Essays on Schools, Crime, and Punishment

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ABSTRACT

This dissertation consists of three essays on schools, crime, and punishment. The first essay — stemming from collaborative work with Christopher Jencks, Anthony Braga, and David Deming — uses longitudinal school and arrest records to examine the long-term effects of winning the lottery to attend one's first-choice high school on students' arrest outcomes in the Boston Public Schools. The second essay uses quasi-experimental regression and matching techniques to examine the effect of out-of-school suspension on serious delinquency using the 1997 National Longitudinal Survey of Youth (NLSY97). The third essay examines the increasing use of exclusionary school discipline and incarceration since the 1970s from a life course perspective. It advances the notion of a "disciplinary career," which captures disciplinary experiences across three domains: home, school, and the juvenile and criminal justice systems. In this essay, I use the NLSY97 to estimate the prevalence of various disciplinary experiences across the early life course and draw on qualitative data from the Boston Reentry Study to explore how individuals who experience high levels of harsh discipline perceive the interplay between offending and punishment over time. I close the dissertation by discussing these essays' implications for theory and policy.

TABLE OF CONTENTS

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1. INTRODUCTION

Educational attainment is highly correlated with arrest and incarceration (Lafree and Drass 1996; Pettit and Western 2004). Delinquency peaks during adolescence, when most U.S. youth are enrolled in secondary school (Hirschi and Gottfredson 1983; Wolfgang, Figlio, and Sellin 1972). Strong attachment to school is a protective factor against delinquency (see, e.g., Sampson and Laub 1993, chapter 5). Education programs and policies — including early childhood education, compulsory schooling laws, and school choice — can have substantial effects on crime (Barnett 1996; Belfield et al. 2006; Cullen, Jacob, and Levitt 2006; Deming 2011; Lochner and Moretti 2004). And criminal involvement can, in turn, shape educational attainment: Students who are arrested as juveniles are less likely than comparable students who are not arrested to complete high school and enroll in college (Hirschfield 2009; Kirk and Sampson 2013).

Despite these facts, research on schooling and research on crime are generally conducted separately. Education researchers tend to focus on test scores and educational attainment, often ignoring schools' effects on non-academic outcomes like behavior and crime. Criminal justice researchers, for their part, often view education as a credential rather than a process, and sometimes focus narrowly on schools' contributions to human capital and employment outcomes. Similarly, education and criminal justice policymakers rarely join forces to design policies that improve outcomes in both domains.

In this dissertation, I focus explicitly on the many links between schooling and crime. Through three essays, I explore how schools' actions affect student behavior and the likelihood of arrest and incarceration. In doing so, I use a variety of methods — one experiment, several quasi-experimental strategies, and descriptive analyses — as well as multiple longitudinal datasets. In the first essay, I link administrative records from education agencies to police records for a sample of roughly 90,000 Boston students. In the second and third essays, I generate national estimates using the Bureau of Labor Statistics' 1997 National Longitudinal Survey of Youth, which has followed a sample of 9,000 men and women from their adolescence in the late 1990s through adulthood. In the third essay, I draw on qualitative data from the Boston Reentry Study, which interviewed 122 men and women up to five times each as they exited Massachusetts state prisons and resumed their lives in the Boston area.

The first essay examines schools' effects on crime broadly. It builds on prior research in Chicago, IL, and Charlotte-Mecklenberg, NC, which showed that winning admission to a first-choice secondary school reduced students' risk of arrest up to seven years after assignment. Building on collaborative research with Christopher Jencks, Anthony Braga, and David Deming, I linked administrative school records from the Massachusetts Department of Elementary and Secondary Education and the Boston Public Schools to arrest records from the Boston Police Department. This yields detailed schooling and arrest histories for more than 25,000 8th graders who entered the districtwide high school lottery between 2002 and 2010 and for approximately 65,000 of their schoolmates. Drawing on criminological theory, I discuss multiple pathways through which schools may affect crime: developing human capital, exposing students to criminogenic social contexts, shaping opportunities to offend, labeling students as delinquent, and referring youth to the police or the courts.

