEL

ADOLESCENT AND FAMILY DEMOGRAPHIC CHARACTERISTICS**.** We include indicators of gender (male=1); age (in years) and age-squared; and race/ethnicity [dummy variables for African American, Mexican, other Latino (predominantly Puerto Rican), and other race/ethnicity, with White as the omitted reference group]. We also include indicators of immigrant generation (first- and second- vs. the omitted referent, third-generation or higher). To capture family structural background, we include an indicator of the respondent's *family SES*–the first principal component of parent's income, education and occupational status. We also include the primary caregiver's marital status, the size of the household, and the number of years the primary caregiver has resided in the neighborhood. See Table 1 for descriptive statistics on variables used in the analyses.

FAMILY PROCESSES. We included a six-item scale from the Provision of Social Relations (PSR) instrument (Turner, Frankel, and Levin 1983), which was administered to adolescent subjects at Wave 1. Responses to scale items reflect the extent to which the respondent's family members provide emotional and social support. Using a scale ranging from 1 (not true) to 3 (very true), respondents were asked to indicate how accurately the following statements describe their experiences: "I know my family will always be there for me," "sometimes I'm not sure I can rely

on family" (reverse-coded), "my family tell me they think I am valuable," "my family has confidence in me," "my family helps me find solutions to problems," and "I know family will always stand by me" (α=.62). We also include a measure of whether the subject is allowed to spend more than one hour at a time unsupervised in public space. Finally, we include a measure of intergenerational closure, based on the respondent's report of the extent to which the respondent's parents know his or her friends.

RISK FACTORS. We include controls for impulsivity, reading achievement, and, in our final model, Wave 1 violence. Impulsivity is based on items drawn from the Achenbach Child Behavioral Checklist. This widely used measure is reliable and valid (Achenbach 1991). The scale is the average of standardized primary caregiver responses to questions concerning whether the subject is impulsive; acts without thinking; has trouble concentrating; has difficulty paying attention; cannot get his/her mind off certain thoughts; cannot sit still; is restless; is hyperactive; is confused or seems to be in a fog; demands a lot of attention; gets hurt a lot/is accident-prone; is nervous, high-strung. or tense; displays nervous movements or twitching; and repeats certain acts over and over (α=.78). Reading achievement is measured by the adolescent's performance on the reading component of the Wide-Range Achievement Test, a standardized test (Wilkinson 1993).

INDEPENDENT MEASURES—NEIGHBORHOOD LEVEL

STRUCTURAL INDICATORS. Measures of neighborhood structure were constructed using data from the 1990 Decennial Census. Neighborhood-level structural indicators were constructed based on principal components factor analyses of census-based measures. *Economic advantage* exhibited high factor loadings for the percentage of residents with incomes over $75,000, college degrees

(or higher), and in professional or managerial positions. *Immigrant concentration* combined the percentage of Latino and foreign-born individuals living within the neighborhood. *Residential stability* exhibited high loadings for the percentage of residents living in the same house as in 1985 and the percentage of housing occupied by owners. We also include a measure of the *percentage African American* in the neighborhood.

SOCIAL PROCESS INDICATORS. Following Sampson, Raudenbush, and Earls (1997), we constructed a *collective efficacy* measure using information from two scales—social cohesion and informal social control—administered as part of the Community Survey. The social cohesion scale is based on items measuring respondents' level of agreement (on a 5-point scale) with the following statements: (1) "People around here are willing to help their neighbors," (2) "This is a close-knit neighborhood," (3) "People in this neighborhood can be trusted," (4) "People in this neighborhood generally don't get along with each other," and (5) "People in this neighborhood do not share the same values." We reverse-coded the latter two items. The informal social control scale is constructed from respondent assessments of the likelihood that their neighbors could be counted on to intervene if (1) "Children were skipping school and hanging out on a street corner," (2) "Children were spray-painting graffiti on a local building," (3) Children were "showing disrespect to an adult," (4) "There was a fight in front of your house and someone was being beaten or threatened," or (5) "The fire station closest to your home was going to be closed down by the city" due to budget cuts. Responses were given on a five-point scale from "very unlikely" to "very likely." The two scales were combined into a single measure of collective efficacy using a three-level linear item response model (Raudenbush and Bryk 2002). The three-

level reliability of the block-group level combined scale was .51 [see Raudenbush and Bryk (2002) for a discussion of reliability in three-level models].[7]

We also include measures of social ties and neighborhood organizational participation. *Social ties/networks* averages measures of each Community Survey respondent's reported number of friends and family members in the neighborhood. *Neighborhood organizational participation* includes involvement in local churches, political groups, neighborhood watch groups, civic organizations, ethnic organizations, and block group/tenant associations. This measure is the neighborhood mean of the number of organizations in which respondents reported participating (see Morenoff, Sampson, and Raudenbush 2001).

INDEPENDENT MEASURES--SCHOOL STRUCTURE AND SOCIAL PROCESS

The school measures used in the analyses reported here are school percentage low-income students, school percentage African American, teacher collective responsibility, and school disciplinary problems. The measure of *percentage low-income students* is a measure of the percentage of students in each school who are eligible for a free or discounted lunch. Both percentage African American and percentage low income are constructed from the CPS administrative data for each of the years 1994 to 1997.

In addition, we employ two survey-based composite measures from the CCSR survey data: teacher-reported *teacher collective responsibility* and student-reported *school disciplinary*

[7] Because the reliability for the block group-level measure of collective efficacy was not ideal, we use empirical Bayes residuals for the final scale score used in the analysis (EB residuals are also used for social ties/networks and organizational participation variables). EB residuals regress OLS estimates toward the grand mean by a factor proportional to the unreliability with which they have been estimated (Raudenbush and Bryk 2002). We also estimated the effects of neighborhood structure and social process measures at the census tract level. Although the social process scales were more reliably measured at the tract level, their mediating effects on neighborhood structural estimates were no greater in magnitude than those observed in block group-level models (see also Sampson, Morenoff, and Raudenbush 2005 for analyses revealing the robustness of neighborhood structural characteristics to inclusion of neighborhood social process measures at the tract level).

problems. The measure of teacher collective responsibility is a set of items derived from the 1994 and 1997 teacher surveys. Teachers were asked how many of the teachers in their school: feel responsible when students fail; feel responsible to help each other do their best; help maintain discipline in the entire school, not just their classrooms; take responsibility for improving the school; feel responsible for helping students develop self-control; set high standards for themselves; and feel responsible that all students learn. Higher scores on the scale correspond to higher levels of teacher collective responsibility within the school (see Consortium on Chicago School Research 1997 for additional information on scale properties and construction).

