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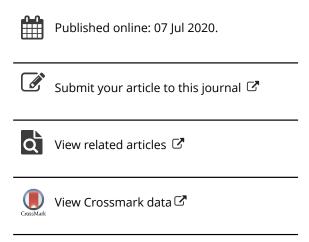
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Factors Mediating School Safety in Charter Schools: An **Analysis of Five Waves of Nationally Representative Data**

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ABSTRACT

Safety-seeking has fueled the growth of charter schools. Descriptive evidence suggests different possible factors underlying safety in charter schools. This study investigates characteristics mediating the relationship between safety and charter schools by linking five waves of the School Survey on Crime and Safety (SSOCS: 2003-04; 2005-06; 2007-08; 2009-10; 2015–16) to Common Core Data. Analyses of 12,698 schools indicate that charter schools report fewer incidents of school crime and violence and school disruptions than public schools do. Additionally, small school size, school-based parent volunteering, and less use of disciplinary and student removal practices were the strongest mediators of the relationship between charter schools and safety. Future research is needed to understand the relative contribution of self-selection processes and school strategies to safety in charter schools.

KEYWORDS

School safety; charter schools; school size; parental involvement; school discipline

School safety has played a major role in fueling the growth of charter schools. Since the inception of the first charter schools in the early 1990s, families have consistently identified safety as one of the main reasons for choosing to send their children to a charter school (Bell, 2007; Hamlin, 2019; Buckley & Schneider, 2009; Stewart & Wolf, 2012). Charter schools have subsequently grown to comprise approximately seven percent of public-school enrollments while serving a large proportion of low-income minority students in urban areas across the United States (US Department of Education, 2017). In the media, school safety has also been a consistent theme in coverage of debates on charter school expansion (Shapiro, 2019; Williams, 2019). The argument that charter schools provide a safe option for families has prompted a growing number of empirical investigations comparing safety in charter and public schools. These studies have tended to find lower levels of crime and violence in charter schools as well as higher perceptions of school safety among students, parents, and school staff (Christensen, 2007; DeAngelis & Lueken, 2020; Eden, 2017; Hamlin, 2017). Yet, the mechanisms underlying these results are not well understood.

In school choice processes influenced by safety concerns, factors associated with safety in charter schools may reflect a complex interaction of selfselection mechanisms and school characteristics. For instance, studies have found an emphasis on school-based parent participation in charter schools (Bifulco & Ladd, 2005; Oberfield, 2019; Smith, Wohlstetter, Kuzin, & De Pedro, 2011), which may increase school safety by strengthening social ties, home-school cooperation, and school climate (Hamlin & Li, 2020; Thapa et al, 2013). However, this approach not only depends on efforts made by schools but also is contingent on parents having the motivation and ability to participate in school. Parents who seek out charter schools where school-based parent participation is prioritized may have the ability and preexisting motivation to participate in their children's schools (Davies & Aurini, 2011; Rose & Stein, 2014). In addition, many charter schools maintain small enrollments, have highly structured learning environments, and emphasize adherence to school rules (Cheng, Hitt, Kisida, & Mills, 2017; Hoxby & Murarka, 2008). These school features are thought to enhance safety by increasing social control and adult supervision on school grounds (Hamlin & Li, 2020; Kirk & Sampson, 2011). At the same time, families who self-select into these types of learning environments may reinforce school approaches to behavior at home, conceivably allowing charter schools to enroll children who are less prone to behavioral problems and more amenable to highly structured school routines.

Another potential factor influencing safety in charter schools is school location. It is possible that when founding a new school, charter school leaders establish operations in relatively safe neighborhoods within cities. This strategic choice of location may reduce the spread of neighborhood crime, violence, and gang activity to charter school campuses (Burdick-Will, Keels, & Schuble, 2013). A safe school location may also align with the priorities of safety-seeking families who prefer to send their children to schools situated in safe neighborhoods (Bell, 2007). Taken together, the literature offers insight into safety in charter schools, but little empirical research has tested factors associated with safety in charter schools.

This study investigates factors mediating the relationship between charter schools and safety by merging five pooled waves of the School Survey on Crime and Safety (SSOCS) to Common Core Data. By using a sample of 12,698 schools (including 322 charter schools), the analyses first examine whether charter school status is associated with fewer incidents of school crime and violence and school disruptions (e.g. gang activities). Descriptive results indicated that charter schools report fewer incidents of school crime and violence and school disruptions than public schools do. The analyses then test a range of sociodemographic, school, and neighborhood factors as potential mediators of the relationship between school safety and charter schools. Small school size, school-based parent volunteering, and less use of disciplinary (e.g.

detention, referral to a counselor) and student removal (e.g. suspension, expulsion) practices were the strongest mediators of the relationship between charter schools and safety. By identifying characteristics associated with school safety in charter schools, this work provides a foundation for future research to examine the relative contribution of selection and school effects to these factors. The remainder of this study is organized as follows. First, previous research on school safety and safety in charter schools is reviewed. Second, this study's data, variables, and analytical methods are described. The results of the analyses are then presented and discussed in the final sections of this study.