The findings suggest that the results of earlier school choice research do not generalize to all U.S. cities. In Boston, a city with no traditional neighborhood high schools and multiple admissions channels operating simultaneously, gaining admission to a first-choice high school via lotteries does improve school quality as measured by test scores and rates of attendance, suspension, and arrest; however, these gains do not yield reductions in arrest. Boston 8th graders who participate in the district-wide lottery are equally likely to be arrested regardless of whether they win admission to their first-choice high school.

The second essay focuses more narrowly on one aspect of schooling that has special importance for crime and increasing policy relevance: how schools discipline students for misbehavior. Prior research has documented strong associations between school discipline, arrest, and incarceration, fueling the notion of a "school-to-prison pipeline." Few studies, however, have examined how school discipline affects students' subsequent behavior. In this essay, I examine the effect of out-of-school suspension on serious delinquency using self-reported data from the 1997 National Longitudinal Survey of Youth. Using four estimation strategies to control for prior behavior and other theoretically-relevant factors, I find that students suspended at ages 12-14 report higher levels of delinquency in follow-up surveys than do otherwise similar youth who were not suspended. For first-time suspendees, effects persist for at least five years after suspension. These findings suggest that, in addition to shaping the life chances of individual students, the widespread use of out-of-school suspension by U.S. secondary schools has broader consequences for stratification and public safety.

The third essay integrates experiences with schools and crime within a broader, life course framework. It builds on two insights from prior research. First, exclusion-

ary punishment has become more common since the 1970s, both in schools and in the juvenile and criminal justice systems. These increases have been borne disproportionately by black and Latino men. Second, experiences with harsh discipline, such as out-of-school suspension and incarceration, can have feedback effects on behavior. In this essay, I document experiences with discipline and punishment across childhood, adolescence, and early adulthood among a cohort of U.S.-born men and women who are now in their early 30s. I advance the notion of a *disciplinary career* that captures experiences with three age-graded institutions of social control—the family, the school, and law enforcement—each of which responds to individuals' behavior and can in turn shape future offending. I conceptualize punishment experiences as a "career" to encourage criminologists to view widely-discussed criminal careers and disciplinary careers as dual trajectories that unfold simultaneously and influence each other over time. I use data from the 1997 National Longitudinal Survey of Youth and qualitative data from the Boston Reentry Study to illustrate these concepts.

The final chapter explores the implications of these essays for theory and policy. It discusses how the dissertation's empirical findings can inform research in the sociology of education and criminology. It also discusses current school discipline policy reform efforts. My hope is that the empirical findings and conceptual frameworks presented in this dissertation can help to fuel a larger, interdisciplinary research agenda on schooling and crime.

2. SCHOOL QUALITY AND CRIME

2.1 *Introduction*

Prior research has documented a strong, negative association between educational attainment and crime. Education disparities are present at each stage of criminal processing, from arrest (Lafree and Drass 1996) through incarceration (Pettit and Western 2004). Among white men born in the United States during the late 1960s, the cumulative risk of incarceration by ages 30-34 was less than 1% among those who had attended any college, compared to 11% among those without a high school degree (Pettit and Western 2004). Among black men in the same cohort, the cumulative risk of incarceration was less than 5% among those who had attended any college, and a stunning 59% among those without a high school degree (ibid). Although the racial gap in incarceration receives more attention than the education gap, the racial gap was stable during the 1980s and 1990s, while the education gap increased (ibid). By 2003, the most recent year for which comprehensive estimates are available, 53% of local jail inmates, 59% of state and federal prison inmates, and 69% of probationers possessed a high school diploma or GED, compared to 82% of the general population (Harlow 2003).

While some researchers have examined education level as a proxy for class divisions (see Pettit and Western 2004:153), criminologists and criminal justice researchers have ample reason to study the link between education and crime in its own right.

