

# School Size, Social Capital, and Student Victimization

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## Abstract

This study assesses the effects of three aspects of school organization—student enrollment, student-teacher ratio, and the number of different students taught—on the property and personal victimization experiences of students. It hypothesizes that smaller schools, schools with lower ratios of students to adults, and schools in which the number of different students taught by the typical teacher is lower will produce less victimization because of the increased social capital to which students in these schools are exposed. Using data from the National Study of Delinquency Prevention in Schools, the authors find that, net of individual-level risk factors and confounding characteristics of schools and their surrounding communities, each of the three aspects of school organization is related to student victimization but that these effects vary across victimization type. Their research suggests that reducing the ratio of students to teachers and reducing the number of different students taught by the average teacher are likely to reduce student victimization. Reducing school size is not. The authors also find evidence that higher levels of social capital, as measured by student consensus about normative beliefs, partially mediate the effects of student-teacher ratio on personal victimization.

## Keywords

student victimization, school size, social capital, school organization, multilevel models

Far from serving as safe havens from crime, schools are in fact places where the risk of certain types of victimization is elevated (Cook, Gottfredson, and Na 2010; Dinkes, Kemp, and Baum 2009). Although rates of serious school violence<sup>1</sup>—fatal violence in particular—have been historically negligible, recent studies indicate that children actually face greater risk of nonfatal victimization at school or on the way to and from school (Dinkes et al. 2009; Snyder and Sickmund 1995). In light of their finding that 56 percent of all juvenile victimizations in 1991 occurred in or around school property, Snyder and Sickmund (1995:16) observed, ‘There is no comparable place where crimes against adults were so concentrated.’

Beyond the direct harm to students, high levels of victimization in schools diminish the overall quality of education by lowering student attendance, diverting students’ and teachers’ attention from the curriculum, and fostering a generally

disruptive and fearful environment (Elliott, Hamburg, and Williams 1998). Recent surveys of American youth indicate that apprehensiveness about victimization in school discourages a small percentage of students from attending every day and prompts some to avoid poorly supervised locations within the school—for example, entrances, hallways or stairs, restrooms—for fear of their personal safety (Dinkes et al. 2009). Further, experiences with victimization may elicit defensive or retaliatory behaviors among students, such as

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carrying weapons (Demaray and Malecki 2003; Lockwood 1997) or perpetrating interpersonal violence (Resnick, Ireland, and Borowsky 2004). Thus, even less serious forms of victimization can set in motion a cycle of fear and distraction that effectively undermines the mission of the school.

The intuitive response to the problem of school-based victimization has been to increase security and surveillance measures. In 2000, as many as 66 percent of middle schools and 57 percent of high schools used some form of security or surveillance tactic, such as metal detectors; drug-, gun-, or bomb-sniffing dogs; or in-school security officers (G. D. Gottfredson et al. 2000). The implementation of these measures is costly, yet there is scant empirical evidence to validate their efficacy, either in terms of increased safety or reduced fear in schools. Rather, recent studies suggest that the use of high-tech security measures not only may be ineffective at preventing crime in schools (O' Neill and McGloin 2007; Schreck, Miller, and Gibson 2003) but might actually heighten fear of victimization among students and teachers and cause teachers to surrender their responsibility for maintaining social control in the school (Devine 1995; Phaneuf 2006).

If increasing security and surveillance is not the answer, what, then, can schools do to reduce student victimization? Interestingly, the answer might be found by considering an extremely rare form of student victimization: school shootings. A recent Congressionally mandated study (National Research Council [NRC] 2003) investigating the circumstances surrounding six fatal school shootings uncovered a common thread among the incidents: poor communication between students and adults in the schools. The study found that in every case "when information became available that should alert adults to the likelihood of a fight or an assault by one youth against another, the information often did not cross the boundary that divides adults and officials from the adolescents" (NRC 2003:254). The committee's finding echoes prior research on extreme forms of school violence (U.S. Secret Service National Threat Assessment Center 2000) and underscores the need to consider the impact of the school social climate on individual behavior.

The conclusions of the NRC study resonate with a large body of sociological theory and research on social capital. Social capital is an emergent property of social relationships that generates benefits for individuals by virtue of their membership in social networks or other social structures

(Portes 1998). Mechanisms that generate social capital include norms of reciprocity that generate obligations and expectations for behavior and shared beliefs about normative behavior (Coleman 1988). In the context of victimization in schools, students in schools characterized by close ties among and between students and adults and in which expectations for behavior are clearly communicated and understood stand to benefit because they will be protected from potential harm by others who care about them and because the environment provides clear signals for appropriate behavior to potential perpetrators of harm. Especially relevant to this study is Coleman's concept of 'closure,' a property of social relations that increases the effectiveness of social norms. Connections among actors are more numerous in closed networks. Individuals are more likely to have common acquaintances, and consequently their behaviors are more likely to be held in check by the shared expectations of multiple people with whom they are in frequent contact.

Coleman (1988) noted that trust is a necessary element for social capital. That is, people must trust others in the organization to carry out their obligations to the unit. Of course, schools whose members are more connected to one another would be expected to engender greater trust among students that adults will protect them from harm. Bryk and Schneider (2002) elaborate on this idea to develop the notion of 'relational trust' as an important property of schools rooted in the nature of social exchanges among members of the school community. They argue that when the school climate is characterized by trust, consensus on behavioral norms is more likely and social control is facilitated.

Closely related are ideas about legitimacy and moral authority discussed by Arum (2003). Arum (2003), reflecting upon Durkheim's ideas about the role of schools in socializing youth, states that schools should "not only teach socially appropriate behavior but must also inculcate a general respect and obligation towards social rule." Schools accomplish this by creating a climate in which there is consensus about appropriate behavior and in which behavior outside of these agreed upon expectations is censored. When students recognize the moral authority of adults in the school and internalize school rules as just and fair, they are more likely to abide by them. Coleman's concept of closure can thus be applied to the school climate with respect to behavioral norms as well as to

interpersonal relationships. That is, in schools in which there is a high degree of consensus about what constitutes appropriate behavior, student behavior will be more effectively constrained. These ideas are also central to a large body of criminological theory and research supporting the importance of the 'social bond,' formed by commitments to common goals, shared beliefs about what constitutes right and wrong behavior, and emotional attachments to school and adults in the school, for effectively constraining youth misbehavior (Cernkovich and Giordano 1992; Hirschi 1969; Najaka, Gottfredson, and Wilson 2001; Payne 2008; Payne, Gottfredson, and Gottfredson 2003).

This article examines the links among aspects of school organization that influence social interactions, social capital, and student victimization experiences. Research on the organization of secondary schools suggests that school size influences a variety of student outcomes, including academic achievement and school dropout (Lee and Smith 1995; Rumberger 1995), because it alters aspects of the internal organization of schools related to social capital (Lee, Bryk, and Smith 1993). School size is also likely to be related to student victimization experiences. Large schools may foster impersonal environments that impede the development of close ties among students and teachers. Students in smaller schools may be more likely to develop a greater sense of trust in the adults and to share common expectations for behavior with others in the school. Large schools are likely to be organized more bureaucratically and to involve more formalized social interactions among members of the school population. As a result, communication may be less frequent or less direct, cohesiveness and trust may be reduced, and management functions (including the management of discipline) may become more burdensome, all resulting in less effective socialization of youth.

The research also suggests that school size may have opposing influences on student victimization experiences. On the one hand, larger schools more often have the capacity to specialize programs and services to more efficiently meet the diverse needs of their students. They may be more capable of identifying problems and intervening to reduce potential security threats. On the other hand, in schools in which less specialization is used, the typical teacher teaches a smaller number of different students and is able to develop more personal relationships with them. Students

in such schools not only may be more likely to refrain from victimizing their fellow students but may also be more likely to intervene on behalf of potential victims and take steps to prevent a potential victimization from occurring. Greater trust in the adults in the school is also likely to increase the likelihood that students will communicate potentially dangerous situations to them.

