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This study examines the effect of dynamic and structural community characteristics on school misconduct. Data include over 45,000 students in the eighth, tenth, or twelfth grade in 237 schools. Hierarchical linear models tested the direct and interactive effects of community measures, while accounting for student and school characteristics. Community substance abuse norms as well as perceptions of community crime and disorder mediated the influence of concentrated disadvantage on school misconduct. Interaction effects demonstrated that community substance abuse norms were more influential for students enrolled in schools that had a less positive school climate although individual and school characteristics remained robust predictors of school misconduct. School misconduct is influenced by the characteristics of the surrounding community and school context, as well as the interaction between those contexts. Research relying on census data measures of community characteristics may underestimate community influence on school misconduct, and omit proximal community influences on school misconduct.

Keywords

communities; school misconduct; juvenile delinquency

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Studies of school misconduct have demonstrated that the characteristics of communities in which schools are located have an important influence on problem behavior within those schools (Battistich & Hom, 1997; Brunson & Miller, 2009; Burrow & Apel, 2008; Felson, Liska, South, & McNulty, 1994; Gottfredson & Gottfredson, 1985; Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Gottfredson, McNeil, & Gottfredson, 1991; Hagan, Hirschfield, & Shedd, 2002; Hellman & Beaton, 1986; Kirk, 2009; Lee & Croninger, 1996; Mateu-Gelabert & Lune, 2000; Payne, Gottfredson, & Gottfredson, 2003; Stewart, 2003; Sullivan, 2002; Welsh, Greene, & Jenkins, 1999; Wilcox & Clayton, 2001). While representing an important contribution to the literature, these studies quantify a limited range of community characteristics, often relying exclusively on measures of community structural characteristics such as poverty, urban location, and mobility (see Kirk, 2009 for a recent exception). These studies typically do not measure community characteristics hypothesized to have a more proximal effect on crime and delinquency including normative context/culture, disorder, and informal social control (Anderson, 1999; Bursik & Grasmick, 1993a, 1993b, 1995; Markowitz & Felson, 1998; Sampson & Groves, 1989; Sampson, Raudenbush, & Earls, 1997; Skogan, 1990; Taylor, 1999; Wilson & Kelling 1982, 2006).

Here, we extend the literature on the relationship between community characteristics and problem behavior in schools by testing models that incorporate measures of community norms and disorder, along with measures of community structural characteristics. The measures of community norms and disorder included in our analysis quantify constructs that are hypothesized to both have a more direct effect on crime and delinquency and to mediate the influence of community structural characteristics on crime. The incorporation of these measures allows us to model community effects in a manner more consistent with contemporary ecological explanations of crime. We also test the effect of the interaction between community characteristics (i.e. disorder and substance abuse norms) and school climate on school misconduct. Analyses are based on a large sample of over 45,000 middle school and high school students from 237 schools in the state of Arizona.

Community Influences on School Misconduct

Shaw and McKay (1942) outlined a number of causal processes linking neighborhood characteristics with crime and delinquency. These causal processes are consistent with a number of distinct theoretical traditions within criminology including informal social control, strain, and cultural deviance (Kornhauser, 1978). One of the most prominent causal processes within the work of Shaw and McKay (1942) is the “cultural transmission” of deviance, wherein norms conducive to delinquency are passed down within a neighborhood. Contemporary ecological explanations of crime emphasizing variation in community norms have typically argued that community structural characteristics, including socioeconomic status, influence norms regarding violence and other forms of problem behavior. Community norms then impact community levels of crime and violence (Anderson, 1999; Bernard, 1990; Luckenbill & Doyle, 1989; Markowitz & Felson, 1998). Consistent with the hypothesis which states community norms mediate the relationship between community structural characteristics and crime; studies have found that the relationship between socioeconomic status and violence is substantially reduced when attitudes related to violence are considered (Heimer, 1997; Markowitz & Felson, 1998). Work within this area also suggests that variation in community norms is oftentimes limited and situational, but remains related to variation in criminal behavior (see Markowitz, 2001).

Recent research on the relationship between community-level normative influences and crime has emphasized the role of cynicism toward authority figures, in violence and other maladaptive behaviors. Sampson and Bartusch (1998) argued that individuals from disadvantaged neighborhoods paradoxically present a belief in conventional norms, yet display behaviors to the contrary. This belief–behavior disparity was attributed to legal cynicism, which they argued develops as a result of adaptation to strained or disadvantaged structural conditions of a neighborhood. Recently, Kirk and Papachristos (2011) suggested that legal cynicism is *perpetuated* by a cultural transmission through resident interactions. As a result, individuals who mistrust agents of social control to effectively handle their grievances or concerns may perceive that they must rely upon their own problem-solving skills in responding to issues and grievances. Unfortunately, when limited problem-solving skills exist as in the case of many school-aged youth, response options may include resorting to violence or other

types of antisocial reactions within the school context.

Welsh et al. (1999) argued that community norms may influence behavior in schools when students import values supportive of crime and delinquency. The importation of these values results in increased school misconduct when acts of crime and delinquency are modeled and reinforced, or when norms are diffused to students within the school (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Bandura, 1986; Jessor & Jessor, 1977). The link between the importation of norms and misconduct in schools is supported by research showing that school-level norms have an impact on individual misconduct (Brezina, Piquero, & Mazerolle, 2001; Felson et al., 1994). Research has also shown that student norms regarding violence are predictive of a variety of distinct types of school misconduct including aggression, theft/vandalism, and general school delinquency (Brezina et al., 2001). This general predictive effect led Felson et al. (1994) to conclude that specific measures of norms regarding violence appear to be reflective of a more general subculture of delinquency.

