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Crime and Inequality in Academic Achievement Across School Districts in the United States

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Abstract

This study investigates the effect of violent crime on school district–level achievement in English language arts (ELA) and mathematics. The research design exploits variation in achievement and violent crime across 813 school districts in the United States and seven birth cohorts of children born between 1996 and 2002. The identification strategy leverages exogenous shocks to crime rates arising from the availability of federal funds to hire police officers in the local police departments where the school districts operate. Results show that children who entered the school system when the violent crime rate in their school districts was lower score higher in ELA by the end of eighth grade, relative to children attending schools in the same district but who entered the school system when the violent crime rate was higher. A 10% decline in the violent crime rate experienced at ages 0–6 raises eighth-grade ELA achievement in the district by 0.03 standard deviations. Models that estimate effects by race and gender show larger impacts among Black children and boys. The district-wide effect on mathematics achievement is smaller and statistically nonsignificant. These findings extend our understanding of the geography of educational opportunity in the United States and reinforce the idea that understanding inequalities in academic achievement requires evidence on what happens inside as well as outside schools.

Keywords Crime · Education · Inequality · Causal inference

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Introduction

Recent work by Reardon et al. (2016b) reported large disparities in academic achievement levels and in racial/ethnic achievement gaps across school districts in the United States. Whereas the mean achievement in school districts such as Brookline, MA, and Cupertino, CA, is three grades above the national mean, the mean academic achievement in Camden, NJ, and Detroit, MI, is more than two grades below the country average. Similarly, the White-Black achievement gap ranges from virtually zero in places like Hillside, NJ, to more than 1 standard deviation in Cleveland, OH, and Atlanta, GA. Correlational evidence suggests that variation in mean achievement levels is highly related to the socioeconomic characteristics of the families living in the school district (Reardon 2016) and that racial/ethnic gaps are wider in school districts with higher levels of racial/ethnic segregation and larger racial/ethnic differences in parental income and education levels (Reardon et al. 2016b).

By themselves, these findings have made a groundbreaking contribution to understanding how geography shapes educational opportunity in the United States. However, our knowledge of the causal mechanisms underlying these patterns is more limited. Building on an extensive body of ethnographic and quantitative evidence showing that exposure to violent crime is a key pathway through which growing up in disadvantaged neighborhoods affects children's developmental trajectories (Burdick-Will et al. 2011; Harding 2009; Harding et al. 2011; Sharkey 2018a), this study aims to fill this gap by examining how changes in violent crime in the school districts where children grow up shape their academic achievement.

The study combines multiple sources of aggregated school district–level data to estimate the impact of violent crime experienced in childhood (at ages 0–6) on English language arts (ELA) and mathematics eighth-grade achievement in 813 school districts in the United States and seven birth cohorts of children born between 1996 and 2002. During these seven years, the violent crime rate fell by 23% nationally (Federal Bureau of Investigation 2015); and in school districts like Chicago and New York City, the decline in violent crime over that period was greater than 35%. To produce causal estimates of the effect of violent crime on achievement, the research design leverages exogenous shocks to crime rates arising from the availability of funds to hire police officers in local police departments thorough the Community Oriented Policing Services (COPS) grants program. This program substantially increased the size of police departments that received the grants, which led to important reductions in violent crime rates (Evans and Owens 2007). Here, I extrapolate this finding to an instrumental variable setup in which I exploit the change in the violent crime rate induced by the COPS grants to estimate the causal effect of violent crime on achievement.

The findings show that birth cohorts who experienced lower levels of violence during childhood performed better in ELA by the end of eighth grade, relative to older birth cohorts of the same school district who experienced higher violent crime rates in childhood. A 10% decline in the violent crime rate raised the district-wide performance in ELA by 0.03 standard deviations. Analyses by race/ethnicity and gender show that the benefits of declining violence are larger among Black students and males. Models exploring the effect of violent crime on mathematics achievement also suggest performance improvements as crime rates fell, but those effects are smaller and concentrated among boys. Importantly, the effect of crime on achievement is not driven by compositional changes in school districts or by changes in school district revenue and spending after the receipt of the COPS grants.

This article also contributes to the literature on the consequences of the decline in violence in America. The study is situated in the late 1990s and early 2000s, a period when community violence fell sharply across the country. Between 1991 and 2015, the property crime rate fell by 50%, the violent crime rate fell by 51%, and the homicide rate fell by 54% across the nation (Federal Bureau of Investigation 2015).[1] In cities like New York City or Los Angeles, the decline in the murder rate between the highest record in the 1990s and the level in 2015 was larger than 75%. Even cities that still today struggle with severe problems of community violence, such as Chicago and Detroit, experienced reductions in their murder rates of at least 30% between 1991 and 2015 (Federal Bureau of Investigation 2015).[2] This progress in making cities safer represents one of the most remarkable improvements in the quality of life in urban America in recent history (Sharkey 2018b), and although the literature has made significant progress in documenting the causes of this decline (Levitt 2004; Zimring 2006), much less is known about its consequences for individuals and communities. This study aims to fill this gap by documenting how the school achievement of children who lived through the decline in violence changed as their communities became safer.

Neighborhood Violence and Educational Outcomes

A long tradition of scholarship in criminology, economics, and sociology has documented the negative consequences of growing up in violent neighborhoods (Aizer 2007; Burdick-Will 2013; Burdick-Will et al. 2011; Harding 2009; Harding et al. 2011; Sharkey 2018a). Studies examining the acute short-term effects of exposure to neighborhood violence have found that when children take cognitive assessments in the days after a homicide has occurred in their neighborhood, their performance declines relative to other children from the same neighborhood who were not exposed to violence in the days before the assessments were given (Sharkey 2010; Sharkey et al. 2014). Evidence on noncognitive outcomes among children has shown that concentration, self-regulatory behaviors, cortisol levels, and sleeping patterns are severely affected in the aftermath of a violent crime (Heissel et al. 2018; McCoy et al. 2015; Sharkey et al. 2012).

In addition to the consequences of direct exposure to violent crime, ethnographic studies have shown that children living in disadvantaged neighborhoods are forced to develop strategies to navigate threatening public spaces and change their daily routines and patterns of social interaction in a way that

[1] Work by Lauritsen et al. (2016) showed a discrepancy between crime trends in the FBI's Uniform Crime Report (UCR) data and in the National Crime Victimization Survey (NCVS). Their findings suggest that NCVS data are more reliable indicators of the trends in violent crime from 1973 to the mid-1980s. Given the period being studied here, 1996 to 2008, the UCR data provide an accurate account of how crime rates changed over time and across space.

[2] Baltimore and Milwaukee cannot join Chicago and Detroit on that list because of the spike in crime experienced in 2015, which brought the murder rate above the level in 1991. If changes are measured between 1991 and 2014, Baltimore and Milwaukee had reductions in their murder rates of 18% and 44%, respectively.

may negatively affect their educational development (Shedd 2015). Adolescents from disadvantaged and violent neighborhoods interact more frequently with older peers who provide them not only with street wisdom and safety but also with alternative scripts and frames that shape their attitudes toward schooling (Harding 2010). Boys and girls living in dangerous neighborhoods are forced to develop a reputation for being "tough" (Anderson 2000; Jones 2009), and although earning this reputation may prevent them from being victimized in the streets, it may complicate their interactions with teachers and school staff and affect their academic performance (Devine 1996).