The measure of school disciplinary problems is a scale constructed from a set of items derived from the 1997 student survey in which students were asked about the number of times during the current school year they got into trouble, they had been suspended from school, their parents had to come to school because they got into trouble, they were sent to the office for getting into trouble, and/or their parents had been contacted because they got into trouble at school. Higher scores indicate schools in which students are frequently in trouble and subject to disciplinary action (Consortium on Chicago School Research 1997). To develop these composite measures, CCSR researchers calculated individual student/teacher scale scores for each through the use of item-response (Rasch) models (Wright and Masters 1982).

For purposes of the reported analyses, and in an effort to temporally align our school measures with the timing of the PHDCN Community Survey and the initial wave of the PHDCN Longitudinal Cohort Survey, we identified the schools each PHDCN subject in cohorts 9-15 attended between the years 1994 and 1997. Each school measure ultimately employed in the analyses was constructed through the use of a multilevel modeling procedure. First, the survey-

based measures of school climate over the period 1994 to 1997 were constructed by averaging the 1994 and 1997 CCSR-provided aggregate survey measures (in the event a school participated only in one of the two years, that score was used). These transformed composite measures were then used to create scales representing school-level social processes over those years. [School-level demographic measures (e.g., percentage low-income and percentage African American students) were available for each of the four years, so averaging was not required.] Each school demographic and social process measure was modeled as an outcome in successive two-level hierarchical models to account for students who attended different schools over the four-year period, and those who did not attend sampled schools in all four years. The two-level modeling procedure allowed us to address these issues through the construction of person-specific school scores for each PHDCN subject, weighted via empirical Bayes estimation. At level one, a person-year file was constructed that contained a school identifier representing the school attended by each student for each year during 1994-1997 that the child attended a Chicago Public School, along with measures of school demographic composition or survey-derived index measure of school climate for each school for each year. The level-two file was a person-level file. Each school measure used in the analyses is thus a person-specific school score for that measure equal to the empirical Bayes (EB) residual from the level-two model.

ANALYTIC STRATEGY

The following section describes our core analyses—models of school and neighborhood effects on individual-level violence perpetration. We also examine associations between demographic and neighborhood predictors and characteristics of schools attended—our analytic strategy for these models is described in the Results section below. For the analysis of violence, the eight

items comprising the violence perpetration scale are modeled simultaneously using three-level Rasch models with random intercepts. The model takes the following form: First, let Y_{ijk} take on a value of unity if the *i*-th exposure to violence item is endorsed by respondent *j* of neighborhood k (otherwise $Y_{ijk} = 0$) and let μ_{ijk} denote the probability $Y_{ijk} = 1$. At level one, the log odds of endorsement on response *i* are modeled as follows:

$$\ln\left(\frac{\mu_{ijk}}{1-\mu_{ijk}}\right) = \pi_{jk} + \sum_{m=1}^{M-1} \alpha_{mjk} a_{mijk}$$

where π_{jk} is the intercept, a_{mijk} are indicator variables representing the violence perpetration items (with one omitted reference item), and α_{mjk} reflects the relative level of severity represented by item *m*. Thus π_{0k} is the log odds of endorsing the omitted reference item (in this case, the dummy variable indicator of whether the respondent carried a hidden weapon in the last year), and $\pi_{0k} + \alpha_m$ is the log odds of endorsing item *m*. At level two (between individuals), individual demographic background, family, peer, prior violence, and school characteristics[8] are included in models of the subject's adjusted latent violence propensity score (intercepts from the level-one equation) as follows:

[8] Because school measures are based on person-specific averages designed to take into account the possibility that multiple schools were attended over the exposure period, the nesting structure of the data cannot be captured by a traditional cross-classified model. The frequency of school moves over the four-year period examined results in relatively few instances of shared values for the school covariates included in the model. Nevertheless, we estimated multilevel cross-classified models by assigning subjects a "modal" school (the school in which the respondent was enrolled for the longest period of time during the 1994-97 period). This approach allowed for estimation of both neighborhood and school random effects. Using the listwise deleted sample, cross-classified multilevel models yielded comparable school effects with respect to magnitude and significance, suggesting that the standard errors reported below for school effects are not biased downward due to failure to account for school clustering.

$$\pi_{jk} = \beta_{0k} + \sum_{q=1}^{Q} \beta_q X_{qjk} + r_{jk} \qquad r_{jk} \sim N(0, \sigma^2)$$

where β_{0k} is the intercept, X_{qjk} is the value of person-level predictor q for individual j in neighborhood k, β_q is the effect of q on individual j's expected violence propensity score, and r_{jk} is an independently, normally distributed error term with variance σ^2. Finally, adjusted intercepts β_{0k} are modeled at the neighborhood level:

$$\beta_{0k} = \gamma_0 + \sum_{s=1}^{S} \gamma_s Z_{sk} + u_k \qquad u_k \sim N(0, \tau_\beta)$$

Here, $\beta_{0\kappa}$ is the average violence propensity score for neighborhood j adjusted for demographic and family background characteristics and item severity, γ_0 is the grand mean, Z_{sk} is the value of covariate s (including economic advantage, residential stability, immigrant concentration, and neighborhood social process measures) for neighborhood k, γ_s is the effect of covariate s on neighborhood violence propensity scores, and u_k is an independent, normally distributed error term with variance τ_β. Thus the model includes variance components at both the individual and block group levels. Final models incorporate robust standard errors.

RESULTS

The analyses to follow begin by considering demographic and neighborhood associations with the characteristics of schools attended by PHDCN youth. We then move to analyses of the links between family, individual, neighborhood, and school characteristics and violence participation.