One reason is that delinquency peaks during adolescence, when most U.S. youth are enrolled in secondary school (Hirschi and Gottfredson 1983; Wolfgang, Figlio, and Sellin 1972). In addition, recent work by economists has found that policies that increase the duration and quality of schooling — raised compulsory schooling ages and access to high-quality schools via lotteries — can reduce self-reported offending and arrest (Cullen, Jacob, and Levitt 2006; Deming 2011; Lochner and Moretti 2004). A longer tradition of social control research in criminology demonstrates that students' attachment to school is a protective factor against delinquency (Sampson and Laub 1993, chapter 5). Moreover, early childhood education interventions have produced impressive crime reductions in the longer term (Barnett 1996; Belfield et al. 2006).

At the turn of the 21st century, sociologists Richard Arum and Irenee Beattie noted that, "while numerous studies recognize overall educational experience as a determinant of imprisonment, existing research has largely ignored the actual character of schooling" (1999:516). With few exceptions, their criticism still applies.[1] Over the past 15 years, literatures have emerged on the rise of zero tolerance policies and exclusionary school discipline (Losen and Martinez 2013); the "criminalization" of minor misbehavior, especially among black and Latino youth (Ferguson 2001; Hirschfield 2008; Rios 2011); and the importation of criminal justice surveillance strategies into schools (Hirschfield 2010; Kupchik 2010; Simon 2007, chapter 7). These literatures suggest that the links between school context and juvenile and criminal justice outcomes may be stronger today than ever before. Nonetheless, we know little about schools' general effects on students' participation in crime.

In this essay, I use data on 8th graders who enrolled in the Boston Public Schools'

[1] See Gottfredson 2001 for a thorough treatment of schools and delinquency. Arum and Beattie (1999) found that vocational coursework, educational resources, and peer composition affect the risk of imprisonment among men aged 19 to 36 in the NLSY79.

high school lottery between 2006 and 2010 to answer one research question: Are Boston students who win the lottery to attend their top-choice high school less likely to be arrested than applicants who lose the lottery? To answer this question, I link longitudinal school records from the Massachusetts Department of Elementary and Secondary Education to arrest records from the Boston Police Department and administrative data from the Boston Public Schools. Following Cullen et al. (2006) and Deming (2011), I estimate the effect of school quality on arrest using exogenous variation stemming from lotteries into oversubscribed schools. I begin by reviewing the literature on how secondary schools can affect crime. Then, I describe the data, methods, and findings. I close by discussing the implications of this study for future research on school quality, school choice, and crime.

2.2 *How Secondary Schools Affect Crime*

In education research, especially since the 2002 passage of No Child Left Behind, school quality is typically measured using test scores. However, schools have many features that can affect academic achievement and non-academic outcomes like crime. These include teachers' experience and effectiveness, classmates' characteristics, the curriculum, the school disciplinary climate, college and career counseling, extracurricular activities, communication with parents and families, and access to physical and mental health professionals. Schools also structure students' daily routines, shape peer groups, and expose students to multiple neighborhoods and transportation methods as they travel to and from school.

Whereas prior research on schools and crime has tended to emphasize schools' academic effects, there are at least five channels through which high schools can affect crime. First, schools can affect crime by developing students' human capital. From

a rational choice perspective, schools that offer rigorous curricula, effective teachers, and other instructional resources can develop students' skills and alter their calculations about the relative costs and benefits of education, employment, and illegal activity.[2] In the longer term, developing human capital can increase students' likelihood of graduating high school, attending college, and finding steady employment (Lochner 2004).

Second, schools can affect delinquency by exposing students to criminogenic social contexts. These include peer groups, neighborhoods, and school environments. An extensive literature on peer effects has shown that association with delinquent peers can affect future delinquency by reinforcing delinquent norms and increasing opportunities to engage in illegal behaviors (Haynie and Osgood 2005; Sutherland and Cressey 1992). Likewise, schools' locations affect the amount of time students spend in, and traveling through, neighborhoods with high crime rates (see, e.g., Ispa-Landa 2013:225 on boys in an urban-to-suburban racial integration program spending evenings in their classmates' neighborhoods). Finally, ethnographic work suggests that the school setting itself — which is quite violent in a small share of U.S. school districts — can be criminogenic (see Devine 1996).