Contemporary ecological explanations of crime also emphasize the relationship between disorder and criminal and delinquent behavior within communities. Community disorder is thought to lead to crime when it signals to potential offenders that communities are not actively engaged in informal social control. A causal relationship between disorder and crime is central to Wilson and Kelling's (1982, 2006) Broken Windows Theory, and to work by both Skogan (1990) and Taylor (1999). Although there are important differences across these models, they are similar in their argument that disorder is a key construct for the explanation of variation in crime and delinquency across communities. Supporting this specification, empirical research has found a link between disorder and neighborhood crime net of the influence of structural characteristics (Brown, Perkins, & Brown, 2004; Harrell & Gouvis, 1994; Perkins, Wandersman, Rich, & Taylor, 1993; Skogan, 1990; Taylor, 1999, 2001). Other research in this area has found that the influence of disorder is mediated by informal social control (Sampson & Raudenbush, 1999). Recently, research has shown that disorder created by researchers within an experimental design leads to increases in littering, trespassing, and theft (Keizer, Lindenberg, & Steg, 2008). Speculation that there is a causal link between disorder and crime has also been supported by research finding

that disorder abatement was associated with reduction in crime (Branas et al., 2011).

In Broken Windows Theory, disorder is thought to lead to crime when it results in a breakdown in the exercise of community informal social control (Wilson & Kelling, 1982, 2006). The theory postulates that when there is a serious increase in disorder, citizens who would formerly “care for their homes, mind each other’s children, and confidently frown on unwanted intruders” instead become isolated from their fellow citizens and are reluctant to become involved in problematic social situations (Wilson & Kelling, 1982, p. 81). A number of authors have highlighted the importance of informal social control for behavior in the school context (Kirk, 2009; Welsh et al., 1999). Welsh et al. (1999) state that communities may influence misconduct through the “weakening of effective community controls over the behavior of children who attend school in a specific neighborhood” (p. 82). If disorder is indeed linked to social control, as Wilson and Kelling speculate, then disorder in a community may impact behavior in schools when informal social controls are weakened in communities with high levels of disorder. Consistent with the arguments of Welsh et al. (1999) regarding the influence of community norms on behavior in schools, this perspective allows that neighborhood disorder has an effect on behavior through community social controls that generalizes from the surrounding neighborhoods to the school environment.

Research Testing Neighborhood Influences on School Misconduct

The link between community characteristics and school misconduct is well documented (Battistich & Hom, 1997; Brunson & Miller, 2009; Felson et al., 1994; Gottfredson & Gottfredson, 1985; Gottfredson et al., 2005; Gottfredson, McNeil, & Gottfredson, 1991; Hagan et al., 2002; Hellman & Beaton, 1986; Lee & Croninger, 1996; Mateu-Gelabert & Lune, 2000; Payne et al., 2003; Stewart, 2003; Sullivan, 2002; Welsh et al., 1999; Wilcox & Clayton, 2001). Quantitative studies of the influence of communities on school misbehavior can be organized into two general analytical frameworks: first, studies examining the school as the unit of analysis; and second, studies using a multilevel analytical approach. Studies focusing on the school as the unit of analysis have found that community characteristics, including community crime levels and community poverty, are associated with problem behavior in schools as

measured by teacher victimization, student delinquency, and student suspensions (Gottfredson & Gottfredson, 1985; Gottfredson et al., 2005; Hellman & Beaton, 1986; Payne et al., 2003).

Multilevel studies of the influence of community characteristics on school misconduct allow a more accurate estimation of community effects on school misconduct by accounting for the non-independence of observation within nested data (Raudenbush, Bryk, Cheong, & Congdon, 2000). Studies using a multilevel approach to analysis show that community characteristics such as poverty, socioeconomic status, community stability, and urbanicity are linked to misconduct in schools (Battistich & Hom, 1997; Felson et al., 1994; Hoffman & Johnson, 2000; Lee & Croninger, 1996; Stewart, 2003; Welsh et al., 1999; Wilcox & Clayton, 2001). In a key study of community effects on school misconduct, Welsh et al. (1999) tested the influence of poverty and community stability on school-based problem behavior. Analyses included survey data drawn from a sample of over 7,000 students in 11 Philadelphia middle schools and census data quantifying the characteristics of the community surrounding the school (local community) and the characteristics of the community from where the students originated (imported community). Hierarchical linear models (HLM) found that school and community characteristics accounted for relatively modest increases in the explanatory power of models predicting school misconduct. Of school (local community) and imported community factors, school measures had a slightly stronger relationship with school misconduct, accounting for approximately 20% of the total explained variance in school misconduct.

While the studies reviewed above have clearly advanced the literature, the measures of community characteristics used in this body of work are limited. As noted earlier, contemporary ecological explanations of crime have argued that community structural characteristics (poverty, mobility, and heterogeneity) influence crime, in part, through their influence on community characteristics more proximal to crime. Community characteristics more proximal to crime include community norms, disorder, and informal social control. To accurately model the community influences described in contemporary ecological theories, tests of community influences on school misconduct need to incorporate direct measures of the community characteristics that have a

proximal influence on crime and delinquency.

Recently, Kirk (2009) addressed this gap in the literature in an analysis that linked data from the Project on Human Development in Chicago Neighborhoods with the Student Survey of the Chicago Public Schools. These two data-sets resulted in a sample of approximately 7,500 students in the sixth and eighth grades distributed across 477 schools. Kirk conducted a multilevel analysis including student, school, and community-level predictors of student suspension and arrest. Community-level predictors included structural characteristics such as concentrated poverty and residential stability in addition to a community dynamic measure of neighborhood collective efficacy. Results showed that community dynamics (i.e. collective efficacy) were important in the prediction of student problem behavior. Specifically, neighborhood collective efficacy interacted with school collective efficacy to predict student suspension. Neighborhood collective efficacy also interacted with student–teacher trust to predict arrest. Kirk’s analysis demonstrates that the community characteristics emphasized by contemporary ecological explanations of crime are important for an understanding of problem behavior engaged in by school students and that these community characteristics interact with school characteristics to predict variation in school-based problem behavior.