Beyond these effects on individuals, an extensive literature in criminology and urban sociology has documented the negative effects that crime has at the community level. Neighborhood violence undermines the quality of life in entire communities, transforms the sociodemographic composition of neighborhoods, and leads to public and private disinvestment (Morenoff and Sampson 1997; Sampson 2012; Skogan 1986). Recent evidence on these community-level effects of crime has shown that children born to low-income families experience lower levels of economic mobility if violent crime is higher in the county where they spend their adolescence (Sharkey and Torrats-Espinosa 2017).

One of the most distinct features of neighborhood violence in the United States is its degree of spatial concentration in low-income and minority neighborhoods. Evidence from crime trends in micro-places within neighborhoods in Boston has shown that the majority of robberies and gun violence incidents across the city take place in a very small fraction of street segments and intersections (Braga et al. 2010, 2011). This high degree of spatial concentration and the high levels of residential racial segregation that characterize American cites generate large disparities in exposure to violence across different racial groups. Using data from the FBI's Uniform Crime Reports (UCR) program, Sharkey (2018a) estimated that the homicide victimization rate is 6.6 times higher for Blacks than for Whites. Estimates from the National Crime Victimization Survey (NCVS) also show large Black-White gaps in self-reported violent victimization and nonfatal firearm victimization. The UCR and NCVS data also reveal large gender disparities in exposure to violence. The homicide victimization rate is 3.9 times higher for males than for females, and the rates of self-reported violent victimization and nonfatal firearm victimization are also much higher among males (Sharkey 2018a).

In sum, the literature on neighborhood violence reviewed above shows that crime is a salient attribute of children's environment that reaches beyond individuals who are directly victimized (Sharkey 2018a). The spatial concentration of crime disrupts the functioning of communities, lowers the quality of institutions such as schools, and erodes the quality of resources that facilitate academic success. Building on this body of evidence, this study pushes the literature forward and takes a national perspective in the study of the long-term effect of crime on children's academic performance.

Data Description

The selection of school districts begins with the 1,000 school districts with the largest student enrollment in grades 3–8 in school year 2008–2009. Districts included in the sample are those that have data on academic achievement in eighth grade for Black, Hispanic, and White children as well as crime data when children of each birth cohort

were 0–6 years old. The analytic sample includes 813 unique school districts that yield an unbalanced panel of 4,255 school district-cohort observations.[3]

Data on academic achievement are obtained from the Stanford Education Data Archive (SEDA). The SEDA data include estimates of the average test scores of students in virtually all public school districts in the United States (Reardon et al. 2016a). The estimates are obtained from approximately 300 million state accountability tests taken by approximately 45 million students in grades 3–8 attending public and charter schools between school years 2008–2009 and 2014–2015, which represents most of all third to eighth graders attending public and charter schools at that time.[4] Test scores are placed on a common scale that allows performance to be compared across school districts, states, grades, and years. The achievement measures in the SEDA data are disaggregated by grade (3–8), school year (2008–2009 to 2014–2015), subject (ELA and mathematics), race/ethnicity (Asian, Black, Hispanic, and White), and gender.[5] This study focuses on the overall achievement in the district, achievement by race and ethnicity (Black, Hispanic, and White students), and achievement by gender (females and males). All measures of achievement are in standard deviation units of the national distribution.

The SEDA data are repeated cross-sections of achievement by grade and school year, thus enabling the possibility of studying the trajectory of several birth cohorts. Given that the data include achievement measures in grades 3–8 for school years 2008–2009 to 2014–2015, 12 birth cohorts are represented in the SEDA data, although not all cohorts have achievement measures in all grades. Assuming that children begin first grade at age 6, children born in 1996 were in eighth grade in school year 2008–2009, and children born in 2007 were in third grade in school year 2014–2015. Under this assumption, eighth-grade estimates from school years 2008–2009 to 2014–2015 in the SEDA data can be used to characterize the educational achievement of children born between 1996 and 2002.

As Reardon (2018) noted, this operationalization of cohorts does not ensure that a consistent pool of students is followed over time. Students in eighth grade in school year 2014–2015 in a given district are not the exact same ones who were in third grade in school year 2009–2010 in the same district. Students moving to other school districts or being retained in a grade will change the pool of students between third and eighth grade. Without access to longitudinal student-level data, this limitation is impossible to address. In additional analyses included in the online appendix, I show that enrollment figures and the racial composition of schools in the districts in the sample did not change in a way that threatens the validity of the results reported here.

Crime data are obtained from the FBI's UCR program, which contain crimes known or reported to local police agencies. The main analyses will focus on the impact of

[3] Among the 813 school districts, 59 have data on eighth-grade achievement for two birth cohorts; 85, for three birth cohorts; 100, for four birth cohorts; 148, for five birth cohorts; 205, for six birth cohorts; and 216, for seven birth cohorts. All findings remain qualitatively the same if the analyses are restricted to the 216 school districts for which data for the seven birth cohorts are available.

[4] School districts are defined according the geographic catchment areas that include students in traditional public schools and local charter schools. Test scores from charter schools are included in the public school district in which they are chartered. For charter schools that are not chartered by a district, their test scores are included in the district in which they are physically located (Reardon 2018).

[5] For additional details on the construction of aggregate measures from student test score data, see Ho and Reardon (2012) and Reardon and Ho (2015).

changes in violent crimes (murders, aggravated assaults, and robberies). Crime is measured as the average crime rate in the school district when children of a given birth cohort were 0–6 years old.[6] To obtain school district crime rates, I assign crime reports from local police agencies to municipalities (i.e., cities and towns) using the 2012 Law Enforcement Agency Identifiers Crosswalk (U.S. Bureau of Justice Statistics 2018), and I crosswalk places to school districts by identifying the city or town whose centroid falls inside the boundaries of a given school district.

Data on the COPS program are obtained from the U.S. Department of Justice.[7] They include the number of full-time police officers hired through the grants program in each year. The instrument is constructed by computing the number of full-time officers per 100,000 residents that each local police department had received up to the year when a given birth cohort was 0–6 years old. Additional details about the instrument are provided in the next section.

Figure 1 shows the average eighth-grade achievement by birth cohort and racial/ethnic group in the districts in the sample. The bars reveal large achievement gaps across racial/ethnic groups. White students scored between 0.1 and 0.2 standard deviations above the eighth-grade national mean, Hispanic students scored between 0.3 and 0.5 standard deviations below the national mean, and Black students scored between 0.4 and 0.5 standard deviations below the national mean.

Table 1 shows means and standard deviations for violent crime rates at ages 0–6 for each of the seven birth cohorts in the study. The oldest cohort was 0–6 years old between 1996 and 2002 and experienced an average violent crime rate for that period of 879 crimes per 100,000 residents. The youngest birth cohort was 0–6 years old between 2002 and 2008 and experienced an average violent crime rate for that period of 800 crimes per 100,000 residents.

