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Too Scared to Learn? The Academic Consequences of Feeling Unsafe in the Classroom

Johanna Lacoe[1]

Abstract

A safe environment is a prerequisite for productive learning. Using a unique panel data set of survey responses from New York City middle school students, the article provides insight into the relationship between feelings of safety in the classroom and academic achievement. The survey data include the reported feelings of safety for more than 340,000 students annually from 2007 to 2010 in more than 700 middle schools. Findings show a consistent negative relationship between feeling unsafe in the classroom and test scores. The study provides insight into the mechanisms through which feeling unsafe in the classroom relates to test scores and presents multiple robustness checks to support the central finding.

Keywords

middle school, school safety, urban, social, violence, adolescent, subjects

Introduction

Students in high-poverty urban schools face multiple barriers to academic achievement (Jargowsky, Wood, Anglum, & Karp, 2016) that precede future challenges in adult life, including employment, earnings, and health. Declines in student engagement that begin in middle school (Wang & Eccles, 2012)

[1]Mathematica Policy Research, Oakland, CA, USA

Corresponding Author:
Johanna Lacoe, Mathematica Policy Research, 505 14th Street, Suite 800, Oakland, CA 94612, USA.
Email: jlacoe@mathematica-mpr.com

are associated with challenges in transitions to high school (Benner & Wang, 2014). As a result, poor students, and Black and Hispanic students, consistently underperform on standardized tests compared with their peers (Reardon, 2011; U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 2004, 2008). These gaps persist even as test scores have risen for all students. Gaps in achievement extend to college enrollment and completion rates making White students more than twice as likely to earn a bachelor's degree as Black students (Western, 2006). Educational gaps translate into differences in wealth accumulation over the life course, differing rates of marriage (Schneider, 2011), and disparities in future health outcomes (Fiscella & Kitzman, 2009; Freudenberg & Ruglis, 2007). Lower educational attainment is associated with an increased probability of arrest and incarceration: The risk of imprisonment is 5 times greater for Black men with no college degree compared with White men with the same level of education (Lochner & Moretti, 2004; Western, 2006). Identifying policy-relevant factors at the middle school level that contribute to these gaps is critical to narrow disparities in later life outcomes.

Is safety a barrier to academic achievement for urban students? Recent episodes of violence in schools have attracted policy attention to issues of school climate and safety. In a special issue of *Educational Researcher* focused on safety and order in schools, Cornell and Mayer (2010) argue that school safety and school order are fundamental to studies of core educational policy topics including the achievement gap, teacher attrition, and student attendance and engagement. This article investigates how feelings of safety in the classroom are related to educational outcomes. In this analysis, safety is defined specifically as how students report feeling inside the classroom, and may include physical or emotional safety and perceptions of a secure environment. If student safety influences attendance and achievement, there may be educational benefits of policies aimed at improving safety and order in schools and classrooms.

Relevant Literature

A safe environment is a prerequisite for productive learning (Maslow, 1970; Piaget, 1936). If students feel unsafe at school, they may be less likely to go to school at all, or less able to focus on learning while at school. Students who feel unsafe may also be disruptive in the classroom, causing peers to feel less safe and preventing learning. Nationally, a larger share of middle school students report being afraid of attack or harm at school compared with high school students.[1] This is confirmed in the New York City data, as feelings of

safety in the classroom vary by grade level: The share of students who feel unsafe peaks in the seventh and eighth grades and declines as students enter high school. Feeling unsafe in the classroom specifically may prevent students from being able to partake in the higher level thinking needed to succeed academically (Maslow, 1970), decreasing performance on assessments. Therefore, safety may influence test scores for the largest number of students in the middle grades.

Only a few studies have focused on the contribution of feelings of safety in the school environment to educational achievement. Davis and Warner (2015) present correlational evidence of the relationship between school climate and academic achievement in New York City high schools, identifying school safety as one of the key dimensions of climate influencing achievement. Henrich, Schwab-Stone, Fanti, Jones, and Ruchkin (2004) survey a sample of New Haven middle school students and find that exposure to community violence is related to academic achievement and overall feelings of safety at school. However, the authors do not discuss the relationship between school safety and academic outcomes and are unable to control for unobserved individual characteristics that might explain both feelings of safety and achievement. Another study of school discipline determines that feelings of safety at school are positively related to both behavioral and academic outcomes (Arum, 2003, Footnote 43). This study finds variation in the relationship between school safety and academic outcomes by gender, with feelings of safety having larger positive association with test scores for females than males, and larger positive association with behavior (i.e., decreases in fighting) for males than females.

If students feel unsafe at school, one response may be to stay home. Increased school absences may be the primary path through which feeling unsafe affects academic outcomes. Although many studies assert that missing school affects students negatively, few have empirically investigated the relationship between being absent and academic achievement. A notable contribution to the literature is Gottfried's body of work identifying the relationship between attendance and achievement. Using detailed student-level data from elementary and middle schools in Philadelphia and a school and classroom fixed effects approach, Gottfried (2010) finds that attendance and achievement are positively related. A subsequent study investigating absences between siblings and using family-specific fixed effects finds that absences negatively affect math achievement, and suggests that controlling for family factors reveals even larger effects of absences on achievement than models that do not account for family factors (Gottfried, 2011). The effects of missing school can extend beyond academic outcomes and beyond the individual student who is absent. Using a classroom fixed effects model, Gottfried

(2014) finds that kindergartners who experience chronic absenteeism, defined as 2 or more weeks of absences, experience reductions in socioemotional outcomes in addition to reductions in reading and math achievement. Furthermore, within elementary school classrooms, there is evidence that peers are negatively affected when the share of classmates who are chronically absent increases, and the relationship is robust to the inclusion of student fixed effects (Gottfried, 2015).

The immediate school and classroom context shapes students' feelings of safety and may play a larger role in determining feelings of safety than external events such as school shootings that occur elsewhere (Fisher, Nation, Nixon, & McIlroy, 2016). The connections between school context and student safety and attendance patterns are particularly strong in middle school and in the transition to high school (Benner & Wang, 2014). For instance, prior research has found that bullying affects feelings of safety at school (Arseneault, Walsh, Trzesniewski et al., 2006) and academic performance for middle school students (Juvonen, Wang, & Espinoza, 2011). School behavioral incidents, such as bullying, are stronger predictors of students' feelings of safety than exposure to crime at school (Mayer, 2010; Skiba, Simmons, Peterson, & Forde, 2006). Some urban students feel that efforts to make schools safer, such as metal detectors or school security, do little to curb misbehavior and violence in schools (Chen, 2008; McNeal & Dunbar, 2010).

Experiences within a single school environment may not be uniform for students of different backgrounds. Research has documented differences in feelings of safety at school between Black and White students, Hispanic and White students, and boys and girls (e.g., Alvarez & Bachman, 1997; Arum, 2003; Hong & Eamon, 2011; Lacoe, 2015; Schreck & Miller, 2003). In addition, Black and Hispanic middle school students are more likely to report feeling unsafe in the classroom than White or Asian peers who attend the same schools and share the same classrooms (Lacoe, 2015). The differences in feelings of safety between students by race and ethnicity are correlated with student perceptions of disciplinary fairness, school disorder, and racial tension in the school. Racial gaps in discipline (Skiba, Michael, Nardo, & Peterson, 2002) have been connected to achievement gaps: Suspensions of Black middle and high schools students lead to late graduation and dropout (Davis & Jordan, 1994; Gregory, Skiba, & Noguera, 2010; Raffaele Mendez, 2003). Differences in disciplinary environments and perceptions of disciplinary fairness across schools may also contribute to racial gaps in achievement (Arum, 2003; Kupchik & Ellis, 2008; Skiba et al., 2014). For minority students, experiences with discipline and disorder may contribute to systematic differences in reported safety and test scores relative to nonminority peers.

The field of urban education aims to understand the unique needs, contexts, experiences, and outcomes of students attending schools in urban areas. This article contributes to the existing urban education literature in several ways. First, the study exploits a longitudinal data set of information about students from a large, diverse urban school district, including annual survey responses linked to administrative academic records. Second, whereas most of the existing literature is concerned with overall school safety, this article focuses on how safe students feel in the classroom, specifically. The aim is to improve our understanding of the classroom context that urban youth experience, how they feel in the classroom environment, and how the environment contributes to their achievement. Furthermore, feelings of safety in the classroom may differ from safety in other parts of the school, given the presence of a teacher and the dynamics within the classroom, and may be more directly linked to achievement. Third, the analysis provides insight into the relationship between feeling unsafe in the classroom and academic performance through a variety of econometric methods and multiple robustness checks. Finally, the findings are situated within the context of current policies and programs aimed at improving school safety and security for urban students.