Authors in the area of community effects on school misconduct have offered partially distinct theoretical frameworks for understanding the influence of community characteristics on problem behavior of students in schools. Kirk (2009) emphasizes informal social control in a framework with multicontextual influences, whereby distinct contexts interact to influence the development of an individual. Welsh et al. (1999) offer a model specifying both normative and informal social control effects of communities on behavior in schools. The current study included measures of community norms and disorder, and explores the effect of the interaction between community characteristics and school characteristics on school misconduct. As such, it is grounded in both the work of Welsh et al. (1999) and Kirk (2009). In the current study, community norms are hypothesized to influence behavior in schools when they are imported from the community into the school environment. Similarly, community disorder influences behaviors occurring both in the community and in schools, and disorder is thought to

operate through an attenuation of informal social control. Kirk (2009) argues that the situational exercise of informal social control may be influenced by number of domains including schools and communities. Here, we generalize this argument to consider interactions between school and community characteristics in the prediction of school misconduct. Thus, the current analysis extends that of Welsh et al. (1999) by considering the direct measures of community norms and disorder and also builds on the work of Kirk (2009) by testing interactions between school climate and both community norms as well as community crime and disorder.

In addition to examining community norms incorporated through measurement of community norms against alcohol, tobacco, and other drug (ATOD) use and its association with antisocial behavior in schools, we consider the interactive effects between community dynamics and aspects of the school climate similar to the approach used by Kirk (2009). Here, measures of school climate are used as a proxy for students trust in school officials such as teachers. Analyses are structured around three hypotheses:

H1: Higher levels of community structural characteristics, including poverty and heterogeneity, will significantly increase the likelihood of school misconduct, net of the influence of school characteristics, and student characteristics.

H2: Higher levels of community dynamics including community crime and disorder, as well as community norms tolerant of ATOD use, will significantly increase the likelihood of school misconduct, net of the influence of community structural characteristics, school characteristics, and student characteristics.

H3: Community characteristics will have a differential impact on school misconduct levels based on school climate, such that school misconduct levels in schools with negative climates will be exacerbated by unfavorable community structural and dynamic characteristics. School misconduct levels in schools with positive climates will be unaffected by unfavorable community structural and dynamic characteristics.

Methodology

The present study uses data from the 2004 Arizona Youth Survey (AYS). The

AYS is administered by the Arizona Criminal Justice Commission (ACJC, 2006) on a biennial basis to students enrolled in both public and charter schools in each of Arizona's 15 counties. For 2004, this statewide survey included students in the eighth, tenth, and twelfth grades at 266 schools throughout Arizona.

Sampling

ACJC researchers used a cross-sectional stratified sampling strategy to determine the sample for the AYS. Based on information provided by the Arizona Department of Education, schools were stratified by county to ensure that a proportionate number of schools and students were surveyed from each of Arizona's 15 counties. Schools not enrolling students in the eighth, tenth, or twelfth grades were eliminated from the sample. Schools were then categorized based on two criteria: school size (i.e. small, medium, and large), and the grades served by the school (i.e. eighth grade only; tenth and twelfth grades; and eighth, tenth, and twelfth grades). Schools were then randomly selected from within each county by school size and school type.

Passive consent procedures were used to obtain consent from parents of children attending selected schools. Few parents refused to allow their child to participate in the study. From February through April 2004, the survey instrument was administered to all eligible students who were in attendance on a specified day. In the end, student participation rates ranged from about 97 to 100%. Student-level response rates were similar to prior school-based studies using passive parental consent procedures (Esbensen, Winfree, He, & Taylor, 2001).

For the present study, 709 students from four schools located in juvenile residential facilities in the criminal justice system were excluded. Payne (2008) noted that such schools should be "excluded (from the analysis) because they include ... a large number of extreme outliers on several of the variables of interest" (p. 451). The final sample for this study included 46,785 students attending 237 different public, secondary, and non-alternative schools. In addition to the student-based survey, this study utilizes data that is simultaneously collected from administrators about their schools, as well as data from the 2000 US Census. The demographic characteristics of

this sample were not significantly different from those noted by the Arizona Department of Education for the 2003–2004 academic year.

The sample used here has limitations consistent with those noted in studies with similar sampling methods (Esbensen et al., 2001; Johnston, O'Malley, & Bachman, 2002).

Namely, our sample excluded students from private schools and did not include students who were sick, truant, dropped out, or who were otherwise absent from school on the day the survey instrument was administered. These limitations might result in high risk youth being under- represented in the study sample. With these limitations in mind, our sampling strategy benefits from it being representative of eighth, tenth, and twelfth graders attending public schools in Arizona who are from rural and urban areas, and come from ethnically diverse backgrounds (e.g. American Indian, Hispanic, African-American, and Caucasian). Table 1 provides a general description of the students, schools, and communities that were included in the analyses.

Table 1 Sample characteristics

Individual-level characteristics (<i>n</i> = 46,785)		
Gender (% male) Ethnicity (%)	49.3	
White, not of Hispanic Origin	46	
Spanish/Hispanic/Latino	32	
American Indian/Native American	8	
Black or African American	4	
Asian or Pacific Islander	9	
	Mean (SD)	Min/Max
Age	15.2 (1.7)	
School misconduct	0 (1.0)	-.40/7.17
School characteristics (<i>n</i> = 237)		
Total enrollment	731.4 (627.7)	24/3,150
School climate	.22 (.41)	-.53/1.69
Community characteristics (<i>n</i> = 237)		
Concentrated disadvantage	-.09 (.97)	-1.86/3.20
Ethnic Heterogeneity	-.05 (1.0)	-3.26/2.33
Neighborhood crime and disorder	.11 (.43)	-.95/1.54
Attitudes against alcohol/tobacco/drugs	-.03 (.41)	-2.6/.90

Measures

School Misconduct

The dependent variable, school misconduct, was a composite scale score computed at the individual level. Values were based on the summed standardized scores of three self-reported questions posed to the student participants—frequency in the past 12 months of being drunk or high while at school, participating in fights at school, and carrying a handgun to school. The original indicators were based on a seven-point ordinal scale with higher values representing increased frequency. Items exhibited correlations that ranged from .39 to .48. Principal components factor analysis with Varimax rotation indicated a single-factor structure accounted for 62.5% of the explained variance in school misconduct. Unidimensionality of the dependent variable was verified using Cronbach's (1951) alpha ($\alpha = .66$).