Table 1 also shows how COPS grants grew over time. On average, 16 police officers were hired, and 2.37 million dollars (in 2015 USD) were awarded for each 100,000 residents in the district when the 1996 birth cohort was 0–6 years old. When the 2002 birth cohort was 0–6 years old, these figures had increased to 28 police officers and 4.04 million dollars (in 2015 USD) for each 100,000 residents in the district. Figure A1 in the online appendix shows that in relative terms, more police officers were hired through the COPS program than outside the program between 1996 and 2008, suggesting that the COPS program played an important role in increasing the size of police departments during the time considered in this study.[8]

[6] The choice of focusing on exposure to crime at ages 0–6 is motivated by the research design, which exploits the availability of funds to hire police officers through the COPS program. The first phase of the COPS program—the one considered in this study—ended in 2008, which is the year when the 2002 birth cohort was 6 years old. After 2008, the COPS program changed its rules for adjudicating grants, making the use of post-2008 data inadequate for the estimation strategy proposed here (for an analysis of the COPS program under the new grant allocation rule, see Mello 2019). Another reason to average crime rates over ages 0–6 is to obtain more stable crime rates. These multiyear averages also help in the 2SLS estimation by yielding a stronger first stage. Figure A8 in the online appendix shows OLS results when the violent crime rate is measured in one-year windows from age 0 to age 13.

[7] The COPS data were collected by William Evans and Emily Owens, who generously shared them for this project.

[8] The minimum, median, and maximum number of police officers per 100,000 residents at ages 0–6 for the 1996 birth cohort were, respectively, 0, 15.15, and 145.2. For the 2002 birth cohort, these figures were, respectively, 0, 24.75, and 431.84.

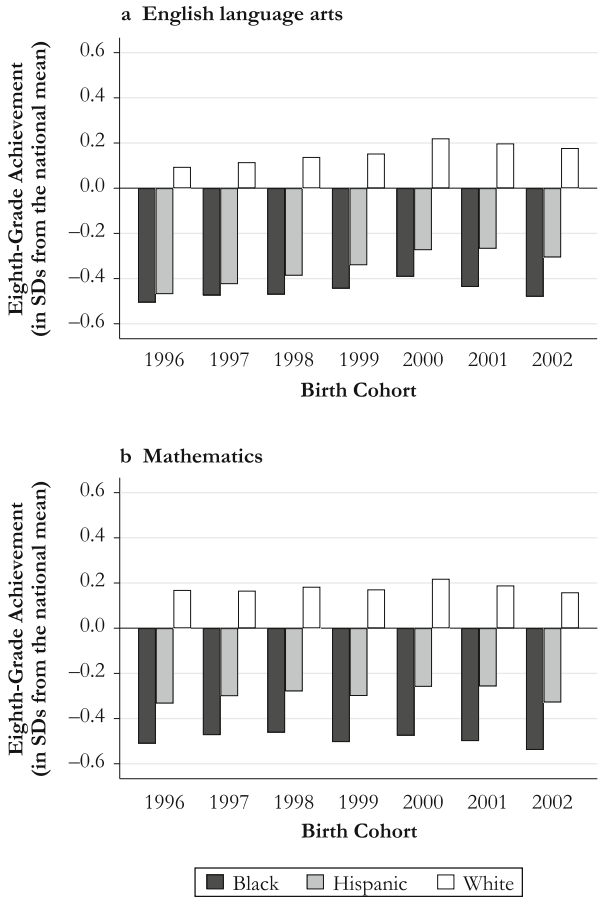

Fig. 1 Eighth-grade achievement, by race, cohorts 1996–2002. Achievement data are from the district-level estimates from the SEDA data (Reardon et al. 2016a). Each bar shows the average eighth grade achievement across all school districts in the sample (N = 813) for a given birth cohort and racial/ethnic group.

Empirical Strategy

Ordinary Least Squares Estimation

The empirical strategy exploits geographic variation in achievement and crime across 813 school districts and temporal variation across seven birth cohorts in a difference-in-differences framework. The estimating equation takes the following form:

$$Y_{sc} = \delta_{OLS} Crime_{sc} + \mathbf{S}_s^{'} + \mathbf{C}_c^{'} + \varepsilon_{sc}. \quad (1)$$

In Eq. (1), Y_{sc} is the eighth-grade ELA and mathematics achievement in school district s for birth cohort c (measured in standard deviations of the national distribution), $Crime_{sc}$ is the log average violent crime rate in school district s measured when birth cohort c was 0–

Table 1 Average crime and COPS rates at ages 0–6, by cohort

	Birth Cohorts						
	1996	1997	1998	1999	2000	2001	2002
Violent Crime Rate							
All violent	879.44	826.82	795.97	785.37	770.63	803.98	799.90
	(421.70)	(393.29)	(390.78)	(376.12)	(368.83)	(368.35)	(360.02)
Murder	13.06	12.04	11.85	11.60	10.02	11.55	10.64
	(7.15)	(6.47)	(6.52)	(6.48)	(5.57)	(6.19)	(5.62)
Aggravated assault	528.15	497.44	484.14	478.27	468.72	462.08	464.41
	(269.32)	(245.44)	(236.09)	(220.73)	(217.29)	(206.25)	(194.14)
Robbery	338.23	317.33	299.98	295.50	291.89	330.35	324.85
	(195.18)	(185.02)	(178.02)	(173.49)	(171.81)	(184.04)	(188.97)
COPS Grants							
Officers	16.06	16.98	17.84	21.10	27.78	27.96	28.15
	(9.05)	(10.39)	(10.77)	(12.34)	(19.10)	(18.86)	(18.71)
Grant amount	2.37	2.58	2.80	3.23	3.97	4.01	4.04
	(1.31)	(1.47)	(1.58)	(1.73)	(2.31)	(2.27)	(2.25)

Notes: The crime data are from the FBI's UCR Program, and the COPS data are from the U.S. Department of Justice COPS Office. Crime reports and COPS grants from local police agencies are assigned to census incorporated places (i.e., cities and towns) using the Law Enforcement Agency Identifiers Crosswalk from the National Archive of Criminal Justice Data, and places are crosswalked to school district boundaries in the SEDA data by identifying the place whose centroid falls inside the boundaries of a given school district. Crime rates are measured in number of crimes per 100,000 residents when a birth cohort was 0–6 years old. COPS grants are measured in number of officers hired per 100,000 residents and in millions of dollars per 100,000 residents (in 2015 USD) when a birth cohort was 0–6 years old.

6 years old, $\mathbf{S}_s'$ is a set of school district fixed effects, $\mathbf{C}_c'$ is a set of birth cohort fixed effects, and ε_{sc} is an stochastic error term. Standard errors are clustered by school district.[9]

The parameter δ_{OLS} characterizes the association between changes in crime rates at ages 0–6 and changes in achievement by the end of eighth grade. The two sets of fixed effects, $\mathbf{S}_s'$ and $\mathbf{C}_c'$, account for time-invariant attributes of the school district and time trends that are common to all districts. Although this difference-in-differences specification represents an improvement on cross-sectional designs, causal identification will not be possible if within-district changes in crime rates over this period are endogenous. The next section discusses the implications of such a scenario and proposes a strategy to address these endogeneity concerns.