Purpose and Hypotheses

The central question addressed in this article is as follows: How does feeling unsafe in the classroom affect student academic performance? Based on Maslow's (1970) hierarchy of needs, which places safety above only breathing, food, and water, and evidence that exposure to violence at school or in the community affects children's cognitive ability and standardized test performance (Beland & Kim, 2015; Burdick-Will, 2013; Sharkey, 2010; Sharkey, Schwartz, Ellen, & Lacoe, 2014), feeling unsafe in the classroom is hypothesized to be negatively associated with student performance on standardized assessments. There may be both a direct relationship between feeling unsafe and test scores, and an indirect relationship (see Figure 1). Feeling unsafe in the classroom may be directly related to test scores if it inhibits student learning or distracts students as they take exams (although I am unable to directly test this hypothesis). Feeling unsafe in the classroom may also influence academic achievement indirectly through increased absences, if it increases the likelihood that a student stays home because he or she feels unsafe at school. Both the direct and indirect relationships between feelings of safety in the classroom and test scores are explored to investigate whether the association operates solely through increased absences, or whether feeling unsafe in the classroom is uniquely related to achievement beyond an increase in school absences.

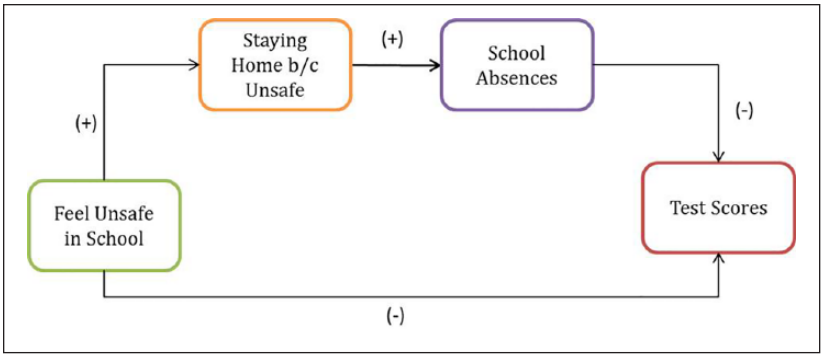

Figure 1. Theoretical relationship between safety, absences, and test scores.

Data and Measures

Data

Student surveys provide a vast deal of information for researchers and policymakers about violence and safety in urban schools (Skiba et al., 2006). In 2007, the New York City Department of Education implemented a school environment survey for all students in sixth grade and above. The annual survey asks a series of questions about student engagement, school climate, and safety. This analysis is based upon student-level survey data for the 2006-2007 through 2009-2010 school years. More than 80% of the middle school students in the district responded to the survey administered in more than 700 public schools and 10,000 homerooms. Individual administrative education records from the Department of Education comprise a rich set of covariate and outcome measures, including the number of absences per year and standardized test scores. The survey data were matched to the administrative records using a unique scrambled student identifier provided to the researcher by the Department of Education. To capture the variation in school environments across the city, the student-level file was merged with annual school-level data on violent and disruptive incidents, reported through the New York State Violent and Disruptive Incident Reporting (VADIR) system.

Sample

The sample is restricted to students in the sixth, seventh, and eighth grades for three primary reasons. First, the share of students who feel unsafe at school peaks in the seventh and eighth grades and declines as students enter

high school. The second reason pertains specifically to the context of this study. In New York, high school students do not take state standardized exams and instead take a series of subject-area exams throughout their high school tenure, making it difficult to model achievement changes between middle and high schools. Finally, survey response rates are highest for students in these grades (compared with high school grades), ensuring good coverage of the population of middle school students.

To ensure sufficient variation within schools and classrooms, schools with fewer than 10 respondents and classrooms with fewer than four respondents are omitted from the analysis. The final sample includes survey responses for more than 340,000 individual students, over multiple years.[2]

Measures

The main focus of this article is safety in the classroom. While feeling unsafe throughout the school may affect student achievement, feeling unsafe in the classroom may directly affect academic performance if a student is unable to absorb material during instruction or to focus during test administration. Responses to the four-response scaled survey item "I am safe in my classes" are recoded as binary, taking a value of one if the student "disagrees" or "strongly disagrees" with the statement. Whether a student feels safe or unsafe is used in the analysis, rather than the difference between students who "disagree" or "strongly disagree" with the statement, because the latter would require strong assumptions about the respondent's interpretations of these categories.[3] To help identify whether there is a unique relationship between feelings of safety in the classroom context and student achievement, three additional measures of safety at school are also explored. Qualitative research finds that violent incidents in schools occur most frequently in areas where there is little adult oversight, such as hallways and parking lots (Astor, Meyer, & Behre, 1999). Therefore, measures were constructed of reported feelings of safety in the hallways, bathrooms, and locker rooms in the school, and outside the school on school grounds. Indeed, a larger share of students in the sample report feeling unsafe in these contexts compared with the classroom setting. The final safety measure captures the frequency with which a student chooses to stay home because he or she feels unsafe at school. Students respond to the statement, "I stay home because I don't feel safe at school," with the frequency response options "never," "some of the time," "most of the time," and "all of the time." This measure is coded as a binary variable taking the value of one if the student stays home out because he or she feels unsafe at school "most" or "all" of the time.

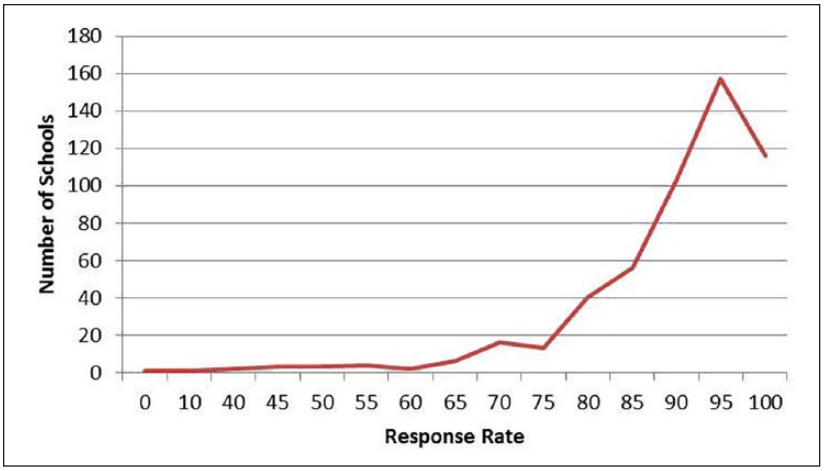

Figure 2. Distribution of response rates across schools (2010).

The primary outcome measure, academic achievement, is parameterized by scores on an annual state math exam, standardized as *z* scores by year and grade. To ensure temporal precedence, models are only estimated for math exam scores, because the math exams were administered after the student survey. During most of the study period, the English exams were administered prior to the school survey. The measure of school absences is the number of full days absent in the past year. Some models also include individual student characteristics, including special education status, free or reduced price lunch status, whether the student speaks a language at home other than English, gender, race, and ethnicity. These indicator variables take the value of one if the characteristic is present for the student. In addition, the models control for total school enrollment because students in smaller schools have been found to report higher levels of safety at school (Arum, 2003).

Response Rates and Survey Reliability

The school climate survey is administered to students online and is available in nine languages. The overall response rate to the survey is very high (above 80%), though response rates vary across schools (Figure 2). Descriptive analyses indicate that there are differences between students who take the survey and those who do not. Although respondents and nonrespondents are comparable in many ways, nonrespondents have lower test scores on average than

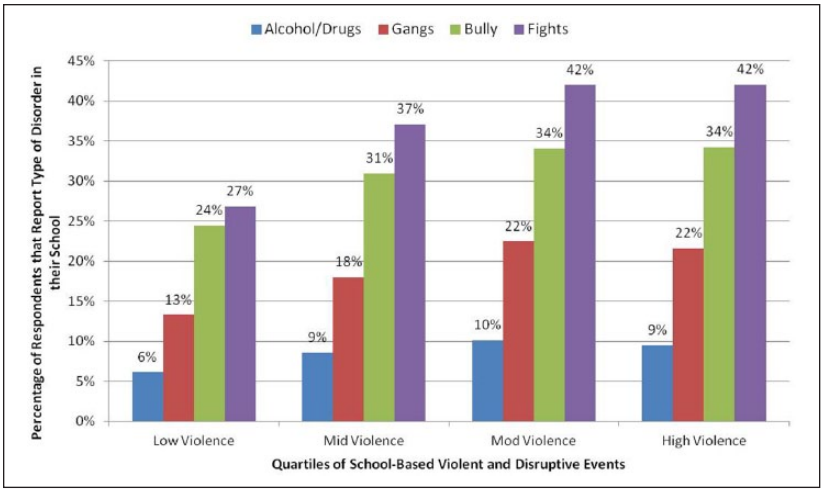

Figure 3. Perceived disorder by level of school violence.

respondents.[4] These differences are potentially problematic if the students who do not respond to the survey have systematically different feelings of safety than respondents. Nonresponse could bias the results in either direction depending on whether nonrespondents feel more or less safe than respondents.

