Under Attack:
A Multilevel Analysis of Peer Victimization in Rural Chinese Middle Schools

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ABSTRACT

Physical victimization at school is little studied in impoverished developing country contexts, where resource deprivation may heighten tensions that lead to student misbehavior. Moreover, the role of school and classroom contexts as risk factors remains poorly understood. We perform a multi-level logistic regression analysis of physical victimization among middle school students from 100 villages in one of China's poorest provinces. Results show that forty percent of students report having been beaten by classmates. Elevated risk is found among males; students with prior poor performance in language; students with past internalizing problems; students of female teachers and teachers evaluated as low-performing; students in disruptive classrooms; and students in classrooms undergoing mandated reforms. Results speak to the importance of micro-climates *within* schools as risk factors.

School violence has received a great deal of attention in countries around the world in recent years (Smith & Brain, 2000; Benbenishty & Astor, 2005). In many nations, media accounts of high-profile acts of physical and psychological aggression at school have thrust the issues of school social climate and student victimization onto the national stage, and have prompted the creation of school programs and policies intended to prevent acts of violence (Guardian, 5/2/2009; Reuters, 11/21/2008; Boston Globe, 1/24/2010; Sydney Morning Herald 2/17/2010). At the same time, a growing body of research has sought to understand the prevalence of student victimization as well as the factors that contribute to victimization at school (Guerra et al, 2011; Akiba et al. 2002; Wong et al, 2008; Mellor, 1990; Rigby, 1997). Strikingly, one cross-national examination of student victimization found that school violence was endemic in each of the 37 countries studied (Akiba et al, 2002). This research, using data from the Third International Mathematics and Science Survey, found that 1 in every 3 to 4 students considered themselves to be a victim or potential victim of violence at school at least once a month across the 37 countries. An international review of a particular form of victimization—bullying—argues that bullying is sufficiently widespread around the world to be termed "normative" (Smith and Brain, 2000: 2). Notably, Smith and Brain's (2000) review emphasizes that forms of victimization at school present with strong similarities across seemingly diverse educational systems such as the United States, Norway, Israel, Japan, Turkey, and New Zealand[1].

Much of the research devoted to the risk factors associated with experiencing violence at school has emphasized individual-level risk factors such as gender, socioeconomic background, and psychological adjustment (Smith et al, 2001; Akiba et al., 2002; Rodkin and Hodges, 2003).

More recent studies of school violence have adopted an ecological perspective by investigating whether characteristics of the wider school and community contexts promote or hinder students' risk of experiencing violence at school (Cook et al, 2010; Benbenishty & Astor, 2005, Swearer and Espelage, 2004). Although some research has identified significant links between school violence and contextual factors such as school and neighborhood economic resources, social composition, and school climate, findings have been inconsistent. In addition, little work has focused on what could be termed micro-contexts or microclimates within schools--such as the day-to-day dimensions of the classroom environment and the characteristics of teachers. Contextual factors may be a particularly important dimension of understanding students' risk for school violence in East Asian educational settings because of a cultural emphasis on group membership. Moreover, despite some evidence to suggest that school violence may be more prevalent in developing countries more industrialized ones (Akiba, 2002), few studies examine victimization in these settings.

In this paper, we investigate whether individual risk factors for victimization well-established in more developed countries apply in impoverished, rural developing communities in China. These communities are highly resource constrained and the majority of families are impoverished. This setting may heighten stress on children, increasing the likelihood of misbehavior in the classroom. Moreover, academic performance is high stakes and generally public knowledge in Chinese classrooms. To the extent that poor performance is stigmatized, prior performance may be linked to victimization (Wei et al, 2007).

We also investigate school and classroom microclimates as contextual factors in victimization. Children in China spend a great deal of time in school, due to long school days

and long academic years. They know teachers and their own classmates very well. China's "homeroom" teacher system in which, normatively, one teacher takes primary responsibility for shepherding a defined class of students throughout their time at the school, means that this teacher and class peers are likely to be particularly salient to students' experiences. This situation might mean that contextual dimensions of schools, classrooms, and teachers could be more directly linked to victimization in East Asian school settings where there is traditionally a stronger class identity and students have more limited interactions with other students outside of their class grouping than in other settings (Wei, et al, 2007; Tom, et al, 2010; Wong, 2008). We employ matched student-school and student-teacher data to investigate not just schools, but also teachers and classes, as contextual factors shaping risk of victimization at school.

In addition, distinctive characteristics of China's educational system provides an unusual opportunity to study whether teacher quality matters and the implementation of reforms altering classroom practice matter for victimization in the classroom. For example, China's well-established system of teacher evaluation and rankings, which depend on multiple inputs such as peer evaluation, professional development activities, and student outcomes, presents an unusually strong indicator of teacher quality. Additionally, the phased in implementation of the so-called "New Curriculum", a major nation-wide educational reform intended to dramatically transform teaching practices, allows us to examine differences in school violence between classrooms where the teachers' attention may be primarily focused on the challenges of implementing a new reform and classrooms where teachers are not engaged in reform.

Defining School Violence

School violence can be defined broadly, to include threats, intimidation, snatching of belongings, and physical and sexual aggression. Most researchers embrace a well-known conceptual definition of school violence (Olweus, 1996) as physical or psychological aggression perpetuated repeatedly with the intent of doing harm. However, the measurement strategies utilized to operationalize school violence in empirical studies of prevalence, determinants, and consequences are less consistent. For example, investigations of student victimization by classmates have employed measures ranging from physical victimization, to direct and indirect verbal, victimization to sexual victimization, to social exclusion, to general bullying (Akiba, 2010, Gottfredson and DiPietro, 2011; Veenstra et al, 2005). Some studies construct a composite score or scale index to capture student experiences with multiple forms of victimization (Gottfredson and DiPietro, 2011; Demaray and Malecki, 2003, Mercer et al, 2009), while others utilize single item variables to understand the factors that place students at risk for particular forms of victimization (Solberg & Olweus, 2003; Currie et al, 2008; Bradshaw, Sawyer, and O'Brien, 2009).