[9] In a set of robustness tests, all OLS and 2SLS models are estimated including a vector of interpolated demographic controls, $\mathbf{X}_{sc}'$, measured for school district s when birth cohort c was 0–6 years old. These controls include percentage non-Hispanic White, percentage non-Hispanic Black, percentage Hispanic, percentage foreign-born, percentage unemployed, percentage of families with income below the poverty line, and median household income (in 2000 USD). All these demographics are computed by linearly interpolating between census years. All results remain the same when these controls are included.

Two-Stage Least Squares Estimation

Estimating the impact of exposure to violent crime on academic achievement presents empirical challenges that are difficult to overcome without an experimental design. Neighborhood violence is highly correlated with other attributes of neighborhoods that may also have an impact on academic achievement, such as poverty and labor force participation (Aizer 2007). One possibility would be to control for as many of these factors as the data allow, but the threat of having omitted one or more confounders would still be present. Another threat is the residential selection of families into school districts on the basis of socioeconomic attributes that are predictive of academic performance (Sampson and Sharkey 2008). If more affluent families have the ability to forecast changes in crime rates in their school district and decide to relocate to a safer school district, higher achievement levels in low-crime school districts could be a reflection of this sorting process.

To deal with these endogeneity concerns and obtain causal estimates of the impact of crime on achievement, I propose a two-stage least squares (2SLS) estimation strategy that leverages exogenous shocks to crime rates arising from the availability of funds to hire police officers in the local police departments where the school districts operate. Specifically, the 2SLS strategy exploits the timing of grants that law enforcement agencies received under the COPS program. The COPS program was established in 1994 as part of the Violent Crime Control and Law Enforcement Act. Through the COPS Universal Hiring Program, police departments that applied for grants received funding to partially cover of the cost of hiring and rehiring entry-level, career law enforcement officers. By end of fiscal year 2004, the COPS program had distributed $11.3 billion in grants, with $5 billion of these funds being spent to hire 64,000 new police officers (Evans and Owens 2007). By 2016, the COPS program had distributed approximately $14.9 billion in grants across 13,000 law enforcement agencies (Office of Community Oriented Policing Services 2015).

Evans and Owens (2007) showed that the addition of police officers through the COPS grants program had a causal effect on violent and property crimes between 1990 and 2001. The average COPS grant reduced burglaries by 2.2%, auto thefts by 3.3%, robberies by 5%, murders by 3.2%, and assaults by 3.6%. The authors showed that although the total grant amount received over the 1994–2002 period was correlated with the size of the police force and crime levels in 1993, there was no correlation between the timing of the receipt of the grants and prior crime trends. To better understand what led to the seemingly random allocation of COPS funds over time, Evans and Owens supported their empirical findings with qualitative evidence gathered through interviews with representatives of police agencies. Those interviews revealed that police agencies faced low barriers to apply and a simple application process. After an agency received a grant, subsequent grants were awarded with minimal paperwork. Furthermore, the disbursement of the requested funds was made arbitrarily, and in some instances, the COPS office actively solicited grant applications.

Evans and Owens (2007) used the COPS grants as an instrument for changes in the size of the police force in a study designed to estimate the impact of police force size on crime rates. In this study, I take their findings one step further and use the COPS grants as an instrument for crime rates. Two sets of arguments justify this step. First, as in any instrumental variable design, the 2SLS estimate in Evans and Owens (2007) is the ratio

of two causal effects: the effect of the COPS grants on crime rates (their reduced-form estimate) divided by the effect of the COPS grants on the size of the police force (their first-stage estimate). Here, I extrapolate their reduced-form findings, which show a causal effect of the COPS grants on crime, and I use that relationship as my first-stage equation. To verify that this relationship holds in my sample, I show in Table 2 that the receipt of the grants led to substantial reductions in crime rates.[10]

Second, to assess the plausibility of the exclusion restriction assumption, in Figs. A2–A7 in the online appendix, I examine the extent to which several school district outcomes changed during the time window that spans from three years before the COPS grants were received to three years after they were received. These outcomes include violent crime rates in the district, district-wide achievement, revenue that districts collected from property and income taxes, instruction-related school expenditures, teacher salaries, third- and eighth-grade enrollment in the schools in the district, socioeconomic composition of schools in the district, and state-level incarceration rates. The conclusion that emerges from these additional analyses is that the COPS grants increased achievement levels in the district through their impact on crime rates, but they did not change other attributes of the district that are directly or indirectly linked to achievement. Albeit circumstantial, this evidence provides compelling support for the exclusion restriction assumption needed in the 2SLS estimation.[11]

The system of equations in the 2SLS estimation takes the following form:

$$Crime_{sc} = \pi_1 COPS_{sc} + \mathbf{S}_s^{'} + \mathbf{C}_c^{'} + \varepsilon_{sc}. \tag{2}$$

$$Y_{sc} = \pi_2 COPS_{sc} + \mathbf{S}_s^{'} + \mathbf{C}_c^{'} + \nu_{sc}. \tag{3}$$

In both equations, $COPS_{sc}$ is the number of police officers per 100,000 residents that had been hired through the COPS program by the municipal police department operating in district s when birth cohort c was 0–6 years old, Y_{sc} is eighth-grade achievement in ELA and mathematics in school district s for birth cohort c (measured in standard deviations of the national distribution), $Crime_{sc}$ is the log average violent crime rate per 100,000 residents in school district s when birth cohort c was 0–6 years old, $\mathbf{S}_s^{'}$ is a set of school district fixed effects, $\mathbf{C}_c^{'}$ is a set of birth cohort fixed effects, and ε_{sc} and ν_{sc} are idiosyncratic error terms. Standard errors are clustered by school district.

[10] Prior studies of the COPS program have shown that most police officers hired through the grants remained in the police force over the long run (Evans and Owens 2007). Given that this study is focused on long-term impacts on achievement, I use the cumulative number of police officers who had been hired and retained up to the time when a birth cohort was 0–6 years old.

[11] One could be concerned about a potential violation of the exclusion restriction in light of prior work that has documented a correlation between crime and the residential choices of families of different groups (Dugan 1999; Ellen et al. 2017; Xie and McDowall 2014). These studies relied on correlational data, and it is difficult to extract any benchmarks from them. It is also important to keep in mind that my sensitivity analyses in Fig. A6 in the online appendix do not focus on changes in crime rates; rather, they focus on changes in the COPS grants and the extent to which they changed student composition of the school district. I find no clear evidence of that being the case.

Table 2 First-stage estimates, ages 0–6

	All Violent (1)	Murder (2)	Aggravated Assault (3)	Robbery (4)
COPS Officers	–0.013**	–0.007**	–0.012**	–0.015**
	(0.003)	(0.002)	(0.003)	(0.004)
Number of Observations	4,255	4,255	4,255	4,255
Adjusted R^2	.987	.984	.981	.989
F Statistic	25.215	15.402	21.121	13.561

Notes: Standard errors, clustered by school district, are shown in parentheses. All models include school district fixed effects, cohort fixed effects, and precision weights. Crime rates are measured in number of crimes per 100,000 residents in the district (averaged across ages 0–6 and log-transformed). COPS officers are measured in number of police officers hired per 100,000 residents in the district (averaged across ages 0–6).
**$p < .01$

Equation (2) is the first-stage equation and estimates the impact of the COPS grants on the violent crime in the district, π_1. Equation (3) is the reduced-form equation and estimates the impact of the COPS grants on the eighth-grade achievement in the district, π_2. The 2SLS estimate of the effect of changes in violent crime on eighth-grade achievement, δ_{2SLS}, is obtained by dividing the reduced-form estimate by the first-stage estimate ($\delta_{2SLS} = \pi_2 / \pi_1$).