Community Characteristics

Community measures used in this study are based on the zip code in which the school is located. Gottfredson, Gottfredson, Gottfredson, and Jones (2002) find that the zip code in which a school is based is a reasonable approximation of the community from which a school draws its student population. Specifically, they find that there is a very strong correlation between community measures from geo-coded attendance areas and community measures based on the zip code in which the school is located. Gottfredson, Gottfredson, Gottfredson, and Jones (2002) conclude that the strength of correlation between zip code-based community measures and attendance area-based measures implies "that the more costly and time consuming approach to the measurement of community is not worth the trouble" (p. 2). The use of school location as the basis for the creation of measures of the influence of communities on school misconduct is also supported by the work of Welsh et al. (1999), who find that measures of the community local to the school were stronger predictors of school misconduct than measures of communities in which students resided. Thus, based on the work of Welsh and colleagues as well as Gottfredson and colleagues, we accept the working assumption that local community characteristics are most influential on school misconduct and that zip code is a rough but reasonable approximation of local

community for exploration of community effects on schools. This acceptance is based in part on the relative rarity of data including measures of community structure, measures community characteristics with direct influences on crime and delinquency, and measures of schools and students. The implication of zip code as an approximation of the community in which a school is located is reviewed as a limitation of the current work in the discussion and conclusion section.

Measures of community structural characteristics were created using indicators from the 2000 US Census. Following Welsh et al.'s (1999) treatment of census data indicators, we conducted a principal components analysis of indicators of poverty, public assistance, unemployment, female-headed households, high school education, as well as measures of race and ethnic composition. Analyses revealed two factors: Concentrated Disadvantage and Ethnic Heterogeneity. Specific items and factor scores are included in Appendix A.

Measures of community norms against ATOD use and community crime and disorder were based on responses to questions in the AYS. For these measures, we first identified all students that resided in the zip code in which a school was located and the associated community structural characteristics. We then created aggregated student perceptions of the neighborhoods by each school's zip code, confirmed the scale structure through factor analysis, and computed the scales using a summative method. On average, 48% of students in a given school resided within the exact same zip code that the school was located, with the vast majority of the other students residing in a zip code immediately adjacent to the school zip code. Twenty-five schools failed to provide student zip codes that would allow for computation of this measure resulting in their exclusion from the study.¹

The Community Norms Against ATOD Use scale ($\alpha = .94$) consisted of three items indicating the extent to which respondents perceived that their neighbors thought it was wrong to use marijuana, drink alcohol, or smoke cigarettes. A key feature of this scale is the reference of the question to student perceptions of their neighbors' beliefs

1. Analysis determined that excluded schools were not distinct regarding their community characteristics in comparison to schools that remained in the analysis.

regarding ATOD use rather than students own beliefs regarding ATOD use. Response options were based on a four-point likert scale ranging from not at all wrong to very wrong with higher scores representing norms against ATOD use. The relationship between community norms and problem behavior has been demonstrated by research showing neighborhood norms are associated with neighborhood levels of crime and delinquency (Bernard, 1990; Heimer, 1997; Luckenbill & Doyle, 1989; Markowitz, 2001; Markowitz & Felson, 1998), and work showing school-level norms influence school misconduct (Brezina et al., 2001; Felson et al., 1994; Welsh, Stokes, & Greene, 2000). The Community Crime and Disorder scale ($\alpha = .92$) included four items that indexed respondents' perceptions of the extent to which fights, graffiti, empty buildings, and drug sales occurred in their neighborhood. Items included in the neighborhood crime and disorder scale are consistent with items used to measure respondent perceptions of disorder in prior research (e.g. Sampson & Raudenbush, 1999; Skogan, 1990; Taylor, 1999).

Our measures of community normative consensus and community crime and disorder allow the operationalization of constructs that have rarely been addressed in studies of the determinants of misconduct in schools; however, we recognize that these measures have their limitations. The two foremost limitations are the lack of a random sample of community members, and the use of zip code as a proxy for neighborhood. We discuss these limitations more fully in our conclusions section.

School Characteristics

Analyses included two measures of school characteristics: size of school enrollment and school climate. Though research is inconsistent, prior work has shown that in certain cases, school enrollment is significantly related to school misconduct (Brezina et al., 2001; Stewart, 2003; but see also Felson et al., 1994; Hoffman & Johnson, 2000). The second school characteristic included in the analyses was positive school climate ($\alpha = .75$). Positive school climate was measured with eight indicators addressing student integration in activities (e.g. student help decide class activities and teachers ask me to work on projects), feedback received from the school (e.g. teachers praise when I work hard and school notifies parents when I perform well), and

how safe the student feels when at school. Specific items and associated factors scores are contained in Appendix A. Items in the positive school climate scale are consistent with the concept of student integration as addressed in discussion of school communal organization (Bryk & Driscoll, 1988). A number of studies have demonstrated that communally organized schools experience lower levels of problem behavior (Battistich & Hom, 1997; Bryk & Driscoll, 1988; Gottfredson et al., 2005; Lee & Croninger, 1996; Payne, 2008; Payne et al., 2003; Welsh et al., 2000). Other research shows that positive feedback including rewards for rule compliance is an important part of effective school disciplinary practices (see Gottfredson et al., 2005; Payne, 2008 for recent discussions of this literature).