Third, schools can affect students' opportunities to offend by providing both formal surveillance and informal social control (Clarke 1983; Cohen and Felson 1979). Although schools vary in their ability to control crime during school hours (Gottfredson and Gottfredson 1985), time spent in school is generally associated with reduced crime and arrest (Farrington et al. 1989; Monahan et al. 2014). Schools with longer school days and more school days per year leave students with less unsupervised time than do schools with shorter or fewer days. While in the school building, educa-

[2] See Witte 1997:220-223 for a thorough discussion of economic models of crime.

tors in some schools may observe students more carefully than do educators in other schools, especially in hallways, cafeterias, and other non-classroom spaces.[3] Likewise, adults may be more likely to notice students' absences in some schools than in others, or may intervene more aggressively to increase attendance. Schools also vary in the quality and quantity of extracurricular activities they offer that can keep students in the school building after school hours and on evenings and weekends. Finally, schools may affect monitoring of youth when they are outside the school building by informing parents of students' behavioral problems and engaging families and communities in students' lives.

Fourth, schools may vary in the degree to which they label students who do not comply with rules as "troublemakers." Education research has long documented the "self-fulfilling prophecy" of teachers' expectations (Rist 1970). Some schools maintain high expectations for student achievement and are committed to ensuring that all students are able to succeed. These schools may use inclusive school disciplinary practices that keep students who misbehave in the school building, rather than removing them from the building through suspension and expulsion. Schools with sufficient resources are increasingly experimenting with reintegrative approaches to school discipline that appear to decrease problem behavior relative to stigmatizing punishments (Braithwaite 1989; González 2014). In other schools, educators rely on policies that exclude students from school and use suspension to build a case for removing troublesome students from school permanently (Bowditch 1993). Finally, to the extent that students internalize a deviant label, they may begin to assume that identity and behave in accordance with the label, generating secondary deviance

[3] See Devine 1996, chapter 4 on teachers consciously overlooking misbehavior in large, underperforming New York City high schools. Devine writes, "The basic phenomenon of school life, as the students experience it, is that teachers no longer challenge them as they walk the halls, threaten other students, disrupt classes, or otherwise act inappropriately" (pp. 114-115).

(Lemert 1967; Tannenbaum 1938; see also Ferguson 2001).

The four channels discussed so far are all ways that schools can affect offending directly. A fifth channel — contact with police and courts — captures ways in which schools can affect students' likelihood of being arrested even if they do not change students' behavior. Although the presence of uniformed police officers and school resource officers has become common across the United States (Robers et al. 2010; Kupchik 2010), schools and districts vary greatly in how they use these personnel. Some schools have police officers who build strong relationships with students and focus on prevention, which might decrease students' risk of arrest. In other schools, police may use their proximity to students to increase surveillance and share information with law enforcement outside the school building, which could increase students' risk of arrest (see Hirschfield 2010; Kupchik 2010). Schools also vary in the frequency with which they refer students to the courts for truancy and other behaviors. Empirical evidence suggests that the overall level of referrals from schools to courts has increased in recent years (Krezmien et al. 2010).

2.3 *Measuring Schools' Effects on Crime*

There are many channels through which schools may affect students' risk of arrest both immediately and in the longer term. However, estimating schools' overall effects on crime is difficult, because most students are not assigned to random schools. At the high school level, a host of factors — including students' street address, test scores, and attendance history — can affect the schools to which they are assigned.