School safety research

Numerous studies have linked school safety to academic, socioemotional, and health outcomes (Cornell & Mayer, 2010; Ozer & Weinstein, 2004; Schreck & Miller, 2003; Voight et al., 2013). To estimate the influence of school safety, scholars have used both direct and indirect measures. Incidents of school crime, violence, and victimization have routinely served as direct indicators while scholars have assessed school behavioral infractions, disciplinary actions, and disruptive events as indirect measures of school safety (Hanson & Voight, 2014; Neiman & Hill, 2011). Much scholarship has also investigated perceived school safety by exploring student, teacher/staff, and parent reports of school safety (Hanson & Voight, 2014; Ripski & Gregory, 2009; Whitlock, 2006). Findings from research on school safety indicate that school context is a significant factor as school sociodemographic characteristics, location, and size are closely related to school safety. For example, low-income and minority students in urban areas tend to face greater exposure to violence and crime at school (Lacoe, 2015; LeBlanc, Swisher, Vitaro, & Tremblay, 2008; Neiman & Hill, 2011). Neighborhood context also appears to have relevance for school safety (Bell, 2007; Burdick-Will et al., 2013; Harding, 2009). Neighborhood crime and gang activity may influence school safety by spilling over onto school grounds from surrounding neighborhoods (Burdick-Will et al., 2013; Harding, 2009; Kirk & Sampson, 2011; Skogan, 2015; Wilson, Marshall, Wilson, & Krizek, 2010).

Developing ways to improve school safety has been a high priority. In attempts to respond to school safety concerns, federal and state policymakers have increasingly directed funds for school safety initiatives to both public and charter schools (Schwartz et al., 2016). As a result, many schools have expanded use of visible security, violence prevention programs, and staff safety training, but the literature is largely inconclusive on the results of these various safety strategies (Cornell & Mayer, 2010; Kutsyuruba et al., 2015; Mowen, 2015). Zero-tolerance policies (e.g. mandatory student expulsion) and other punitive practices have also drawn mixed reactions while growing empirical evidence suggests that these types of disciplinary strategies may have other harmful effects on school climate and sense of belonging among students (Curran, 2016; Kupchik, 2016).

In contrast to visible security, punitive practices and other programmatic measures, school characteristics related to school culture and climate exhibit more consistent positive associations with school safety (Ryan & Deci, 2000; Thapa et al., 2013). School approaches focused on cultivating supportive norms and positive interpersonal relationships in the school community may help to support school safety (Astor, Guerra, & Van Acker, 2010; Forsyth et al., 2011; Kupchik, 2016). Furthermore, studies have found positive associations between school-based parental involvement and school safety, leading scholars to hypothesize that parent participation in school may increase safety through the strengthening of home-school partnerships, school connectedness, and adult supervision in school (Hamlin & Li, 2020; Jones et al., 2009; Sheldon & Epstein, 2002; Westrich & Strobel, 2013). Other researchers have found that school orderliness and a structured learning environment promote school safety (Hamlin, 2019; Kirk & Sampson, 2011; Whitman, 2008). Although correlational and descriptive studies dominate research on school safety, evidence from the current body of work indicates that structured learning environments and supportive interpersonal relationships may help to foster school safety (Bryk, Sebring, Allensworth, Easton, & Luppescu, 2010; Gregory et al., 2010; Johnson, 2009; Rosenblatt & Peled, 2002).

School safety in charter schools

Providing families with an option to attend a safe school has been one of the main arguments for extending school choice to families through charter schools (Astor et al., 2010). In studies comparing charter and public schools, charter schools tend to report less school crime and violence while students, teachers/staff, and parents report higher perceptions of school safety (DeAngelis & Lueken, 2020; Hamlin, 2017; Christensen, 2007; Eden, 2017). In an analysis of nationally representative data, Christensen (2007) found that school staff reported fewer safety problems in charter schools than in traditional public schools. Charter school students in New York City also reported feeling safer in school than their public-school peers (Eden, 2017). Another study based on student reports of safety in Detroit found that student perceptions of safety remained higher in charter schools after controlling for sociodemographic, school, and neighborhood characteristics, but that the positive association between charter school status and school safety diminished after accounting for parental involvement (Hamlin, 2017). Despite relatively consistent patterns in sector comparisons of school safety, it is largely unclear what factors are behind safety in charter schools.

To understand higher safety rates in charter schools, conventional charter school theory contends that charter schools benefit from competitive forces and operational independence from school districts. These mechanisms are expected to give charter schools the appropriate motivation and flexibility to address specific safety priorities, develop innovative safety strategies, and employ flexible approaches to student behavior (Cheng et al., 2017; Maranto & Ritter, 2014; Whitman, 2008; Zimmer & Gaurino, 2013). However, a longstanding contrasting perspective is that results in charter schools are attributable to self-selection processes, whereby families who participate in school choice are those who tend to have greater social resources, commitment to their children's development, and motivation to seek positive developmental experiences for their children (Hoxby & Murarka, 2008; Rose & Stein, 2014). Following this reasoning, it may then be that the children of these families have a lower risk for delinquent behavior and criminal activity in school (Hamlin, 2019).

Even though theoretical explanations for charter school results diverge in their emphasis on either school or selection effects, findings in the literature suggest that outcomes in charter schools may be the product of an interaction between school strategies and self-selection effects. For instance, researchers have reported that charter schools develop strategies that raise school-based parental involvement, which has consistently been associated with school safety (Hamlin, 2019; Jones et al., 2009; Sheldon & Epstein, 2002; Smith et al., 2011; Westrich & Strobel, 2013). Yet, parent participation in charter schools also seems to be influenced by selection mechanisms (Bifulco & Ladd, 2005; Hamlin, 2017). By investigating three nationally representative surveys spanning a ten-year period, Oberfield (2019) concludes that higher levels of parent participation in charter schools is due to school approaches that elicit school-based parent participation as well as charter school families' having the time, resources, and inclination to participate. Other quantitative and qualitative studies of parental involvement in charter schools underscore this combination of both school and selection effects (Hamlin, 2017; Bifulco & Ladd, 2005).