In this paper, we adopt a narrowly defined measure of peer-peer physical violence, namely physical victimization, which indicates whether a student reports having been beaten "sometimes" or "often" by classmates. Unlike composite measures in which the same value can be obtained by a number of different forms of school violence, the single item measure that we use can be interpreted consistently for all students. Additionally, some of the items typically included in scale measures such as social exclusion are less meaningful in collective cultures. While not a scale measure and thus not picking up the full range of perceived vulnerabilities to violence, this measure has the benefit that being beaten is a concrete occurrence, likely to be

experienced, recalled and reported consistently relative to other kinds of experiences such as verbal victimization or fear of victimization.

Our analyses address four specific research questions: 1) How prevalent is physical victimization in rural middle schools in Gansu Province? 2) Do the individual risk factors typically associated with student victimization in more developed settings, such as low socio-economic status, being male, and psychological vulnerability predict the likelihood of experiencing school violence in this setting? 3) Do students who have teachers with specific characteristics have less risk for experiencing physical victimization at school? And finally, 4) are characteristics of students' microclimates and wider school environments associated with experiencing physical victimization?

FRAMEWORK

We begin by presenting a framework for analysis. We draw on two prominent areas of research on violence at school. First, we discuss multidisciplinary and cross-national work that investigates the individual level risk factors associated with school violence, primarily in developed country contexts. Second, we refer to nested ecological theory to consider the social context surrounding school violence.

Individual risk factors for student victimization

Previous research in developed countries has focused on the individual risk factors associated with victimization at school. This research consistently highlights gender differences in students' experiences of school violence, with male students being victimized more frequently than female students. (Guerra et al, 2011; Benbenishty & Astor, 2005; Furlong et al, 1998; Boulton & Underwood, 1992). For example, a national study of victimization among students in

grades six through ten in the United States Studies demonstrates that approximately 26 percent of boys and 14 percent of girls reported frequently experiencing bullying (Nansel et al, 2001). Research also reveals that the gender gap in school violence is even more pronounced for more violent types of victimization (Benbenishty & Astor, 2005; Furlong et al, 1998). Female students are more likely to be victimized by more indirect forms of aggression, while male students are more likely to experience direct physical aggression such as hitting or kicking (Olweus, 1993; Nansel et al, 2001; Olweus et al, 1999; Benbenishty & Astor, 2005; Furlong et al, 1998). In a study of school violence among Israeli secondary school students, more than twice as many boys needed to seek medical attention because they were injured and approximately three times as many boys were cut with a knife or other sharp object, when compared to girls (Benbenishty & Astor, 2005).

Research has also linked indicators of psychological vulnerability such as student depression to increased risk for victimization, school maladjustment, and avoidance (Guerra et al, 2011; Leff 2007; Kochenderfer and Ladd 1996; for a review, see Espelage and Swearer 2003). For instance, an investigation of Australian primary school students found that the tendency to be victimized is associated with depression (Slee, 1995). In the same vein, studies of U.S. middle schoolers indicate that students with depressive tendencies are less likely to stand up for themselves (Craig, 1998) and, in turn, may be easily targeted by aggressors (Nation et al., 2008). A meta-analytic review of cross-sectional studies of the association of student victimization with psychosocial maladjustment published between 1978 and 1997 suggested that victimization was strongly related to depression (Hawker and Boulton 2000).

Although the findings are inconsistent, several studies show an association between low socioeconomic status and increased risk for student victimization. An examination of victimization in a sample of nearly 2000 African American, Hispanic, and non-Hispanic White urban primary school children in the United States found that the risk of being victimized varied by indicators of socioeconomic status (Hanish & Guerra, 2000). Internationally, investigations of bullying and victimization in England and Germany (Wolke et al, 2001) and the Netherlands (Veenstra et al, 2005) also found that students from poorer socioeconomic backgrounds have an elevated risk for victimization at school. Similarly, Alikasifoglu and colleagues (2007) found that economically disadvantaged students and those with less-educated mothers were more likely to be victims of bullying in Turkey.

Contextual perspectives on school violence

Some scholars have made a case for a broader, contextual perspective that describes violence at school as an ecological phenomenon, established and perpetrated over time as a result of the complex interplay between inter- and intra-individual variables (Espelage & Swearer, 2003; Benbenishty & Astor, 2005). This nested ecological model regards human behavior as interactions between individual characteristics and multiple levels of social and physical contextual variables (Bronfenbrenner, 1979). For example, psychological research has suggested that dimensions of the school environment may serve as both stressor (Carver, Schir, & Weintraub, 1989) and protector (Kuperminc et al, 2001) for students by moderating individual risk factors. In this way, the actions of peers, teachers and other adults at school, physical characteristics of the school, and even dimensions of the wider community are implicated in the development and maintenance of violence at school.

School climate, difficult to measure, has been cited widely as an important element of school quality and linked empirically to various student outcomes (Kuperminc et al, 2001; Kuperminc et al, 1997; Kasen et al, 1998; Espelage & Swearer, 2003; Ream & Rumberger, 2008; Goyette and Conchas, 2002; Parcel and Dufur, 2001). For example, in the United States, Kuperminc et al. (1997) found that more positive perceptions of school climate among middle school boys were associated with fewer aggressive or delinquent behaviors. In another study, Kasen et al. (1998) showed that a learning-focused school setting appeared to detract from subsequent school dropout and deviant behavior. Students who attend schools with poor disciplinary climates, ones accepting of aggressive and disruptive behavior, were more likely to engage in these behaviors themselves (Espelage and Swearer 2003). Research also suggests that students in highly disruptive classrooms develop less prosocial behavior and less affiliation for their peers, which may increase the risk of being victimized (Gottfredson & DiPietro, 2011). However, the association between school climate and risk for poor student behavior is complicated because the disciplinary climate itself may be shaped by both composition of the student body, such as their degree of economic deprivation, and the organizational features of the school (Arum, 2000; Barnes et al. 2006).