Individual- and Neighborhood-Level Associations with School Characteristics

Establishing the association between residential neighborhood structural characteristics—particularly economic advantage—and key features of the schools PHDCN respondents attend is an important first step in demonstrating the potential role of schools in accounting for neighborhood (and, potentially, race/ethnic) associations with violence. The link between neighborhood and school characteristics is partially dependent on the process by which the Chicago Public Schools allocates students to schools. During the period of the study (1994-2001), the Chicago Public School system employed a school assignment procedure that followed a relatively traditional "neighborhood school" model.[9] However, the U.S. Justice Department's threat to sue the Chicago Public School system led to a 1980 consent decree that resulted in modifications to the neighborhood school model, primarily related to the racial composition of schools. Among the measures the CPS district employed during the 1990's to address equity concerns were redrawing school boundaries where possible to foster school integration; the creation of more racially balanced magnet schools; allowing majority-minority transfers; and integrating majority White schools to limit the White population to 65% (Sinha, Payne, and Cook 2005). These policies contributed to a nontrivial departure from the neighborhood school model. For instance, in 1994, roughly 30% of elementary school students and 50% of high school students in Chicago did not attend a neighborhood school (Bryk and Schneider 2002).

[9] Neighborhood schools automatically enroll students within a given attendance boundary.

Nevertheless, neighborhood school attendance remained the dominant pattern among CPS students and, as noted, we expect that attendance at non-neighborhood schools is likely to be geographically constrained. Thus we expect to observe significant associations between neighborhood structural characteristics and the key school characteristics considered in analyses of violence.

Table 2 reports the results of multilevel linear models with robust standard errors estimating the association between demographic background and neighborhood characteristics and the average (1) percentage of low income students, (2) percentage African American, (3) teacher collective responsibility score, and (4) disciplinary problems score characterizing the schools PHDCN youth attended between 1994 and '97. These analyses employ samples of PHDCN youth who reported attending a CPS at either Wave 1 or 2 of the Longitudinal Cohort Study, who were successfully matched to a CPS for at least one of the years considered, and were non-missing on the dependent variable considered.[10] We incorporate a measure of whether the subject reported having attended a Catholic or private school at Wave 1 or 2.[11]

Turning to Table 2, noteworthy patterns emerge from this preliminary analysis of school characteristics. Focusing on the percentage of low income students in Model 1, African Americans attend schools that have, on average, 5.9 percentage points more low-income students than European Americans. By comparison, Mexican and other Latino youth attend schools that

[10] Individual level Ns vary based on the school data source [(CPS administrative data in the case of proportion low income (N=1383) and CCSR survey data for teacher collective responsibility and disciplinary problems (N=1278 and 1252, respectively)].

[11] We also considered two measures of parental educational management efforts intended to capture those subjects with primary caregivers who may be motivated to enroll their children in more selective or economically advantaged schools–the frequency of attendance at parent-teacher conferences and PTA meetings. Neither was a significant predictor in models of school characteristics, nor did the inclusion of these measures appreciably alter the size or significance of other coefficients in the model. Because these measures may also be a function of school characteristics, we chose to drop them from the final models presented in Table 2. All three measures (including attendance at a Catholic or private school) were also included in subsequent models of violence but did not significantly influence the outcome or the pattern of association observed between neighborhood and school characteristics and violence perpetration.

have, on average, 3.5 and 4.0 percentage points more low-income students, respectively, than their European American counterparts. Net of race/ethnicity, first-generation immigrant youth attend schools with more low income students (3.1 percentage points) than youth who are third generation or higher. Larger households are also associated with attendance at lower income schools. Age and family socioeconomic status are powerfully negatively associated with school percentage low income. With respect to family socioeconomic status, a one standard deviation increase in SES decreases the average percentage of low income students in the school attended by 4.4. Finally, attending a Catholic or private school at Wave 1 or 2 is negatively associated with school percentage low income.

Although fewer significant associations emerge in baseline analyses of individual demographic background associations with the percentage African American, school teacher collective efficacy, and disciplinary problems (Models 3, 5, and 7), consistent effects emerge, notably, for African American race and family SES. African American youth attend schools with remarkably different racial composition—African American youth, on average, attend schools with 37 percentage points more African Americans compared with European American youth. The schools African American youth attend also exhibit significantly lower levels of teacher collective efficacy and higher levels of disciplinary problems than European American youth. In contrast, Latino youth (Mexican and "other Latino") attend schools that are not significantly different with respect to the percentage African American, teacher collective efficacy, or disciplinary problems when compared with European American youth. Family SES was positively associated with teacher collective efficacy and negatively associated with school percentage African American and disciplinary problems and positively associated with teacher collective responsibility.

Incorporation of neighborhood structural effects in models 2, 4, 6, and 8 revealed significant associations with percentage low income, percentage African American, and school disciplinary problems. Focusing, first, on Model 2, neighborhood economic advantage is powerfully negatively associated with school percentage low income, as expected. A one standard deviation increase in the economic advantage level of the youth's neighborhood of residence is associated with a 5.9 point drop in the average percentage of low-income students in the school attended. Increases in neighborhood residential stability are also associated with reduced presence of low-income students in schools attended. Higher concentrations of immigrants in a youth's neighborhood of residence, however, are positively associated with the school percentage of low-income students. A number of coefficients describing individual-level demographic background associations with percentage low-income students were modified with the introduction of neighborhood structural characteristics. Although the coefficient for African American race decreased only nominally (around 5 percent), coefficients for Mexican and other Latino race/ethnicity decreased by 50% and 32%, respectively, and were rendered insignificant with the introduction of neighborhood structural characteristics. The coefficient for SES was also reduced by some 15%. Thus neighborhood structure—particularly economic advantage—is powerfully associated with the economic composition of schools youth attend and appears to account, in part, for race/ethnic and socioeconomic associations with this outcome.

Fewer neighborhood structural effects were observed in models of percentage African American and teacher collective responsibility. In Model 4, immigrant concentration and the neighborhood percentage African American were negatively and positively associated with school percentage African American, respectively, with the coefficient for racial composition being, by far, the most powerful neighborhood effect observed (reducing the individual-level

African American coefficient by over 40%). No significant structural associations were observed with teacher collective responsibility (the effect of economic advantage, although in the expected direction, did not achieve significance (p = .107).

Finally, we observed a number of neighborhood structural associations with school disciplinary problems. Economic advantage and immigrant concentration were both negatively associated with disciplinary problems, while neighborhood percentage African American was positively associated with this outcome. Although the economic advantage effect on disciplinary problems is expected, the protective effect of immigrant concentration on school disciplinary problems is somewhat surprising, given immigrant concentration's positive association with school poverty level. Also of interest in Model 8 is the reduction in the magnitude of the positive association between African American race and attendance at schools with higher levels of disciplinary problems (45%). In short, demographic and residential neighborhood structural associations with school poverty, percentage African American, and quality measures reveal pronounced patterns of inequality in school characteristics by race/ethnicity, income, and neighborhood disadvantage. To the extent that schools are consequential for behavioral outcomes, these findings warrant further consideration of the possible mediating role of school characteristics in the link between neighborhood disadvantage and violence.