To test the construct validity of the survey measures, two exercises are conducted. First, for respondents, there is a strong correlation between reporting frequently staying home due to feeling unsafe at school and actual school absences recorded by the school, indicating that student reports of missing school for safety reasons are correlated with attendance rates.[5] Students who feel the least safe may have more absences, which make them more likely to miss school when the survey or the standardized test is administered.[6] As a result, the findings presented here may be underestimates of the true relationship between feeling unsafe in the classroom and test scores.

As a second test, student perceptions of social disorder (bullying, fighting, and gang activity) are compared with school-level administrative measures of school violence reported on an annual basis through the VADIR.[7] Figure 3 shows that student-reported violence and social disorder vary in the expected direction with the level of school violence reported through the VADIR, indicating that students in the most violent schools report higher levels of disorder. The same pattern exists for perceptions of safety at school.

Method

Baseline Model

The association between feeling unsafe in the classroom and academic achievement is estimated using a series of ordinary least squares (OLS) regression models.[8] The first specification (Equation 1) presents the baseline model of the relationship between feeling unsafe in the classroom ($UnsafeClass_{it}$) and math test scores ($TestScore_{it}$):

$$TestScore_{it} = \beta_0 + \beta_1 UnsafeClass_{it} + \gamma Grade \times Year_t + \varepsilon_{it}, \quad (1)$$

where $Grade \times Year_t$ is a set of dummy variables controlling for annual time trends at the grade level. However, individual student characteristics may explain both feeling unsafe in the classroom and achievement. The second specification (Equation 2) includes a vector of observed student characteristics (**X**),

$$TestScore_{it} = \beta_0 + \beta_1 UnsafeClass_{it} + \mathrm{X_{it}}\Gamma + \gamma Grade \times Year_t + \varepsilon_{it}, \quad (2)$$

that includes special education status, free or reduced price lunch status, language spoken at home other than English, gender, and race and ethnicity. These models also include annual school enrollment to control for the effect of attending a larger school.

Strengthening the Baseline Model

There are several methodological challenges to estimating the relationship between feeling unsafe and academic achievement. A main concern is omitted variable bias, which could occur because school or classroom characteristics, such as the school environment or a particular teacher, affect both feelings of safety and academic achievement. If important variables are omitted from the model, changes in academic outcomes may be inaccurately attributed to students' feelings of safety. As shown earlier, a larger share of students who attend more violent schools report social disorder in their schools (Figure 3), compared with students who attend less violent schools. To strengthen the model, school fixed effects are added to control for characteristics of the school environment, such as violence and disorder, which may affect feelings of safety.

However, students may be exposed to different classroom environments within the same school. In more disorderly classrooms, teachers may themselves be fearful, or may dedicate more time to discipline at the detriment of

instructional time. Students in these classrooms may suffer academically as a result. Therefore, the next model includes homeroom fixed effects, controlling for unobserved, time-invariant characteristics of homerooms that likely affect safety and achievement.[9] Although the within-homeroom comparisons do not control for tracking into higher or lower level courses (that may foster safety differently) or for subject-matter classrooms, these models allow for a comparison between students who experience the same classroom environment at least once during the school day.

Still, unobserved *individual* factors may be explaining student feelings of safety and academic achievement among students in the same homerooms. To strengthen the individual controls in the model, two approaches are taken. First, a value-added model is estimated in which the individual student's test score from the previous year is added to the homeroom fixed effects model. In a value-added model, an individual's achievement in a given year is a function of all previous years of schooling and experience. The value-added model estimates the effect of feeling unsafe in the classroom on the gain in test scores over the prior year alone, removing differences between students that have accumulated over years of schooling. [10]

Although it is an improvement over the previous model, the value-added model does not control for all time-invariant characteristics of an individual student that may be related to safety. Studies of value-added models of education often use student fixed effects to achieve estimates of the impact of a policy change on student achievement (Gentile & Imberman, 2011). Therefore, the second approach is to control for unobserved student characteristics that remain constant over time in a student fixed effects model. This model also includes controls for school-specific year effects to capture the influence of shocks to the entire school—such as a new principal, or adoption of a new academic policy—that might affect both student safety and test scores.

To investigate whether the relationship between feeling unsafe in the classroom and math achievement differs by these characteristics, the student fixed effect model includes interactions between feeling unsafe in the classroom and race, ethnicity, and gender indicators.

To explore the direct and indirect relationships between feeling unsafe in the classroom and test scores, two measures are added to the model: a measure of whether a student reports staying home from school due to feeling unsafe, and the number of absences that occurred in the given year.

Validity Tests

Despite the strategies described above, there may remain a concern that systematic, time-varying individual or school characteristics not included in

these models are driving both feelings of safety and academic achievement. Potential sources of omitted variable bias include changes in the home lives of individual students or general social "disorder" in schools that might both be reasons that students feel unsafe and perform poorly on tests. If social disorder at school affects a student's feelings of safety and his or her test scores, these models may incorrectly attribute the influence of disorder on academic performance to feelings of safety. To separate the relationship between feeling unsafe in the classroom and achievement from the other ways in which school disorder may affect test scores, the analysis is conducted using alternative measures of safety at school that are less directly related to academic performance. If these measures of safety are also significant predictors of achievement, it is more likely that an omitted variable is causing students to feel unsafe across all contexts and their academic achievement to decline.

In addition to omitted variable bias, another threat to the validity of the inference is reverse causality—an inability to determine the direction of the relationship between feeling unsafe at school and having poor academic performance. This can result in correlation between the independent variables in the model (i.e., feeling unsafe) and the error term, violating a condition of unbiased OLS estimation. The models presented thus far are based on prior research that finds exposure to violence negatively affects the academic achievement of students and their peers (Carrell & Hoekstra, 2010; Sharkey, 2010; Sharkey et al., 2014). If students exposed to violence become fearful, they may misbehave in class and disturb their own learning and that of their peers, or they may stop coming to school altogether. If this is the case, one would expect the relationship to operate from feelings of safety to academic outcomes. However, one could tell a different, but plausible, story. Students who are falling behind in school may fear disappointing their teachers or being embarrassed in front of classmates, and may feel that the classroom is not a safe or comfortable place. In this case, poor academic performance may drive feelings of safety at school. On the other end of the spectrum, strong academic performance may be associated with feeling unsafe at school if high-performing students are targeted for bullying. To address the simultaneity concern, the analysis is restricted to standardized tests that are given *after* the survey is administered, and a falsification test of the relationship between feeling unsafe in the classroom in *future* years and current test scores is conducted.

After estimating the relationship between classroom safety and academic performance and determining the direction of the relationship, variation in the estimate across schools with different levels of school violence is explored.

Table 1. Mean Characteristics of New York City Public Middle School Students, by Question Response.

Mean student and school characteristics	"I am safe in my classes."			
	Total	Safe	Unsafe	No response
Observations	658,122	527,122	93,418	37,576
Free/reduced lunch	0.66	0.65	0.69	0.70
Female	0.51	0.52	0.47	0.44
Home language not English	0.56	0.56	0.53	0.59
Special education	0.12	0.11	0.13	0.17
Black	0.30	0.28	0.37	0.39
White	0.15	0.16	0.11	0.11
Asian	0.16	0.17	0.14	0.10
Hispanic	0.39	0.39	0.38	0.40
Days absent	11.8	11.4	13.3	14.1
Took math test (%)	0.97	0.97	0.97	0.96
ELA *z* score	0.052	0.111	−0.159	−0.267
Math *z* score	0.073	0.143	−0.167	−0.316
Total enrollment ('000s)	692	697	682	647
Peers same race (%)	0.52	0.51	0.53	0.53
Peer social disorder (%)	0.09	0.08	0.11	0.10
Unsafe in halls (%)	0.28	0.19	0.80	0.39
Unsafe outside (%)	0.34	0.26	0.77	0.43
Stays home most or all of the time (%)	0.05	0.03	0.15	0.09

Note. ELA = English language arts.

Results

Students who reported feeling unsafe in the classroom experience a consistent decrease in math test scores. The finding is robust to school, homeroom, and student fixed effects models. Robustness and validity checks support the central finding.

Descriptive Statistics

Fifteen percent of all middle school students reported feeling unsafe in the classroom.[11] Students who reported feeling unsafe had different average characteristics than students who reported feeling safe in the classroom (Table 1). A majority of students in the sample qualify for free or reduced price lunch, a proxy for poverty, and an even larger share of students who reported feeling unsafe were poor.[12] Males made up a larger share of students

who reported feeling unsafe in the classroom than females, and a larger share of Black students reported feeling unsafe than White, Asian, and Hispanic students. Students who felt unsafe in the classroom were more likely to qualify for special education services, compared with students who felt safe.

Students who reported feeling unsafe in the classroom had higher mean absences and lower scores on the math and English language arts standardized tests. The share of students who took standardized tests was high across all response categories (97%), tempering concerns about systematic differences in test taking. The average student was in a school with a majority of students of the same race or ethnicity. Students who reported feeling unsafe in the classroom attend schools where a larger share of peers reported that social disorder—bullying, fighting, and gang activity—was a problem in the school.