Individual Characteristics

At the individual level, four scales were included as control measures. These scales included three different measures of the school social bond and a measure of antisocial behavior onset. School social bond measures included commitment to school, belief in conventional rules, and attachment to prosocial others. Higher values on these measures were indicative of a stronger bond. Prior research has demonstrated that stronger social bonds within the school are associated with greater decreases in school misconduct (Cernkovich & Giordano, 1992; Gottfredson et al. 2002; Jenkins, 1997; Krohn & Massey, 1980; Liska & Reed, 1985; Payne, 2008; Welsh et al., 1999; Wilson, 2004). Information on items, scale construction, and Cronbach's *a* are included in Appendix B. Higher values for the age of onset of antisocial behavior measure indicate a later age of onset in a variety of antisocial behavior realms. In a sense, our measure of age of onset represents a control for between individual differences in the tendency to engage in antisocial behavior. A large body of research has found that the age of onset of antisocial behavior has a strong relationship with the frequency of offending and the duration of the criminal career (Blumstein, Cohen, Roth, & Visher, 1986; DeLisi, 2005, 2006; Farrington et al., 1990; Piquero, Farrington, & Blumstein, 2003; Wolfgang, Figlio, & Sellin, 1972).

Analyses also included gender (female = 1 and male = 0), ethnicity, and age as control variables. Ethnic categories included Caucasian, Hispanic, American Indian,

African-American, and Asian/Pacific Islander groups. In the analyses, ethnicity was dummy coded with Caucasian representing the contrast group.

Analytical Model

Given the nested nature of our data, two-level HLM were used to test the relationship between community characteristics and misconduct in schools. Community measures were included in the analytical model at the same level as school measures as an inadequate number of schools per zip code prevented a three-level model. As Raudenbush et al. (2000) discuss, a two-level HLM consists of two submodels. Applied in the current analysis, there were $i = 1, \dots, n_{jk}$ level-1 units (e.g. Arizona students), which are nested within each of $j = 1, \dots, J_k$ level-2 units (e.g. Arizona public schools) with random variation assumed at each level: variation between students within schools and variation between schools. The number of students per school ranged from 9 to 1,242 students with an average of 182 students.

Described by Raudenbush et al. (2000), the outcome for the level-1 models is represented within level-2 unit j as: $Y_{ij} = b_{0j} + b_{1j}X_{1ij} + b_{2j}X_{2ij} + \dots + b_{Qj}X_{Qij} + r_{ij}$ where b_{qj} ($q = 0, 1, \dots, Q$) are level-1 coefficients, X_{Qij} is a level-1 predictor q for case i in level-2 unit j (e.g., schools), r_{ij} is the level-1 random effects, and r^2 is the variance of r_{ij} that is the level-1 variance. The random term r_{ij} is assumed to have a normal distribution with a mean of zero. Each of the coefficients in the level-1 model becomes an outcome variable in the level-2 model. The level-2 model is illustrated as: $b_{qj} = c_{q0} + c_{q1}W_{1j} + c_{q2}W_{2j} + \dots + c_{qS_q}W_{S_qj} + u_{qj}$ where c_{qs} ($q = 0, 1, \dots, S_p$) are level-2 coefficients, W_{sj} is a level-2 predictor, and u_{qj} is a level-2 random effect. An examination of the dependent variable distribution indicated its values were positively skewed. Approximately 60% of the students reported no school misconduct as it was defined in this study. To transform the dependent variable for use in models assuming a normal distribution, we calculated the logarithm of this dependent variable after adding a constant. Results of models utilizing logarithmic transformation did not significantly vary from models using the untransformed dependent variable. For ease of interpretation, the latter is presented here.

Results

Results from HLM Models are displayed in Table 2. An unconditional (intercept only) model (not shown) determined that significance between school variation existed within the school misconduct measure. The w^2 test statistic for between-schools variation in school misconduct was significantly different from zero (1311.49, $df = 235$, $p < .01$) allowing that school and community factors may contribute to the explanation of the between-schools variation in misconduct.

The interclass correlation coefficient (q) was used to estimate the percent of variation in school misconduct that is accounted for by between schools differences. The formula for q is $q = s_{00}/(s_{00} + r^2)$, where s_{00} is the school-level variance and r^2 is the individual-level variance (Gelman & Pardoe, 2006). Calculated in this way, q represents the percentage of the outcome variance that exists as a function of differences between schools. Here, we find that approximately 3.2% of the variation in school misconduct is accounted for by differences between schools. The majority of the variation lies within schools and is likely attributable to student, teacher, and classroom characteristics and other factors not measured in these data. The amount of between-schools variation in school misconduct found here is consistent with prior research. The magnitude of the interclass correlation coefficient in studies of students within schools rarely exceeds 6% (Gottfredson et al., 2005; Payne, 2008; Snijders & Bosker, 1999; Welsh et al., 1999). Moreover, a low interclass correlation coefficient does not preclude the existence of significant contextual-level variables such as school- and community-level predictors of school misconduct (Duncan & Raudenbush, 1999).