Individual, Neighborhood, and School Associations with Violence Perpetration

Table 3 examines the association between individual, family, and neighborhood characteristics and violence among PHDCN youth. Model 1 examines baseline associations of demographic, family, and other individual-level predictors with violence. We find a host of associations at this level of analysis, consistent with extant research examining these data (Sampson, Morenoff, and

Raudenbush 2005). Age exhibits a positive linear association with violence, with a marginally significant ($p < .10$) quadratic effect, consistent with the well-known "age-crime curve" found in numerous prior studies (Gottfredson and Hirschi 1983, Britt 1992, Tittle and Ward 1993). African American youth and those of "other" race/ethnicity are significantly more likely to participate in violence than European American youth. We find no evidence that Latino youth are more likely to participate in violence than European American youth. Boys are substantially more likely than girls to report violence. Immigrant (first generation) youth are less likely than third (or higher) generation youth to report violence, as are youth whose families have resided in the neighborhood for longer periods of time. Youth whose parents are married are less likely to report violence, as are those youth whose parents maintain regular contact with their children's friends. Finally (and again consistent with Sampson, Morenoff, and Earls 2005), youth who exhibit higher levels of impulsivity and lower reading achievement scores are more likely to participate in violence.

Model 2 introduces neighborhood structural characteristics (controlling all level-one characteristics considered in Model 1). Consistent with the basic social disorganization framework, we find that both economic advantage and residential stability are negatively associated with violence. Immigrant concentration also exhibits a negative association with violence, reinforcing recent findings demonstrating the protective effect of immigrant presence at the neighborhood level on the problem behavior of youth (Martinez 2002, Xie and Greenman 2005, Morenoff and Astor 2006, Greenman and Xie 2008). To examine the robustness of the neighborhood structural effects we observe when additional neighborhood- level structural and social process covariates are introduced, we include a measure of the percentage African American in the neighborhood (Model 2) as well as a number of neighborhood social process

characteristics (Model 3). Racial composition is not a significant predictor of violence in Model 3; measures of collective efficacy and friend/kin ties in the neighborhood also do not exhibit significant associations with violence in Model 4. In contrast, a measure of organizational participation is negatively and significantly associated with violence and reduces the magnitude and significance of the residential stability effect on violence (the effect is reduced by 30% and rendered insignificant at the conventional level).[12] Model 5 replicates Model 4 with the exception of the percentage African American in the neighborhood. Although the coefficients for economic advantage and immigrant concentration decline somewhat in magnitude, these effects are not influenced by the inclusion of the proportion African American in the neighborhood (which does not achieve significance, but is highly correlated with other neighborhood structural covariates included in the model). Thus the neighborhood economic advantage effect on violence is observed net of a range of individual and family-level variables and appears to be robust to the inclusion of other potential neighborhood-level confounders and social process mediators.

Table 4 incorporates school variables to assess the extent to which neighborhood structural characteristics are accounted for by school economic disadvantage and climate measures. Model 1 replicates Model 5 of Table 3 in order to display coefficient estimates of neighborhood structural effects for the purposes of comparison with subsequent models. Note that although the

[12] Measures of collective efficacy and friend/kin ties were maintained in subsequent models because of their theoretical centrality. Organizational participation, however, was the only significant neighborhood social process-based predictor of violence that we observed. In analyses not reported we considered the potential mediating role of a host of additional neighborhood social process measures in the link between neighborhood structural and individual-level violence. These included measures of neighborhood social and physical disorder, organizational density, legal cynicism, frequency of social interaction and exchange, intergenerational closure, tolerance for deviance, perceived violence, attitudes toward police, and neighborhood decline. None of these measures were significant predictors of violence, nor did they influence the strength or magnitude of the associations between neighborhood structural characteristics and violence.

effect of individual level African American race is some 25% smaller by comparison with Model 1 of Table 3, the coefficient remains positive and significant in Model 1 of Table 4 ($p < .05$).

Model 2 introduces the average school percentage low income to covariates included in Model 1. School percentage low income is positively and significantly associated with violence, above and beyond individual, family, and neighborhood characteristics. A ten percentage point increase in the percentage low income results in a 20% increase in the odds of reporting any given violence item. Moreover, introduction of the school proportion low-income measure reduces the magnitude of the neighborhood economic advantage coefficient by 54% and renders it statistically insignificant. The coefficient for individual-level African American race is also reduced in magnitude (17%). The effect of school economic disadvantage remains comparable with the introduction of school proportion African American in Model 3, which does not achieve significance. However, the correlation between the proportion African American in the school and both individual level African American race and neighborhood-level immigrant concentration results in reductions in the magnitude and significance of both coefficients.

Models 4 and 5 introduce measures of teacher collective responsibility and disciplinary problems, both of which exhibit significant effects on violence (in the expected directions). Based on Model 4 estimates, a standard deviation increase in the teacher collective responsibility measure results in an 18% reduction in the odds of reporting any given violent act in the outcome scale. Teacher collective responsibility accounts for some 14% of the school low-income effect, although the latter remains a significant predictor of violence. In Model 5, school disciplinary problems also exerts a significant influence on violence—a one standard deviation increase in the disciplinary problems scale leads to a 27% increase in the odds of reporting a given violent act. Inclusion of the school disciplinary problems measure in Model 4 results in a further

reduction in the magnitude and significance of the school economic disadvantage measure. Combined, the school climate measures explain a substantial proportion of the school poverty effect (from Model 2) on violence (50%). Introduction of the school disciplinary problems measure, however, only nominally modified the coefficient for teacher collective responsibility (indeed, the bivariate correlation between the two school climate measures was a relatively modest -.12).

Finally, Model 5 introduces a control for Wave 1 violence reports by the subject to examine the robustness of the school effects to inclusion of a lagged measure of the dependent variable (dropping the non-significant, but potentially collinear effect of the percentage African American in the school[13]). The effects of both teacher collective responsibility and school disciplinary problems remain significant (reduced somewhat in the case of disciplinary problems), offering stronger evidence that the effects of school climate are not a function of selection of violence prone individuals into disadvantaged school contexts.