Table 2 reports first-stage estimates for all violent crimes combined and for each of the three types of crime individually. Column 1 shows that in a school district with 100,000 residents, hiring one additional police officer through the COPS program led to declines of 1.3% for the violent crime rate, 0.7% for the murder rate, 1.2% for the aggravated assault rate, and 1.5% decline for the robbery rate. In all specifications, a Wald test on the excluded instrument yields an F statistic above 10, which meets the criterion suggested by Stock and Yogo (2005) to avoid problems associated with weak instruments. Table A1 in the online appendix reports the mean and standard deviation of the change in violent crime rate at ages 0–6 from the 1996 to the 2002 birth cohort for three sets of school districts: school districts that did not experience any change in COPS grants between the 1996 and 2002 cohorts, school districts with a below-median (and greater than 0) change in COPS officers between the 1996 and 2002 cohorts, and school districts with an above-median change in COPS officers between the 1996 and 2002 cohorts. Table A1 shows that in districts that experienced a change in COPS hiring between the 1996 and 2002, crime rates declined monotonically with the growth in COPS officers.

Results

Before moving to the regression results from the difference-in-differences estimation, I show how achievement correlates with crime across districts, ignoring changes over time (i.e., averaging district-level measures of crime and achievement over the seven birth cohorts). Figure 2 shows the cross-sectional association between the violent crime rate in the district when birth cohorts were 0–6 years old and the ELA and mathematics

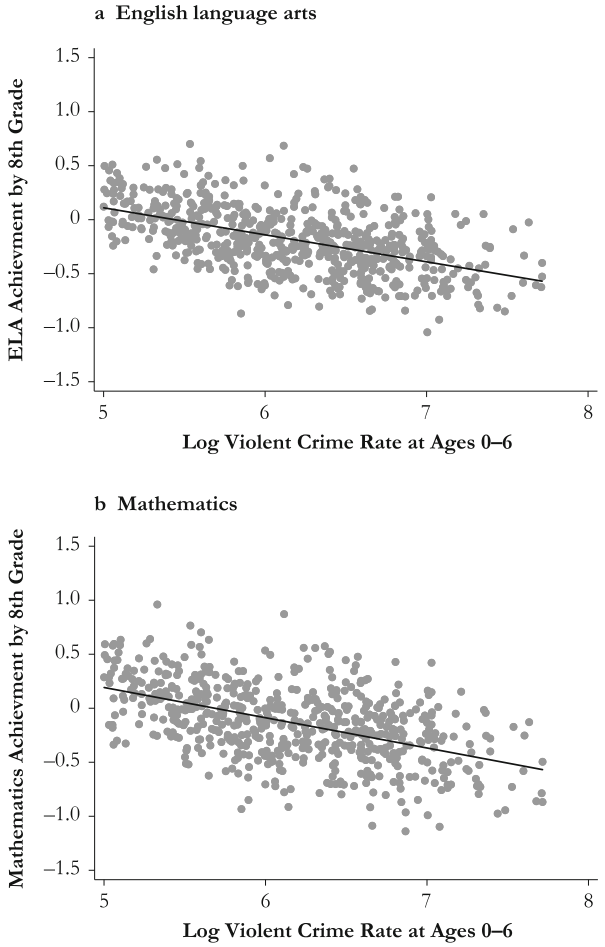

Fig. 2 Cross-sectional relationship between crime and achievement. Achievement data are from the district-level estimates from the SEDA data (Reardon et al. 2016a), and crime data are from the FBI's UCR Program. Each dot represents a school district (N = 813), and it measures the log mean violent crime rate in the school district at ages 0–6 averaged across all seven birth cohorts (1996–2002) and the mean eighth-grade achievement in the school district averaged across all seven birth cohorts. The measures of achievement are estimated by combining students of all racial/ethnic groups.

achievement by eighth grade. The scatterplots reveal a strong negative correlation between crime experienced at ages 0–6 and ELA and mathematics achievement by the end of eighth grade. On average, school districts with a violent crime rate 1 standard deviation above the mean show a performance level in ELA that is 0.51 standard deviations below the national mean (R^2 = .26) and a performance level in mathematics that is 0.49 standard deviations below the national mean (R^2 = .25). These negative associations hold when observable characteristics of the school districts are held constant.[12]

[12] These controls are obtained from the 2000 census and include percentage non-Hispanic White, percentage non-Hispanic Black, percentage Hispanic, percentage foreign-born, percentage unemployed, percentage families with income below the poverty line, and median household income (in 2000 USD).

The next set of analyses estimates impacts of changes in the violent crime rate in the school district using the OLS and 2SLS difference-in-differences estimation strategy outlined earlier. Results reported here take advantage of the group-specific achievement measures available in the SEDA data; they show effects for all students in the district combined, by racial/ethnic group, and by gender.[13]

Effects of Violent Crime by Race and Gender

Table 3 shows OLS difference-in-differences estimates for all students pooled and by racial/ethnic group. As a reminder, crime rates enter the model log-transformed. The interpretation that follows translates the size of the estimated regression coefficients as changes in achievement for each 10% decline in crime rates. On the basis of these estimates, the overall ELA achievement in the district increased by 0.01 standard deviations for each 10% decline in violent crime, without showing much heterogeneity across racial/ethnic groups.

Table 4 shows 2SLS difference-in-differences estimates for all students pooled and by racial/ethnic group. The overall ELA achievement in the district increased by 0.03 standard deviations for each 10% decline in violent crime. In other words, in a district of 100,000 residents, the 0.03 standard deviation gain in ELA performance was caused by a decline in 88 violent crimes induced by the hiring of approximately eight COPS officers, according to the first-stage estimates in Table 2. Models that estimate the effect on mathematics show slightly smaller magnitudes that are statistically nonsignificant.

Models that estimate impacts by racial/ethnic group show that the district-wide impact is driven by changes in achievement among Black students. A 10% decline in violent crime experienced at ages 0–6 led to a 0.03 standard deviation gain in ELA achievement by the end of eighth grade for Black students. For Hispanic and White students, the magnitudes of such impact are a statistically nonsignificant 0.03 and 0.02 standard deviation gain, respectively. Models that estimate impacts on mathematics achievement show smaller and statistically nonsignificant magnitudes. The magnitudes of the coefficients for mathematics for the three racial/ethnic groups follow a pattern similar to that in ELA models (i.e., a larger effect size among Black students).

Given that crime rates are markedly higher in predominantly Black districts, one possible explanation for the larger effects among Black students is that the absolute changes in crime rates in predominantly Black districts are larger than the absolute changes in predominantly White districts. In such scenario, a 10% drop in the violent crime rate means comparing a very different absolute change when estimating results by race. To assess the extent to which these differences in absolute changes in crime rates are driving the differences in effects reported in Table 4, I divide the sample of school districts into low- and high-crime districts, based on whether the violent crime rate in 1996 was below or above the sample median, and estimate race-specific 2SLS models in each of these two subsamples. Results from these models are shown in Fig. 3.