Two recent studies have addressed selection into schools using exogenous variation in school assignment generated through lotteries into oversubscribed secondary schools. Cullen, Jacob, and Levitt (2006) find that students in the Chicago Public

Schools who won lotteries into oversubscribed high schools in 2000 and 2001 did not obtain gains on traditional academic measures relative to students who lost the lotteries, but did report fewer disciplinary incidents and arrests in follow-up surveys. In Charlotte-Mecklenburg, NC, Deming (2011) finds that students who won the lottery for admission to their top choice middle school in 2002 — the first year of open enrollment after 40 years of court-ordered busing to preserve racial balance — were arrested less often than comparable students who lost the lottery during a seven year follow-up period. These effects were concentrated among middle school students with a high predicted probability of arrest before assignment and were not apparent among high school students. Taken together, these studies in Chicago, IL, and Charlotte-Mecklenburg, NC, have shown that secondary school choice can reduce the risk of arrest and self-reported offending in large, urban school districts. In both of these studies, students who lost the lotteries into their top-choice schools tended to attend traditional, neighborhood-based high schools located closer to their homes.

In this paper, I examine the effect of high school choice among students in Boston Public Schools, a system that has operated a school choice mechanism since the late 1980s and has no traditional, neighborhood high schools. I offer the following hypothesis: *Boston Public Schools 8th graders who win the lottery to attend their top-choice high school should be arrested less often than comparable students who lose the lottery during a seven-year follow-up period.*

2.4 *Data*

To examine this hypothesis, I link three types of administrative data: longitudinal student records from the Massachusetts Department of Elementary and Secondary Education (DESE), arrest histories from the Boston Police Department (BPD), and 8th

grade lottery data from the Boston Public Schools (BPS).

I have nine years of lottery data, from 2002 to 2010, with 26,558 observations belonging to 26,273 unique students. I retain only the earliest observation for students who appear in the data in more than one year.[4] BPS changed its lottery procedures extensively beginning in 2006, so I focus only on the 2006-2010 lotteries in this essay.[5] During these years, 13,323 students appear in the lottery data.

I link these lottery data to longitudinal student enrollment and test score data from the Massachusetts Department of Elementary and Secondary Education (DESE). The DESE data contain a unique identifier for each student, so I can track all students for as long as they remained enrolled in a Massachusetts public school.[6] For each academic year, the DESE data contain identifiers for the school(s) in which the student was enrolled (in October and again at the end of the school year), attendance information, data on in-school and out-of-school suspensions, and student demographics. The demographic data include race, gender, eligibility for Free or Reduced Price Meals (FRPM), English language proficiency, and country of origin. Enrollment data are linked to reading and math test scores from the Massachusetts Comprehensive Assessment System (MCAS) exams. I was able to link 12,484 of the 13,323 lottery participants (94%) to the DESE enrollment and test score data.

Finally, with support from the Boston Police Department (BPD), I attempted to match each lottery participant to a Criminal Record (CR) Number, which is a unique identifier for each individual arrested in the city of Boston who appears in BPD arrest data. Of the 12,484 unique students who appeared in the DESE data, just 34 (fewer

[4] 283 students appeared twice; 1 appeared 3 times.

[5] For details on changes to the lottery process occurring in 2006, see Abdulkadiroğlu, Che, and Yasuda 2011.

[6] These data cover both traditional public schools and charter schools.

than 1%) were missing identifiers that prohibited us from attempting to match them to arrest data. Of the remaining 12,450 individuals, we matched 1,872 (15%) to a CR Number. Most of these students were matched using exact first and last names and dates of birth. A few were matched using Soundex software that accounts for typographical errors and common variations of the same name (e.g., Jeff and Jeffrey). Based on prior experience with this matching process, I believe that most of the 85% of students who did not match to a CR Number are accurate non-matches because they had never experienced an arrest in Boston. For each student matched to a CR Number, I observe all recorded arrests occurring in the city of Boston through June 30, 2013, including juvenile arrests. For each arrest, I observe the date, time, location, and all resulting charges. I do not observe arrests outside of Boston.