Beyond the school climate literature, other research links dimensions of the broader socio-economic context at school and in the surrounding neighborhood with victimization. For example, research demonstrates that school level poverty is associated with high levels of interpersonal violence and poor psycho-social adjustment (Kellam et al, 1998; Aber et al, 2003). Importantly, the risk associated with school level poverty is independent of family level economic disadvantage (Kellam et al, 1998). Similarly, findings from a longitudinal study of

more than 400 school children in England indicate that children who attend schools with higher levels of poverty are at greater risk for victimization (Dhami et al, 2005). Further, research in the United States has suggested that attending school in areas of more concentrated poverty is associated with higher rates of adolescent delinquency (Arum 2000). Interestingly, the links between contextual economic disadvantage and risk for violence persist at the national level. Using cross-national data, Akiba et al. (2002) demonstrate that at the national level, economic deprivation matters for school violence.

Beyond community economic resources, research suggests that students benefit from both community social resources and community norms that support education (Adams, 2006: Connelly & Zheng, 2003; Ross and Lin, 2006). Community support for education may positively affect education by influencing student behaviors and beliefs about schooling, and in turn, students who attend schools with high levels of community support may have less risk for victimization.

Taken together, the research investigating victimization points to the importance of examining both the individual and contextual risk factors associated with experiencing school violence. Figure 1 depicts the student, classroom and teacher, and school level characteristics that we hypothesize are associated with physical victimization in rural Chinese middles schools. We list our hypotheses below:

--Insert Figure 1 about here--

Hypothesis 1. Male students and psychologically vulnerable adolescents are at greater risk for experiencing physical victimization, while students who are from families with higher socioeconomic backgrounds and who have higher academic achievement are at less risk.

Hypothesis 2. Characteristics of classroom teachers are associated with student risk for physical victimization in two ways: First, students who have high quality teachers (based on the teacher evaluation system) and more educated teachers are at less risk for being victimized. These teachers are likely more skilled at managing the classroom environment and more aware of student behavior. Second, students who perceive their teachers as providing social support are less likely to be physically victimized because supportive teacher-student relationships may serve as an important protective factor for students (Akiba, 2010; Davidson & Adams, 2011).

Hypothesis 3. Students who are in classrooms with poor disciplinary climates and where teachers are in the midst of altering classroom practices to comply with new educational reforms have a greater risk of experiencing victimization.

Hypothesis 4. Students attending schools with greater material resources and community support are less likely to be victimized. Students in middle schools with poor academic climates are more likely to experience victimization.

STUDY CONTEXT: SCHOOLING IN CHINA'S RURAL NORTHWEST

This study focuses middle school students in rural areas of Gansu Province, a poor interior province in northwestern China. Gansu Province, stretching from north to south across diverse topographical features ranging from desert to grassland to jagged mountain peaks, has a population of roughly 26 million (China.org.cn 2008). Gansu is one of China's poorest provinces, with chronic water shortages and desertification posing serious challenges to economic prosperity and family livelihoods.

Throughout the 1990s and into the 21st century, efforts to ensure access to schooling for children in the northwestern region were hindered by policies that decentralized school finance.

Local governments were required not only to raise their own funds for schools. In poor, rural communities, finances were insufficient, and many public schools financed education by collecting tuition as well as multiple miscellaneous fees[2]. During this period, access to education was conditioned by household and community level poverty (Adams and Hannum, 2005). As China entered the 21st century, the government responded to concerns about access problems under the decentralized system with a series of educational initiatives aimed at eliminating financial barriers to education for rural children. For example, in 2001, a "one fee system" was set up to prevent local schools from charging exorbitant fees. A phased-in implementation in Gansu province began in the poorest counties and ethnic minority areas in 2003. In communities that complied with the new fee system, local governments were expected to provide incentives for local schools to charge only "one fee" as well as commit to making up any shortfalls incurred by the change (Gansu Provincial Department of Education, 2003). By 2007, the national government not only eliminated all educational tuition and fees for compulsory education, but also pledged to provide free textbooks and subsidies for needy rural students (People's Daily March 5, 2006).

As financial barriers to school access began to lift, the national government sponsored several initiatives focused on improving students' experiences in the classroom as a way to raise school quality. For example, as a way to raise teaching quality in rural areas, the State provided incentives for urban college graduates and urban teachers to teach in rural schools (Ministry of Education, 2008). As in many nations, teachers play an integral role in the State's efforts to improve educational quality. However, in rural China, teachers may carry even greater influence due rural parents' unfamiliarity with the school system (Kong, 2008) and because Chinese

teachers stay with their students for many years. In addition, although middle school teachers' primary responsibility is to ensure academic progress, transmitting knowledge and skills to students is only one of many diverse responsibilities. Teachers are expected to create a classroom environment that facilitates learning, quells disciplinary issues, and instills social norms. Teachers, particularly those who works in resource-constrained settings, are also expected to play the role of mentors or caregivers, providing guidance on a range of issues from problems at home to conflicts with friends to the correct way to study.

The State also launched a dramatic curriculum reform, requiring an overhaul of all curricular materials, a revision of textbooks, and investment in teacher training, to transform teaching practices and classroom environments (Adams and Sargent, 2009; Sargent, 2009). Interviews with children in three villages in rural Gansu in 2002 suggest considerable variability in children's perceptions of their school environments (Hannum and Adams 2008). Children and mothers characterized climates in their schools and classrooms in terms that ranged from welcoming and nurturing, to competitive, strictly disciplined, and, sometimes, even violent (Hannum and Adams, 2008). Sargent's (2009) classroom observations and survey results from rural Gansu suggest distinctly different patterns of student-teacher interactions across schools during the implementation period. Further, Ross and Lin (2006) discuss findings from fieldwork in schools serving different types of communities across China, and describe dramatic differences in educational philosophies and behavioral expectations for children.