There is strong theoretical justification for expecting a causal link between school organization and student victimization through social capital. Coleman (1988) used the number of siblings and parents present in the family and the ratio of adults to children as proxy measures for family social capital. He argued that more siblings and fewer adults dilute the amount of attention available for each child. Following the same logic, schools with fewer students, a higher ratio of teachers to students, and a smaller number of different students taught by the typical teacher should increase social capital and reduce victimization experiences. Despite this strong theoretical justification for a causal link between these aspects of school organization, social capital, and student victimization, relatively little attention has yet focused on these relationships. The following section summarizes research on each of the hypothesized links.

## SOCIAL CAPITAL AND VICTIMIZATION

A social capital framework has been applied to further understanding of neighborhood and school influences on crime in general, but less so to the understanding of school organization on student victimization. Sampson and colleagues (Morenoff, Sampson, and Raudenbush 2001; Sampson, Morenoff, and Earls 1999; Sampson, Raudenbush, and Earls 1997) introduced the concept of 'collective efficacy' as a process through which neighborhood residents convert social capital into concrete actions directed at a specific goal, such as crime prevention. Collective efficacy, like social capital, involves ties among residents and shared expectations for behavior but also implies mutual engagement by residents in maintaining local social control. Others (Battistich and Hom 1997; Bryk and Driscoll 1988; Kirk, 2009; Payne 2008; Payne et al. 2003) have hypothesized that 'communally organized' schools (i.e., schools in which members care about and support one another, have common

goals and a sense of shared purpose, and feel personally committed) will experience less crime and disorder. They argue that more communally organized schools should produce higher levels of student bonding to school and lower levels of misbehavior. These studies have generally supported the conclusion that problem behavior is less likely to occur in communally organized schools or in schools with higher levels of collective efficacy, net of individual- and community-level controls that might produce spurious relationships. Bryk and Driscoll (1988), using High School and Beyond data, found that teacher reports of communal organization in high schools were related to lower levels of student misbehavior and dropout. Battistich and Hom (1997) used data from a sample of 24 elementary schools and found that a measure of student sense of community, aggregated to the school level, was negatively associated with student drug use and delinquency. Insufficient between-school variability in victimization prevented a test of the effect of school community on student victimization. Payne et al. (2003) theorized that communally organized schools promote greater school bonding and, subsequently, experience lower levels of student delinquency and victimization. In a school-level analysis of data from the National Study of Delinquency Prevention in Schools (NSDPS; the same data used in this study), the authors reported that schools with higher levels of communal school organization—defined using teacher reports of informal social relations, common norms and experiences, and collaboration and participation (Payne et al. 2003:751)—experienced significantly less student delinquency perpetration. No significant relationship was found between levels of communal organization and student victimization. Average student bonding (attachment to others, commitment to conventional goals, and belief in conventional norms for behavior) was significantly related to lower levels of student delinquency and victimization, and it mediated the relationship between communal school organization and student delinquency. Extending this school-level work using a multilevel framework, Payne (2008) replicated the previously reported associations among communal social organization, student bonding, and delinquency but also reported evidence for a cross-level interaction: Delinquency was more dependent upon individual student bonding in schools that were more communally organized.

The most recent examination of school-level social capital and student misbehavior is provided by Kirk (2009). He used data from the Project on Human Development in Chicago Neighborhoods to examine the interdependency of influences of school, neighborhood, and family contexts in explaining juvenile misbehavior and arrest. The study measured teacher reports of both collective efficacy and teacher-parent trust at the school level, as well as individual-level student-teacher trust. Higher levels of student-teacher trust were related to lower levels of suspension and arrest. School-level collective efficacy was inversely related to both suspension and arrest (the latter marginally significant). The measure of teacher-parent trust was not significantly related to either outcome. Further, neighborhood collective efficacy interacted with school collective efficacy in predicting suspensions and school-parent trust in predicting arrest, thus demonstrating that the influences of community and school contexts in shaping misbehavior are interdependent.

In addition to these studies that focused directly on social capital or communal social organization, a number of studies have firmly established that two aspects of the school environment closely related to social capital—normative beliefs and student attachment to school—are related to lower levels of student delinquency and victimization. Many studies have examined the association between aggregate-level attachment and problem behaviors. Although these studies are too numerous to be summarized individually here, Cook, Gottfredson, and Na (2010)<sup>2</sup> summarized results from nine studies relating a school-level measure of student affective bonds (often measured as the extent to which students like the teachers and principal and feel supported by the adults in the school) to problem behaviors and concluded that average student attachment to school inhibits student problem behaviors. They also summarized results from studies relating normative belief structures to problem behaviors. Only two studies (G. D. Gottfredson and Gottfredson 1985; Hoffman and Ireland 2004) related student reports of beliefs about right and wrong behaviors (aggregated to the school level) with measures of delinquency and victimization. Both found evidence supporting an effect of the school-level normative belief structures on these problem behaviors. Also supporting this conclusion is a review of the effects of school-based interventions (D. C. Gottfredson, Wilson, and Najaka 2002), which concluded that interventions aimed at establishing norms or expectations for behavior

are among the most effective for preventing substance use, delinquency, aggression, and other problem behaviors.

This body of research on school social capital, and closely related features including collective efficacy, communal organization, attachment to school, and normative beliefs, provides a strong basis for anticipating that increased social capital should reduce victimization experiences. The objective of this article is to extend the research in this area to examine the extent to which variation in aspects of school organization that influence human interactions is related to social capital. It asks whether reducing school size, student-teacher ratios, and the number of different students taught is likely to increase social capital and reduce student victimization experiences. The following sections summarize research on the relevant aspects of school organization, social capital, and student victimization.

## SIZE-RELATED ASPECTS OF SCHOOL ORGANIZATION AND STUDENT VICTIMIZATION

Much of the research on school organization and student victimization has not focused on school size as a predictor of interest, but many of these studies have controlled for school size when examining the effect of factors such as normative beliefs or student bonding. In one of the earliest studies of the organizational and structural predictors of school-based victimization, G. D. Gottfredson and Gottfredson (1985) examined school-level predictors of victimization rates in a national sample of more than 600 secondary schools, using the Safe School Study data. In this school-level study, both school size and the number of different students taught were associated with higher average levels of teacher victimization, but these factors were not significantly related to student victimization (personal and property combined) once externally determined factors were controlled.

Khoury-Kassabri, Benbenishty, Astor, and Zeira (2004) studied school climate effects on student victimization in a national sample of 162 Israeli secondary schools. The authors used multilevel modeling to examine the effects of several externally determined factors (e.g., community characteristics and students' families' socioeconomic status), school organization characteristics (e.g., school level and size), and student bonding (e.g.,

student-teacher supportive relationships) on several measures of student victimization. The study found no association between school size and student victimization,<sup>3</sup> although a measure of class size was significantly related to higher levels of victimization. Similarly, Ma (2002), using multilevel modeling in a study of rural schools located in New Brunswick, Canada, reported no significant association between school size and student victimization.

Using a sample of 254 schools from the NSDPS, G. D. Gottfredson et al. (2005) examined the extent to which a combined measure of property and personal victimization was explained by school structural factors, including measures of school size and the number of different students taught. The unique contribution of school size and the number of different students taught could not be determined in this study (or in other published reports from the NSDPS; Payne 2008; Payne et al. 2003) because these measures were combined with correlated community factors. Together, the composite containing the size factors and urbanicity were related to lower student victimization and delinquency.

In summary, research relating student enrollment, student-teacher ratio, and the number of different students taught to student victimization has produced mixed results. The results from existing studies, however, are difficult to evaluate because the effects of these variables have likely been masked because they have been (a) combined with the effects of other factors such as urbanicity, (b) reported only in models that control for school climate factors they might influence, or (c) reported only in combined measures of property and personal victimization.<sup>4</sup> As a consequence, we have little reliable evidence relating aspects of school organization that influence human interactions and student victimization.