[13] In the SEDA data, the measure of achievement for all students combined is constructed from the test scores of students of all racial and ethnic groups in the school district, which include more groups than the three being considered here. I report disaggregated results for Black, Hispanic, and White children (but not for others) because in some districts, the number of students of other racial/ethnic minorities is too low to yield reliable estimates of their achievement.

Table 3 OLS estimates, by race, ages 0–6

	ELA				Mathematics			
	Pooled (1)	Black (2)	Hispanic (3)	White (4)	Pooled (5)	Black (6)	Hispanic (7)	White (8)
Log All Violent	–0.086**	–0.086**	–0.098**	–0.097**	–0.065**	–0.061**	–0.057†	–0.088**
	(0.024)	(0.022)	(0.026)	(0.029)	(0.021)	(0.021)	(0.031)	(0.018)
Number of Observations	4,255	4,255	4,255	4,255	4,255	4,255	4,255	4,255
Adjusted R^2	.954	.849	.841	.866	.948	.853	.851	.938

Notes: Standard errors, clustered by school district, are shown in parentheses. All models include school district fixed effects, cohort fixed effects, and precision weights. Crime rates are measured in number of crimes per 100,000 residents in the district (averaged across ages 0–6 and log-transformed). ELA and mathematics achievement are computed at the end of eighth grade and measured in standard deviations of the national distribution.

†$p < .10$; **$p < .01$

When I compare the effect sizes by race within high-crime districts, the racial differences reported before still remain. For Black and Hispanic students in high-crime school districts, each 10% decline in the violent crime rate increased ELA achievement by 0.03 standard deviations. For White students in high-crime districts, a comparable 10% decline in the violent crime rate led to a statistically nonsignificant 0.02 standard deviation increase in ELA achievement. This finding suggests that differences in absolute changes in crime rates are not the explanation for the larger impacts among Black students.[14]

Figure A8 in the online appendix shows OLS estimates for ELA by race when violent crime is measured in one-year windows between the ages of 0 to 13. On the basis of these estimates, the eighth-grade performance of children seems to be more impacted by exposure to violent crime at ages 4–8. This pattern is consistent with findings by Sharkey et al. (2014), who documented significant negative effects of acute exposure to violence on test scores among elementary school students (in grades 3, 4, and 5) but no effect on middle school students (in grades 6, 7, and 8). The OLS estimates in Fig. A8 cannot be given a causal interpretation, but the pattern revealed in the three plots is nonetheless informative. Unfortunately, I cannot estimate 2SLS models beyond the age of 6 because of a change in how the COPS grants were distributed after 2008, the year when the 2002 birth cohort was 6 years old. After 2008, the COPS program was redesigned, and grants were allocated following a different rule. Police departments that applied were scored and ranked by the COPS office, and that ranking determined the allocation of grants. This change

[14] The SEDA data include estimates of racial/ethnic gaps for each school district and birth cohort. In Table A2 in the online appendix, I use these racial/ethnic gaps as outcomes in the 2SLS regressions. Results from these models suggest a positive impact of changes in crime rates (i.e., gaps narrowed as crime rates declined), but these effects are statistically nonsignificant.

Table 4 2SLS estimates, by race, ages 0–6

	ELA				Mathematics			
	Pooled (1)	Black (2)	Hispanic (3)	White (4)	Pooled (5)	Black (6)	Hispanic (7)	White (8)
Log All Violent	–0.270†	–0.283*	–0.256	–0.181	–0.148	–0.184	0.056	–0.119
	(0.160)	(0.141)	(0.162)	(0.248)	(0.199)	(0.216)	(0.194)	(0.128)
Number of Observations	4,255	4,255	4,255	4,255	4,255	4,255	4,255	4,255

Notes: Standard errors, clustered by school district, are shown in parentheses. All models include school district fixed effects, cohort fixed effects, and precision weights. Crime rates are measured in number of crimes per 100,000 residents in the district (averaged across ages 0–6 and log-transformed). ELA and mathematics achievement are computed at the end of eighth grade and measured in standard deviations of the national distribution.

†$p < .10$; *$p < .05$

in the allocation of grants makes the use of post-2008 data inadequate in a difference-in-differences setting like the one being used here.

Difference-in-differences estimates by gender are shown in Tables 5 (OLS) and 6 (2SLS). On average, boys experienced larger gains in ELA and mathematics as crime rates fell. On the basis of the 2SLS estimates, ELA and mathematics achievement of male students increased by 0.03 standard deviations for each 10% decline in violent crime rate. For the same change in the violent crime rate, females experienced a statistically nonsignificant gain of 0.02 standard deviations in ELA and no change in mathematics.[15]

Effects by Type of Crime

So far, the analyses have focused on estimating the effect of changes in the violent crime rate in the school district. The aggregated violent crime index is used here to capture changes in the levels of neighborhood violence that surrounds children in their day-to-day lives. In this section, I use the rates of homicides, aggravated assaults, and robberies to estimate the impact of each of them individually on ELA achievement. Estimating effects for each of the three types of crime that compose the violent crime index is valuable from a methodological standpoint because it enables the assessment of potential measurement error. The violent crime index is dominated by aggravated assaults and robberies, which are likely to be influenced by discretionary ways of measuring and reporting them across police departments. Therefore, estimating the effect of changes in the homicide rate alone, which is less vulnerable to measurement error, will yield more reliable estimates. A second reason to focus on homicides is to align this study with prior work that has documented acute effects of exposure to homicides on cognitive assessments (Sharkey 2010; Sharkey et al. 2014).

Figure 4 shows 2SLS estimates of the impact of each of the three types of violent crimes on ELA by race and gender. Homicides show the largest relative impact on

[15] In models that use SEDA estimates of gender gaps as outcomes (Table A2 in the online appendix), the female-male gap in mathematics is statistically significant.

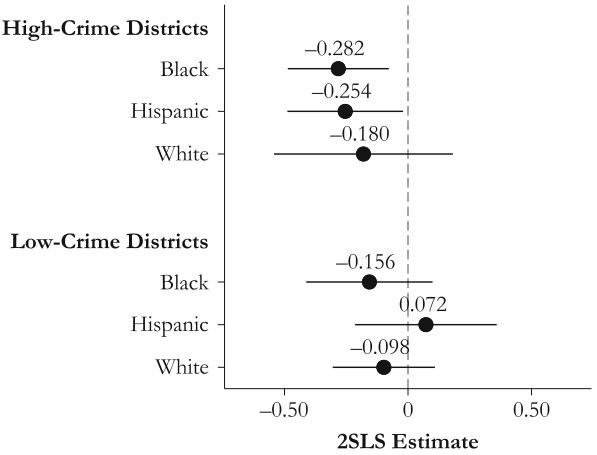

Fig. 3 2SLS ELA estimates in low- and high-crime school districts. Point estimates and 95% confidence intervals are obtained from 2SLS regressions analogous to the ones used in models reported in Table 4. These regressions are estimated separately from two sets of school districts: high-crime school districts (those with an above median violent crime rate in 1996) and low-crime school districts (those with a below median violent crime rate in 1996). Standard errors clustered are by school district. All models include school district fixed effects, cohort fixed effects, and precision weights. Crime rates are in number of crimes per 100,000 residents in the district (averaged across ages 0–6 and log transformed). ELA and mathematics achievement are computed at the end of eighth grade and measured in standard deviations of the national distribution.

achievement. For a 10% decline in the homicide rate, the ELA achievement of Black and Hispanic children increased by 0.06 and 0.05 standard deviations, respectively. Among males, the impact on ELA achievement of a 10% decline in the homicide rate was a 0.11 standard deviation gain. Males also experienced a 0.07 standard deviation gain in mathematics achievement for a 10% decline in the homicide rate.