Figure 1 shows variation in the predicted probability that the respondent reports hitting a non-family member in the last year. Using the results of Model 5—estimating school effects net of a control for Wave 1 violence—we plot the predicted probability of hitting a non-family member at 1.5 standard deviations above and below the mean on the teacher collective responsibility and school disciplinary problems measures (holding other covariates at their means). The estimate of .517 for disciplinary problems from Model 5 yields a 19% increase in the odds of any given violent act with a one standard deviation increase in the disciplinary problems measure—more comparable in magnitude to the effect of teacher collective responsibility. Accordingly, Figure 1 indicates that a three standard deviation move (-1.5 – 1.5)

[13] Inclusion of the proportion African American variable in the final model results in negligible changes to coefficient magnitudes.

on the teacher collective responsibility measure decreases the predicted probability of hitting a non-family member from .220 to .147. Similarly, a comparable move on the school disciplinary climate measure increases the predicted probability from .146 to .222. Thus, the two school climate measures appear to exert comparable influence on the probability of violence, above and beyond individual (including prior violence), family, neighborhood, and school structural characteristics.

Of note is the impact of school characteristics on race disparities in violence observed in Table 3. Although the coefficient for individual-level African American race becomes nonsignificant with the introduction of the percentage African American measure in Model 3 of Table 4, the individual-level coefficient for African American exhibits substantial reductions in magnitude and significance when school characteristics other than percentage African American are controlled . The incorporation of school low income, teacher collective responsibility, and disciplinary climate (i.e., equivalent to Model 5 *without* the percentage African American) accounts for 54% of the remaining effect of individual level African American race as estimated in Model 1 of Table 4 and renders the effect insignificant. These findings suggest that the individual level Black-White disparity in violence is accounted for primarily by school income and quality measures rather than the percentage African American in the school.

DISCUSSION

Research on the social contexts of child and adolescent development has seen significant advances in recent decades. Groundbreaking theoretical contributions (Bronfenbrenner 1979), in combination with the increased accessibility of statistical applications for multilevel analysis (Raudenbush and Bryk 2002) and data collection efforts explicitly focused on youth social

contexts (Brooks-Gunn, Berlin, Leventhal, and Fuligni 2003), have yielded a number of important findings on the socially embedded nature of developmental processes (Sampson, Morenoff, and Gannon-Rowley 2002). Above and beyond family and individual-level factors, key social contexts such as neighborhoods and schools have been found to influence a host of developmentally relevant outcomes such as problem behavior, health, and educational achievement (Brooks-Gunn, Duncan, Klebanov, and Sealand 1993).

Despite the promise of contextually-oriented research, existing studies have been hampered by a tendency to focus on a single developmental arena without considering the range of social exposures children typically experience. With few exceptions (e.g., Barber and Olsen 1997; Cook et al. 2002; Elliott et al 2006; Kirk 2009; Sameroff, Peck and Eccles 2004; Teitler and Weiss 2000), research on neighborhood and school contexts of child and adolescent outcomes have proceeded largely independently of one another. Our study considers the unique role of school characteristics in shaping the violence propensity of adolescents and mediating the effects of residential neighborhood structural characteristics on this outcome. Although extant research has demonstrated a link between neighborhood economic structure and individual-level violence perpetration (Sampson, Morenoff, and Raudenbush 2005), the mechanism accounting for this economic structure effect has yet to be identified.

Our models of neighborhood structural effects on individual-level violence indicate that economic advantage, residential stability, and immigrant concentration are all independently associated with adolescent violence, above and beyond family and individual-level controls. The effects of both advantage and immigrant concentration remain after examining controls for a number of neighborhood processes, including collective efficacy, friend and kin ties, and organizational participation. Only organizational participation is a significant (negative)

predictor of individual-level violence. Organizational participation partially mediates the effect of neighborhood residential stability, suggesting that stable neighborhoods are better able to sustain local organizations and groups, with implications for the control of adolescent violence. Controls for a host of neighborhood social process measures (beyond those reported), however, did not account for the protective effects of neighborhood advantage or immigrant concentration, suggesting that alternative mediating mechanisms are at work.

Rooted in a multi-contextual perspective, our theoretical approach acknowledges the potential for youth routines to encompass discrete activity spaces not captured by conventional social process measures of residential neighborhood environment. Specifically, we considered the unique and mediating effects of school contextual characteristics in the link between neighborhood structural factors and individual adolescent violence. Models incorporating the effects of school characteristics for youth who attended Chicago Public Schools—including school poverty levels, teacher collective responsibility, and the prevalence of disciplinary problems—revealed evidence that schools independently contribute to violence perpetration among adolescents. School poverty, represented by the proportion of students on free or reduced lunch, was positively associated with adolescent violence; moreover, school poverty mediated a substantial proportion of the observed neighborhood economic advantage effect. Indeed, advantage no longer exerted a significant effect on violence after incorporation of the school poverty measure. Neighborhood advantage, then, appears to operate in large part through consequential characteristics of the schools youth attend by virtue of residence in neighborhoods of variable socioeconomic status.

Consistent with a model that links contextual resources to social processes that are relevant for behavioral outcomes, we further explored the extent to which school social processes mediate

the effect of school poverty on violence. Specifically, we considered the effects of teacher collective responsibility—a construct capturing teachers' shared orientations toward the monitoring of student conduct and promotion of academic success—and student-reported disciplinary problems—a measure capturing a combination of student misbehavior and administrative responses to behavioral problems. Both factors were significantly associated with individual-level adolescent violence in the expected directions and partially accounted for the association between school poverty and violence (with school disciplinary problems accounting for a larger proportion of the school poverty-violence link). The effects of both teacher collective responsibility and school disciplinary problems held in models controlling for adolescents' self-reported violence at Wave 1, indicating the robustness of these school climate measures as predictors of violent behavior.

The observed effect of teachers' collective normative orientations in support of prosocial student outcomes highlights an important aspect of the school as a context of concentrated socialization. Schools with high levels of teacher collective responsibility are characterized by teachers who informally monitor and intervene to correct student misconduct and model and promote the rewards and opportunities that follow from prosocial behavior in and beyond the classroom context. In addition to the socialization benefits of consistent teacher informal social control of student conduct, student perceptions of teacher investment in their well-being and achievement may trigger reciprocal student investments in the educational process (Gregory and Ripski 2008). In turn, students are likely to better apprehend the long-term costs of disruptive and illegal behavior and respect teachers' admonitions.