## SCHOOL SIZE AND SOCIAL CAPITAL

Do smaller schools increase social capital? We argued earlier that students attending smaller schools should be more likely to develop close ties with other students and teachers, place more trust in the adults in the school, and share common expectations for behavior with others in the school. We argued that school discipline management should present greater challenges in large schools, potentially increasing uncertainty about expectations for appropriate behavior. The scant

research that has closely examined how social relations differ in large and small schools suggests that the relationship is not straightforward. A study of a recent experiment in the Chicago Public Schools in which large, comprehensive high schools were converted into several smaller schools (Kahne, Sporte, de la Torre, and Easton 2008) found consistent evidence across several student-reported measures of greater perceived support and more personalized environments in the smaller schools as compared to the traditional public high schools. Similarly, Lee, Smerdon, Alfred-Liro, and Brown (2000), in a qualitative study of small and large schools, documented that students in small schools reported generally higher levels of support and caring among the members of their school communities. However, they also found evidence to suggest that 'proximity may breed conflict' as students become too familiar with one another and that students 'get lost' in small schools just as they do in large schools. Lee and Ready (2007) reviewed existing evaluations of attempts by schools to reorganize into smaller 'schools within schools' (SWS) and reported in detail on the aftermath of five public high schools' attempts at such reorganizations. The studies they reviewed found that although social relations in the SWS schools were generally more positive than in traditional comprehensive schools, findings were inconsistent across studies regarding effects on other outcomes such as attendance and academic achievement. Their in-depth study documented numerous implementation challenges faced by the schools as they attempted this ambitious reform. They concluded that changing the size of the subunits in the school does not necessarily produce more cohesive environments and may in fact introduce new tensions as staff must renegotiate fundamental aspects about the way educational services are delivered within these subunits. Lee and Ready's (2007) research suggests that changing school size per se may be the wrong focus for school reform directed at reducing student victimization experiences. If the goal is to increase interpersonal ties and consensus about appropriate behaviors, more sensitive targets for reform might be more proximal organizational features such as the ratio of students to adults in the school or the number of different students taught by the typical teacher. As noted earlier, only a handful of studies have reported on the association of these aspects of school organization and victimization, but G. D. Gottfredson and Gottfredson (1985) showed that

the number of different students taught by the average teacher was positively related to teacher victimization rates in senior high schools, net of community factors and the demographic composition of the school. To our knowledge, no studies have reported on the extent to which changes in these aspects of school organization produce greater social capital.

The research on school size to date, focusing as it has more on academic outcomes and dropout than on behavioral problems, leaves open the question of whether student enrollment, or related aspects of school organization such as student-teacher ratio and the number of different students taught, is causally related to the level of social capital produced in the school environment and whether manipulating school size might be an effective policy lever for reducing student victimization experiences in schools. Our research attempts to answer these questions: Is the number of students enrolled related to student victimization? Are student-teacher ratio and the number of different students taught by the typical teacher related to student victimization? Are the effects of these aspects of school organization on student victimization experiences mediated by measures of social capital?

Our key hypotheses are as follows:

*Hypothesis 1:* Net of individual-level and community characteristics, students in schools with larger student enrollments, with higher ratios of students to teachers, and in which teachers teach larger numbers of different students will experience more victimization.

*Hypothesis 2:* Students in smaller schools, schools with lower ratios of students to teachers, and schools in which teachers teach smaller numbers of different students will report closer ties to adults in their schools and a higher degree of consensus about norms for behavior. These aspects of social capital will mediate the influence of the school size, student-teacher ratio, and number of different students taught on student victimization.

## THE PRESENT STUDY

### Sampling Design

The NSDPS (G. D. Gottfredson and Gottfredson 2001; G. D. Gottfredson et al. 2000) was conducted to classify and describe existing school-

based prevention programs and practices and to examine factors related to their successful implementation. It also provided national estimates of the type and amount of crime and violence occurring in and around schools. The study was designed to describe schools in the United States as well as characterize schools by level and location. Accordingly, a sample of public, private, and Catholic schools, stratified by location (urban, suburban, and rural) and level (elementary, middle, and high) was drawn from the most comprehensive list of schools available: a mailing list maintained by Market Data Retrieval, a commercial mailing list vendor. A probability sample of 1,287 schools (143 for each cell in the sample design) was selected with the expectation that if a response rate of 70 percent could be achieved there would be 300 schools responding at each level and 300 schools responding from each location (about 100 per cell or 900 schools overall). Principal, teacher, and student surveys were conducted in 1997 and 1998.<sup>3</sup>

Generally, all teachers in participating schools were sampled, and a sufficient number of students were sampled to produce an estimated 50 respondents per school. When a student roster containing student gender was available, students were systematically sampled within gender. Otherwise, students were stratified by grade level for systematic sampling.

### ***Final Sample and Response Rates***

Of the 847 secondary schools asked to participate in student and teacher surveys, 403 (48 percent) agreed to conduct teacher surveys and 310 (37 percent) student surveys. The primary reason for nonparticipation at the school level was principal refusal to participate in the study. Eventually, 66 percent of the principals contacted agreed to participate, with nonparticipants usually stating that they were too busy or that the study posed too great a burden on their schools. Of the participating principals who did not permit their schools to participate in the teacher and student survey activities, many cited local policies that prohibited them from participating.

Certain categories of schools are excluded from this analysis. Of the 310 secondary schools that participated in both the student and the teacher surveys, 32 were alternative schools for disruptive youth, whose data included a number of extreme

outliers on several of the variables of interest in the study. Further, preliminary analyses indicated that problems of disorder and victimization are very different for public schools than for private and religious schools and would require separate analyses. Because only 29 nonpublic secondary schools were included in the sample, we decided to limit the study to public schools. These exclusions resulted in a sample of 255 schools (rather than 249 because some schools were both private and alternative). Finally, we excluded 1 school in which student enrollment was an extreme outlier, and 1 school in which all student demographic data were missing.<sup>6</sup> The final sample for this study consists of 253 public, secondary, nonalternative schools that participated in both the teacher and the student surveys.

In this final sample of 253 schools, the within-school response rate for the student survey ranged from 16 to 100 percent, with a mean of 75 percent. This yielded, on average, 54 student surveys from which to compute school means. The total number of student surveys in these 253 schools is 13,597.

G. D. Gottfredson et al. (2005) compared the final study sample with the full sample of 847 secondary schools on variables that were available for all schools and showed that the study sample was less likely to be located in urban areas and, not surprisingly, contained a smaller percentage of private schools than the full sample. Also, the grade levels included in the schools differed, with 34 percent of the final sample and 49 percent of the full sample being high schools as opposed to middle or junior high schools. Several other characteristics of the schools and communities were significantly correlated with participation in the survey, but the magnitude of the differences between the original and final samples is small.

### ***Measures***

Items and scales composed from principal and student questionnaires are described below. Student-level measures are described first, followed by school-level measures. All student-level measures are derived from student surveys. School-level measures are drawn from census records (to describe the communities in which the schools are located), principal surveys, and student surveys aggregated to the school level. More detailed descriptions of each of the measures are provided by G. D. Gottfredson et al. (2000).