Reporting feeling unsafe in the classroom is correlated with reported feelings of safety in other areas of the school. Approximately 80% of students who felt unsafe in the classroom also felt unsafe in the hallways, bathrooms, and locker rooms, and 77% also felt unsafe outside the school on school grounds, compared with 19% of students who felt safe in the classroom but unsafe in the halls, and 26% of students who felt safe in the classroom but unsafe outside the school. Most notably, 15% of students who felt unsafe in the classroom also reported that they stay home most or all of the time because they felt unsafe at school. Only 3% of students who felt safe in the classroom reported staying home at similar levels. Although classroom safety is indeed related to feelings of safety elsewhere in the school, the unique relationship between students and teachers inside a classroom and the direct link between classroom learning and achievement through testing conditions (as opposed to other school climate factors that may be less directly linked to achievement or test taking) make classroom safety a particularly important dimension of school safety.

Overall, students who responded to the survey but did *not* answer the safety questions appear to be most similar to the least safe students. Only 5.7% of students who responded to the survey did not answer the classroom safety question. Compared with students who responded, larger shares of nonrespondents are poor (70%), speak a language at home other than English (59%), and are enrolled in special education (17%). A larger share of the students who did not respond are Black (39%). The mean number of absences and the mean reading and math scores for students who did not answer the safety questions are on par with or lower than students who report feeling the least safe.

There is variation in how safe students report feeling over time (Table 2). Of the students who reported feeling the least safe in the classroom in a prior year (*strongly disagree*), 38% continue to feel unsafe in the following year, whereas 57% reported feeling safe in the classroom in the following year

Table 2. Within-Student Changes in Reported Feelings of Safety in the Classroom.

Statement: "I am safe in my classes."	Current year				
	Strongly agree	*Agree*	*Disagree*	*Strongly disagree*	*Missing*
Previous year					
Strongly agree	0.51	0.37	0.05	0.03	0.04
Agree	0.27	0.56	0.10	0.04	0.04
Disagree	0.18	0.48	0.20	0.09	0.05
Strongly disagree	0.21	0.36	0.19	0.19	0.05

(and 5% are missing responses to the safety question).[13] Of the students who felt the least safe in the current year, 25% changed their response from "strongly agree" in the previous year, 37% changed their response from "agree" in the previous year, 20% changed their response from "disagree" in the previous year, and 18% did not change their response. There does not seem to be a pattern of nonresponse linked to prior year response. In fact, of the students missing responses to the survey in the current year, more than 80% reported feeling safe in the classroom in the prior year.

Regression Results

The baseline specifications presented in Table 3 show consistent evidence that feeling unsafe in the classroom is related to decreases in test scores. This finding is robust to the addition of individual covariates, school and homeroom fixed effects, and inclusion of the prior year test score. The raw correlation between reporting feeling unsafe and test scores is a 0.32 standard deviation decrease in scores. The effect size is reduced significantly with the addition of individual covariates (0.23), school fixed effects (0.13), and homeroom fixed effects (0.09). The value-added specification (column 5) shows that reporting feeling unsafe in the classroom decreases math test scores by 0.06 standard deviations, controlling for prior test scores, homeroom effects, and grade-level time trends. This effect size is larger than the independent effect of being poor on test scores (0.02). In column 6, the effects of "strongly disagreeing" and "disagreeing" are estimated separately, with the expected pattern of a stronger expression of feeling unsafe related to a larger decrease in test scores (0.07).

Still, individual-level omitted variables may explain the relationship between feeling unsafe and achievement. Controlling for time-invariant student characteristics further reduces the size of the effect of feeling unsafe

Table 3. Baseline Relationship Between Feeling Unsafe and Math z Scores.

	(1)	(2)	(3)	(4)	(5)	(6)
Math z score	Raw	Covariates	School FE	Classroom FE	Value added	Categorical
Unsafe in class	−0.316*** (0.0178)	−0.226*** (0.0104)	−0.134*** (0.00555)	−0.0889*** (0.00295)	−0.0553*** (0.00221)	
Safe in class						
Disagree						−0.0453*** (0.00254)
Safe in class						
Strongly disagree						−0.0772*** (0.00361)
White[a]		0.612*** (0.0336)	0.328*** (0.0182)	0.225*** (0.00512)	0.0872*** (0.00369)	0.0871*** (0.00369)
Hispanic		0.0702*** (0.0187)	0.0478*** (0.00748)	0.0398*** (0.00331)	0.00298 (0.00247)	0.00278 (0.00247)
Asian		0.947***(0.0405)	0.699*** (0.0217)	0.539*** (0.00543)	0.252*** (0.00380)	0.251*** (0.00380)
Female		0.00503 (0.00423)	−0.00466 (0.00388)	−0.0268*** (0.00213)	0.0137*** (0.00165)	0.0134*** (0.00165)
Home language not English		0.0217 (0.0166)	0.0463*** (0.00800)	0.0820*** (0.00339)	0.0550*** (0.00252)	0.0550*** (0.00252)
Free/reduced lunch		−0.203*** (0.0166)	−0.116*** (0.00838)	−0.0459*** (0.00396)	−0.0195*** (0.00296)	−0.0195*** (0.00296)
Special education		−0.664*** (0.0125)	−0.621*** (0.00957)	−0.491*** (0.00431)	−0.218*** (0.00318)	−0.218*** (0.00318)
Enrollment ('000s)		0.0744* (0.0339)	−0.0531 (0.0429)	−0.0323 (0.0319)	−0.0442 (0.0248)	−0.0440 (0.0248)
Math z score (t − 1)					0.593*** (0.00205)	0.593*** (0.00205)
Observations	579,031	579,031	579,031	579,031	579,031	579,031
R^2	.014	.237	.339	.474	.670	.670
Year × Grade FE	Yes	Yes	Yes	Yes	Yes	Yes
School FE	No	No	Yes	No	No	No
Homeroom FE	No	No	No	Yes	Yes	Yes

Note. Clustered standard errors in parentheses. FE = fixed effects.
[a]The omitted racial/ethnic category is Black.
*p < .1. **p < .05. ***p < .01.

Table 4. Relationship Between Feeling Unsafe and Math *z* Scores, Student Fixed Effect Models.

	(1)	(2)	(3)
Math *z* score	Student FE	School × Year FE	Categories
Unsafe in class	−0.0350*** (0.00536)	−0.0288*** (0.00490)	
Category of unsafe in class			−0.0156*** (0.00244)
Enrollment ('000s)	−0.0923** (0.0287)	−0.105 (0.0608)	−0.105 (0.0608)
Grade 7		−0.164*** (0.0319)	−0.163*** (0.0320)
Grade 8		−0.371*** (0.0600)	−0.370*** (0.0603)
Observations	579,031	579,031	579,031
R^2	.908	.915	.915
Year × Grade FE	Yes	No	No
Student FE	Yes	Yes	Yes
School × Year FE	No	Yes	Yes

Note. Robust standard errors in parentheses, clustered at the school level. FE = fixed effects.
*$p < .1$. **$p < .05$. ***$p < .01$.

(Table 4). The first student fixed effects model shows that feeling unsafe in the classroom results in a 0.04 standard deviation decrease in test scores. The specification in column 2 includes annual school trends to control for school-wide changes that might affect test scores and safety (such as a new principal, or change in disciplinary or security policy). With these controls, on average, a student who reported feeling unsafe in the classroom experienced a 0.03 standard deviation decrease in math test scores. The third specification estimates the effect of a change in response to a more "unsafe" category over time and finds that each decrease in reported feelings of safety results in a 0.02 standard deviation decrease in test scores.

Although the descriptive statistics show that a greater share of Black and Hispanic students felt unsafe in the classroom compared to White and Asian students, interaction models show no differences in the rate at which safety affects test scores by student race and ethnicity (Table 5). Boys entering middle school are more likely to become involved in delinquent behavior (Lynne-Landsman, Graber, Nichols, & Botvin, 2011), and to be both a victim and aggressor in student conflicts. As a result, boys may feel more afraid and suffer academically relative to girls. Yet, the results show no differential effect of feeling unsafe in the classroom on test scores between boys and girls.

Feeling unsafe in the classroom may affect test scores if students choose to stay home. On average, students who indicate that they stay home because they feel unsafe at school should have a higher number of absences. As a

Table 5. Relationship Between Feeling Unsafe in the Classroom and Math *z* Scores, Interactions With Student Characteristics.