As indicated in Table 2, coefficients resulting from the first model demonstrated individual and school characteristics were significantly associated with school misconduct. Specifically, higher levels of self-reported school misconduct are associated with being male, less commitment to school, having a weaker belief in conventional rules, fewer attachments with prosocial others, and earlier onset of antisocial behavior. Moreover, Hispanic youth were found to be less likely to engage in school misconduct compared to students who were white, while Asian/Pacific Islander youth were more likely to engage in school misconduct as compared to youth who were white. A lower level of school misconduct among Hispanics is consistent with research finding lower

levels of crime among communities with larger populations of Hispanic immigrants (Lee & Martinez, 2002; Sampson, 2008). It is also possible that there is systematic response bias across the different ethnic/racial groups included in our data. Interestingly, measures of school climate were not significantly related to school misconduct. This finding is in contrast to earlier work supporting this linkage (Battistich & Hom, 1997; Bryk & Driscoll, 1988; Gottfredson et al., 2005; Lee & Croninger, 1996; Payne, 2008; Payne et al., 2003; Welsh et al., 2000). Lastly, size of school had a negative and statistically significant relationship with school misconduct.

Model 2 tested the statistical significance of the community structural characteristics, including concentrated disadvantage and ethnic heterogeneity, in the explanation of variation in school misconduct, while controlling for school and individual level measures examined earlier. Results show that students were more likely to engage in school misconduct in schools located in communities with higher levels of concentrated disadvantage. The heterogeneity of the community did not impact school misconduct. Thus, results provide conditional support for Hypothesis 1 in that higher level of concentrated disadvantage in a community, but not ethnic heterogeneity of the community, was significantly related to higher levels of school misconduct net of individual and school characteristics. These results partially overlap with those of Welsh et al. (1999) who found community poverty was related to misconduct in schools, while community mobility was not.

Model 3 tests Hypothesis 2 by adding a measure of community norms against ATOD use and a measure of community crime and disorder to the variables included in model 3. Results in Table 2 show that community crime and disorder as well as community norms against ATOD use had a statistically significant relationship with school misconduct. Specifically, students from schools embedded in neighborhoods that more commonly disapproved of ATOD use demonstrated less school misconduct. Students from schools embedded in neighborhoods with higher levels of crime and disorder were more likely to engage in school misconduct. We also find that the inclusion of community crime and disorder and community norms against ATOD use mediates the relationship between concentrated disadvantage of the community in.

Table 2 Influence of individual and school characteristics on school misconduct

Model 1	Model 2		Model 3		Model 4			
Fixed effects	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
Individual characteristics								
Intercept	.116	3.6	.116	3.7	.068	2.47	.070	2.65
Gender	-.058	-6.05	-.058	-6.05	-.06	-7.85	-.06	-6.46
Age	.003	-.52	.003	-.52	-.005	-1.42	-.005	-.83
Ethnicity								
Hispanic	-.039	-3.40	-.039	-3.40	-.030	-2.68	-.03	-2.53
Black	.045	1.47	.045	1.47	.042	1.92	.042	1.43
American Indian	-.031	-1.16	-.030	-1.16	-.047	-2.10	-.047	-1.66
Asian/Pacific Islander	.051	2.97	.051	2.97	.049	3.46	.049	2.77
Commitment to school	-.020	-3.21	-.020	-3.21	-.007	-1.47	-.007	-1.06
Belief in conventional rules	-.187	-20.0	-.187	-20.0	-.163	-30.6	-.163	-17.7
Attachment to prosocial others	-.301	-26.2	-.301	-26.2	-.276	-50.9	-.276	-24.9
Antisocial onset	-.247	-27.9	-.247	-27.9	-.236	-43.4	-.236	-25.9
School Characteristics								
Total enrollment	-.0001	-4.57	-.0001	-4.37	-.0001	-3.82	-.0001	-3.48
School climate	.038	-.92	.043	-1.02	-.022	-.53	-.025	-.58
Community Characteristics								
Concentrated disadvantage	—	—	.032	2.23	.005	.34	.013	.77
Ethnic heterogeneity	—	—	-.003	-.25	.008	.59	.001	.05
Norms regarding ATOD use	—	—	—	—	-.182	-5.07	-.162	-3.66
Crime and disorder	—	—	—	—	.089	2.36	.091	1.85
Sch. Climate x Concentrated Disadvantage							-.031	-.68
Sch. Climate x Eth. Heterogeneity							.017	.48
Sch. Climate x ATOD use							-.19	-2.88

(Continued)

Table 2 (Continued)

Model 1			Model 2		Model 3		Model 4		
Fixed effects									
Individual characteristics	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	
Sch. Climate x Crime/Disorder			-.09					-1.1	
Random Effects									
	r	w ² (df)							
Between schools— I_0 / R_0	.035	1726.8	.034	1630.0	.029	1304.8	.029	1277.6	
Within schools—R/E	.5031	(233)	.5032	(231)	.4689	(229)	.4689	(225)	

Note. Dependent variable is school misconduct. Individual characteristics were group mean centered.

$\checkmark p < .05$.

which a school is located and the amount of misconduct occurring in that school. This finding suggests that community crime and disorder and community norms against ATOD use exert a more proximal effect on school misconduct than measures of community structural characteristics including concentrated disadvantage

In the final model, we test interactions between school climate and both community structural factors as well as community characteristics hypothesized to have a direct influence on crime and delinquency. As indicated in the results for Model 4 in Table 2, the interaction between school climate and community norms against ATOD use had a negative and statistically significant relationship with school misconduct. (i.e. higher levels represented community norms ATOD use was wrong). A significant interaction term in this case indicates that varying levels of school climate were differentially related to school misconduct given differing levels of community norms against ATOD.

In further *post hoc* analyses, four groups of schools were examined: (1) below-average school climate AND below-average community norms against ATOD, (2) above-average school climate BUT below-average community norms against ATOD, (3) below-average school climate BUT above-average community norms against ATOD, and (4) above-average school climate AND above-average community norms against ATOD. As indicated in Figure 1, average school misconduct levels were highest in schools with students who perceived below-average community norms against ATOD use, yet have an above-average positive school climate ($M = .20$, $SD = .29$). Second highest school misconduct levels were within schools who had both a below-average community norms against ATOD score and below-average school climate score ($M = .08$, $SD = .25$). Reflective of the overall average level of school misconduct levels was schools with students who perceived below-average prosocial community norms against ATOD irrespective of the school climate ($M = -.003$ for schools with below-average school climate, $M = -.02$ for schools with above-average school climate).