Taking the homicide estimates from Fig. 4 as the most reliable ones and considering the change in the homicide rate at ages 0–6 from the 1996 to the 2002 cohorts—a 19% drop—I find that such average change in the homicide rate translated into a 0.11 standard deviation gain in ELA achievement for Black students and a 0.10 standard deviation gain in ELA achievement for Hispanic students. Assuming that achievement grows at an average of 0.3 to 0.5 standard deviations per school year in elementary school grades, a 19% decline in the homicide rate represented a gain of approximately two to three months of instruction for Black and Hispanic children.[16] Extrapolating these findings to the period 1992–2012—a time when the national homicide rate fell by approximately 50%—being born 20 years apart and experiencing markedly lower levels of violence meant having benefited from the equivalent of five to eight additional months of instruction.

Interpreting the Reduced-Form Estimates

To this point, my interpretation of regression coefficients has focused on the second-stage results, which provide estimates of the local average treatment effect of crime on

[16] The range of 0.3–0.5 standard deviations in growth per school year captures most of the estimates that the literature in education has generated up to this point. School years are assumed to have nine months of instruction.

Table 5 OLS estimates, by gender, ages 0–6

	ELA			Mathematics		
	Pooled (1)	Female (2)	Male (3)	Pooled (4)	Female (5)	Male (6)
Log All Violent	–0.086**	–0.088**	–0.080**	–0.065**	–0.067*	–0.063**
	(0.024)	(0.029)	(0.024)	(0.021)	(0.031)	(0.016)
Number of Observations	4,255	4,255	4,255	4,255	4,255	4,255
Adjusted R^2	.954	.945	.946	.948	.937	.945

Notes: Standard errors, clustered by school district, are shown in parentheses. All models include school district fixed effects, cohort fixed effects, and precision weights. Crime rates are measured in number of crimes per 100,000 residents in the district (averaged across ages 0–6 and log-transformed). ELA and mathematics achievement are computed at the end of eighth grade and measured in standard deviations of the national distribution.

*$p < .05$; **$p < .01$

achievement. In most instrumental variable analyses, the interpretation of results would end here. However, given the nature of the instrument being used here—namely, federal dollars spent in community policing—the reduced-form estimates have meaningful policy implications. Specifically, π_2 will capture the causal effect of hiring one additional police officer through the COPS grants on school achievement in the district. Knowing the average cost of hiring one police officer, I can estimate the return in standard deviations of each dollar spent through the COPS program.

The reduced-form estimates show that in a school district with 100,000 residents, hiring and retaining one additional police officer increased the ELA achievement of students in each cohort in the district by 0.005 standard deviations (see Fig. A2 in the online appendix). The average size of a birth cohort attending public schools in a school

Table 6 2SLS estimates, by gender, ages 0–6

	ELA			Mathematics		
	Pooled (1)	Female (2)	Male (3)	Pooled (4)	Female (5)	Male (6)
Log All Violent	–0.270†	–0.180	–0.339†	–0.148	0.003	–0.302†
	(0.160)	(0.154)	(0.180)	(0.199)	(0.229)	(0.182)
Number of Observations	4,255	4,255	4,255	4,255	4,255	4,255

Notes: Standard errors, clustered by school district, are shown in parentheses. All models include school district fixed effects, cohort fixed effects, and precision weights. Crime rates are measured in number of crimes per 100,000 residents in the district (averaged across ages 0–6 and log-transformed). ELA and mathematics achievement are computed at the end of eighth grade and measured in standard deviations of the national distribution.

†$p < .10$

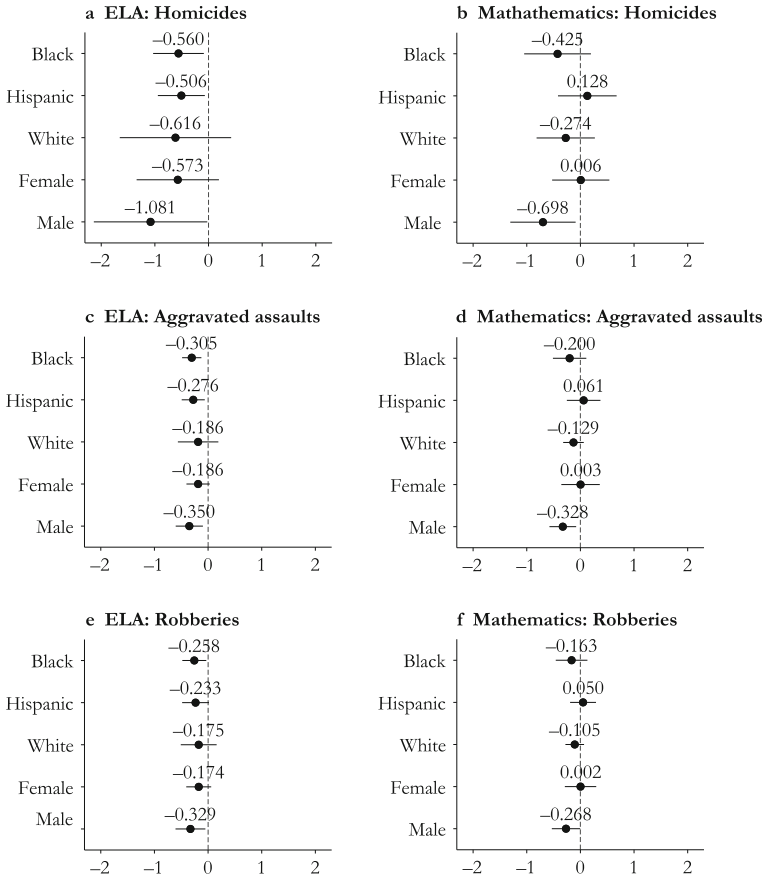

Fig. 4 2SLS estimates, by type of crime. Point estimates and 95% confidence intervals are obtained from 2SLS regressions analogous to the ones used in models reported in Tables 4 and 6. Standard errors are clustered by school district. All models include school district fixed effects, cohort fixed effects, and precision weights. Crime rates are in number of crimes per 100,000 residents in the district (averaged across ages 0–6 and log transformed). ELA and mathematics achievement are computed at the end of eighth grade and measured in standard deviations of the national distribution.

district with 100,000 residents is 1,597 children.[17] Rounding this figure up to include students in charter schools, I find that in a district with 1,750 students in each cohort, hiring one police officer through the COPS grant raised the average eighth-grade ELA performance of the birth cohort by 0.005 standard deviations. Considering that the average cost of hiring one police officer through the COPS grants in the sample of school districts in the analysis was $151,639 (in 2015 USD), I obtain that an average increase in COPS spending of $86 per pupil increased the achievement in the district by 0.005 standard deviations. Equivalently, an average increase in COPS spending of $1,720 of per pupil increased the ELA achievement by 0.10 standard deviations. Lafortune et al. (2018) estimated that a $622 increase in state aid per pupil per year and a $424 increase in total revenue per pupil per year following school finance reforms

[17] This figure corresponds to the average enrollment per grade in years 1994–2008 in the set of 813 school districts included in the sample.

also raised achievement in the district by 0.10 standard deviations. The return of the COPS program appears small when compared with the return of the education reforms that Lafortune et al. (2018) examined; however, if we consider the increase in achievement documented here as an unintended consequence of a policy aimed at making neighborhoods safer without targeting student outcomes directly, the return of the COPS program is sizable.