The prevalence of disciplinary problems in a school exerts a comparable (but positive) effect on violent tendencies among youth to that observed for teacher collective responsibility. School

disciplinary problems reflect both the prevalence of misbehavior and the tendency toward formal sanctioning (in the form of principal's office visits and calls to parents). The prevalence of both behavioral problems and formal disciplinary responses to misbehavior are likely to cue the breakdown of informal controls on disruptive activity (Gregory and Ripski 2008). Such an environment may foster the increasing resort to violence as a defensive mechanism (Massey and Denton 1993; Anderson 1999) as youth experience the proliferation of threats and coercive, formal intervention becomes the pervasive form of behavioral control (Skiba and Peterson 2000). Adapting to such contexts may lead to the assimilation of violence as part of an enduring behavioral repertoire.

School factors also played a role in explaining race disparities in violence perpetration. Neighborhood structural factors have been found to account for a substantial proportion of the African American-White disparity in violence in previous research (Bellair and McNulty 2005). However, Sampson, Morenoff, and Raudenbush (2005), despite accounting for a non-trivial proportion of the African American-white violence disparity, found that the positive effect of African American race remained significant in models that controlled for an array of neighborhood characteristics. The current study demonstrated that accounting for school characteristics reduced the coefficient associated with African American race substantially and rendered it insignificant at conventional levels. School low income and disciplinary problems accounted for the majority of the remaining effect of African American race, suggesting that African Americans are significantly more likely to attend—and are consequentially influenced by—economically disadvantaged schools with widespread behavioral problems and a reliance on formal behavioral control.

The present study demonstrates the importance of considering multiple social contexts of development, as suggested by theoretical models that emphasize the importance of inter-contextual associations (Bronfenbrenner 1979, Jencks and Mayer 1990). As Cook (2003) has persuasively argued, the dominance of uni-contextual studies in research on context and youth well-being points to a number of potential concerns about the nature of extant findings. First, studies that focus on a single context may underestimate the total contextual effect on developmental outcomes. Although research on social context has produced a significant body of evidence demonstrating the independent effects of neighborhoods, schools, and networks on youth outcomes, some have argued that these effects are small in comparison with family and individual (e.g., temperament) influences. Uni-contextual approaches, however, do not assess the combined effects of multiple relevant developmental contexts. The collective contextual effect may be substantially greater than the unique effect of any given context in isolation. Moreover, because the characteristics of contexts may be correlated, estimates of the effects of a single context on individual outcomes may be biased. Observed effects of a given context may be spurious if causally relevant features of another context with which it is associated have been omitted (Arum 2000; Goldsmith 2009).

Of central concern for the current analysis is the potential for gaining important insights into mediational processes through the simultaneous consideration of multiple contexts. Characteristics of contexts may be causally related, with implications for understanding the origins of child and adolescent well-being. The process by which disadvantaged neighborhoods feed resident youth into schools with characteristics that are consequential for their development suggests that schools may be understood to play an important mediating role in the link between neighborhood structure and some youth outcomes. In the absence of a concurrent consideration

of both contexts, however, the mechanisms linking neighborhood characteristics to youth may remain elusive. To the extent that schools, in fact, account for the association between neighborhood poverty and problem behavior, failure to consider school characteristics may lead to a misplaced overemphasis on neighborhood social processes in research designs intended to shed light on the observed effects of neighborhood poverty on adolescent development. Similarly, social policies formulated on the basis of an artificially uni-contextual approach may result in the misallocation of resources toward the neighborhood, neglecting schools and other contexts of "concentrated socialization" in which such investments might pay greater dividends.

Despite unique data on the neighborhood and school contexts of violent behavior among adolescents, further research is needed to address a number of limitations of the present study. Selection bias remains a concern with the current analysis. Unmeasured family level processes may account for both the characteristics of schools and adolescent violent tendencies. It should be noted that such concerns apply to observed neighborhood effects as well to the extent that some families choose residential neighborhoods based on the quality of local schools. Although we acknowledge the potential for selection bias, we also note that controls for parental educational management efforts (e.g., attendance at PTA meetings and parent-teacher conferences) as well as adolescent prior violence did not alter our conclusions regarding contextual effects.. Future research may benefit from more extensive attention to the processes governing both neighborhood and school selection. Our conclusions are also limited by the reliance on data from one large urban area. School assignment procedures vary across contexts, calling into question whether conclusions drawn from the current sample would apply to other U.S. cities. Finally, our findings cannot be extended to youth who attended Catholic or private schools exclusively during the period considered.

There is no shortage of accounts of the U.S. adolescent experience. Indeed, the longstanding popular fascination with (and cultural focus on) youth is mirrored by extensive quantitative research and rich ethnographic studies that highlight the transition to adulthood as a confluence of risk and opportunity (see, e.g., Coleman 1961, Anderson 1999, Mortimer and Larson 2002). As interest in the social-spatial determinants of adolescent problem behavior expands to include the multiple contexts of youth development, our findings suggest that researchers should consider how these various contexts interrelate to shape socialization experiences. The promise of contextually oriented research may not be fully realized without an explicit recognition of the interdependent and systemic nature of developmental contexts.

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Table 1. Descriptive Statistics for Variables in the Analysis[a]

Independent Variables	Mean	Std Dev
Family/Individual level		
Wave 1 age	11.959	2.399
Wave 3 age	16.580	2.464
Race/ethnicity (vs. white)		
European American	.123	-
African American	.380	-
Mexican	.305	-
Other Latino	.157	-
Other race/ethnicity	.038	-
Male	.486	-
Immigrant generation		
First generation	.131	-
Second generation	.341	-
Third generation	.528	
Years resident in neighborhood	6.216	6.918
Family size	5.532	2.080
Socioeconomic status	-.299	1.310
Married parents	.549	
Supervision	.814	.384
Intergenerational ties	.796	.399
Parent-child attachment	2.041	.321
Impulsivity	2.686	.577
Reading achievement	95.435	18.988
Neighborhood characteristics		
Concentrated affluence	.000	1.000
Residential stability	.000	1.000
Immigrant concentration	.000	1.000
Proportion African American	41.306	45.267
Collective efficacy	-.013	.224
Social ties/networks	.003	.191
Organizational participation	.090	.317
School characteristics		
Proportion low income	81.387	12.594
Proportion African American	43.319	34.026
Teacher collective responsibility	5.340	.523
Discplinary climate	.004	.332