**Dependent variables.** Two dependent variables are examined, both of which are adapted from the survey *What about You?* (G. D. Gottfredson and Gottfredson 1999). *Personal victimization* ( $\alpha = .61$ ) consists of five items measuring students' in-school personal victimization experiences. Items ask whether or not the following things happened to the respondent at school during the current school year: been physically attacked; been forced to hand over money or things worth less than \$1; had money or things worth more than \$1 taken by force, weapons, or threats; been threatened with a beating; and been threatened with a knife or gun. *Property victimization* ( $\alpha = .64$ ) consists of two items measuring students' in-school property victimization experiences. Items ask whether or not the respondent had something worth less than \$1 and something worth more than \$1 stolen from his or her desk, locker, or other place at school during the current school year. For each scale, a student's score is the proportion of the items endorsed. The means of the scales are 0.49 for property and 0.11 for personal victimization, or approximately 1 property and .5 personal victimization experiences out of 2 and 5 possible. The personal victimization scale was transformed by taking its natural log (after adding 1), reducing its skew to 1.71. The property scale was not highly skewed in its original form. The intraclass correlations for personal and property victimization are both .03.

**Student-level predictors.** Three measures of student demographic characteristics are included in the multilevel models. These characteristics are expected (based on previous research) to be related to victimization experiences and must therefore be controlled.

*Age* is measured in years. *Female* is coded as a dichotomous variable (1 = *female*, 0 = *male*). Consistent with prior research (Bastian and Taylor 1991; Chandler, Chapman, Rand, and Taylor 1998; Dinkes et al. 2009; Khoury-Kassabri et al. 2004; Ma 2002; Olweus 1993; Welsh 2000, 2001), we expect that younger students and male students will be more likely to be victimized, although we anticipate that gender is likely to be more highly related to crimes against persons than to crimes against property (Burrow and Apel 2008; Schreck et al. 2003; Wilcox, Tillyer, and Fisher 2009).

We include a variable measuring whether or not the student is a member of a racial or ethnic group that represented a minority of the school's

population. Interestingly, although some research has documented higher rates of victimization among members of racial or ethnic minority groups (Chandler et al. 1998), Welsh (2000, 2001) found that white students reported higher levels of victimization than did nonwhite students but that this occurred in a school setting where nonwhite students composed the vast majority of the student population. Burrow and Apel (2008), Schreck et al. (2003), and Wilcox et al. (2009) all reported that minorities were less likely to be victims of crimes against persons but not against property. For this study, the *ethnic minority status* variable was created by comparing the student's self-reported race/ethnicity with the school average race/ethnicity using the following categories: Hispanic, non-Hispanic white, African American, Asian, American Indian, and 'other.' This is a dichotomous measure coded as (1 = *the student's group represented less than 50% of the school's population*, 0 = *otherwise*). One quarter of students in the sample are coded as ethnic minority students.

*Closeness of ties and normative beliefs* are individual-level counterparts of the social capital measures described below. Measured at the individual level, these variables capture the attachment and belief elements of the social bond (Hirschi, 1969) discussed earlier.

**School-level measures of school organization and social capital.** As summarized earlier, research on school organization more generally suggests that schools with larger student enrollments may increase student victimization by creating an atmosphere of anonymity in which students are less likely to experience close ties to adults. Adults in larger schools may also experience difficulty in asserting their moral authority, and therefore such schools may be less effective at creating climates in which there is consensus about appropriate behavior. Higher ratios of students to teachers are expected to operate in a similar fashion but may have a greater effect on the level of social capital than does the total number of students because in schools with more students per adult, attention to each child is likely to be diluted (Coleman, 1988), resulting in sparser ties between students and adults and less effective reinforcement of behavioral norms. Another relevant aspect of school organization is the number of different students taught by the typical teacher. Even in relatively small schools, students may be grouped for instruction in such a way that they interact with a larger number of different teachers, spending



less time with each. Organizing students in this way can be expected to affect social capital in the same way that a larger number of students would. Teachers who teach one class all day are more likely to develop personal relationships with students than are teachers who teach a different group of students each class period. We assume that in schools in which the typical teacher teaches a smaller number of different students, students will develop closer ties with teachers and that their teachers will be more effective at socializing youths around shared norms for behavior. We measure the three aspects of school organization as follows:

*Student enrollment* is based on principal reports of the number of students enrolled in the school. These principal reports were compared with data from the Common Core of Data and Market Data Retrieval. Clarification from the schools was sought when substantial discrepancies occurred. School enrollment ranges from 97 to 2,912, with a mean of 792.02. The natural log of the enrollment was taken to reduce skew. *Student-teacher ratio* is the ratio of the number of students to the number of full-time teachers as reported by the principal. This ratio is divided by 100 for analysis. This measure ranges from 0.06 to 0.49, with a mean of 0.17. The *number of different students taught* is taken from the teacher questionnaire. Teachers were asked to report how many different students they taught in an average week; responses were *fewer than 35*, *35 to 70*, *71 to 100*, and *more than 100*. Responses were then coded as follows: *Fewer than 35* was coded as 17.5, *35 to 70* was coded as 52.5, *71 to 100* was coded as 85.5, and *more than 100* was coded as 120. Individual teacher reports were averaged to create a school-level variable. This school-level measure ranges from 24.23 to 120, with a mean of 90.07.

Finally, the research summarized earlier suggests that smaller schools may experience lower levels of student victimization because their students have higher levels of social capital. We focus on two aspects of social capital: closeness of ties and normative beliefs. Multi-item scales measuring these two dimensions were created from items adapted from the What about You? survey (G. D. Gottfredson and Gottfredson 1999). *Closeness of ties* is a 5-item scale ( $\alpha = .68$ ) that measures the extent to which students care about, respect, and like the teachers and principal in the school. Items, responses to which were all true/false, include 'I like the principal' and 'I care what

teachers think about me.' Items were averaged to form a scale whose values range from 0 to 1. Higher scores indicate closer ties. *Normative beliefs* is a 23-item scale ( $\alpha = .86$ ) that includes items such as 'How wrong is it for someone your age to do each of the following things?' (answered for each of six misbehaviors ranging from cheat on school tests to steal something worth more than \$50) and 'Sometimes you have to cheat in order to win.' The response formats varied across items: Some were true/false and others were Likert-type scales. To handle the different response formats, the Likert-type scale responses were dichotomized, and the recoded items were averaged to form a scale called *normative beliefs* whose values range from 0 to 1. Higher school averages indicate greater levels of consensus about what constitutes appropriate behaviors. Lower school averages indicate less consistent adherence to a prosocial normative belief structure. Both scales are normally distributed. The correlation between them is .52 at the individual level, which is not surprising because normative beliefs and attachment to others are related elements of an underlying social bond that restrains behavior (Hirschi 1969). The two scales are included as student-level measures and are also averaged across all students in each school to create school-level measures of social capital. The intraclass correlations for the scales are .05 (closeness of ties) and .06 (normative beliefs).

*Control measures.* Several variables are used to measure characteristics of the schools and communities that are not under the direct control of the school but that can be expected to influence student victimization. The measures of community characteristics were created by geocoding the attendance areas of the schools and merging 1990 census variables that were created by summing data across the specific block groups included in each school's attendance area.<sup>7</sup> The geocoding procedure is described by G. D. Gottfredson et al. (2003). A factor analysis of these community measures suggested two orthogonal factors for the community variables. The first varimax-rotated factor, *concentrated disadvantage*, accounted for 45 percent of the variance in the community factors and had high loadings for the following variables: public assistance income, family poverty, unemployment rate, high school noncompletion, and female-headed households. The second factor, *urban immigration and mobility*, accounted for 19 percent of the variance and had high loadings for population density, foreign-born population, and residential

mobility. Two scores were created based on this factor analysis by averaging the z-scores for the variables mentioned that loaded on each factor.

The *proportion students African American, Hispanic, and Asian* (all taken from the Common Core of Data from the National Center for Education Statistics) and the *average age of students* in the school (aggregated from the student-level file) are also used as school-level control variables.