The interaction between school and selection effects may also extend to climate and culture in charter schools. Many charter schools are reportedly smaller in size, emphasize structured school routines, and maintain high expectations for behavior (Cheng et al., 2017; Golann, 2015; Whitman, 2008). While there is evidence that these school-driven characteristics may increase school safety, charter school parents' existing beliefs and practices at home may help to reinforce the effectiveness of school strategies focused on structure and high expectations for behavior (Golann, Debs, & Weiss, 2019). Lending support to this idea, studies have found that families who choose to enroll their children in charter schools tend to place value on structure, discipline, and high expectations for student behavior (Golann et al., 2019,

2019; Pattillo, 2015). Charter schools may also attempt to mold the student body to cohere with these expectations by expelling and suspending students with behavioral problems (Angrist, Pathak, & Walters, 2013; Golann, 2015; Zimmer & Guarino, 2013). Along with school climate and culture, the influence of selection and school effects on safety in charter schools may operate through choice of school location. Charter school founders may locate in relatively safer neighborhoods, thereby reducing external pressures on school safety that neighborhood public schools in high-crime areas must face (Burdick-Will et al., 2013). This strategic choice of location may reduce the spread of neighborhood crime, violence, and gang activity to charter school campuses while simultaneously helping charter schools to attract safety-oriented families (Burdick-Will et al., 2013).

The current study

Prior research points to a range of factors that may influence school safety in charter schools (Hamlin, 2017; Golann et al., 2019; Oberfield, 2019). This study examines factors mediating the relationship between charter schools and safety by analyzing incidents of school crime and violence and the frequency of school disruptions. These two dependent variables (i.e. school crime and violence and school disruptions) are key indicators of school safety. Incidents of school crime and violence represent direct measures of safety that are related to numerous student outcomes (Hong & Espelage, 2012; Ozer & Weinstein, 2004). School disruptions may shape perceptions of safety and transmit signals to students about the level of social control in school (Hanson & Voight, 2014; Simons, Simons, Burt, Brody, & Cutrona, 2005). For the analyses, this study asks the following two questions:

RQ1. Do charter schools exhibit fewer incidents of school crime and violence and school disruptions than public schools?

RQ2. What sociodemographic, school, and neighborhood characteristics mediate the relationship between charter schools and school safety?

Methods

Data

The School Survey on Crime and Safety (SSOCS) is the US Department of Education's most comprehensive source of information on school safety. It is a nationally representative school-level survey that collects data on school safety practices, violence prevention programs, staff training, school crime and

violence rates, and school-based parental involvement. For this study, five waves of the School Survey on Crime Safety (SSOCS: 2003-04; 2005-06; 2007-08; 2009-10; 2015-16) were merged to Common Core Data. The total number of schools responding to each survey wave was as follows: 2,710 schools in 2003-04; 2,714 schools in 2005-06; 2,547 schools in 2007-08; 2,638 schools in 2009-10; and 2,089 schools in 2015-16. By linking each survey wave to Common Core Data, controls for school-level sociodemographic characteristics and organizational features were generated. However, there were two schools missing demographic data in 2003-2004, ten in 2005-2006, thirteen in 2007–2008, ten in 2009–2010, and three in 2015–2016. After removing schools with missing demographic data, the total sample derived from the five survey waves was 12,698 schools. Even though the sample was not intended to be representative for charter schools, characteristics of the charter school sample (n = 322) closely mirror those of the entire population of charter schools in the Common Core of Data. Table 1 presents a comparison of the charter school sample to the charter school population, demonstrating sociodemographic and geographic similarity between the sample and population of charter schools.

Table 2 presents summary statistics for each variable of analysis in the school sample.

Dependent variables

School Crime and Violence was calculated based on the total number of criminal incidents recorded at school during the academic year. Incidents comprised homicide, rape/attempted rape, sexual battery, robbery, physical attack or fight, threats with physical attack, theft/larceny, possession of firearm or explosive device, possession of a knife or sharp object, distribution, possession, or use of

Table 1. Comparison of charter school sample in SSOCS and charter school population in CCD.

	CCD Chart	er Schools	SSOCS Cha		
Variables	Mean	S.D	Mean	S.D	T-test
School Characteristics					
School enrollment (000 s)	3.25	4.26	4.42	4.87	***
Primary school	0.46	0.5	0.29	0.45	***
Middle school	0.11	0.31	0.17	0.38	**
High school	0.23	0.42	0.38	0.49	***
Combined school	0.21	0.41	0.17	0.37	*
% Free/red. price lunch	50.65	32.97	50.14	32.92	
% Black	28.84	34.51	26.53	33.08	
% Hispanic	24.85	28.91	26.77	29.19	
City	0.54	0.5	0.56	0.50	
Suburban	0.25	0.44	0.27	0.45	
Small town	0.07	0.25	0.05	0.21	
Rural	0.13	0.34	0.12	0.33	
Number of schools	16,834		322		

To match the time period of the SSOCS survey waves, charter schools represented in the CCD are from the 2002–03, 2004-05, 2006-07, 2008-09, and 2013-14 academic years

^{*} p <.05; ** p <.01; *** p <.001 (two-tailed test)

Table 2. Summary statistics (N = 12,698).