METHOD

The data source for this paper is the Gansu Survey of Children and Families (GSCF), Waves 1 and 2 (2000, 2004). The GSCF is an interdisciplinary, longitudinal study of 2,000

children ages 9 to 12 in the first wave of the survey, along with their families, teachers, principals, and communities. The overarching goal of the project is to shed light on factors that matter for the welfare of impoverished rural children, with welfare defined broadly to include educational experiences, physical health and psychological well-being, and subsequent economic outcomes.

Procedure

The primary sample of children was drawn using a multi-stage approach, selecting counties,[3] townships, villages, and then children from birth registries. Three minority autonomous counties were excluded from the sampling frame due to travel restrictions to these areas, language barriers, limited transportation, and sparse and dispersed populations in these counties. Unfortunately, the sample does not contain sufficient numbers of minority children for meaningful analysis. With this caveat, the GSCF is representative of children in rural areas of Gansu, and includes wealthier and poorer rural counties. The data was collected through questionnaires administered to the students, their families, teachers in their schools, and school principals in 2000 and 2004. This investigation focuses on a subset of questionnaire items that were gathered from students when the original sample of children were 13-16 years old (2004). We also utilize student data from the first wave of the survey (2000) to control for prior internalizing problems and academic achievement. Next, we link matched data collected from principal and teacher questionnaires to examine the risk factors for physical victimization associated with students' microclimates and the wider school environment.

Analytic Sample

The analytic sample used for our analyses comprises 812 adolescents who were enrolled in middle school in 2004. Of the original sample of 2000 children surveyed in the first wave, 1918 participated in the second wave of data collection in 2004. Because we are interested violence in middle schools,[4] we first exclude students who have dropped out of school by 2004 (n=269), and next, we exclude adolescents who are in primary school (n=444) or senior secondary school (n=368). Table 1 presents descriptive statistics for all variables included in the analyses.

Measurement

In Table 1, we present descriptive data consisting of students' gender, socio-economic characteristics, prior psychological adjustment, and prior academic achievement.. The table also describes classroom and teacher and school contextual factors.

Physical victimization is based on a single item collected using the student self-reports in the second wave of the survey while the students were 13-16 years-old. The students were asked whether they had ever been beaten up by classmates at school. Students answered "never," "sometimes," or "often." Consistent with some previous studies investigating the prevalence of school violence, we created a dichotomous indicator to demonstrate whether the student had experience physical victimization or not; Students who answered "never" were coded as 0 (60%), while students who answered "sometimes" (37%) or "often" (3%) were coded as 1.

Student risk factors. Student level measures include students' age and gender (coded 0 if female and 1 if male). In order to investigate whether students from lower socioeconomic groups are more likely to report experiencing violence at school, we include the log of family

wealth and mother's education (in years). Consistent with research examining student victimization (Leff 2007; Kochenderfer and Ladd 1996; Hawker and Boulton 2000), we consider students' psychological adjustment by including a summative scale of students' internalizing behavior collected four years earlier in 2000. The scale is constructed from a subset of 18 items adapted from the Child Behavior Check List and the Youth Self Report (Achenbach, 1991), The scale is internally reliable in 2000 (Cronbach's alpha=0.82) as well as in other waves of the survey (Liu, 2008). Each item was rated in a 4-point scale, as "strongly disagree," "disagree," "agree," or "strongly agree." The items capture symptoms of internalizing behavior, such as feeling worthless, unhappiness, depression, and social withdrawal. Higher scores on the scale indicate more internalizing problems. Because stigma associated with poor performance may increase the likelihood of victimization (Wei et al, 2007), we also include students' prior mathematics and Chinese achievement from the year 2000.

Risk factors associated with teachers and classrooms. We consider whether students with male teachers (codes 0 if female and 1 if male), more educated teachers (coded 0 if middle or secondary school graduates and 1 if university graduates), and higher quality teachers have less risk of being physically victimized at school. In China, teachers are evaluated each year receiving a designation as outstanding, good, pass, or fail. In our analyses, we used these ratings to create a dichotomous indicator of teacher quality coded as 1 if the teacher was ranked good or outstanding and 0 if the teacher was rated as less than good. Additionally, because previous examinations of victimization suggest that a supportive relationship between student and teacher may protect students from victimization (Akiba, 2010), we used student perceptions of their teacher to create a teacher support scale (Cronbach's alpha=0.72). We constructed the scale by

summing student responses to seven items regarding students' perception of whether their teacher cares about students, likes them, pays attention to them, and treats them fairly, dividing by the number of items.

We also investigate two important dimensions of the classroom context: the disciplinary climate and whether teaching practices in the classroom are undergoing reform. In our analysis, we use student reports to create a classroom climate scale (Cronbach's alpha=0.85). The scale was constructed by summing student responses to 11 items regarding students' behavior in the classroom, such as cheating, stealing, skipping school, and disrupting class and then dividing by the number of items. For each of the questions, the student indicated how often the behavior occurred in the classroom. We also include a variable that indicates whether the classroom is undergoing change in the way the teacher manages classroom activities and evaluate students to comply with recent educational reform. Teachers were asked whether they had changed their methods in the classroom because of requirements imposed by the New Curriculum Reform. These reforms are intended to move teachers from traditional teacher-centered and hierarchical traditional teaching style to learner-centered, interrogative approaches. The new approach, itself, may make it harder to maintain classroom discipline, but the process of focusing on any dramatic change in pedagogy may make it more difficult for teachers to maintain supervision in the classroom. We created a variable, coded 0 if the teacher answered "no change" or "changed, but not that much" and 1 if the teacher responded "changed."