	(1)
Math *z* score	School × Year FE
Unsafe in class	−0.0603*** (0.0131)
Unsafe in Class × Black	0.0269 (0.0141)
Unsafe in Class × Hispanic	0.0139 (0.0140)
Unsafe in Class × Asian	0.0150 (0.0162)
Unsafe in Class × Free/Reduced Lunch	−0.00279 (0.00845)
Unsafe in Class × Female	0.00603 (0.00838)
Unsafe in Class × Home Language Not English	0.0267** (0.00868)
Unsafe in Class × Special Education	−0.00295 (0.0135)
Enrollment ('000s)	−0.0903 (0.0535)
Observations	586,553
R^2	.914

Note. Clustered standard errors in parentheses. All models include student FE, grade FE, and School × Year FE. FE = fixed effects.
*$p < .1$. **$p < .05$. ***$p < .01$.

validity check of this measure of safety, Table 6 presents the relationship in a regression framework. There is a strong association between staying at home due to feeling unsafe and the number of full-day absences. The association persists with the inclusion of individual student characteristics, school and classroom fixed effects, and student fixed effects. Within the same classrooms, students who reported staying home because they felt unsafe are absent 2 days more, on average, than students who do not (Specification 4).

To explore the mediating effect of school absences on the relationship between feeling unsafe in the classroom and test scores, measures of days absent and whether the student reports staying home from school because he or she feels unsafe are added to the model. The test examines whether the main results hold with the inclusion of the new variables and an interaction term. The results in Table 7 show that holding reported feelings of safety in the classroom constant (column 2), students who indicated that they stayed home because they felt unsafe at school experienced a larger decrease in test scores (an additional 0.03 standard deviation decrease).[14] Each additional absence from school also decreased test scores. In fact, there is no independent effect of staying home due to feeling unsafe at school when an interaction term between staying home and absences is included in the model (column 3). The point estimate on classroom safety (column 1) is largely unaffected by the inclusion of these additional

Table 6. Relationship Between Staying Home due to Feeling Unsafe and School Absences.

Dependent variable (DV): Days absent	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Raw	Covariates	School FE	Homeroom FE	Student FE	Student FE and school trend
Stay Home Because Unsafe at School	3.328***	2.804***	2.330***	2.091***	0.624***	0.572***
	(0.128)	(0.111)	(0.101)	(0.0824)	(0.110)	(0.104)
Black[a]		0.152	−1.020***	−1.666***		
		(0.293)	(0.196)	(0.0678)		
Hispanic		1.947***	0.720***	0.200***		
		(0.276)	(0.165)	(0.0577)		
Asian		−4.292***	−4.204***	−3.888***		
		(0.294)	(0.215)	(0.0599)		
Female		−0.202***	−0.101*	−0.0117		
		(0.0481)	(0.0438)	(0.0302)		
Free/Reduced Lunch		2.221***	1.798***	1.092***		
		(0.140)	(0.101)	(0.0554)		
Home Language not English		-2.517***	-2.441***	-2.479***		
		(0.150)	(0.108)	(0.0479)		
Special Education		2.629***	2.329***	1.536***		
		(0.107)	(0.0856)	(0.0608)		
Enrollment ('000s)		-0.344	1.318**	1.096**	0.163	0.675
		(0.344)	(0.483)	(0.354)	(0.355)	(0.925)
Observations	580,480	580,480	580,480	580,480	580,480	580,480
R^2	.004	.082	.145	.212	.898	.903
Grade × Year FE	Yes	Yes	Yes	Yes	Yes	No
Covariates	No	Yes	Yes	Yes	No	No
School FE	No	No	Yes	No	No	No
Homeroom FE	No	No	No	Yes	No	No
Student FE	No	No	No	No	Yes	Yes
School × Year FE	No	No	No	No	No	Yes

Note. Robust standard errors in parentheses. FE = fixed effects.
[a]The omitted racial/ethnic category is White.
*p < .1. **p < .05. ***p < .01.

measures, indicating that there is both a direct effect of feeling unsafe on academic achievement and an indirect effect through increased absences.

Validity Tests

It is possible that unobserved, time-varying student characteristics may contribute both to feelings of safety in the classroom and test scores, or that potential simultaneity prevents the identification of a relationship. Although

Table 7. Relationship Between Classroom Safety, Staying Home, and Math *z* Scores.

	(1)	(2)	(3)
Variables	Student FE	Mediators	Interaction
Unsafe in Class	−0.0294*** (0.00493)	−0.0243*** (0.00503)	−0.0242*** (0.00503)
Stay Home Because Unsafe at School		−0.0329*** (0.00699)	−0.0176 (0.0103)
Absences		−0.00617*** (0.000301)	−0.00608*** (0.000300)
Stay Home × Absences			−0.00114* (0.000560)
Enrollment ('000s)	−0.103 (0.0548)	−0.0973 (0.0551)	−0.0980 (0.0552)
Observations	575,286	575,286	575,286
R^2	.915	.915	.915

Note. Robust standard errors in parentheses. All models include student FE, grade FE, and School × Year FE. FE = fixed effects.
*p < .1. **p < .05. ***p < .01.

there is no surefire way to alleviate this concern in the quasi-experimental context, several tests provide support for the robustness of the estimates.

To address concerns about omitted variable bias, the central model is estimated including alternative measures of feelings of safety in school that are less closely related to academic performance. If feeling unsafe in all contexts is related to test scores, it is more likely that an omitted variable that is affecting both safety and achievement is present as a source of bias in the results. For instance, the victimization of a family member through domestic violence may influence both feelings of safety and performance in school. However, one would expect that this type of exposure to violence would make students feel unsafe in all contexts, not just in the classroom. Table 8 provides the results from variants of the student fixed effect model that include feeling unsafe in the hallways, bathrooms, and locker rooms at school, and feeling unsafe outside the school on school grounds. There is no relationship between these measures of safety and test scores when controlling for safety in the classroom, and the magnitude and significance of the effect of feeling unsafe in the classroom are unchanged.[15] Although this test does not rule out all potential sources of omitted variable bias, it minimizes the concern as remaining omitted variables affecting test scores should be related to feelings of safety in the classroom only.[16]

Next, the falsification check in Table 9 estimates whether feelings of safety in the *following* year predict test scores in the current year. No relationship is found between future feelings of safety and current test scores, and the coefficient on the current year safety measure is unchanged. Future reported feelings

Table 8. Validity Test 1, Relationship Between Other Safety Measures and Math *z* Scores.

	(1)	(2)
	Unsafe in halls	Unsafe outside
Variables	DV: Math *z* score	DV: Math *z* score
Unsafe in Class	−0.0228*** (0.00539)	−0.0224*** (0.00537)
Unsafe in Halls	−0.00293 (0.00444)	
Unsafe Outside		−0.00499 (0.00392)
Stay Home Because Unsafe at School	−0.0327*** (0.00730)	−0.0325*** (0.00728)
Absences	−0.00618*** (0.000301)	−0.00618*** (0.000301)
Enrollment ('000s)	−0.0794 (0.0520)	−0.0796 (0.0520)
Observations	560,355	560,355
R^2	.917	.917

Note. Robust standard errors in parentheses. All models include student FE, grade FE, and School × Year FE. FE = fixed effects.
*p < .1. **p < .05. ***p < .01.

Table 9. Validity Test 2, Falsification Test.

Falsification test	(1)	(2)
	Reference	Falsification test
Variables	DV: Math *z* score	DV: Math *z* score
Unsafe in Class	−0.0253*** (0.00704)	−0.0245** (0.00776)
Unsafe in Class (t + 1)		0.00202 (0.00777)
Enrollment ('000s)	−0.0562 (0.0745)	−0.0565 (0.0745)
Observations	332,138	332,138
R^2	.929	.929

Note. Robust standard errors in parentheses. All models include student FE, grade FE, and School × Year FE. FE = fixed effects.
*p < .1. **p < .05. ***p < .01.

of safety do not affect test scores in the previous year, suggesting that changes in reported feelings of safety lead to decreases in test scores, not the reverse.

The findings are also robust to estimation on a smaller, balanced panel of students who responded to the survey for all 3 years of middle school

Table 10. Robustness Test 1, Balanced Panel.

Balanced panel	(1)	(2)
	Unbalanced	Balanced
Variables	DV: Math z score	DV: Math z score
Unsafe in Class	−0.0294*** (0.00493)	−0.0323*** (0.00517)
Enrollment ('000s)	−0.103 (0.0548)	−0.0559 (0.0593)
Observations	575,286	204,731
R^2	.915	.862

Note. Robust standard errors in parentheses. All models include student FE, grade FE, and School × Year FE. FE = fixed effects.
*p < .1. **p < .05. ***p < .01.

(Table 10). The coefficient on feeling unsafe in the classroom maintains significance, and the point estimate from the balanced panel model is larger than the estimates achieved using the unbalanced panel.

Finally, variations on the value-added model are estimated, including a model with a lagged test score but no student fixed effects (as used by Gottfried, 2010), a student fixed effect model with level scores and then with lagged scores, and a model of the change in test score as the dependent variable (Table 11). The point estimate of the variable of interest is larger for the first specification, indicating that a value-added approach alone is no substitute for a student fixed effect estimator. Across the student fixed effect models, the estimates for feeling unsafe in the classroom are robust to estimation with just the level math score and no lagged score, and estimation on the change in math score.