Variables	Mean	S.D	Min	Max
Dependent Variables				
School crime and violence	40.54	59.16	0.00	2142.00
School disruptions	0.00	0.65	-1.12	4.15
School Strategies				
Parent volunteering	1.51	0.81	0.00	4.00
School removal/suspension	3.13	1.72	0.00	8.00
School disciplinary actions	5.25	1.70	0.00	9.00
Visible security measures	5.05	1.85	0.00	12.00
School safety practices	3.83	1.31	0.00	9.00
Formal school programs	6.33	1.70	0.00	11.00
Staff safety training	4.36	1.83	0.00	7.00
Community involvement	4.40	2.20	0.00	8.00
School Characteristics				
School enrollment (000 s)	8.47	6.18	0.01	53.36
Primary school	0.25	0.43	0.00	1.00
Middle school	0.35	0.48	0.00	1.00
High school	0.36	0.48	0.00	1.00
Combined school	0.04	0.20	0.00	1.00
% Free/red. price lunch	42.91	26.64	0.00	100.00
% Limited English	8.69	14.83	0.00	100.00
% Special needs	13.42	8.32	0.00	100.00
% Low-achieving	14.17	14.66	0.00	100.00
% Black	15.16	23.03	0.00	100.00
% Hispanic	17.84	24.76	0.00	100.00
City	0.26	0.44	0.00	1.00
Suburban	0.37	0.48	0.00	1.00
Small town	0.12	0.33	0.00	1.00
Rural	0.25	0.43	0.00	1.00
Neighborhood Crime				
Low crime	0.75	0.43	0.00	1.00
Moderate crime	0.19	0.39	0.00	1.00
High crime	0.06	0.23	0.00	1.00

Data are summary statistics for 12,698 schools represented in five waves of the School Survey on Crime and Safety (SSOCS).

illegal drugs, inappropriate distribution, possession, or use of prescription drugs, distribution, possession, or use of alcohol, and vandalism.

School Disruptions was a standardized composite variable generated from nine five-point Likert scale items indicating how frequent (i.e. happens daily; happens at least once a week; happens at least once a month; happens on occasion; never happens) the following events were in school: racial/ethnic tensions, bullying, bullying based on gender identity, bullying based on sexual orientation, sexual harassment, verbal abuse of teachers by students, nonverbal disrespect of teachers by students, gang activities, and classroom disorder. As a standardized variable, reports of school disruptions that are lower than the sample mean have negative values, whereas school disruptions that are higher than the sample mean take on positive values.

Independent variables

School strategies

School-based parent volunteering was a variable that was generated from a survey item indicating the percentage of parents who had volunteered in school or served on a school committee. A variable for school disciplinary actions was generated from nine items exploring whether the following disciplinary actions were undertaken during the school year: referral to a school counselor, assignment to program to reduce disciplinary problems, loss of school bus privileges, corporal punishment, placement on probation, detention/Saturday school, loss of student privileges, and community service requirements. School removal/suspensions was constructed from a series of items indicating whether the school had removed students with no services, removed students with services, transferred students to a specialized school for disciplinary reasons, transferred students to a regular school for disciplinary reasons, given out-of-school suspensions, and given in-school suspensions. Measures for visible security, school safety and behavioral practices, staff safety training, violence prevention programs, and community involvement in school were also analyzed.

School and neighborhood characteristics

School enrollment (hundreds) was the total number of students enrolled in the school. Other measures were included for grade level, percentage of students eligible for free and reduced-price lunch, percentage of students with limited English proficiency, percentage of special education students, percentage of students achieving below the 15th percentile on standardized tests, percentage of Black students, and percentage of Hispanic students. To account for neighborhood conditions, a measure of the perceived neighborhood crime-level in the area around a school as assessed by respondents to the SSOCS was used. Geographic locale (i.e., suburban, town, rural, or city) was included in the analysis.

Data analysis

To examine whether charter schools report fewer incidents of school crime and violence and school disruptions than public schools do, mean comparisons were first performed. Following this step, two negative binomial regression models predicting incidents of school crime and violence were performed along with two OLS regression models predicting school disruptions. In the first model, a dummy variable for charter school status was introduced with controls for survey year. In the second model, factors mediating the relationship between charter schools and incidents school crime and violence and school disruptions were tested by adding to the model an array of variables representing school strategies, school characteristics, and perceived neighborhood crime. To check the robustness of these models, state-level fixed effects models were performed.

The Karlson-Holm-Breen (KHB) method was used to estimate the relative contributions of school strategies, school characteristics, and perceived neighborhood crime to mediating the association between charter schools and school safety (Breen, Karlson, & Holm, 2018), The KHB method accounts for rescaling between non-linear models and can be applied to linear models. For this study, the KHB analysis decomposes the relationship between charter schools and the dependent variable (i.e. school crime and violence and school disruptions), showing indirect associations for each mediating variable. Descriptive sub-analyses were also undertaken to compare school crime and violence and school disruptions across small, midsize, and large charter and public schools located in cities.

Results

Table 3 presents mean comparisons between charter and public schools. When compared to public schools in the sample, charter schools report statistically fewer incidents of crime and violence (p < .001) and fewer school disruptions (p < .001). This descriptive difference is rather large, amounting to an average of 41 incidents of crime and violence in public schools compared to an average of 17 incidents in charter schools. The scale for school disruptions in charter schools is over a quarter of a standard deviation less than that of public schools. Comparisons indicate that charter schools in the sample have smaller enrollments, greater parent volunteering, lower rates of school removal/suspension, and fewer disciplinary actions (p < .001). For school-level sociodemographic attributes, charter schools report a higher percentage of students eligible for free and reduce priced lunch, percentage of lowachieving students, and percentages of Black and Hispanic students. These findings are mostly consistent with other descriptive reports produced by the Department of Education comparing charter and public schools (US Department of Education, 2017). Also consistent with prior descriptive work, charter schools are more likely than public schools to be in cities and located in high crime areas (p < .001). These descriptive comparisons offer useful insight into different contextual features between charter and public schools. Appendix Table A1 presents a further breakdown of charter schools in different geographic locales (i.e. city, suburban, small town/rural) for each variable of analysis.