School risk factors. Our analyses also examines the risk associated with the academic and material resource environments at school and community support for schooling The variable

poor academic context denotes how the school's graduating class performed on the county level examination compared to other schools in the county (coded 0 if and the exam scores were "excellent," "above average," or "average" and coded 1 if the scores were "poor"). In addition, we investigate the material resource environment by including the log of per pupil expenditure, and the community commitment to education. One way that we are able to observe community support in this context is via whether communities have adopted the "one fee system.". This policy aimed to address skyrocketing school fees for compulsory education in poor communities and was rolled out just prior to the fieldwork for this study. During the roll-out, communities that accepted the new one fee system were those whose local governments committed to make up any shortfalls incurred by requiring schools to only charge "one fee" to parents. It is important to note that this measure is not a proxy for community financial resources, as the government prioritized the poorest and minority areas for initial implementation of the policy.

—Table 1 about here.—

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Analytic strategy

Given the nested structure of the data and the need to model individual, teacher, and contextual factors simultaneously, we used multi-level logistic regression analysis (MLRA) to take into consideration the correlations among the students who have the same teachers and attend the same schools[5]. We estimated a series of nested models. Model 0 included the random parameters (teachers and schools) in order to partition the variance at different levels. Model 1 included the student characteristics, Models 2-4 included the student, teacher, and classroom

characteristics, and Model 5 the student, teacher, classroom, and school characteristics[6]. We report the variance at the classroom and schools levels. In addition, we calculated the median odds ratio (MOR) which converts the variance into odds ratios that can be directly compared with the odds ratios of particular variables[7]. Specifically, the MOR associated with the classroom level can be interpreted as how much a student's odds of being victimized would increase if the same student moved to a different classroom within the same school with higher odds of being victimized. An MOR of one indicates that there are no differences between classrooms in their odds of being victimized. The larger the differences between classrooms (or schools) the larger the associated MOR will be.

RESULTS

Prevalence of physical victimization

First, we consider the prevalence of physical victimization in rural Gansu overall. As Table 1 shows, experiences of physical victimization are not at all uncommon amongst rural junior high school students in Gansu: forty percent reported having been beaten by classmates. When compared to the incidence of school violence in more developed, urban settings in East Asia, such as Taiwan and Hong Kong, the prevalence of school violence in rural China is higher. Recent research indicates that approximately 20 percent of Hong Kong students (Wong, 2007) and 30 percent of 7th graders in Taiwan (Wei et al, 2010) report experiencing victimization by peers at school.

Profiles of victims and non-victims

Table 2 shows student experiences, teacher characteristics, and school contextual characteristics for victims and non-victims, as well as a t-test of difference in mean or proportion by victimization status for each characteristic. Focusing first on student-level variables, compared to non-victims, victims are more likely to be male (62 percent versus 51 percent; t=-3.08); have a slightly higher internalizing problem score (33.6 versus 32.6, t=-2.15); have lower language performance (an average score of 72.26 versus 74.63 on the Chinese language achievement tests, t=2.94); and report experiencing more disruptive classroom climates (poor climate score of 2 versus 1.85, t=2.84). Notably, there are not significant differences by victimization status in socioeconomic status--either mean logged family wealth or mean years of mother's education--prior math achievement, or perceived support from the teacher.

—Table 2 about here.—

Table 2 also highlights certain differences in teacher characteristics and classroom and school contextual factors by victimization status. Victims were less likely to have male teachers than non-victims (75 percent versus 83 percent, t=2.84). They were also less likely to have teachers recognized for high quality performance than non-victims (40 percent of victims had teachers rated good or outstanding, versus 47 percent of non-victims, t=2.01). Victims are less likely than non-victims to be in schools in high community support contexts (27 percent versus 36 percent, t=2.54). There are not statistically significant differences by victimization status in

teacher average years of education, teacher involvement in curricular reforms, school socioeconomic context, or school academic context.

Multi-level logistic regression analysis of physical victimization

—Table 3 about here.—

In Table 3, to isolate risk factors for physical victimization, we present a series of multi-level logistic regression models that incorporate hypothesized individual, teacher, and school factors. For ease of interpretation, we present estimated odds-ratios. An estimated odds-ratio value greater than 1 indicates, net of other factors in the model, a heightened risk of victimization associated with a unit change in the independent variable (a one unit increase in a continuous variable, or a change from the reference category to a non-reference category for a categorical variable). An estimated odds-ratio value that is less than 1 indicates a reduced risk of victimization associated with the same change.

To illustrate, first, the variation in scale of victimization by classroom and school context, we present first median odds ratios for a null model containing only random parameters for teachers and schools. The null model, model 0, is presented to illustrate variability according to classroom and school contexts. The median odds ratio (MOR) in model 0 associated with teacher/classroom is 1.5. This number indicates a median expected increase of 50 percent in a student's odds of victimization associated with changing to a different teacher/classroom in the same school with a greater risk of victimization. The median odds ratio associated the school random parameter is 1.12. This number indicates a median increase of 12 percent in odds of victimization associated with changing to a different teacher/classroom in a different school with

higher odds of victimization. These results illustrate the relative importance of teachers and classrooms as contexts for understanding student victimization.

Model 1 has a teacher/classroom MOR of 1.36 and a school effect MOR of 1, indicating for students with the same covariates, a 23 percent increase in the median odds of being victimized with a move to a higher victimization teacher/classroom context, but no residual variability associated with a move to a different school (and teacher). In other words, teacher/classroom effects, or microclimate effects, remain non-trivial after accounting for students' characteristics, but school effects, already modest, are not significant once students' characteristics are taken into account.

Turning to the fixed effects estimated in model 1, male students are more likely to be victimized by peers: the odds-ratio of 1.51 indicates that being male is associated with 51 percent greater odds of being victimized, relative to being female, net of other variables in the model (100*(1.51-1)). In contrast, children who have a history of higher Chinese language performance enjoy protection from victimization: each point increase on the Chinese language achievement test is associated with a 2 percent decrease in the odds of victimization (100*(1-.98)). Age, socioeconomic status, and prior internalizing problems are not significant in this specification.