Relatively few cases are missing for individual-level variables. The number of valid cases ranges from 13,231 to 13,597 (less than 3 percent missing for any variable). Listwise deletion is used in the Level 1 equations. At the school level, missing data are estimated using the EM algorithm available in the missing value analysis module of SPSS v. 15.0. The estimated values are substituted for missing values for measures of concentrated disadvantage and urban immigration and mobility (15 cases each). Table 1 shows the descriptive statistics for all study variables, and the appendix shows the correlations among all school-level variables.<sup>8</sup>

### Analytic Strategy

This study uses hierarchical linear modeling software (Bryk and Raudenbush 1992) to examine the effects of the individual- and school-level variables implied in the hypotheses on student reports of their victimization experiences. The individual-level (Level 1) equation is

$$\begin{aligned}
 Y_{ij} \approx & b_{0j} + b_{1j}X_{1ij} + b_{2j}X_{2ij} + b_{3j}X_{3ij} + b_{4j}X_{4ij} + b_{5j}X_{5ij} + r_{ij}
 \end{aligned}$$

where  $Y_{ij}$  is the value of each victimization measure for individual  $i$  in school  $j$ ;  $X_{1ij}$  is the gender of individual  $i$  in school  $j$ ;  $X_{2ij}$  is the age of individual  $i$  in school  $j$ ;  $X_{3ij}$  is the ethnic minority status of individual  $i$  in school  $j$ ;  $X_{4ij}$  is the normative belief scale score for individual  $i$  in school  $j$ ;  $X_{5ij}$  is the closeness-of-ties scale score for individual  $i$  in school  $j$ ;  $b_{0j}$  is the intercept value for school  $j$ ;  $b_{1j}$  through  $b_{5j}$  are slope coefficients relating the individual-level variables to victimization; and  $r_{ij}$  is an error term and is assumed to be distributed normally with mean zero and variance  $s^2$ .<sup>9</sup>  $X_{1ij}$  through  $X_{5ij}$  are included in all models described below (except the unconditional models).  $X_{4ij}$  and

$X_{5ij}$  are included in the Level 1 equation only for Model 3 (described below), which includes the social capital measures. The individual-level counterparts of the social capital variables are included in this equation to allow for an interpretation of the school-level effect of social capital as a contextual effect. Each of the Level 1 predictor variables is centered around its grand mean, except for  $X_3$ , which is uncentered.<sup>10</sup> With grand mean centering, the intercept is interpreted as a covariate adjusted group mean of victimization. This centering is used because we have a substantive interest in the effects of Level 2 predictors on victimization, and it is necessary to adjust for between-school variance that arises because of the grouping of individuals with similar characteristics in schools (Enders and Tofighi 2007).

In the Level 2 equations, the Level 1 intercept ( $b_{0j}$ ) is the outcome variable. The equation for the intercept ( $b_{0j}$ ) from Level 1 is

$$b_{0j} \approx g_{00} + \sum_{k=1}^K g_{0k} W_{kj} + u_{0j}$$

where  $g_{00}$  is the intercept term;  $W_{kj}$  are the school-level control, school organization, and social capital variables;  $g_{0k}$  is the contextual effect of the school-level variables on  $b_{0j}$ ; and  $u_{0j}$  is the error term for school  $j$ . The school-level random effect is assumed to be normally distributed with variance  $t$ . The Level 1 slopes are not modeled because we have no substantive interest in these slopes, but a randomly varying error term is included in the equation for each slope coefficient for which the null hypothesis of homogeneity was rejected. School-level predictors are not centered. The Level 2 equation is built in steps. Model 1 includes only the control variables. Model 2 adds the school organization variables, and Model 3 adds the social capital variables.<sup>11</sup> In this way, we are able to assess the extent to which effects of the control variables are mediated by school organization and social capital and the extent to which the effects of school organization factors are mediated by social capital.

Finally, all models were repeated after omitting eight schools in which the value of one or more variables in the Level 2 equation was identified as an extreme outlier (e.g., values that exceeded three interquartile ranges from the 75th or 25th percentile of the distribution). Instances in which results from these models differ from the results obtained using all cases are noted.

Table 1. Descriptive Statistics for Study Variables ( $N = 13,597$  individuals in 253 schools)

	<i>n</i>	Mean	Minimum	Maximum
<b>Dependent variables</b>				
Personal victimization	13,556	.11 (.19)	.00	1.00
Personal victimization (ln)	13,556	.09 (.15)	.00	.69
Property victimization	13,551	.49 (.43)	.00	1.00
<b>Individual-level variables</b>				
Age	13,440	14.06 (1.87)	9.00	18.00
Female	13,450	.51 (.50)	.00	1.00
Ethnic minority status	13,597	.25 (.43)	.00	1.00
Closeness of ties	13,400	.71 (.30)	.00	1.00
Normative beliefs	13,231	.66 (.22)	.00	1.00
<b>School organization (<math>N = 253</math>)</b>				
Student enrollment		792.02 (478.58)	97.00	2,912.00
Student-teacher ratio		.17 (.05)	.06	.49
Number of different students taught		90.07 (15.13)	24.23	120.00
<b>Social capital (<math>N = 253</math>)</b>				
Closeness of ties		.72 (.08)	.49	.92
Normative beliefs		.66 (.06)	.40	.81
<b>School-level control variables (<math>N = 253</math>)</b>				
Concentrated disadvantage		-.04 (.80)	-1.49	3.21
Urban immigration and mobility		-.16 (.72)	-1.65	2.26
Proportion students African American		.15 (.24)	.00	99.69
Proportion students Hispanic		.10 (.19)	.00	98.11
Proportion students Asian		.03 (.07)	.00	79.55
Average age of students		13.99 (1.46)	11.63	17.29

Note: Standard deviations are in parentheses.

## RESULTS

We first examine the intercept-only (unconditional) model. For both personal and property victimization, the null hypothesis that the intercept variance ( $t$ ) equals zero was rejected and the percentage of variance that lies between schools is 3 percent for both types of victimization. This small percentage of variance between schools is consistent with other studies of school disorder. For example, Welsh (2001), with a relatively homogeneous sample of Philadelphia middle schools, reported the percentage of variance between schools was 4 percent for a measure of victimization.

An initial set of multilevel models containing only Level 1 predictors was estimated to check for random effects in the Level 2 equation for

each slope coefficient. For this set of models in which the intent is to test for slope heterogeneity, Level 1 variables (except ethnic minority status, which remains uncentered) are centered around their school means, as recommended by Raudenbush and Bryk (2002:143). These models reveal that all of the slope coefficients except that for gender vary significantly across schools ( $p < .01$ ) in the equation predicting personal victimization. In the equation predicting property victimization, the variability in the slope coefficients for closeness of ties varies significantly across schools ( $p < .05$ ). Therefore, all subsequent models include a randomly varying error term at Level 2 for the affected slopes.

Model 1 in Table 2 shows the coefficients from a model of personal victimization that includes only control variables. These models are estimated

Table 2. Hierarchical Linear Regression of Personal Victimization (ln) on Individual Measures, School Size, and Social Capital

	Model 1		Model 2		Model 3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Intercept	.147	.026***	.172	.035***	.183	.036***
Individual variables						
Age	-.006	.001***	-.006	.001***	-.009	.001***
Female	-.052	.003***	-.052	.003***	-.041	.003***
Ethnic minority status	.023	.004***	.023	.004***	.017	.004***
Closeness of ties					-.059	.006***
Normative beliefs					-.090	.009***
Exogenous school-level variables						
Concentrated disadvantage	.011	.004**	.010	.004**	.005	.003
Urban immigration and mobility	.004	.004	.008	.005	.003	.004
Proportion students African American	-.020	.013	-.017	.013	.001	.010
Proportion students Hispanic	-.018	.016	-.022	.015	-.007	.011
Proportion students Asian	-.010	.024	-.021	.024	-.027	.017
Average age of students	-.004	.002*	-.003	.002	-.003	.002
School size						
Student enrollment			-.010	.004*	-.005	.003
Student-teacher ratio			.132	.041**	.071	.028*
Number of different students taught			.000	.000	.000	.000
Social capital						
Closeness of ties					.018	.031
Normative beliefs					-.082	.038*
Proportion t variance accounted for	.318		.379		.561	

Note: The  $p$  values are based on robust standard errors. Female, age, closeness of ties, and normative beliefs are centered on their grand means. Ethnic minority is not centered.  $N = 13,597$  individuals in 253 schools.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

with grand-mean centering (except for ethnic minority status, which is uncentered). All individual-level variables are significantly related to personal victimization in the anticipated direction: Being young and male (both  $p \leq .001$ ) and being a member of an ethnic group that is a minority in the student's school ( $p \leq .001$ ) are related to higher levels of personal victimization in school. These demographic characteristics explain approximately 30 percent of the between-school variance ( $t$ ) and approximately 5 percent of the within-school variance ( $s^2$ ) in personal victimization.<sup>12</sup> Among the Level 2 control variables, only average student age ( $p \leq .05$ ) and concentrated disadvantage ( $p \leq .01$ ) are significantly related to personal victimization. Higher levels of community disadvantage are

related to more personal victimization, and older average age is related to less personal victimization, both as anticipated. All control variables together account for approximately 32 percent of the between-school variance in personal victimization.