Table 4 presents the results of regression models predicting school crime and violence and school disruptions. In Model 1, relative to public schools, charter school status is associated with fewer incidents of school crime and violence, controlling for survey year (p < .001). To interpret the negative



Table 3. Mean comparisons between charter and public schools.

	Charter	Schools	Public	Schools	
Variables	Mean	S.D	Mean	S.D	T-test
Dependent Variables					
School crime and violence	16.79	26.85	41.18	59.66	***
School disruptions	-0.26	0.55	0.01	0.65	***
School Strategies					
Parent volunteering	1.81	1.11	1.50	0.80	***
School removal/suspension	2.51	1.66	3.15	1.71	***
School disciplinary actions	4.31	1.88	5.27	1.69	***
Visible security measures	4.48	1.87	5.07	1.85	***
School safety practices	3.95	1.42	3.83	1.31	
Formal school programs	6.45	1.86	6.33	1.69	
Staff safety training	4.81	1.73	4.35	1.84	***
Community involvement	3.44	2.21	4.43	2.19	***
School Characteristics					
School enrollment (000s)	4.42	4.87	8.58	6.18	***
Primary school	0.29	0.45	0.25	0.43	
Middle school	0.17	0.38	0.35	0.48	***
High school	0.38	0.49	0.36	0.48	
Combined school	0.17	0.37	0.04	0.19	***
% Free/red. price lunch	50.14	32.92	42.72	26.43	***
% Limited English	9.30	16.93	8.68	14.77	
% Special needs	12.49	13.37	13.45	8.15	*
% Low-achieving	19.65	23.00	14.02	14.34	***
% Black	26.53	33.08	14.86	22.62	***
% Hispanic	26.77	29.19	17.60	24.59	***
City	0.56	0.50	0.25	0.44	***
Suburban	0.27	0.45	0.37	0.48	***
Small town	0.05	0.21	0.13	0.33	***
Rural	0.12	0.33	0.25	0.43	***
Neighborhood Crime					
Low crime	0.54	0.50	0.76	0.43	***
Moderate crime	0.29	0.46	0.19	0.39	***
High crime	0.17	0.38	0.06	0.23	***
Number of schools	3:	32	12,	366	

^{*} p <.05; ** p <.01; *** p <.001 (two-tailed test)

binomial regression results, coefficients were converted into marginal effects estimates which show that predicted incidents of school crime and violence are 41 for public schools and 18 for charter schools. In Model 2, the association between charter school status and school crime and violence is substantially mediated after adding measures for school strategies, school characteristics, and perceived neighborhood crime to the model. In Model 3, charter school status is associated with fewer school disruptions, controlling for survey year (p < .001). On the school disruptions scale, this difference between charter and public schools is .269 standard deviations. In Model 4, the addition to the model of measures for school strategies, school characteristics, and perceived neighborhood crime reduces the association between charter schools and school disruptions. These findings offer evidence of factors mediating the association between charter schools and safety. In testing the robustness of these results, state-level fixed effects models exhibited largely similar patterns to those observed for the main models (See Appendix Table A2 for full results).

Table 4. Models predicting school crime and violence and school disruptions (N = 12,698).

	Scho	ol Crime	and Violence	School Disruptions b				
	Mode	l 1	Mode	l 2	Mode	d 3	Mode	14
Charter school	-0.807***	(0.093)	-0.171	(0.109)	-0.269***	(0.031)	-0.147***	(0.031)
School Strategies								
Parent volunteering			-0.135***	(0.018)			-0.061***	(0.006)
School removal/suspension			0.130***	(0.009)			0.073***	(0.004)
School disciplinary actions			0.097***	(0.010)			0.050***	(0.004)
Visible security measures			0.003	(0.009)			0.002	(0.003)
School safety practices			0.026**	(800.0)			-0.000	(0.004)
Formal school programs			-0.028	(0.020)			-0.000	(0.003)
Staff safety training			-0.005	(800.0)			-0.015***	(0.003)
Community involvement			0.027**	(0.010)			0.004	(0.003)
School Characteristics								
School enrollment			0.079***	(0.002)			0.016***	(0.001)
Middle school			0.484***	(0.043)			0.234***	(0.014)
High school			0.288***	(0.043)			0.128***	(0.016)
Combined school			0.077	(0.065)			0.063**	(0.023)
% Free/red. price lunch			0.005***	(0.001)			0.001***	(0.000)
% Limited English			0.001	(0.001)			0.001	(0.000)
% Special needs			0.006**	(0.002)			0.004***	(0.001)
% Low-achieving			0.004***	(0.001)			0.005***	(0.000)
% Black			0.002**	(0.001)			-0.001**	(0.000)
% Hispanic			0.000	(0.001)			-0.001**	(0.000)
Suburban			-0.066*	(0.027)			-0.088***	(0.014)
Small town			-0.049	(0.040)			-0.062***	(0.019)
Rural			-0.148***	(0.043)			-0.130***	(0.016)
Neighborhood Crime								
Moderate crime			0.171***	(0.032)			0.178***	(0.016)
High crime			0.286***	(0.051)			0.298***	(0.030)
Academic Year								
2005-2006	-0.053	(0.039)	-0.022	(0.047)	0.001	(0.018)	0.036*	(0.015)
2007-2008	-0.107**	(0.040)	-0.072	(0.051)	0.004	(0.018)	0.041**	(0.015)
2009–2010	-0.157***	(0.043)	-0.156***	(0.045)	0.006	(0.017)	0.061***	(0.015)
2015-2016	-0.478***	(0.044)	-0.428***	(0.044)	0.008	(0.019)	0.063***	(0.017)
Intercept	3.848***	(0.031)	1.430***	(0.130)	0.004	(0.013)	-0.772***	(0.033)
Pseudo R-square/R-square	0.003		0.064		0.004		0.311	

^aNegative binomial regression; ^b OLS regression. Numbers in parentheses are standard errors. Primary school, city, low crime, and the 2003–2004 academic year are reference groups.