[a] Person level N = 1383; Block group level N = 391

Table 2. Multilevel Linear Models with Robust Standard Errors: School Characteristics by Demographic Background, Socioeconomic Status, and Neighborhood Structural Characteristics

Independent Variables	Percentage Low Income[1]		Percentage African American[1]		Teacher Coll Responsibility[2]		Disciplinary Problems[3]		
	1	2	3	4	5	6	7	8	6
Family/Individual level									
Race/ethnicity (vs. European American)									
African American	5.899 ***	5.585 **	37.289 ***	21.693 ***	-.234 ***	-.193 **	.312 ***	.172 ***	
	(1.591)	(1.741)	(3.060)	(2.854)	(.061)	(.072)	(.041)	(.044)	
Mexican	3.506 **	1.761	1.950	2.117	.018	.013	.008	.027	
	(1.327)	(1.267)	(2.214)	(1.725)	(.058)	(.059)	(.040)	(.038)	
Other Latino	3.976 **	2.693	1.372	.878	.015	.017	.061	.064	
	(1.449)	(1.404)	(2.350)	(1.781)	(.059)	(.061)	(.039)	(.037)	
Other race/ethnicity	-.138	.280	19.112 ***	11.340 **	-.198 *	-.179 *	.095	.021	
	(2.298)	(2.325)	(4.023)	(3.150)	(.087)	(.087)	(.067)	(.065)	
Age	-1.130 ***	-1.107 ***	.621 **	.609 **	-.085 ***	-.084 ***	-.026 ***	-.026 ***	
	(.118)	(.117)	(.229)	(.206)	(.006)	(.006)	(.004)	(.004)	
Immigrant generation									
First generation	3.136 *	3.012 *	-2.740	-2.708	-.004	-.013	.007	.021	
	(1.277)	(1.530)	(2.025)	(1.672)	(.057)	(.057)	(.035)	(.034)	
Second generation	1.954	2.018 *	-3.782 *	-2.364	-.040	-.050	-.032	-.013	
	(1.035)	(1.017)	(1.919)	(1.515)	(.048)	(.049)	(.033)	(.031)	
Household size	.588 ***	.584 ***	.605 *	.282	-.005	-.004	.010 *	.006	
	(.126)	(.127)	(.291)	(.246)	(.008)	(.008)	(.004)	(.004)	
Years resident in neighborhood	-.033	-.010	.258 **	.047	.000	.001	.003 *	.001	
	(.051)	(.049)	(.087)	(.073)	(.002)	(.002)	(.002)	(.002)	
Socioeconomic status	-3.337 ***	-2.825 ***	-1.044 *	-.991 *	.053 ***	.048 **	-.046 ***	-.045 ***	
	(.313)	(.309)	(.488)	(.413)	(.014)	(.014)	(.008)	(.010)	
Attend non-Public school	-2.581 *	-2.476 *	-.410	-.107	.043	.040	-.019	-.013	
	(.994)	(.959)	(2.152)	(1.995)	(.053)	(.053)	(.033)	(.032)	
Neighborhood characteristics									
Economic advantage	-	-4.699 ***	-	.674	-	.068	-	-.074 **	
		(.968)		(1.129)		(.042)		(.024)	
Residential stability	-	-1.558 **	-	1.340	-	.039	-	.018	
		(.523)		(.806)		(.027)		(.016)	
Immigrant concentration	-	2.425 **	-	-2.061 *	-	.036	-	-.070 ***	
		(.689)		(.979)		(.032)		(.017)	
Percentage African American	-	.037	-	.500 ***		.000	-	.002 **	
		(.021)		(.037)		(.001)		(.001)	
Intercept	80.514 ***	79.610 ***	44.529 ***	44.919 ***	5.363 ***	5.367 ***	.005	.012	

*p < .05 **p < .01 *** p < .001 (two-tailed)

[1] N = 1383

[2] N = 1278

[3] N = 1252

Table 3. Three Level Rasch Models with Robust Standard Errors: Wave 3 Violence by Individual and Neighborhood Level Predictors[a]

Independent Variables	Wave 3 violence				
	1	2	3	4	5
Family/Individual level					
Age	.113 ***	.115 ***	.115 ***	.115 ***	.115 ***
	(.018)	(.018)	(.018)	(.018)	(.018)
Age squared	-.020	-.018	-.018	-.018	-.018
	(.011)	(.011)	(.011)	(.011)	(.011)
Race/ethnicity (vs. European American)					
African American	.599 **	.500 **	.567 *	.526 *	.449 *
	(.181)	(.186)	(.251)	(.246)	(.187)
Mexican	-.037	.052	.074	.037	.011
	(.179)	(.184)	(.197)	(.195)	(.183)
Other Latino	.206	.252	.264	.210	.195
	(.198)	(.202)	(.212)	(.213)	(.203)
Other race/ethnicity	.461	.397	.418	.338	.314
	(.253)	(.243)	(.253)	(.249)	(.239)
Male	.827 ***	.821 ***	.824 ***	.814 ***	.810 ***
	(.089)	(.090)	(.090)	(.090)	(.090)
Immigrant generation					
First generation	-.694 **	-.693 **	-.696 **	-.738 ***	-.731 ***
	(.197)	(.198)	(.202)	(.201)	(.197)
Second generation	-.221	-.195	-.204	-.224	-.212
	(.146)	(.144)	(.145)	(.146)	(.146)
Years resident in neighborhood	-.025 ***	-.026 ***	-.025 ***	-.023 ***	-.024 ***
	(.006)	(.006)	(.006)	(.006)	(.006)
Family size	.033	.030	.032	.032	.030
	(.020)	(.020)	(.021)	(.021)	(.020)
Socioeconomic status	.048	.057	.055	.051	.053
	(.040)	(.041)	(.040)	(.040)	(.040)
Married parents	-.292 **	-.281 **	-.286 **	-.287 **	-.282 **
	(.101)	(.101)	(.102)	(.102)	(.101)
Supervision	.105	.105	.102	.105	.109
	(.123)	(.123)	(.123)	(.124)	(.123)
Intergenerational ties	-.260 *	-.277 *	-.285 *	-.288 *	-.279 *
	(.131)	(.134)	(.136)	(.137)	(.134)
Parent-child attachment	.124	.159	.167	.196	.184
	(.472)	(.462)	(.461)	(.459)	(.459)
Impulsivity	.262 ***	.270 ***	.269 ***	.267 ***	.270 ***
	(.069)	(.068)	(.068)	(.068)	(.068)
Reading achievement	-.004 *	-.004	-.004	-.004	-.004
	(.002)	(.002)	(.002)	(.002)	(.002)
Neighborhood characteristics					
Economic advantage	-	-.148 *	-.181 *	-.204 *	-.168 *
		(.075)	(.080)	(.084)	(.081)
Residential stability	-	-.108 *	-.099 *	-.070	-.089
		(.050)	(.049)	(.057)	(.057)
Immigrant concentration	-	-.157 **	-.203 *	-.177 *	-.121 *
		(.058)	(.080)	(.084)	(.058)
Proportion African American	-	-	-.002	-.003	-
			(.003)	(.003)	
Collective efficacy	-	-	-	.200	.257
				(.266)	(.264)
Social ties/networks	-	-	-	-.309	-.306
				(.260)	(.260)
Organizational participation	-	-	-	-.362 *	-.349 *
				(.153)	(.153)
Intercept	-2.567 ***	-2.580 ***	-2.577 ***	-2.588 ***	-2.591 ***