Discussion and Conclusions

Our results build on earlier work finding that community structural characteristics significantly predict antisocial behavior in schools (Battistich & Hom, 1997; Gottfredson

& Gottfredson, 1985; Gottfredson et al., 1991, 2005; Felson et al., 1994; Hellman & Beaton, 1986; Hoffman & Johnson, 2000; Lee & Croninger, 1996; Payne et al., 2003; Stewart, 2003; Welsh et al., 1999; Wilcox & Clayton, 2001). Consistent with this earlier literature, we find that community structural characteristics are related to school misconduct, net of the influence of school characteristics, and the influence of the individual student characteristics. The current analysis advanced on this literature by incorporating measures of community norms against ATOD use and community crime and disorder. Initial results of HLM models showed that in communities with greater crime and disorder, and in communities that failed to demonstrate a strong disapproval of ATOD use, students reported more problem behavior in their schools. Further, the inclusion of these measures mediated the influence of concentrated disadvantage on school misconduct. This pattern of results is consistent with contemporary ecological explanations of crime which acknowledge the importance of community structural characteristics such as concentrated disadvantage, but highlight the more proximal influence of other community characteristics including norms, disorder, and informal social control.

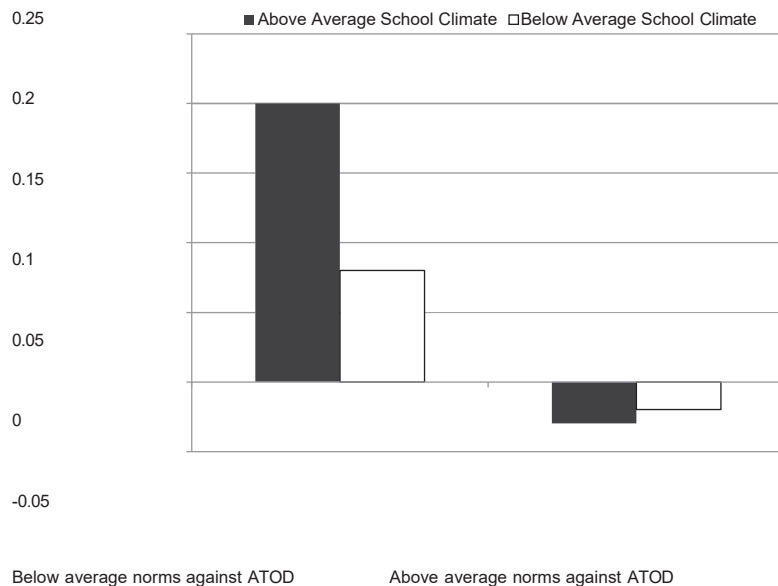


Figure 1 The influence of school climate and norms against ATOD on school misconduct.

Next analyses tested the influence on school misconduct of interactions between the school and community measures. The results presented here and those of Kirk (2009) show that community characteristics interact with school climate in the prediction of antisocial behavior. In our case, community norms against ATOD influenced school misconduct even when an above-average favorable perception of the school climate existed. Similarly, Kirk (2009) found community informal social control interacted with school informal social control to predict suspension and arrest. Both studies also found that community structural characteristics, such as concentrated disadvantage, were not significantly related to school misconduct when measures of constructs hypothesized to have a more direct influence on misconduct were included in statistical models. This finding supports models specifying a causal linkage between community structural characteristics (in our case concentrated disadvantage) and school misconduct that is largely mediated by the influence of community dynamics with a more direct influence on school misconduct.

To reiterate, the interaction effects found in the current study were similar to Kirk's (2009) findings regarding school suspensions, such that our results indicate in communities with norms strongly proscribing against ATOD use, school measures did not influence the likelihood of school misconduct. Yet in contrast to Kirk's study, we find in schools where students perceive their communities do *not* strongly proscribe against ATOD use, the likelihood of school misconduct is higher in schools with a positive school climate. Kirk's study found a compensatory effect for the influence of school collective efficacy on suspensions such that it was greater in neighborhoods lacking collective efficacy. Given the differences between the school-level measures implemented in this study with Kirk's (2009) study, only limited comparisons and conclusions should be considered. More globally, it is important to note with regard to the empirical assessment of community effects, these findings suggest that data allowing the direct measurement of community dynamics are advantaged in the study of the influence of communities on school misconduct. Further, research without such measures may underestimate community influences on misconduct in schools.

Despite our emphasis on the importance of communities in the explanation of school misconduct, we would be remiss not to note that the lion's share of variation in

our hierarchical linear models existed at the within school level. This finding was consistent with past work that tested the influence of community characteristics on school antisocial behavior with multilevel models (Battistich & Hom, 1997; Felson et al., 1994; Hoffman & Johnson, 2000; Lee & Croninger, 1996; Stewart, 2003; Welsh et al., 1999; Wilcox & Clayton, 2001). In our unconditional model, 96.8% of the variation in school misconduct was explained at the within school level. While this finding clearly demonstrates the importance of the characteristics of students, teachers, and classrooms for an explanation of school misconduct, a consideration of the specific individual characteristics that were associated with school misconduct in our analysis reveals that community and individual effects may be confounded. For example, age of onset of antisocial behavior is strongly related to school misconduct in all models. It seems reasonable to suggest that aspects of the community may play an important part in determining age of onset. Students living in communities with higher levels of crime and disorder may have an increased opportunity to engage in crime, thereby resulting in an earlier age of onset. Thus, while within school variation does indeed explain the strong majority of misconduct in schools, aspects of within school variation may be heavily influenced by communities. Disentangling community and individual influences remains a major challenge for future work.