Variation in the Estimated Relationship

To learn whether the association between feeling unsafe and test scores is larger for students who are exposed to more school-based violence, I explore variation in the estimates by levels of school violence.[17] Descriptively, it appears that the average student in a school with high violence feels less safe than the average student in a low-violence school. Differences in the violent incident rate in the school may result in larger estimates of the relationship between feeling unsafe in the classroom and test scores. Table 12 presents the student fixed effect models stratified by quartiles of school violent and disruptive incident rates in 2007 (the baseline year of the survey). Column 1

Table 11. Robustness Test 2, Value-Added Specifications.

Value added	(1)	(2)	(3)	(4)
	Lag score	Level	Lag, FE	Change
Variables	DV: Math z score	DV: Math z score	DV: Math z score	DV: Math z score
Unsafe in Class	−0.0583*** (0.00213)	−0.0290*** (0.00482)	−0.0274*** (0.00480)	−0.0348*** (0.00759)
Math z Score (t − 1)	0.626*** (0.00137)		−0.269*** (0.00719)	
Enrollment ('000s)	−0.0405** (0.0138)	−0.0905 (0.0533)	−0.0829 (0.0548)	−0.107 (0.0776)
Observations	586,553	586,553	586,553	586,553
R^2	.661	.914	.922	.505
Classroom FE	Yes	No	No	No
Student FE	No	Yes	Yes	Yes
Grade × Year FE	Yes	No	No	No
Grade FE	No	Yes	Yes	Yes
School × Year FE	No	Yes	Yes	Yes

Note. Robust standard errors in parentheses. FE = fixed effects.
*p < .1. **p < .05. ***p < .01.

Table 12. Relationship Between Feeling Unsafe in the Classroom and Math z Scores, by Rate of in School-Based Violent and Disruptive Incidents (2007).

Variables	(1) Low violence (Q1: Rate < −30)	(2) Moderate violence (Q2: −30 < rate < 22)	(3) Medium violence (Q3: 22 < rate < 121)	(4) High violence (Q4: Rate > 121)
Unsafe in Class	−0.0307 (0.0237)	−0.0219* (0.0103)	−0.0306** (0.0104)	−0.0325*** (0.00791)
Change in Violent Incident Rate (2007-2010)	−0.0000198 (0.000270)	−0.000647 (0.000823)	−0.000207 (0.00111)	−0.000148 (0.00202)
Enrollment ('000s)	0.0395 (0.142)	0.0429 (0.0828)	−0.0302 (0.0869)	−0.0948 (0.0711)
Observations	50,447	113,070	184,815	201,415
R^2	.915	.914	.916	.919

Note. Robust standard errors in parentheses. All models include student FE, grade FE, and School × Year FE. FE = fixed effects.
*p < .1. **p < .05. ***p < .01.

presents estimates for students who attend schools that had the lowest incident rates in the city in 2007, and column 4 presents estimates for students attending schools that had the highest incident rates. The models also control for the change in the incident rate between 2007 and 2010, and total enrollment in the school, as well as grade and year fixed effects. Results show that feeling unsafe in the classroom has no statistically significant effect on test scores for students in schools with the lowest levels of violence, but as students are exposed to greater in-school violence and disruption, the estimates grow larger and become statistically significant. For students in schools with the highest violent and disruptive incident rates, feeling unsafe in the classroom decreased math performance by 0.033 standard deviations.

Discussion

This study analyzes the relationship between feeling unsafe in the classroom and academic achievement, based on a comparison of current and prior year standardized test scores. Feeling unsafe in the classroom has a consistent negative association with math test scores in the most controlled, student fixed effects model. Put differently, students who report feeling the *safest* in their classes and who report never staying home because they feel unsafe at school perform better, on average, on standardized math exams.[18] To place the magnitude of the findings in context, previous research (Hill, Bloom, Black, & Lipsey, 2008) has found that an effect size of 0.03 standard deviations on a standardized assessment for elementary and middle school students is roughly equivalent to 1 additional month of instruction in a school year.[19]

Although an estimated decrease in math scores due to feeling unsafe in the classroom of 0.03 standard deviations is a small effect, it is within the range of effect sizes resulting from interventions specifically aimed at improving achievement.[20] A study of the impact of classroom size on test scores finds that small class sizes—an intervention widely adopted across the country—increase test scores by 0.05 to 0.10 standard deviations (Stretcher & Bohrnstedt, 2002). Other research on class size has found effects of similar magnitudes (Chubb & Loveless, 2002). Furthermore, in an analysis of the impacts of small class size on test scores using Tennessee Student-Teacher Achievement Ratio (STAR) data, Krueger (1999) estimates that an increase of 1 standard deviation in either math or reading test scores translates into 8% higher earnings, on average, over the life course. Although the impacts of class size reduction are thought to be cumulative, for the 30,120 students in this sample who feel unsafe in the classroom across multiple years, the estimated effects are likely larger. Although there is little comparable research in

the violence and school safety literature, Sharkey (2010) estimates the effect of exposure to homicides and finds small but highly significant impacts on children's cognitive functioning. Indeed, safety is one of many factors contributing to student academic success. These findings suggest that policy efforts to improve school safety may yield small gains in achievement, in addition to other benefits of a safe school environment.

Overall, a larger percentage of Black and Hispanic middle school students in New York City report feeling unsafe in the classroom, compared with the share of Asian and White students. Based on the estimates in this analysis, a larger percentage of Black and Hispanic students are negatively affected by feeling unsafe in the classroom, compared with their White and Asian peers. Although this is not proof that feeling unsafe directly contributes to educational inequality, it suggests that safety is one factor that systematically differentiates the academic success of Black and Hispanic students.

Limitations

This analysis provides new information about the size of the relationship between classroom safety and achievement, but some limitations remain. The effect of feeling unsafe on academic outcomes may be particularly salient for acute events, such as exposure to violent crime that results in a direct, yet potentially short-lived effect on both safety and academic performance. Acute effects are difficult to detect in this analysis due to the annual observation of feelings of safety; therefore, these results likely reflect the cumulative effect of feeling unsafe at school over time.

Issues of reporting accuracy, particularly underreporting or overreporting on sensitive topics, could be a concern for research about feelings of safety. For instance, social pressures may make it likely for middle school students, particularly boys, to underreport feeing unsafe at school. In this case, the significant effects of feeling unsafe on academic outcomes are conservative estimates. Even with the likelihood of underreporting, the survey data show that among middle school students in New York City, boys are more likely to report feeling unsafe than girls.

Although the school survey data provide detailed information about student perceptions of their environment that researchers generally do not have access to, the questions about safety do not distinguish between physical safety and other types of safety, such as intellectual or emotional safety. Qualitative research suggests that classroom safety can include feeling comfortable and encouraged, and not belittled, by teachers and peers in the classroom setting, as well as physically safe (Bondy, Ross, Gallingane, & Hambacher, 2007; Cooper, 2012). The effect of safety on academic

achievement may differ by type of safety, although the current analysis is unable to distinguish between these different types of safety in the student responses.

Finally, although research focused on a single city or a sample of students can suffer from limited external validity, in this case, high coverage of the student population makes it possible to generalize from the results to all New York City middle school students. The sheer size and diversity of the New York City public school system provides ample variation in race, ethnicity, immigrant status, and other student factors, making lessons from New York relevant for other large urban school systems. However, factors influencing safety may differ across other municipal contexts, and comparative work would benefit the field.

Policy Implications

This study can inform policy and programming aimed at improving safety in urban schools. First, accountability systems are used in many districts to measure the effectiveness of schools and teachers in promoting academic progress among students and reducing racial disparities in outcomes. In New York City, School Report Card grades account for aggregate school safety ratings, and a "safe environment" is a category of evaluation during site visits for the quality reviews of all city schools. A first step would be to ensure that the rich information collected about student safety is used to inform practice. In particular, low classroom safety scores may signal to administrators that teachers in the school need training and support to promote safer classroom environments for students. One place to start would be in schools that consistently report the highest violent and disruptive incident rates, where the relationship between feeling unsafe in the classroom and test scores is largest.

Second, to effectively address poor classroom safety, it is critical to identify evidence-based interventions that improve safety in the classroom. Ecological approaches to classroom management focus on improving the classroom setting to promote positive behavior, instead of focusing on particular students (Osher, Bear, Sprague, & Doyle, 2010). Studies of classroom-level approaches to decreasing problem behaviors and bullying in schools suggest that curriculum-based programs alone, without classroom management support for teachers, may be a less effective method for changing the classroom environment and influencing student behavior (Cappella et al., 2012; Ttofi & Farrington, 2011; Vreeman & Carroll, 2007). Furthermore, introducing new curricular units may take away from instructional time in core academic areas, whereas improving classroom management skills may allow teachers to dedicate more time to instruction.