Including two dimensions of the student microclimate in models 2 and 3 reduces the MOR associated with teacher/classroom effects to 1.23; the MOR illustrates the variation between victimization rates of different teachers/classrooms that is not explained by the risk factors in the models. The MOR associated with schools remains close to 1.00, indicating little variation in victimization between schools. Models 2 and 3 reveal a generally stable pattern of

results for variables included in the first specification. Most notably, males remain at significantly higher risk of physical victimization (odds-ratios=1.58 in both specifications) and students with a history of stronger Chinese language performance continue to enjoy some protection from victimization (odds-ratio=.98 in both specifications). With the exception of prior internalizing problems, the pattern of results for other variables included in model 1 does not change in model 2.

Prior internalizing problems show no change in estimated magnitude of effect from model 1, with an odds ratio of 1.02 indicating an increase of 2 percent in odds of victimization for each point increase on the internalizing scale, but unlike the case of model 1, internalizing problems achieve significance in model 2 and all subsequent specifications. These findings suggest that children with a history of internalizing problems, such as depression and loneliness, are at greater risk of being victimized by peers.

New in models 2 and 3 are the poor classroom disciplinary climate and teacher support variables. Classroom disciplinary climate is significant, with an odds ratio of over 3.8 in both specifications, indicating dramatically heightened odds of victimization in classrooms characterized by poor behavior, such as stealing, cheating, and generally disruptive behavior. Experiences of teacher support are not statistically significantly related to victimization.

In model 4, the MORs for both teacher/classroom and school random effects are both 1.00, indicating no residual variability associated with school and teacher/classroom context when the teacher characteristics accompany the covariates included in previous models. The results presented in Model 4 are consistent with model 3, but also highlight the importance of teacher characteristics. Most notably, students in classrooms supervised by male teachers have

about 43 percent lower odds of victimization (100*(1-.57)), relative to students in classrooms headed by female teachers, net of other variables in the model. Students in classrooms headed by high quality teachers – those who are evaluated as high performers at their last yearly evaluation--are at significantly lower risk of victimization. These students experience about 27 percent lower odds of victimization (100*(1-.73)), compared to students with teachers not evaluated as high performers, net of other variables in the models. Finally, students in classrooms in which teachers were in the midst of implementing a new, much more student-centered curriculum were at heightened risk for reporting physical victimization: odds of victimization were 36 percent higher in classrooms headed by teachers implementing the reforms (100*(1.36-1)), compared to those in other classrooms, net of other factors in the models.

Finally, model 5 adds wider school context variables: logged per pupil expenditures, poor academic climate, and for a measure of community commitment to education. MORs associated with the teacher and school random effects remain at 1.00 in this specification, indicating that the risk factors included in the model explains the variation between teacher/classrooms and schools. Among the school level variables, only community commitment to education matters, net of other factors in model 5. Children in schools with a high level of community commitment to education have 37 percent lower odds of experiencing victimization (100*(1.37-1)), compared to children in other schools, net of other variables in the model. Importantly, the addition of school context variables leaves stable the pattern of significant results established in earlier specifications, except that prior Chinese language performance is not significant in this specification. Girls, children without internalizing problems, children experiencing less

disruptive classrooms, children with male, highly qualified teachers, and children in classrooms not undergoing reforms in curriculum remained at significantly lower risk of victimization.

DISCUSSION AND CONCLUSION

Our findings show that physical victimization among rural middle school students is non-trivial in this setting: 40 percent of students surveyed reported that they had been beaten by classmates. Some students are at greater risk than others. As suggested by prior literature focused on other contexts, our research confirms that certain individual factors that we included in *Hypothesis 1* are associated with higher risk for victimization. Specifically, boys were at heightened risk of victimization, as were students who were psychologically vulnerable. However, another factor included in our hypotheses did not matter in this context: socioeconomic status—whether measured as mother's education or as logged family wealth. This finding could be due to the fact that, while there is considerable variability in socioeconomic status in the sample, the sample is, as a whole, relatively poor: rural village residents in one of China's most disadvantaged provinces. In addition, although we hypothesized that poor academic performance might be a trigger for victimization in China's highly exam-based, competitive school system, we found only a bivariate relationship between prior language performance and victimization that did not persist net of other covariates in multilevel models. Prior math performance had no relationship to victimization.

One of the most significant findings of the paper is the importance of the classroom microclimate as a context for youth victimization. Results from a null model intended to partition variability showed greater differences in the odds of victimization across classrooms in the same school than those associated with schools themselves. In fact, the modest residual

variability associated with schools became negligible once characteristics of students were taken into account, but this was not the case for residual variability associated with classrooms.

In *Hypothesis 2* and *Hypothesis 3*, we highlighted several possible significant teacher and classroom characteristics as risk factors for peer physical victimization. Confirming our hypotheses, students paired with teachers who were evaluated as lower quality were at greater risk, suggesting that teachers who are effective at managing the academic performance of students were also effective at managing peer interactions and classroom dynamics. Teacher gender proved significant as well: students paired with male teachers were less likely to be victimized by peers. It may be that students perceive male teachers to be stricter disciplinarians, and in turn, are less likely to act out in classrooms supervised by males. Additional dimensions of the classroom environment presented in *Hypothesis 3* were also confirmed as significant risk factors. Students in classrooms with a high degree of disruptive behavior were at heightened risk. Students in classrooms undergoing curricular reforms were also at greater risk; this finding could be attributable to the process of reforming pedagogy itself distracting teachers from classroom management, or it could be due to the fact that the new student-centered curriculum requires much more intense involvement of teachers in management of peer interactions in the classroom.