The implications of our study are conditioned by its methodological characteristics including the measurement of community characteristics and the use of zip code as an approximation of neighborhood. Ideally, survey-based measures of community characteristics should be gathered from a random sample of neighborhood residents. Instead, ours are based on the perceptions of students. Including these measures does allow us to address dimensions of communities largely excluded in prior analyses of the influence of community characteristics on antisocial behavior in schools; however, student perceptions of these community characteristics may be different from the perceptions of community residents in general. While we argue that student perceptions represent a reasonable starting point and likely have a great deal of overlap with the perceptions of residents in general, we recognize that the measurement of community characteristics would be improved if measures were based on a survey of a random sample of neighborhood residents.

Measures of community structural characteristics included in analyses presented here were based on census data at the zip code level. Similarly, we aggregated student survey data at the zip code level to measure both community norms and community crime and disorder. This approach may result in the attenuation of community effects as zip codes represent geographic areas that include neighborhoods with relevantly divergent characteristics. Sampson, Morenho, and Gannon-Rowley (2002) argued that the neighborhood is the relevant unit of analysis for tests of ecological explanations of crime and delinquency. It is no stretch to generalize this argument to the understanding of community effects on misconduct in schools and the community most relevant for the explanation of school misconduct may be the neighborhood directly surrounding the school itself. If this is the case, our use of community measures based on the zip code that the school is located in will serve to attenuate community effects as the characteristics with the most relevant community (the neighborhood in which the school is located) are part of a larger measure of community.

Despite these methodological caveats, we found that both of our community measures had a statistically significant association with school misconduct. Additionally, we found that the inclusion of our measures of community dynamics, results in the attenuation of the influence of community structural characteristics (concentrated disadvantage) on school misconduct. This underscores the importance of direct measures of community characteristics that mediate the relationship between community structure and school misconduct. If we allow that better measures of community will improve the strength of association between these measures and school misconduct, their inclusion in future work is all that much more important since their omission may lead to the underestimation of the influence of community on misconduct in schools.

Beyond the concerns outlined above regarding the measurement of community characteristics, the implications of our results should also be considered in the context of our sample. Our sample included over 46,785 students in 237 schools. Given the demographic characteristics of students in Arizona schools (see Table 1), it is possible that our results will not directly generalize to schools in all areas of the USA. We

anticipate, however, that our primary findings will remain consistent. Prior tests of the relationship between community characteristics and antisocial behavior in schools have shown that community characteristics have an influence on school misconduct when tested with data drawn from distinct locations and with data from a national probability sample.

The methodological considerations outlined above suggest avenues for future research. Future work should test the extent to which our findings generalize to schools outside of Arizona. Additional work in this area should also consider operationalizing a wider range of community dynamics that may influence antisocial behavior in schools and offer tests of the extent to which community measures based on different ecological groupings (census tract, neighborhood, and zip code) influence results.

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Appendix A

School climate ($\alpha = .74$)	Factor scores
Students help decide class activities	.537
Teachers ask me to work on projects	.449
My teacher notices a good job	.720
Lots of chances to get involved	.452
Lots of chances for one-on-one with teachers	.640
School notifies parents when I perform well	.547
Teachers praise me when I work hard	.659
Feel safe at my school	.720
Community structural measures	
<i>Concentrated Disadvantage</i> ($\alpha = .91$)	
% living in poverty	.977
% public assistance	.928
% unemployed	.934
% possessing less than a high school education	.823
% female headed household	.893
<i>Ethnic heterogeneity</i> ($\alpha = .68$)	
Percentage of foreign born	.955
Percentage of hispanic	.953
Percentage of black	.599
Community dynamics measures	
<i>Norms regarding alcohol, tobacco and DRUG Use</i> ($\alpha = .88$)	
How wrong would people in your neighborhood say it is to	
Use marijuana	.835
Use alcohol	.906
Smoke cigarettes	.899

(Continued)

Appendix A (Continued)

School climate ($a = .74$)	Factor scores
<hr/>	
<i>Neighborhood crime and disorder</i> ($a = .85$) Crime and/or	
drug sales in neighborhood	.835
Fights in neighborhood	.852
Lots of empty buildings in neighborhood	.792
Lots of graffiti in neighborhood	.839
<i>School misconduct</i> ($a = .62$) Frequency of ...	
Being drunk or high while at school	.742
Participating in fights at school	.795
Carrying a weapon to school	.787

Appendix B

Scale items in individual-level measures

Commitment to school ($a = .78$) Enjoy being at school?

Try to do best work in school?

How often school work is meaningful? What were grades like last year?

Importance of school learning for later life? How interesting are most courses?

Are your grades better than most? Participate in school clubs (past 12 months) Done extra school work (past 12 months)

Belief in conventional rules ($a = .84$)

How wrong to take a handgun to school? How wrong to steal anything worth > \$5? How wrong to pick a fight?

How wrong to attack someone to hurt them? How wrong to miss school all day?

How wrong is it to smoke marijuana?

Attachment to prosocial others ($a = .85$) Best friends used marijuana

Best friends suspended from school Best friends sold illegal drugs

Best friends steal motor vehicles

(Continued)

Appendix B (Continued)

Scale items in individual-level measures

Best friends been arrested

Best friends dropped out of school

Age of antisocial behavior onset ($\alpha = .70$) Age of first school suspension

Age of first arrest

Age first attacked someone to hurt them Age of first marijuana use

Notes. Items within the belief in conventional rules and commitment to school scales were scored on likert scales with higher values reflecting greater belief in conventional rules and commitment respectively. Age of antisocial behavior onset scale items were based on a nine point likert scale (from 1 through 9 with 1 = younger than 10, 9 = never). Values for attachment to prosocial others were reverse coded such that higher scores reflected greater attachment to prosocial others. For each scale, factor scores were created using listwise deletion.