2.4.1 *School Quality Measures*

Table 2.1 lists a variety of possible school quality measures based on theory and prior research on how schools might affect crime. In this essay, I examine five of these school-level measures based on data availability: average math test score, average ELA test score, average student attendance rate (in days per year), out-of-school suspension rate (the number of students suspended at least once during a given school year divided by the total number of students in the school), and the percentage of students who had ever been arrested in Boston.

To create these measures, I use data on all BPS high school students. From 2006 to 2010, total enrollment in BPS high schools was more than 20,000 students each year. As with the lottery participants, I first attempted to link these students' Massachusetts DESE records to CR Numbers. Then I collapsed the data by school and year to produce annual indicators of school quality. In regression analyses, I use measures

of the school environment during the school year prior to the lottery participants' expected enrollment in the school.

Table 2.1: Five Channels Through which Schools Can Affect Students' Arrest Risk

	Mechanism	Possible School-Level Indicators (Lagged)[a]
1	Human capital development	**a) mean ELA test score** **b) mean math test score**
2	Exposure to criminogenic social contexts	**a) percentage of students ever arrested**[b] b) crime rate in neighborhood(s) surrounding school
3	Providing opportunities to offend	**a) average attendance (days per year)** b) length of school day
4	Labeling students with behavioral problems	**a) out-of-school suspension rate** b) uses in-school suspension (1=yes)
5	Exposure to the police and the courts	a) number of police officers assigned to building b) school-based arrest rate (# arrests/# students)

Note: This table summarizes five pathways through which schools may affect students' risk of arrest and lists two possible measures of each. Variables in bold are used in this essay. The remaining measures should be explored in future research. [a]In regression analyses, school-level measures are created by aggregating data from students who attended the school during the academic year prior to lottery applicants' expected enrollment. [b]Arrest histories are limited to Boston.

2.5 *BPS High School Selection, 2006-2010*

Unlike most large, urban, public school districts in the United States, BPS has no traditional "neighborhood" high schools.[7] Since court-ordered busing ended in the late 1980s, all BPS high schools have been citywide. In theory, any student can attend any high school regardless of his or her family income or home address. In practice, students' high school options are shaped beginning in elementary school. Students and their parents can use several possible strategies to influence their high school placement. First, they can compete for admission to the district's three "exam schools," which are widely viewed as the most elite, academically-rigorous options

[7] Information in this section is derived primarily from resources available on the Boston Public Schools website. I also draw on informal interviews with two Boston Public Schools teachers and Hirsch's 2012 unpublished thesis on school choice in Boston.

in the district. Admission is determined in 6th grade, and it is based entirely on students' grades and scores on an entrance exam.

For students who do not gain admission to an exam school in 6th grade, the high school selection process in 8th grade is more complicated. Students who understand the layout of the system can apply to one or more of BPS's five selective pilot schools. During the period covered by this study, each of these pilot schools offered a specialty – math and science, arts, social justice, or general college preparation – that presumably appealed to some students more than others. These pilot schools are generally viewed as academically rigorous. They each run their own selection process outside of the district-wide lottery system. Students who wish to attend these five schools must apply separately to each school in which they are interested. During the study period, three selective pilot schools required an essay, transcripts, and letters of recommendation; one required an audition; and one ran its own lottery outside of the larger BPS lottery process.

Whether or not they submit applications to selective-admission pilot schools, all 8th graders can submit a district lottery form. This form is distributed to 8th graders in January and is due in early February.[8] It is used to determine admission to nearly all non-selective BPS high schools.[9] During the study period, the pool of non-selective schools that students could list on this form included two pilot schools, several general college preparation schools, several small career academies that had been created out of larger schools, and one vocational high school.

In short, high school selection is a multi-layered process in Boston. Many of the

[8] Pilot schools select their students after the district lottery form is due.