A number of studies have investigated the school as context, but these studies have found few consistent risk factors for physical victimization beyond community poverty. Findings presented here investigate the factors detailed in *Hypothesis 4* such as the school material resources and academic environment. Our findings reveal only one consistent school-level risk factor for victimization: poor community support for education. It may be that communities that harness social resources for the purposes of education also create norms regarding schooling that

prevent school violence. Children in these communities may also benefit from increased supervision and concern for general child well-being. One explanation for the limited school context results may be that the classroom micro-climates within the school matter a great deal for children's experiences of victimization. Moreover, the risk associated with dimensions of teachers and classroom may be even greater in East Asian schools and other collectivist cultures where class identity is a salient feature in students' lives.

Our results, which highlight the importance of classroom microclimates, both deepen our understanding of the complex risk factors associated with victimization at school and have practical implications for efforts to reduce violence at school. First, our results indicate that physical victimization by classmates is prevalent in rural schools in China's northwestern region. Although some of the individual risk factors associated with victimization in developed setting were identified as risk factors in our study as well, on the whole, individual risk factors explained a relatively small amount of the variation in experience violence at school. Instead, we found that dimensions of the classroom microclimates, captured by teacher and classroom features, explained the greater amount of variation than individual or school factors. Complex classroom dynamics shaped in part by teachers' ability to manage student interactions and limit classroom disruption play an important role in promoting a safe environment for children at school. These findings suggest that efforts to reduce school violence should not focus on the deficits of individual students, but rather should target pre-service and continuing education devoted to classroom management techniques for rural teachers. Moreover, teachers engaged in the process of educational reform may particularly benefit from these programs. By focusing the spotlight

on teachers and classrooms rather than individual students, schools may be more effective in creating a classroom environment that promotes the learning, social development, and safety.

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Figure 1. Conceptual Framework of the Individual and Contextual Risk Factors for Physical Victimization

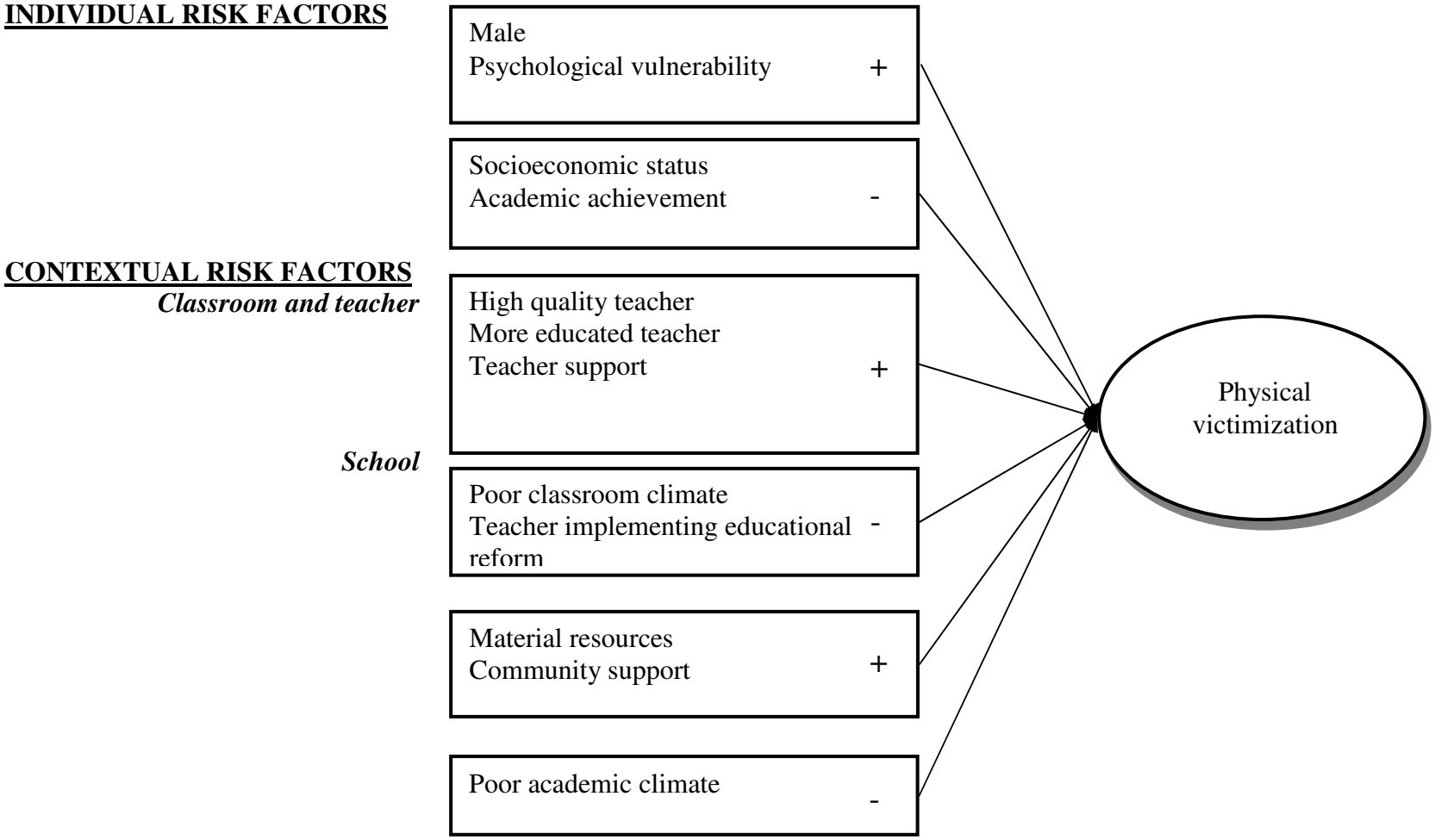

Table 1. Descriptive statistics for rural middle school students and the school context