Third, studies suggest that select school-wide interventions may foster improvements in school climate, discipline, and student safety that may affect how students feel in the classroom. School-wide positive behavioral support programs, which aim to prevent problem behaviors by effectively communicating rules and rewarding positive behaviors, have been found to reduce referrals to the principal's office (Bradshaw, Mitchell, & Leaf, 2010). Social-emotional learning programs target individual students and aim to build their self-awareness, social awareness, relationship skills, and decision-making skills (Osher et al., 2010). Although experimental studies of social-emotional learning interventions document reductions in disruptive behavior and bullying (Osher et al., 2010), one study of a school-wide bullying intervention finds no effect on bullying but significant improvements in student safety (Rahey & Craig, 2002). There is also evidence that early intervention can support prolonged academic success among urban students. City Connects is an intervention providing support for elementary students in urban schools to overcome nonacademic barriers to learning, such as family issues, that may arise outside of school. The intervention has been found to have lasting effects on achievement through middle school (Walsh et al., 2014).

Finally, factors outside the school such as neighborhood violence or problems at home may also contribute to student feelings of safety in the classroom. The interventions described above may improve the classroom or school setting for all students, regardless of the source of student feelings of safety, but the interventions are not targeted toward alleviating fear from outside sources. More research is needed to investigate contextual factors that mediate and/or moderate the relationship between feelings of safety at school and academic outcomes, and to highlight approaches that effectively promote safety and achievement among students who are exposed to dangerous or disorderly environments.

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Notes

1. Table 230.70, U.S. Department of Justice, Bureau of Justice Statistics, School Crime Supplement (SCS) to the National Crime Victimization Survey, selected years, 1995 through 2013.
2. Mean characteristics of the students in the analytic sample are identical to mean characteristics of the full sample.
3. Models disaggregating the "disagree" and "strongly disagree" responses are presented as a robustness check.
4. Percentages of students who are female, enrolled in English as a second language (ESL), native born, and receiving free or reduced price lunch are comparable between respondents and nonrespondents. Black and Hispanic students make up larger percentages of the nonrespondent group than the respondent group.
5. Students who stay home because they feel unsafe have 2.6 more absences on average than students who do not.
6. Students who do not take the standardized exam are omitted from models estimating the relationship between feelings of safety and test scores.
7. Schools are categorized by quartiles based on the number of incidents that occur in a given year: "Low" = 25th percentile and below, "Mid" = between 25th and 50th percentiles, "Mod" = between 50th and 75th percentiles, and "High" = 75th percentile and above.
8. All models were estimated using Stata. Commands used: *reg* (baseline models), *areg* (one-dimensional fixed effects) and *reg2hdfe* (two high-dimensional fixed effects). For more information on *reg2hdfe*, see Guimarães and Portugal (2009).
9. The data only include codes for homerooms; therefore, it is not possible to identify math classrooms.
10. There is no clear standard in the literature about specification of value-added models. Most researchers use a cumulative model, which estimates the impact of inputs on the level test score controlling for prior scores, or a gain score model, which uses the change in test score from the previous year as the dependent variable (Gentile & Imberman, 2011; Harris & Sass, 2006; Rockoff, 2004; Rothstein, 2009; Wiswall, 2013). Another approach is to measure the contemporaneous effect of inputs on test scores using the student fixed effect alone to capture prior performance (Harris & Sass, 2006; Wiswall, 2013). Value-added models are inconsistent when estimated using a random effects estimator; therefore, a fixed effects estimator is used (Harris & Sass, 2006).
11. Share of students by response to the statement, "I feel safe in the classroom": *strongly agree* (37%), *agree* (43%), *disagree* (10%), *strongly disagree* (5%), and *no response* (6%).
12. Unsafe includes the responses "disagree" or "strongly disagree" to the statement, "I feel safe in the classroom."
13. Reported safety varies across the middle school years. Descriptively, a larger share of students report feeling unsafe in the classroom in seventh and eighth grades, compared with sixth grade. If students are more likely to become involved in delinquent activities or with delinquent peers as they get older, they

may also feel less safe. Boys are more likely to report feeling unsafe at school than girls, but this may change with age, puberty, and maturity.

14. The measure includes students who said that they "most" or "all" of the time stay home because of feeling unsafe. Additional specifications that include the less extreme response "some of the time" and the interaction between "some of the time" and absences do not change the results for the main effects. However, the interaction between days absent and the "stay home from school some of the time" response category is not significant. This suggests that students who stay home from school only "some of the time" because they feel unsafe may miss school for other reasons (not related to safety) that also contribute to decreases in test scores.
15. Feeling unsafe in the halls or outside the school is significantly related to test scores in models that omit classroom safety.
16. Differential exposure to neighborhood crime may contribute to the relationship between safety and achievement. I estimate a model using the annual number of crimes that occur in each student's census tract of residence to measure neighborhood crime. The inclusion of this neighborhood crime measure does not affect the magnitude or significance of the coefficient on feeling unsafe. Furthermore, interaction terms between classroom safety and neighborhood crime are not statistically significant. Feeling unsafe in the classroom is related to test scores, independent of neighborhood crime.
17. School-based violence is based on the statewide Violent and Disruptive Incident Report (VADIR).
18. Student fixed effect models of feeling safe in the classroom find a 0.038 standard deviation increase in math scores when students "strongly agree" with the statement, "I feel safe in my classes," and a 0.025 increase when students "agree" with the statement, relative to when they disagree. When students report "never" staying home because they feel unsafe at the school, they experience an increase in test scores (relative to staying home "all of the time").
19. Effect size calculated by the Strategic Data Project at Harvard University, in a report titled "SDP Human Capital Diagnostic for Los Angeles Unified School District," November 14, 2012, based on the empirical findings of Hill, Bloom, Black, and Lipsey (2008).
20. Randomized studies have found variation in the size of educational intervention effects by grade level and test type, with mean effect sizes for younger students on broad standardized tests being lower on average than for older students (Hill et al., 2008).

References

Akiba, M. (2010). What predicts fear of school violence among U.S. adolescents? *Teachers College Record*, *112*, 68-102.

Alvarez, A., & Bachman, R. (1997). Predicting the fear of assault at school and while going to and from school in an adolescent population. *Violence and Victims*, *12*, 69-86.

Arseneault, L., Walsch, E., Trzesniewski, K., Newcombe, R., Caspi, A., & Moffitt, T. E. (2006). Bullying victimization uniquely contributes to adjustment problems in young children: A nationally representative cohort study. *Pediatrics*, *118*, 130-138.

Arum, R. (2003). *Judging school discipline: The crisis of moral authority*. Cambridge, MA: Harvard University Press.

Astor, R. A., Meyer, H. A., & Behre, W. J. (1999). Unowned places and times: Maps and interviews about violence in high schools. *American Educational Research Journal*, *36*, 3-42.

Beland, L., & Kim, D. (2015). The effect of high school shootings on schools and student performance. *Educational Evaluation and Policy Analysis*, *38*, 113-126.

Benner, A. D., & Wang, Y. (2014). Shifting attendance trajectories from middle to high school: Influences of school transitions and changing school contexts. *Developmental Psychology*, *50*, 1288-1301.

Bondy, E., Ross, D. D., Gallingane, C., & Hambacher, E. (2007). Creating environments of success and resilience: Culturally responsive classroom management and more. *Urban Education*, *42*, 326-348.

Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2010). Examining the effects of schoolwide positive behavioral interventions and supports on student outcomes: Results from a randomized controlled effectiveness trial in elementary schools. *Journal of Positive Behavior Interventions*, *12*, 133-148.

Burdick-Will, J. (2013). School violent crime and academic achievement in Chicago. *Sociology of Education*, *86*, 343-361.

Cappella, E., Hamre, B. K., Kim, H. Y., Henry, D. B., Frazier, S. L., Atkins, M. S., & Schoenwald, S. K. (2012). Teacher consultation and coaching within mental health practice: Classroom and child effects in urban elementary schools. *Journal of Consulting and Clinical Psychology*, *80*, 597-610.

Carrell, S. E., & Hoekstra, M. L. (2010). Externalities in the classroom: How children exposed to domestic violence affect everyone's kids. *American Economic Journal: Applied Economics*, *2*(1), 211-228.

Chen, G. (2008). Communities, students, schools, and school crime: A confirmatory study of crime in U.S. high schools. *Urban Education*, *43*, 301-318.

Chubb, J. E., & Loveless, T. (Eds.). (2002). *Bridging the achievement gap*. Washington, DC: Brookings Institution Press.

Cooper, K. S. (2012). Safe, affirming, and productive spaces: Classroom engagement among Latina high school students. *Urban Education*, *48*, 490-528.

Cornell, D. G., & Mayer, M. J. (2010). Why do school order and safety matter? *Educational Researcher*, *39*, 7-15.

Davis, J. E., & Jordan, W. J. (1994). The effects of school context, structure, and experiences on African American males in middle and high school. *The Journal of Negro Education*, *63*, 570-587.