*p < .05 **p < .01 *** p < .001 (two-tailed)

Note: Level one item estimates omitted.

[a] Person level N = 1383; Block group level N = 391

Table 4. Three Level Rasch Models with Robust Standard Errors: Wave 3 Violence by Individual, Neighborhood, and School Level Predictors[a]

Independent Variables	Wave 3 violence					
	1	2	3	4	5	6
Family/Individual level						
Age	.115 ***	.134 ***	.132 ***	.106 ***	.125 ***	.033
	(.018)	(.018)	(.019)	(.021)	(.021)	(.022)
Age squared	-.018	-.015	-.016	-.025 *	-.019	-.035 **
	(.011)	(.011)	(.011)	(.012)	(.012)	(.011)
Race/ethnicity (vs. European American)						
African American	.449 *	.373 *	.176	.186	.172	.192
	(.187)	(.185)	(.213)	(.211)	(.210)	(.194)
Mexican	.011	-.018	-.044	.003	.057	.096
	(.183)	(.178)	(.186)	(.180)	(.190)	(.191)
Other Latino	.195	.175	.175	.217	.216	.207
	(.203)	(.202)	(.205)	(.202)	(.205)	(.210)
Other race/ethnicity	.314	.298	.219	.233	.272	.450
	(.239)	(.242)	(.248)	(.246)	(.244)	(.280)
Male	.810 ***	.806 ***	.812 ***	.824 ***	.812 ***	.692 ***
	(.090)	(.090)	(.090)	(.091)	(.092)	(.091)
Immigrant generation						
First generation	-.731 ***	-.785 ***	-.766 ***	-.761 ***	-.784 ***	-.600 **
	(.197)	(.197)	(.198)	(.199)	(.204)	(.210)
Second generation	-.212	-.247	-.231	-.251	-.261	-.298 *
	(.146)	(.147)	(.148)	(.147)	(.149)	(.148)
Years resident in neighborhood	-.024 ***	-.024 ***	-.025 ***	-.026 ***	-.027 ***	-.022 **
	(.006)	(.006)	(.006)	(.006)	(.006)	(.007)
Family size	.030	.018	.015	.014	.008	.014
	(.020)	(.020)	(.020)	(.020)	(.020)	(.021)
Socioeconomic status	.053	.103 *	.104 *	.109 *	.121 **	.117 *
	(.040)	(.044)	(.044)	(.044)	(.044)	(.046)
Married parents	-.282 **	-.256 **	-.242 *	-.235 *	-.237 *	-.254 **
	(.101)	(.101)	(.100)	(.098)	(.097)	(.096)
Supervision	.109	.084	.102	.091	.103	.132
	(.123)	(.122)	(.122)	(.125)	(.127)	(.136)
Intergenerational ties	-.279 *	-.285 *	-.293 *	-.294 *	-.304 *	-.332 *
	(.134)	(.134)	(.132)	(.134)	(.136)	(.141)
Parent-child attachment	-.184	-.169	-.176	-.200	-.285	.307
	(.459)	(.453)	(.458)	(.470)	(.492)	(.478)
Impulsivity	.270 ***	.263 ***	.258 ***	.251 ***	.235 **	.205 **
	(.068)	(.069)	(.069)	(.069)	(.071)	(.073)
Reading achievement	-.004	-.002	-.002	-.003	-.002	-.005 *
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
Wave 1 violence	-	-	-	-	-	.322 ***
						(.029)
Neighborhood characteristics						
Economic advantage	-.168 *	-.078	-.054	-.050	-.039	.007
	(.081)	(.087)	(.085)	(.087)	(.090)	(.094)
Residential stability	-.089	-.066	-.090	-.074	-.084	-.091
	(.057)	(.057)	(.059)	(.061)	(.061)	(.060)
Immigrant concentration	-.121 *	-.148 *	-.090	-.085	-.045	-.029
	(.058)	(.058)	(.068)	(.069)	(.068)	(.064)
Collective efficacy	.257	.267	.306	.303	.350	.393
	(.264)	(.261)	(.267)	(.272)	(.272)	(.272)
Social ties/networks	-.306	-.365	-.363	-.351	-.421	-.307
	(.260)	(.254)	(.253)	(.258)	(.252)	(.258)
Organizational participation	-.349 *	-.331 *	-.335 *	-.328 *	-.297	-.230
	(.153)	(.152)	(.154)	(.154)	(.154)	(.155)
School characteristics						
Proportion low income	-	.018 **	.017 **	.015 **	.009 *	.007
		(.005)	(.005)	(.005)	(.004)	(.005)
Proportion African American	-	-	.005	.004	.001	-
			(.003)	(.003)	(.003)	
Teacher collective responsibility	-	-	-	-.317 *	-.285 *	-.312 **
				(.114)	(.109)	(.108)
Discplinary climate	-	-	-	-	.723 *	.517 *
					(.248)	(.221)
Intercept	-2.591 ***	-2.600 ***	-2.610 ***	-2.567 ***	-2.624 ***	-2.628 ***

*p < .10 **p < .05 *** p < .01 (two-tailed)

Note: Level one item estimates omitted.

[a] Person level N = 1383; Block group level N = 391.

Figure 1. Predicted Probability of Hitting a Non-Family Member in the Last Year by School Climate