To investigate further which factors explain the association between charter schools and school safety, Table 5 presents the results of a KHB decomposition model. Measures of school strategies, school characteristics, and perceived neighborhood crime explain 74% of the association between charter schools and fewer incidents of school crime and violence and 45% of the association between charter schools and lower levels of school disruptions. Across individual measures, a negative coefficient explains the negative association between charter schools and school crime and violence and school disruptions. School size is the most influential mediator of the relationship between charter schools and school safety. School size explains 50% of the relationship between charter schools and school crime and violence and 25% of the relationship for school disruptions. Parent volunteering, school disciplinary actions, and school removal/suspension also mediate the relationship between charter schools and school safety. Less

^{*} p <.05; ** p <.01; *** p <.001 (two-tailed test)



Table 5. KHB decomposition for charter schools (N = 12,698).

	Sch	ime and V	iolence ^a	School Disruptions ^b				
	Indired	t Asso	ciation	% Mediated	Indired	t Asso	% Mediated	
School Strategies								
Parent volunteering	-0.044	***	(0.009)	6.82	-0.020	***	(0.004)	7.45
School removal/suspension	-0.074	***	(0.012)	11.41	-0.042	***	(0.007)	15.55
School disciplinary actions	-0.086	***	(0.011)	13.13	-0.044	***	(0.006)	16.29
Visible security measures	-0.002		(0.004)	0.32	-0.001		(0.002)	0.54
School safety practices	0.002		(0.002)	-0.38	0.000		(0.000)	0
Formal school programs	0.002		(0.003)	-0.34	0.000		(0.000)	-0.01
Staff safety training	-0.002		(0.002)	0.32	-0.006	**	(0.002)	2.09
Community involvement	-0.025	***	(0.005)	3.85	-0.003		(0.002)	1.28
School Characteristics								
School enrollment	-0.328	***	(0.023)	50.25	-0.066	***	(0.006)	24.51
Middle school	-0.087	***	(0.011)	13.37	-0.042	***	(0.006)	15.69
High school	0.005		(800.0)	-0.72	0.002		(0.003)	-0.77
Combined school	0.010		(0.006)	-1.51	0.008	*	(0.004)	-3.01
% Free/red. price lunch	0.027	**	(0.009)	-4.11	0.006	*	(0.003)	-2.22
% Limited English	0.000		(0.001)	-0.04	0.000		(0.001)	-0.12
% Special needs	-0.006		(0.005)	0.92	-0.004		(0.003)	1.38
% Low-achieving	0.022	***	(0.006)	-3.44	0.025	***	(0.006)	-9.28
% Black	0.024	***	(0.007)	-3.74	-0.010	**	(0.004)	3.74
% Hispanic	0.001		(0.004)	-0.13	-0.008	**	(0.003)	2.92
Suburban	0.006	*	(0.003)	-0.94	0.008	**	(0.003)	-3.03
Small town	0.004		(0.003)	-0.62	0.005	**	(0.002)	-1.92
Rural	0.019	***	(0.004)	-2.88	0.016	***	(0.003)	-6.11
Neighborhood Crime								
Moderate crime	0.018	***	(0.005)	-2.74	0.019	***	(0.005)	-6.89
High crime	0.033	***	(800.0)	-5	0.034	***	(0.007)	-12.63
Total Indirect Association	-0.481	***	(0.046)	73.81	-0.122	***	(0.022)	45.45

^aNegative binomial regression; ^b OLS regression. Numbers in parentheses are standard errors. Primary school, city, low crime, and 2003-2004 academic year are reference groups. Indirect associations are estimated using the Karlson, Hohm, and Breen (KHB) method for decomposition.

use of school disciplinary actions mediated 13% of the relationship for school crime and violence and 16% of the relationship for school disruptions. Similarly, less use of school removal/suspensions mediates 11% of the relationship for school crime and violence and 16% for school disruptions. Parent volunteering mediated 7% of the relationship for school crime and violence and 8% for school disruptions.

Even though a large portion of the association between charter schools and safety is explained by small school size, other factors mediate the association between safety and charter schools. To demonstrate the potential significance of other factors across different school sizes, Table 6 presents descriptive comparisons of small, midsize, and large charter and public schools located in cities where 56% of the United States' charter schools are in operation. For school crime and violence, small, midsize, and large charter schools report statistically fewer incidents of school crime and violence than their public school counterparts. Small, midsize, and large charter schools also exhibit fewer school disruptions but results are only statistically significant for comparisons of midsize and large charter and public schools.