Model 1 in Table 3 shows that the individual-level predictors of property victimization are similar to those for personal victimization except that being a member of an ethnic group that is a minority in the student's school is not significantly related to property victimization ( $p \leq .10$ ). These demographic characteristics, which explain approximately 19 percent of the between-school and approximately 1 percent of the within-school variance in property victimization, are more important

Table 3. Hierarchical Linear Regression of Property Victimization on Individual Measures, School Size, and Social Capital

	Model 1		Model 2		Model 3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Intercept	.638	.075***	.725	.110***	.722	.133***
Individual variables						
Age	-.011	.004**	-.011	.004**	-.014	.003***
Female	-.066	.008***	-.067	.008***	-.049	.008***
Ethnic minority status	.016	.009	.015	.009	.008	.010
Closeness of ties					-.052	.016**
Normative beliefs					-.180	.021***
Exogenous school-level variables						
Concentrated disadvantage	-.022	.993*	-.017	.010	-.018	.010
Urban immigration and mobility	-.019	.011	-.001	.013	-.005	.013
Proportion students African American	.023	.000	.025	.031	.000	.000
Proportion students Hispanic	.070	.039	.045	.035	.001	.000
Proportion students Asian	-.119	.051*	-.142	.054**	-.001	.001*
Average age of students	-.011	.005*	-.007	.005	-.008	.005
School size						
Student enrollment			-.040	.011***	-.036	.011***
Student-teacher ratio			.097	.097	.008	.097
Number of different students taught			.001	.000**	.001	.000**
Social capital						
Closeness of ties					.035	.102
Normative beliefs					-.045	.135
Proportion variance accounted for	.230		.309		.290	

Note: The  $p$  values are based on robust standard errors. Female, age, closeness of ties, and normative beliefs are centered on their grand means. Ethnic minority is not centered.  $N = 13,597$  individuals in 253 schools.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

predictors of personal than of property victimization. Note that the specific differences by type of victimization anticipated on the basis of previous research (i.e., that being male would be more highly related to crimes against persons than to crimes against property and that minority group members would be less likely to be victims of crimes against persons but not of crimes against property; Burrow and Apel 2008; Schreck et al. 2003; Wilcox et al. 2009) were not observed.

Model 1 in Table 3 also shows that, as with personal victimization, as the average age of the students in the school increases, the property victimization level decreases ( $p \leq .05$ ). Students in schools serving a higher proportion of Asian students experience lower levels of property

victimization ( $p \leq .05$ ). Students in schools located in more disadvantaged areas experience significantly *less* property victimization ( $p \leq .05$ ), but this association is no longer statistically significant in sensitivity analyses conducted after excluding eight schools containing outliers. All control variables together account for approximately 23 percent of the between-school variance in property victimization.

Next, the school organization variables are added to the Level 2 equations. Results are shown in Model 2 of Tables 2 and 3. These variables as a block account for 6.1 percent and 7.9 percent of the between-school variance in personal and property victimization, respectively. For personal victimization (Table 2), the higher the ratio of

students to teachers in the school, the higher the personal victimization ( $p \leq .01$ ), net of individual-level and school-level control variables. Also, student enrollment has a significant inverse association with victimization ( $p \leq .05$ ). The effect of the control variables is hardly influenced by the addition of the school organization variables to the equation.<sup>13</sup> For property victimization (Table 3), the number of different students taught is significantly related to victimization ( $p \leq .01$ ), while (as for personal victimization), student enrollment is inversely related to victimization ( $p \leq .01$ ).

The final models (Model 3) in Tables 2 and 3 test the hypothesis that the influence of school organization on student victimization is mediated by social capital. First, the individual-level measures of closeness of ties and normative beliefs are significantly related to both types of victimization. Individuals with closer ties and more conventional beliefs experience less victimization. These characteristics explain more of the within-school variance in personal (5 percent) than in property (1 percent) victimization. Of greater interest are the coefficients relating the school-level measures of social capital to student victimization. Table 2 shows that students in schools with greater consensus around norms for behavior report less personal victimization ( $p \leq .05$ ) net of their own beliefs and other covariates. Although school-level closeness of ties was significantly related to victimization in a model excluding individual-level ties (not shown), that association was reduced to nonsignificance once individual-level ties entered the equation. The social capital variables are not significantly related to property victimization.

Do the social capital variables mediate the observed effects of student enrollment and student-teacher ratio on personal victimization? Table 2 shows that the mediation hypothesis is partially supported for personal victimization. The addition of the social capital variables results in a 51 percent reduction in the magnitude of the school enrollment coefficient (and it is no longer statistically significant) and a 46 percent reduction in the magnitude of the student-teacher ratio coefficient. Also, school social capital partially mediates the concentrated disadvantage effect, as evidenced by the 47 percent reduction in the magnitude of that coefficient. The effect of concentrated disadvantage is no longer statistically significant once the social capital variables enter the equation.

## DISCUSSION

The primary objective of this study was to examine the relationship between three aspects of school organization—student enrollment, student-teacher ratio, and the number of different students taught—and student victimization. We anticipated that these school organization variables would be related to student victimization insofar as they altered the level of social capital in the school. Schools with higher student enrollments and ratios of students to teachers and with a greater number of different students taught by the average teacher were hypothesized to have higher rates of student victimization because students in these schools would, on average, have weaker ties to adults and because consensus about norms for behavior would not be as strong. We expected that student-teacher ratio and the number of different students taught might be more highly related to the social capital mediators than student enrollment because they are more sensitive indicators of the level of attention likely to be provided to the typical student in the school. A secondary objective of the study was to investigate the extent to which the factors influencing student victimization vary according to type of victimization. Research has found that both ecological and individual determinants of victimization vary across crime type (Burrow and Apel 2008; Khoury-Kassabri et al. 2005; Khoury-Kassabri et al. 2004; Miethe and McDowall 1993; Miethe, Stafford, and Long 1987; Sampson and Lauritsen 1990; Schreck et al. 2003; Wilcox et al. 2009; Wittebrood and Nieuwebeerta 2000). We anticipated that aspects of school organization that influence human interactions may influence crimes against persons more so than crimes against property, based in part on findings that household overcrowding and family size had stronger positive associations with physical than with property victimization (Khoury-Kassabri et al. 2005).

Findings partially supported our hypotheses. First, most of the variation in student victimization was between individuals within schools rather than between schools, a finding that is consistent with prior multilevel studies of student victimization (Welsh 2001). Within-school variability in victimization experiences was related as expected to the demographic variables that had been suggested in prior research. Individual-level closeness of ties and conventional beliefs were also inversely related

to both property and personal victimization, as anticipated.