	Mean	Sd	n
Physical Victimization *Student has been beaten by classmates*	0.40	(0.49)	812
Student			
Male	0.55	(0.50)	812
Age (2004)	15.22	(1.01)	812
Mother's education in years	4.82	(3.46)	812
Log family wealth 2004	9.70	(0.93)	812
Prior student depression (internalizing scale) 2000	33.02	(6.39)	812
Math performance 2000	76.04	(12.40)	812
Chinese performance 2000	73.68	(11.32)	812
Classroom and teacher			
Poor classroom climate scale (student perception)	1.91	(0.35)	812
Teacher support scale (student perception)	2.88	(0.39)	812
Male teacher	0.79	(0.40)	445
Teacher university graduate	0.19	(0.40)	445
Teacher quality good or outstanding	0.44	(0.49)	445
Teacher implementing reform in the classroom	0.34	(0.47)	445
School			
Log of per pupil expenditure	4.12	(0.77)	70
Poor academic context	0.03	(.016)	70
Community commitment	0.33	(.047)	70

Data source: GSCF-2000, GSCF-2004

Table 2. Physical victimization by selected student, teacher and contextual characteristics (n=812)

	Physical Victimization		
	No	**Yes**	**t-statistic**
Student			
Male	0.51	0.62	-3.08**
Age (2004)	15.24	15.19	0.63
Mother's education years	4.91	4.71	0.83
Log of family wealth	9.69	9.71	-0.15
Student depression 2000	32.6	33.6	-2.15*
Math achievement 2000	76.51	75.36	1.33
Chinese achievement 2000	74.63	72.26	2.94*
Classroom and teacher			
Poor classroom climate scale	1.85	2.00	-5.71*
Teacher support scale	2.89	2.87	0.74
Male teacher	0.83	0.75	2.84**
Teacher university graduate	0.21	0.17	1.59
Teacher evaluated as good or outstanding 2003	0.47	0.40	2.01*
Teacher stress? (new curr)	0.32	0.36	-1.30
School			
Log of per pupil expenditure	4.12	4.13	-0.17
Poor academic context	0.03	0.03	0.40
Community commitment to school	0.36	0.27	2.54**

*p<.05, **p<.01, ***p<.001 Data source: GSCF-2000, GSCF-2004

Table 3. Multi-level logistic regression analysis of physical victimization in rural Chinese middle schools (n=812)

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Student						
Gender		1.51**	1.58**	1.58**	1.66**	1.69**
		(0.23)	(0.25)	(0.25)	(0.26)	(0.27)
Age		0.79	0.56	0.55	0.80	0.77
		(1.45)	(1.03)	(1.02)	(1.48)	(1.43)
Age-squared		1.01	1.02	1.02	1.01	1.01
		(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Mother education		0.98	0.98	0.98	0.98	0.97
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Log family wealth		1.02	0.99	0.99	0.99	0.97
		(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Internalizing Scale 2000		1.02	1.02*	1.02*	1.02*	1.02*
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Math achievement 2000		1.01	1.01	1.01	1.01	1.00
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Chinese achievement 2000		0.98*	0.98*	0.98*	0.98*	0.98
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Classroom and teacher						
Student perception of school climate			3.83***	3.86***	3.88***	3.90***
			(0.92)	(0.95)	(0.90)	(0.90)
Student perception of teacher support				1.04		
				(0.20)		
Teacher gender					0.57**	0.54**
					(0.11)	(0.10)
Teacher education					0.75	0.74
					(0.15)	(0.14)
Teacher quality					0.73*	0.71*
					(0.11)	(.011)
Teacher implementing reform					1.36*	1.37*
					(0.22)	(0.22)
School						
Log per pupil expenditure						1.01
						(0.10)
Poor academic climate						0.62
						(0.25)
Community commitment						0.63***
						(0.11)
Random effects						
Teacher (intercept)	0.426	0.326	0.218	0.214	2.11e-07	4.87e-08
	(0.253)	(0.307)	(0.490)	(0.500)	(0.390)	(0.357)
$MOR_{teacher}$	1.50	1.36	1.23	1.23	1.00	1.00
School (intercept)	0.126	2.05e-07	0.056	0.058	3.99e-09	3.93e-09
	(0.220)	(0.369)	(0.447)	(0.443)	(0.193)	(0.134)
MOR_{school}	1.12	1.00	1.06	1.06	1.00	1.00

*p<.05, **p<.01, ***p<.001 Data source: GSCF-2000, GSCF-2004

NOTES

[1] For a more in-depth examination of school bullying in different nationals contexts, please see Smith, P.K., Y, Morita, J. Junger-Tas, D. Olweus, R. Catalano, and P. Slee (Editors) 1999. *The nature of school bullying: a cross-national perspective*. London and New York: Routledge.

[2] For a review of education policies under market reforms, see Hannum, Behrman, Wang, & Liu, 2008.

[3] These three minority autonomous counties were Subei Mongolian autonomous county, Akesai Kazak autonomous county, and Sunan Yugur autonomous county.

[4] Previous research indicates that acts of aggressive behavior are highest in middle schools (Bradshaw et al, 2007; Nansel et al, 2001).

[5] We use the *xtmelogit* command in STATA 10 to specify a multi-level logistic regression model. The functional form of the intercept-only model with no predictors is:

$$\ln\left(\frac{p_{ijk}}{1-p_{ijk}}\right) = \beta_{0jk} = \beta_0 + \upsilon_{0k} + \mu_{0jk}$$

[6] We tested cross-level interaction terms, but did not find any to be significant.

[7] The intraclass correlation coefficient typically used to report variance in multilevel linear models is not meaningful when estimating models with a binary response. Instead we calculate median odds ratios (MOR) to shed light on classroom to classroom and school to school variability in the outcome. $\text{MOR} = \exp\left(\sqrt{2\sigma^2}\,\phi^{-1}(0.75)\right)$