^{*} p <.05; ** p <.01; *** p <.001 (two-tailed test)

	City-based Cl	narter Schools	City-based P	City-based Public Schools			
Variables	Mean	S.D	Mean	S.D	T-test		
School Crime and Violence							
Small size schools (0-350)	13.81	17.24	20.53	47.17	***		
Midsize schools (350-700)	20.39	33.70	31.08	46.17	*		
Large size schools (Above 700)	33.25	31.19	75.89	73.25	***		
School Disruptions							
Small size schools (0–350)	-0.22	0.60	-0.13	0.70			
Midsize schools (350-700)	-0.27	0.58	0.03	0.69	***		
Large size schools (Above 700)	-0.17	0.56	0.34	0.74	***		
Number of schools	1	85	3,1	52			

^{*} p <.05; ** p <.01; *** p <.001 (two-tailed test)

Discussion

Families have cited safety as one of the main reasons for choosing a charter school (Bell, 2007; Hamlin, 2017; Buckley & Schneider, 2009; Stewart & Wolf, 2012). While previous studies have found that charter schools provide comparatively safe learning environments (Christensen, 2007; Eden, 2017), little empirical work has attempted to understand what characteristics support safety in charter schools. This study pooled five waves of the School Survey on Crime and Safety to examine factors mediating the relationship between school safety and charter schools. Results showed that charter schools report fewer incidents of school crime and violence and school disruptions than their public school counterparts. School size, school-based parent volunteering, and school removal/suspension and school disciplinary actions were the strongest mediators of these relationships.

In the literature, students in small schools tend to have less exposure to crime, violence, and other safety-related disruptions in school (Hamlin & Li, 2020; McRobbie, 2001). Researchers have attributed higher safety in small schools to increased adult supervision, social control, and studentteacher bonds (Bosworth, Ford, & Hernandaz, 2011; Gregory et al., 2010; Perumean-Chaney & Sutton, 2013) while the total number of safety incidents reported in small schools may also likely be lower because there are fewer students in small schools. In this study, small school size explained a large share of the association between charter schools and safety. However, as descriptive sub-analyses showed that small, midsize, and large charter schools were safer than their small, midsize, and large public school counterparts, there were other meditating factors beyond school size. One of these factors was school-based parent volunteering. This finding largely coheres with prior scholarship reporting that charter schools emphasize parental involvement (Bifulco & Ladd, 2005; Oberfield, 2019; Smith et al., 2011) and other evidence suggesting that school-based parent participation promotes school safety (Hamlin & Li, 2020; Bryk et al., 2010; Forsyth et al., 2011 Thapa et al., 2013).

In contrast to results for school size and school-based parent volunteering, results for school disciplinary actions and student removal practices have less previous empirical support. Qualitative studies provide evidence that charter schools use strict disciplinary and expulsion practices to shape their student bodies (Hamlin, 2019; Golann, 2015) while a small body of statistical research finds no difference between charter and public schools in the use of student removal/expulsion practices (Zimmer & Guarino, 2013). The results of this study differ from this line of existing scholarship in that charter schools in this study's sample were less likely to report using strict disciplinary and student removal practices. Importantly, less use of these practices was associated with greater school safety. One possible explanation for this result is that prior research primarily explores conditions in no-excuses charter schools, whereas discipline and student removal practices may be less common in this study's diverse national sample of charter schools. Along with school-based approaches, scholars link neighborhood safety to school safety (Burdick-Will et al., 2013; E. J. Wilson et al., 2010; Harding, 2009; Kirk & Sampson, 2012; Skogan, 2015). However, perceived neighborhood crime did not mediate the relationship between charter schools and safety in this study, so charter schools may not locate within relatively safer sections of a city as some scholars have hypothesized (Bell, 2007).

In reflecting on the mechanisms underlying safety in charter schools, factors mediating safety may be the product of an interaction between self-selection and school effects. Although charter schools may attempt to foster safety by operating smaller schools in more personalized and structured school settings, safety-oriented families may also seek out such schools. Parent participation in school seems to be an area of emphasis for charter schools, but one that requires parents to have the time, commitment, and resources to participate in school (Bifulco & Ladd, 2005; Hamlin, 2017; Oberfield, 2019; Smith et al., 2011). Families that participate in school choice could be a more attentive subgroup whose children are less prone to behavioral problems at school (Davies & Aurini, 2011; Hoxby & Murarka, 2008; Rose & Stein, 2014). Charter schools may have fewer instances where they might need to take serious disciplinary action, such as expulsion or student removal. The relative contributions of school and selection effects to factors mediating safety in charter schools are uncertain, so the mediating factors found in this study may not translate into policy interventions. However, identifying these factors is valuable. The dynamic interaction of selection and school effects shapes both public and charter school contexts and conceivably influences safety in all schools to some degree. School choice could amplify this interaction in highneeds settings where factors mediating safety may be reflective of an array of family, school, and community characteristics that create conditions leading to safer schools.



Limitations

This study has several important limitations. First, as a correlational analysis, it is unable to make causal claims. Although this study used an extensive set of sociodemographic, school, and neighborhood variables, the analyses may omit other consequential confounding factors. The correlational nature of the analyses cannot determine the relative contribution of school and selection mechanisms to factors mediating the relationship between charter schools and safety. Results should thus be interpreted as providing only suggestive evidence for future testing. In addition to these limitations, the analyses did not distinguish different types of charter schools from one another. There may be key heterogeneity within the charter school sample. For example, no-excuses charter schools may exhibit different results for disciplinary actions and school removal/suspensions than other types of charter schools. Third, while respondents to the SSOCS are assured confidentiality when responding to the survey, underreporting of school crime, violence, and disruptions could taint estimates presented in this study. One concern is that in high-choice settings where safety is a priority, charter and public school respondents may have an incentive to depress incidents of crime, violence, and other disruptions.

While these limitations require cautious interpretation of results, this study's large national comparison of public and charter schools on two measures of school safety adds a valuable contribution to a growing strand of literature. It also advances this literature by performing an empirical analysis of the factors mediating school safety in charter schools. Results suggest that factors underlying safety in charter schools may be the product of an interaction between school and selection effects. To an extent, this interaction may be the norm not only in charter schools but also in public schools. Future studies may seek to be understand this interaction in school choice processes and what the relative contribution of selection and school effects is to safety in charter schools.