We also found evidence that attending a school in which a higher degree of consensus exists about what constitutes appropriate behavior influences personal victimization experiences, net of the influence of the closeness of each individual's ties, his or her own beliefs, and other covariates. This finding supports the importance of school social capital for shaping the behavior of individuals within each school. Our findings further suggest that, at least for explaining victimization experiences, consensus about behavioral norms is more powerful than relational ties with adults. The finding on the importance of consensus about behavioral norms is consistent with Coleman's (1988) ideas about the importance of providing clear signals for appropriate behavior to potential perpetrators of harm, with Arum's (2003) work on moral authority in schools, and with Devine's (1995) ethnographic work suggesting the importance of signaling to students that the adults in the school are prepared to protect them from harm.

The study also found that the number of different students taught by the average teacher and the ratio of students to teachers were related to student victimization in the direction anticipated after controlling for individual-level characteristics that place students at elevated risk for victimization, as well as characteristics of the schools and the communities in which the schools are located. The direction of the student enrollment effect, however, was not anticipated: In larger schools, students reported experiencing *lower* levels of both property and personal victimization.

One of the social capital variables was found to partially mediate the influence of student-teacher ratio on personal victimization. The greater consensus on behavioral norms achieved in schools with higher ratios of students to teachers protects students from becoming victims of crime against persons.

Finally, results indicated that the predictors of student victimization varied somewhat by type of victimization. As anticipated, individual characteristics were found to be more effective for explaining personal than property victimization. At the individual level, being a member of an ethnic group that is a minority in the student's school increased personal victimization but was not significantly related to property victimization. Community-level factors also generally predicted personal more than

property victimization experiences, and the influence of concentrated disadvantage had opposite effects on the different types of victimization: It increased personal but decreased property victimization. While student-teacher ratio predicted lower levels of personal victimization, the number of different students taught predicted lower rates of property victimization. Finally, consensus on behavioral norms was negatively related to personal but not to property victimization.

Before discussing implications of the research, we identify study limitations and discuss findings that were inconsistent with our predictions.

## LIMITATIONS

We recognize limitations of our study that may preclude definitive conclusions. First, the generalizability of the study results is limited by the low school participation rate and the association of survey participation with community characteristics. The largest correlates of nonparticipation in the survey were urban location and private (as opposed to public) auspices. The full and final samples also differed with respect to the grade levels included in the school (e.g., high schools were less likely to participate than middle schools). Therefore, the study results may not generalize well to schools similar to those not included in the final sample. Explorations of the extent to which attrition biased the results of the study suggested, however, that the basic results of the study would not change with the inclusion of the nonresponding schools. First, private schools were excluded from this study, so their lower response rate is of no import. Second, the main report for this project (G. D. Gottfredson et al. 2000) employed weighting procedures to correct for possible nonresponse bias, and that report showed that unweighted and weighted correlational results were similar. Finally, the appendix shows that in the sample used in this study, urbanicity is not highly related to student victimization, although it is positively related to the measures of school organization included in the study. Inclusion of a higher percentage of the schools in the initial sample would therefore have added more schools at the high end of the distribution on these factors and therefore most likely would have *increased* the magnitude of the observed associations. It is, on the other

hand, difficult to imagine how low participation rates could account for the associations reported in this study.

The cross-sectional nature of the study data challenges causal interpretations. While the results suggest that student-teacher ratio, number of different students taught, and social capital are causally connected to student victimization, the study cannot rule out the possibility that student victimization influences social capital (and perhaps even decisions about student-teacher ratio and number of student taught) or that the associations reported herein are due to unmeasured and uncontrolled characteristics of the schools or their communities. Longitudinal studies of large, nationally representative samples would be required to address these concerns.

## UNANTICIPATED FINDINGS

The finding that victimization was *lower* in larger schools was not anticipated. In our study, school size is highly correlated with urban location ( $r = .59$ ). Although the school size effect remained after controlling for urbanicity, it is possible that unmeasured characteristics related to urbanicity (e.g., lower value of personal property relative to that of more affluent suburban areas) explain the negative association between school size and property victimization. Another possibility is that student enrollment is not linearly related to student outcomes and that the direction of the effect might change after a certain school size threshold is reached. This possibility is consistent with prior research that has suggested that moderate-size schools (i.e., school serving 600–900 students) are optimal in terms of effects on academic achievement (Lee and Smith 1997). Future research might investigate nonlinear associations between student enrollment and student victimization. Finally, it is possible that larger schools engage in specific security practices that reduce victimization, such as using closed-circuit cameras to monitor students.

School-level closeness of ties did not predict victimization experiences once individual-level ties were controlled. That is, although school-level closeness of ties was significantly related to victimization in a model excluding individual-level ties, that association was reduced to nonsignificance once individual-level ties entered the equation. This was not anticipated. Early discussions of

social capital (Coleman 1988), the 2003 NRC report cited earlier, Devine's (1995) ethnographic work, and Bryk and Schneider's (2002) ideas about the importance of "relational trust" strongly suggested that increasing connections between adults and students would reduce victimization. One possible explanation for the weaker-than-anticipated effects of closeness of ties is that the reliability of our individual-level measure of closeness of ties was not as high as the reliability of the normative beliefs measure (.68 vs. .86). However, the two measures had approximately equal school-level reliabilities (.71 and .74), suggesting that they had similar potential to explain between-school variation in victimization rates. Our study measured social capital differently than other studies. While some other studies focused on parent-teacher trust (e.g., Bryk and Schneider 2002; Kirk 2009), we focused on student-adult ties. Also, we measured closeness of ties separately from normative beliefs and controlled for the effects of normative beliefs when testing the effect of closeness of ties. Other studies (e.g., Payne et al. 2003) have either combined various aspects of social capital into one measure and reported on its combined effects or kept highly related aspects of the school climate as separate measures but examined them in different equations (e.g., Kirk 2009). Future studies should disaggregate the different dimensions of social capital to further investigate which aspects are most important for explaining which outcomes. It is possible that, although individual ties with adults protect youths from harm, attending a school in which the overall strength of ties to adults is strong offers no additional protection.

Also not anticipated is the finding that personal but not property victimization was influenced by school social capital. We hypothesized that schools characterized by stronger ties with adults and greater consensus about norms for behavior protect students against both types of victimization experiences by closing the gap between adults and students, improving communication, and increasing social control. The finding that a lower ratio of students to teachers reduced personal but not property victimization experiences and that this association was partially explained by the higher levels of social capital found in these schools may be explained by the relative seriousness of the two types of victimization. Property victimization is more common and less likely to be regarded as harmful relative to personal victimization. It may be more



challenging to generate consensus about the impropriety of stealing than about engaging in personal crimes such as robbery and assault. Also, impending fights and other types of personal victimization incidents may be more public (and therefore more likely to be acted upon by bystanders) than impending thefts.

## IMPLICATIONS

The research reported herein has a number of implications for research and practice. First, our results suggest that reducing the number of students enrolled in schools is not likely to alter social capital and will not necessarily reduce student victimization experiences. In fact, it may increase them. However, reducing the ratio of students to teachers is likely to reduce personal victimization by increasing consensus about behavioral norms. Although we also found that reducing the number of different students taught by the typical teacher reduces property victimization, the mechanism through which this effect occurs is not known.