Davis, J. R., & Warner, N. (2015). Schools matter: The positive relationship between New York City high schools' student academic progress and school climate. *Urban Education*. Advance online publication. doi:10.1177/0042085915613544

Fiscella, K., & Kitzman, H. (2009). Disparities in academic achievement and health: The intersection of child education and health policy. *Pediatrics*, *123*, 1073-1080.

Fisher, B. W., Nation, M., Nixon, C. T., & McIlroy, S. (2016). Students' perceptions of safety at school after Sandy Hook. *Journal of School Violence*. Advance online publication. doi:10.1080/15388220.2015.1133310

Freudenberg, N., & Ruglis, J. (2007). Reframing school dropout as a public health issue. *Preventing Chronic Disease*, *4*(4), Article A107.

Gentile, E., & Imberman, S. A. (2011). *Dressed for success? The effect of school uniforms on student achievement and behavior* (Working Paper No. 17377). Cambridge, MA: National Bureau of Economic Research.

Gottfried, M. A. (2010). Evaluating the relationship between student attendance and achievement in urban elementary and middle schools: An instrumental variables approach. *American Educational Research Journal*, *47*, 434-465.

Gottfried, M. A. (2011). The detrimental effects of missing school: Evidence from urban siblings. *American Journal of Education*, *117*, 147-182.

Gottfried, M. A. (2014). Chronic absenteeism and its effects on students' academic and socioemotional outcomes. *Journal of Education for Students Placed at Risk*, *19*, 53-75.

Gottfried, M. A. (2015). Chronic absenteeism in the classroom context: Effects on achievement. *Urban Education*. Advance online publication. doi:10.1177/0042085915618709

Gregory, A., Skiba, R. J., & Noguera, P. A. (2010). The achievement gap and the discipline gap. *Educational Researcher*, *39*, 59-68.

Guimarães, P., & Portugal, P. (2009). *A simple feasible alternative procedure to estimate models with high-dimensional fixed effects* (IZA Discussion Paper No. 3935). Retrieved from http://ssrn.com/abstract=1329573

Harris, D. N., & Sass, T. R. (2006). *Value-added models and the measurement of teacher quality*. Unpublished manuscript.

Henrich, C. C., Schwab-Stone, M., Fanti, K., Jones, S. M., & Ruchkin, V. (2004). The association of community violence exposure with middle-school achievement: A prospective study. *Journal of Applied Developmental Psychology*, *25*, 327-348.

Hill, C. J., Bloom, H. S., Black, A. R., & Lipsey, M. W. (2008). Empirical benchmarks for interpreting effect sizes in research. *Child Development Perspectives*, *2*, 172-177.

Hong, J. S., & Eamon, M. K. (2012). Students' perceptions of unsafe schools: An ecological systems analysis. *Journal of Child and Family Studies*, *21*, 428-438.

Jargowsky, P. A., Wood, Z. D., Anglum, J. C., & Karp, D. N. (2016). Expanding educational opportunity in urban school districts. In S. M. Wachter & L. Ding (Eds.), *Shared Prosperity in America's Communities* (pp. 102-117). Philadelphia, PA: University of Pennsylvania Press.

Juvonen, J., Wang, Y., & Espinoza, G. (2011). Bullying experiences and compromised academic performance across middle school grades. *The Journal of Early Adolescence*, *31*, 152-173.

Krueger, A. B. (1999). Experimental estimates of education production functions. *The Quarterly Journal of Economics*, *114*, 497-532.

Kupchik, A., & Ellis, N. (2008). School discipline and security. *Youth & Society*, *39*, 549-574.

Lacoe, J. R. (2015). Unequally safe: The race gap in school safety. *Youth Violence and Juvenile Justice*, *13*, 143-168.

Lochner, L., & Moretti, E. (2004). The effect of education on crime: Evidence from prison inmates, arrests, and self-reports. *The American Economic Review, 94*(1), 155-189.

Lynne-Landsman, S. D., Graber, J. A., Nichols, T. R., & Botvin, G. J. (2011). Trajectories of aggression, delinquency, and substance use across middle school among urban, minority adolescents. *Aggressive Behavior*, *37*, 161-176.

Maslow, A. H. (1970). *Motivation and personality*. New York, NY: Harper & Row.

Mayer, M. J. (2010). Structural analysis of 1995-2005 school crime supplement datasets: Factors influencing students' fear, anxiety, and avoidant behaviors. *Journal of School Violence*, *9*, 37-55.

McNeal, L., & Dunbar, C., Jr. (2010). In the eyes of the beholder: Urban student perceptions of zero tolerance policy. *Urban Education*, *45*, 293-311.

Osher, D., Bear, G. G., Sprague, J. R., & Doyle, W. (2010). How can we improve school discipline? *Educational Researcher*, *39*, 48-58.

Piaget, J. (1936). *The origins of intelligence in children* (M. Cook, Trans.). New York, NY: International Universities Press.

Raffaele Mendez, L. M. (2003). Predictors of suspension and negative school outcomes: A longitudinal investigation. *New Directions for Youth Development*, *99*(Fall), 17-33.

Rahey, L., & Craig, W. M. (2002). Evaluation of an ecological program to reduce bullying in schools. *Canadian Journal of Counselling*, *36*, 281-296.

Reardon, S. F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. In R. Murnane & G. Duncan (Eds.), *Whither opportunity? Rising inequality and the uncertain life chances of low-income children* (pp. 91-116). New York, NY: Russell Sage Foundation.

Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *The American Economic Review, 94*(2), 247-252.

Rothstein, J. (2009). Student sorting and bias in value-added estimation: Selection on observables and unobservables. *Education, 4*(4), 537-571.

Schneider, D. (2011). Wealth and the marital divide. *American Journal of Sociology*, *117*, 627-667.

Schreck, C. J., & Miller, J. M. (2003). Sources of fear of crime at school: What is the relative contribution of disorder, individual characteristics, and school security? *Journal of School Violence*, *2*, 57-79.

Sharkey, P. (2010). The acute effect of local homicides on children's cognitive performance. *Proceedings of the National Academy of Sciences*, *107*, 11733-11738.

Sharkey, P., Schwartz, A. E., Ellen, I. G., & Lacoe, J. (2014). High stakes in the classroom, high stakes on the street: The effects of community violence on students' standardized test performance. *Sociological Science*, *1*, 199-220.

Skiba, R. J., Chung, C. G., Trachok, M., Baker, T. L., Sheya, A., & Hughes, R. L. (2014). Parsing disciplinary disproportionality: Contributions of infraction,

student, and school characteristics to out-of-school suspension and expulsion. *American Educational Research Journal*, *51*, 640-670.

Skiba, R. J., Michael, R., Nardo, A., & Peterson, R. (2002). The color of discipline: Sources of racial and gender disproportionality in school punishment. *The Urban Review*, *34*, 317-342.

Skiba, R. J., Simmons, A. B., Peterson, R., & Forde, S. (2006). The SRS safe school survey: A broader perspective on school violence prevention. In S. R. Jimerson & M. J. Furlong (Eds.), *Handbook of school violence and school safety: From research to practice* (Vol. 346, pp. 157-170). Lawrence Erlbaum Associates.

Skiba, R. J., Simmons, A. B., Peterson, R., McKelvey, J., Forde, S., & Gallini, S. (2004). Beyond guns, drugs and gangs. *Journal of School Violence*, *3*, 149-171.

Stretcher, B. M., & Bohrnstedt, G. W. (2002). *Class size reduction in California: Findings from 1999-2000 and 2000-2001*. Palo Alto, CA: American Institutes for Research.

Ttofi, M. M., & Farrington, D. P. (2011). Effectiveness of school-based programs to reduce bullying: A systematic and meta-analytic review. *Journal of Experimental Criminology*, *7*, 27-56.

U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress. (2004). *NAEP 2004 trends in academic progress*. Retrieved from http://nces.ed.gov/nationsreportcard/naepdata

U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress. (2008). *2008 NAEP long-term trend mathematics assessment*. Retrieved from http://nces.ed.gov/nationsreportcard/naepdata

Vreeman, R. C., & Carroll, A. E. (2007). A systematic review of school-based interventions to prevent bullying. *Archives of Pediatrics & Adolescent Medicine*, *161*, 78-88.

Walsh, M. E., Madaus, G. F., Raczek, A. E., Dearing, E., Foley, C., An, C., . . . Beaton, A. (2014). A new model for student support in high-poverty urban elementary schools effects on elementary and middle school academic outcomes. *American Educational Research Journal*, *51*, 704-737.

Wang, M. T., & Eccles, J. S. (2012). Adolescent behavioral, emotional, and cognitive engagement trajectories in school and their differential relations to educational success. *Journal of Research on Adolescence*, *22*, 31-39.

Western, B. (2006). *Punishment and inequality in America*. New York, NY: Russell Sage Foundation.

Wiswall, M. (2013). The dynamics of teacher quality. *Journal of Public Economics, 100*, 61-78.

Author Biography

Johanna Lacoe is a researcher at Mathematica Policy Research. She conducts policy and evaluation research in the fields of criminal and juvenile justice, education, and housing.