Note

1. Negative binomial regression is appropriate for count variables (e.g. school crime and violence) that may be subject to over dispersion (Hilbe, 2011). As a non-linear function, negative binomial regression produces coefficients that are difficult to interpret, so marginal effects estimates are generated to interpret the results of the negative binomial regression models.

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Appendix

 Table A1. Charter school characteristics by geographic locale (SSOCS sample).

	Ci	ity	Subu	ırban	Small Town/Rural		
Variables	Mean	S.D	Mean	S.D	Mean	S.D	
Dependent Variables							
School crime and violence	18.54	26.42	14.13	20.98	15.36	35.51	
School disruptions	-0.23	0.58	-0.33	0.47	-0.24	0.56	
School Strategies							
Parent volunteering	1.70	1.07	2.05	1.20	1.80	1.05	
School removal/suspension	2.61	1.72	2.60	1.57	2.00	1.50	
School disciplinary actions	4.22	1.89	4.45	1.87	4.39	1.87	
Visible security measures	4.63	2.01	4.53	1.68	3.93	1.61	
School safety practices	4.08	1.45	4.04	1.19	3.39	1.55	
Formal school programs	6.64	1.82	6.44	1.85	5.82	1.93	
Staff safety training	4.96	1.58	4.92	1.67	4.13	2.12	
Community involvement	3.55	2.21	3.34	2.26	3.21	2.12	
School Characteristics							
School enrollment (000s)	4.38	4.49	5.03	5.14	3.57	5.54	
Primary school	0.26	0.44	0.32	0.47	0.32	0.47	
Middle school	0.17	0.37	0.19	0.39	0.16	0.37	
High school	0.41	0.49	0.35	0.48	0.32	0.47	
Combined school	0.17	0.37	0.14	0.35	0.20	0.40	
% Free/red. price lunch	57.05	33.71	41.11	29.80	41.99	30.08	
% Limited English	10.58	18.17	9.04	16.68	5.45	12.07	
% Special needs	12.31	11.67	12.20	14.93	13.57	15.95	
% Low-achieving	21.46	24.85	17.44	19.65	17.25	21.45	
% Black	35.54	36.83	19.62	26.39	8.03	14.42	
% Hispanic	28.16	29.80	24.66	28.43	25.58	28.64	
Neighborhood Crime							
Low crime	0.43	0.50	0.64	0.48	0.75	0.44	
Moderate crime	0.30	0.46	0.30	0.46	0.25	0.44	
High crime	0.27	0.45	0.07	0.25	0.00	0.00	
Number of schools	185		91		56		



Table A2. State-level fixed effects models predicting school crime and violence and school disruptions (N = 12,698).

	Scho	ol Crime	and Violence	a e	9	School Disruptions b			
	Mode	l 1	Mode	1 2	Model 1		Mode	l 2	
Charter school	-0.541***	(0.057)	-0.356***	(0.054)	-0.318***	(0.037)	-0.153***	(0.032)	
School/Parent Intervention									
Parent volunteering			-0.116***	(0.010)			-0.057***	(0.007)	
School removal/suspension			0.108***	(0.005)			0.072***	(0.004)	
School disciplinary actions			0.074***	(0.005)			0.051***	(0.004)	
Visible security measures			0.009	(0.004)			0.010**	(0.003)	
School safety practices			0.014**	(0.006)			-0.003	(0.004)	
Formal school programs			-0.001	(0.005)			-0.004	(0.003)	
Staff safety training			-0.012**	(0.004)			-0.012***	(0.003)	
Community involvement			0.008*	(0.003)			0.005	(0.003)	
School Characteristics									
School enrollment			0.041***	(0.001)			0.017***	(0.001)	
Middle school			0.516***	(0.025)			0.229***	(0.015)	
High school			0.530***	(0.028)			0.111***	(0.018)	
Combined school			0.299***	(0.043)			0.045	(0.027)	
% Free/red. price lunch			0.003***	(0.000)			0.001***	(0.000)	
% Limited English			0.000	(0.001)			0.001	(0.000)	
% Special needs			0.003**	(0.001)			0.004***	(0.001)	
% Low-achieving			0.002***	(0.000)			0.004***	(0.000)	
% Black			0.001	(0.000)			0.001	(0.000)	
% Hispanic			-0.002**	(0.000)			-0.001**	(0.000)	
Suburban			-0.037*	(0.018)			-0.061***	(0.013)	
Small town			-0.092***	(0.025)			-0.038*	(0.018)	
Rural			-0.158***	(0.023)			-0.087***	(0.016)	
School Neighborhood Crime									
Moderate crime			0.137***	(0.018)			0.166***	(0.014)	
High crime			0.203***	(0.029)			0.267***	(0.024)	
Academic Year									
2005-2006	-0.017	(0.024)	0.054**	(0.020)	-0.000	(0.017)	0.030*	(0.015)	
2007-2008	-0.058*	(0.024)	0.008	(0.020)	0.001	(0.018)	0.035*	(0.015)	
2009-2010	-0.133***	(0.024)	-0.046*	(0.020)	0.005	(0.018)	0.055***	(0.015)	
2015-2016	-0.338***	(0.027)	-0.271***	(0.024)	0.006	(0.019)	0.060***	(0.017)	
Intercept	-0.206***	(0.019)	-1.326***	(0.049)	0.007	(0.012)	-0.851***	(0.034)	

aNegative binomial regression; b OLS regression. Numbers in parentheses are standard errors. Primary school, city, low crime, and 2003–2004 academic year are reference groups. *p < .05; **p < .01; ****p < .001 (two-tailed test)