Discussion

Although violent crime rates in America still remain higher than in most developed countries (United Nations Office on Drugs and Crime 2019), the decline in violence that began in the early 1990s represents a major improvement in the quality of life of Americans. Much has been written about the causes of the crime decline (Levitt 2004; Zimring 2006), but an understanding of its consequences for individuals and communities is more limited. This study is an attempt to fill this gap by estimating the impact of declining crime rates on the educational achievement of seven birth cohorts who entered the school system when the violent crime rate in their school districts was markedly different.

The oldest cohort of children in this study was born in 1996, when the national violent crime rate was at 636 crimes per 100,000 residents. The youngest cohort was born in 2002, when the national violent crime rate was 494 per 100,000 residents, a 23% decline from the 1996 level (Federal Bureau of Investigation 2015). Being only seven years apart meant living through childhood and adolescence with a lower risk of being victimized in the streets and experiencing the trauma and stress associated with living in violent environments. When comparing the achievement at the end of eighth grade of children born between 1996 and 2002, experiencing a 10% decline in violent crime raised the district-wide performance in ELA of an entire birth cohort by 0.03 standard deviations. Analyses by race/ethnicity show that the district-wide improvement in achievement that followed the fall in violence is driven by the gains that accrued to Black children. These findings are consistent with evidence from studies documenting that the acute effect of exposure to homicides on students' performance is larger among Black students and in predominantly Black schools (Gershenson and Tekin 2017; Sharkey 2010; Sharkey et al. 2014). The larger effects among Black and Hispanic students make sense when considering that their neighborhoods, which have higher average levels of concentrated violence (Morenoff and Sampson 1997; Peterson and Krivo 2010; Sampson et al. 1997), experienced the largest declines in crime in the 1990s and 2000s (Friedson and Sharkey 2015).

An important finding emerging from this study is the larger effect of violence among boys. On the basis of the 2SLS estimates in Table 6, the achievement gap between female and male students closed by 0.03 standard deviations in mathematics for a 10% decline in the violent crime rate. Although girls are also exposed to community violence and forced to develop strategies to navigate threatening school and street environments (Jones 2009), ethnographic accounts show that young minority men experience the most severe consequences of neighborhood violence (Anderson 2000; Harding 2010). From this perspective, it makes sense that the alleviation of the stress and trauma associated with having to navigate violent spaces translated into larger gains among boys.

Focusing on the coefficient magnitudes, the size of these effects may appear small. However, it is worth remembering that these improvements in achievement are averaged over all students in the school district. These estimates imply that the effect might be larger for children living in neighborhoods where crime was more concentrated and where the crime drop was felt more intensely (Friedson and Sharkey 2015). Similarly, data limitations do not allow taking a longer-term view and comparing, for example, the achievement of children born in the late 1980s to that of children born in the early 2000s. These two sets of children lived through school years in vastly different neighborhood and school environments in terms of levels of violence. Extrapolating the 2SLS estimates obtained here to the 20-year period 1992–2012, the average change in the homicide rate during that time—approximately a 50% decline—represents that children born in 2012 will benefit from the equivalent to five to eight months of additional instruction by the end of eighth grade because of the drop in neighborhood violence.

The evidence on ELA achievement is clear and strong, but the effect of violent crime on mathematics is inconclusive. All point estimates for mathematics are in the same direction as those in ELA models, but their magnitudes are smaller and in some models are statistically nonsignificant. This pattern is consistent with findings from other studies of violence and student outcomes (Sharkey 2010; Sharkey et al. 2014). These studies have suggested that performance in mathematics and reading assessments may be explained by different self-regulatory mechanisms that interact differently with violence-related stressors (Liew et al. 2008). Children suffering from the trauma and stress associated with neighborhood violence may find it harder to maintain the level of attention and concentration necessary in reading assessments in which the different parts of the test are often interconnected, but they may find it easier to stay focused during mathematics assessments in which test items can be tackled individually. One additional explanation for the difference in ELA and mathematics estimates is that the learning of literacy skills relies more on the support and resources that children find at home than the learning of mathematics skills does (Griffin and Morrison 1997). The disruption that violence causes in the neighborhood is likely to enter the home environment if parents become anxious about their children being victimized or if children are exposed to the constant sound of sirens, for example, hindering the learning of reading skills at home.

The findings from this study add to a growing body of work showing that economic opportunity varies substantially by location (Chetty et al. 2014), and they suggest that the effect of crime on economic mobility documented in previous studies operates partly through effects on educational achievement (Sharkey and Torrats-Espinosa 2017). If places, rather than people living in them, account for a large share of the differences in economic mobility across metropolitan areas (Chetty and Hendren 2018), making places safer can generate long-term social returns that extend beyond the most immediate and direct benefits of reducing community violence. More broadly, these findings provide additional evidence on the role that violence plays in shaping the developmental trajectories of children, and they reinforce the idea that understanding differences in academic achievement requires evidence on what happens inside schools as well as what happens outside schools.

The most important limitation of this study is that it provides no evidence on the mechanisms driving the improvement in achievement as crime rates fell. The

supplementary analyses in the online appendix show that the COPS funds did not change school resources and that the effects are not driven by changes in the economic and racial composition of school districts over time. It is unclear, however, whether children born in the 2000s fared better because they were able to stay more focused on school as their surroundings became safer, or because safer streets meant that parents were more willing to enroll them in extracurricular activities that furthered their development, for example. Given the age when changes in crime rates are measured, at ages 0–6, it is likely that an important part of the explanation has to do with how parents responded to crime changes in the neighborhood. Future research that surveys children about their perceptions of safety and parents about their strategies to shield children from street crime can help unpack these mechanisms.

The discussion of the consequences of the crime decline cannot ignore the costs of such change. A shift toward more aggressive forms of policing and soaring incarceration rates have disrupted the lives of minority youth as much as street violence did in the 1980s and early 1990s. More police in the streets cannot be the only response to confront community violence, and the reduced-form findings do not mean that more police in the streets are needed to close achievement gaps. The use of the COPS grants as an instrumental variable is just a methodological tool to recover causal estimates from a policy shock that reduced crime rates. The policy debate should be around strategies to make neighborhoods safer. Giving more resources to police departments so that they can engage and partner with community organizations and provide effective responses to communities' needs is just one of the many possibilities. Importantly, law enforcement agencies should be held accountable so that they carry their jobs with fairness and without engaging in discriminatory practices. This accountability requirement is of crucial importance in light of recent qualitative and quantitative evidence showing the negative effects of policing on minority youth (Legewie and Fagan 2019; Rios 2011).

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