Pending replication in longitudinal research, these findings suggest that schools should seek to reduce student-teacher ratios and the number of different students taught by the typical teacher. Although reducing student-teacher ratios may not be feasible, the same social capital benefits might be achieved by hiring paraprofessionals to interact regularly with youths, perhaps during lunch and other noninstructional times. The number of different students taught by the typical teacher might be reduced by reducing the average class size or through alternative arrangements such as team teaching, block scheduling, and SWS. Such reorganizations often involve creating small groups of students who stay together for an extended period during the school day and who are taught by a small group of teachers. In the upper grades, these arrangements would likely reduce the number of classroom changes, which has been shown to be related to violent and property crime perpetration (O' Neill and McGloin 2007). Lee and Ready's (2007) summary of evaluations of efforts to reorganize existing schools into smaller SWSs concluded

that social relations in the SWS schools were in fact more positive than in the traditional comprehensive schools. Their report also suggested that these reforms were not necessarily effective for achieving other outcomes such as attendance and academic achievement. However, earlier research testing more focused SWS-type reorganizations reported some success at achieving desired outcomes. Felner and Adan (1988), for example, reported that students who had been assigned to SWS programs rather than to the typical ninth-grade experience had higher grades, better attendance, and lower dropout rates later in their high school years. Similarly, D. C. Gottfredson (1990) reported that students who were randomly assigned to a two-hour per-day integrated curriculum in which students were team taught by a small number of teachers reported lower levels of delinquent behavior and drug use than their counterparts in the regular school setting. These experimental students also had higher academic achievement, persisted longer in school, and reported higher levels of attachment to school and lower levels of negative peer influence.

A more recent study of a similar intervention—accelerated middle schools (AMS)—also reported beneficial outcomes. AMSs are self-contained academic programs designed to help middle school students who are behind grade level catch up with their age peers before entering high school. Dynarski, Gleason, Rangarajan, and Wood (1998) studied a SWS in which treatment students were assigned to a special program taught by a team of four teachers who each covered one of four subjects: English, math, basic skills, and science/social studies. The study found that students who were assigned to the AMS program completed significantly more years of schooling and that a smaller percentage of treatment than control subjects were sent to the office for doing something wrong and reported that they drank alcohol in the previous month. While we can only speculate on the potential impact of programs like these on victimization levels, it seems likely that such efforts have promise to the extent that they foster consensus about appropriate behavior. The field would benefit from experimental research in which the policies and practices discussed above are systematically manipulated to assess effects on student victimization.

Appendix Correlations ( $N = 253$ )

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Personal victimization	<b>1.000</b>												
2. Property victimization	<b>.368</b>	<b>1.000</b>											
3. Concentrated disadvantage	<b>.110</b>	<b>-.145</b>	<b>1.000</b>										
4. Urban immigration and mobility	<b>.090</b>	<b>-.053</b>	<b>-.146</b>	<b>1.000</b>									
5. Proportion students African American	<b>-.001</b>	<b>-.095</b>	<b>.555</b>	<b>.045</b>	<b>1.000</b>								
6. Proportion students Hispanic	<b>.065</b>	<b>.012</b>	<b>.246</b>	<b>.511</b>	<b>-.058</b>	<b>1.000</b>							
7. Proportion students Asian	<b>.041</b>	<b>-.134</b>	<b>-.133</b>	<b>.441</b>	<b>-.058</b>	<b>.119</b>	<b>1.000</b>						
8. Average age of students	<b>-.415</b>	<b>-.378</b>	<b>.143</b>	<b>-.106</b>	<b>.064</b>	<b>-.031</b>	<b>.048</b>	<b>1.000</b>					
9. Student enrollment	<b>-.112</b>	<b>-.199</b>	<b>-.135</b>	<b>.593</b>	<b>.074</b>	<b>.134</b>	<b>.146</b>	<b>.085</b>	<b>1.000</b>				
10. Student-teacher ratio	<b>.218</b>	<b>.016</b>	<b>.030</b>	<b>.246</b>	<b>.017</b>	<b>.104</b>	<b>.085</b>	<b>-.007</b>	<b>.266</b>	<b>1.000</b>			
11. Number of different students taught	<b>.036</b>	<b>.182</b>	<b>-.336</b>	<b>.300</b>	<b>-.120</b>	<b>.019</b>	<b>.025</b>	<b>-.197</b>	<b>.386</b>	<b>.196</b>	<b>1.000</b>		
12. Closeness of ties	<b>-.271</b>	<b>-.073</b>	<b>-.215</b>	<b>.024</b>	<b>-.246</b>	<b>.040</b>	<b>.111</b>	<b>-.123</b>	<b>.032</b>	<b>-.144</b>	<b>.089</b>	<b>1.000</b>	
13. Normative beliefs	<b>-.292</b>	<b>-.018</b>	<b>-.064</b>	<b>-.010</b>	<b>.094</b>	<b>-.035</b>	<b>-.050</b>	<b>-.300</b>	<b>.047</b>	<b>-.155</b>	<b>.128</b>	<b>.615</b>	<b>1.000</b>

Note: Correlations in bold are significantly greater than 0 at the  $p \leq .05$  level.

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## NOTES

1. Serious violent crimes include rape, sexual assault, robbery, and aggravated assault (Dinkes, Kemp, and Baum 2009).
2. A more detailed summary of Cook, Gottfredson, and Na' s (2010) review is available in the online appendix to this article (available at <http://soe.sagepub.com>).
3. The independent effect of the school size variables is difficult to assess because these effects were reported only with other school climate measures statistically controlled.
4. The few studies that have reported effects of school and community factors separately by type of victimization showed that the school- and community-level

predictors do sometimes differ for personal and property victimization. For example, Khoury-Kassabri, Benbenishty, and Astor (2005) showed that the percentage of unemployed workers in the school community was positively related to physical but not to verbal or property victimization. Similarly, measures of household overcrowding and family size had stronger positive associations with physical than with property victimization. Individual-level studies also hint at different correlates of community- and school-level factors for different types of school victimization: Burrow and Apel (2008) reported that community residential instability was positively related to assault but not to larceny victimizations in school and that students living in intact families were less likely to be victims of assault but not larceny. Family income was also related to higher levels of larceny but was not significantly related to assault in this study. Certain school-related experiences were also differentially related to person and property victimization. For example, participating in extracurricular activities increased larceny but not assault victimizations. In another individual-level study, Schreck, Miller, and Gibson (2003) reported that living in unsafe neighborhoods increased the risk of violent but not property victimization and that student alienation increased the risk of property but not violent victimization.

5. From the sample of 1,287 schools, 7 were found to be closed and 1 was found not to be a school, leaving 1,279 schools in the sample. Student surveys, on which most of the measures in this analysis are based, were administered only in secondary schools. Subsequently, elementary schools are excluded from the analysis.
6. In the student questionnaire, questions about student demographics were included on a separate page for

- confidentiality purposes. This page was later merged with the remaining student survey items. The data failed to merge or the demographic page was not administered in one school.
7. Although a three-level model in which students are nested within schools and schools are nested within communities would be theoretically and empirically informative, it is not possible with the National Study of Delinquency Prevention in Schools data because only one school per community is available.
  8. The distributions of all measures to be included in the study were examined. A few extreme outliers were identified involving eight schools. Sensitivity analyses were run excluding these eight schools.
  9. Property victimization has only three possible values because it is based upon two binary items. The analyses for this outcome were repeated using ordinal regression. The results from this analysis do not differ substantially from those reported here.
  10. The variable, ethnic minority status, is not centered because in its original metric it represents a deviation of the individual's race and ethnic status from the predominant race and ethnic represented in the school.
  11. We also experimented with alternative models that tested each of the three size-related variables separately. Because these three variables are moderately correlated (see the appendix), we thought that including all three together might be too conservative a test of the association of each. The results from the alternative models were nearly identical to results for the models in which all three are included, so we report only the latter models.
  12. Computation of variance explained statistics is not straightforward in equations containing random slopes. We re-estimated all models constraining the error terms for all slope coefficients to be zero. The results from these models were nearly identical to those without this constraint. We use the variance components from the constrained models for the variance-explained calculations. The equation for proportion of between-school variance accounted for is  $t$  (unconditional model) -  $t$  (model of interest)/ $t$  (unconditional model). The equation for proportion of within-school variance accounted for is  $s^2$  (unconditional model) -  $s^2$  (model of interest)/ $s^2$  (unconditional model).
  13. When estimated without eight schools containing outliers, the coefficient for average age remains significant ( $p < .05$ ) in Models 2 and 3 of Table 2.
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