[9] BPS has two in-district charter schools that do not select students on the basis of grades and test scores and do not use this lottery. A small share of students (150-200 per year out of about 5,000 incoming 9th graders) attend out-of-district charter schools.

city's most advantaged families enroll their children in private or parochial schools; whereas others groom their children for admission to public exam schools. Selective-admission pilot schools are another option for families savvy enough to navigate their application processes. For 8th graders who do not apply to selective exam or pilot schools, or who apply and are not admitted, the centralized BPS lottery system is the primary sorting mechanism into high school. Students who neither apply to selective schools nor submit the lottery form are administratively assigned.

Not surprisingly, this multi-tiered process creates heterogeneity in student characteristics across BPS high schools. Table 2.2 describes this variation as of May 2010. As column 1 shows, BPS 9th graders are predominantly lower-income, 40% black, and 38% Latino. One in eight was born outside the United States, and one in five has limited English proficiency. As columns 2 to 5 show, student characteristics vary dramatically across school types. Ninth graders in the city's top two exam schools are disproportionately female, white, Asian, higher-income, and younger than the district average.[10] Black, Latino, low-income, immigrant, and limited English learners are underrepresented in these schools. The third exam school looks more like the overall BPS student population in terms of race and ethnicity, but 9th graders in that school are also disproportionately female and are younger than the district average. Selective pilot schools (column 4) have more representative age and gender distributions than do exam schools and are similar to the district averages for race and ethnicity, income level, and English proficiency. Finally, ninth graders in non-selective high schools — those that admit students through the district lottery process when oversubscribed — are disproportionately male (56%) and black or Latino (86%). More than one in three (36%) has limited English proficiency (see column 5).

[10] Presumably this reflects lower rates of grade retention up to and including 9th grade.

Table 2.2: Characteristics of BPS 9th Graders by School Type, May 2010

	(1) All BPS 9th graders		(2) Top Two Exam Schools		(3) Third Exam School		(4) Selective Pilots		(5) Non-Selective Schools	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (yrs)	15.92	1.08	15.23	.43	15.34	.52	15.77	.90	16.13	1.16
Female	.47		.56		.56		.50		.44	
Black	.40		.20		.40		.42		.43	
Hispanic	.38		.13		.28		.45		.43	
Asian	.09		.26		.20		.04		.05	
White	.12		.40		.11		.07		.07	
Low-income[a]	.73		.42		.53		.81		.79	
Immigrant	.12		.03		.06		.07		.15	
Limited English	.20		.01		.08		.21		.36	
Number of students	5,614		751		327		726		3,810	

Note: [a] Low-income is defined by eligibility for free or reduced price meals.

2.5.1 *Lotteries into Oversubscribed Schools*

Between 2006 and 2010, students could rank up to 10 school and program choices on their BPS lottery form. Few students listed more than five choices. This analysis focuses only on students' first choice schools.

In determining admission to oversubscribed schools, BPS gives preference to students who have a sibling enrolled at the school, and/or live within the school's walk zone (a 2-mile radius). Based on these two factors, students are assigned a priority level for each school they rank. The four priority levels, in descending order, are: Sibling + walk zone, Sibling only, Walk zone only, and No priority.[11] All students are admitted from one priority level before any students are admitted from the next lower priority level. If there is not enough space for all students in a given priority level, random numbers are used to determine the order in which students will be admitted. Applicants with lower numbers gain entrance before those with higher

[11] The walk zone priority level only has preference over the no-priority level until the school reaches its 50% walking quota; then students in these groups are on equal standing for the remaining spots. One high school admits all students in its walk zone.

numbers.

Because some schools have multiple oversubscribed programs, the treatment is randomized within each group of students applying to the same school and program with the same priority level during the same lottery year. Each year-school-program-priority level (yspx) group is potentially its own lottery. I coded each student as a "Winner" if he or she had a random number below the cutoff for their lottery group and was assigned to the school at the initial lottery date and as a "Loser" if he or she had a random number above the cutoff and was assigned to another high school. Between 2006 and 2010, random assignment at the initial lottery date was clean in all lottery groups. No group contained a student with a random number below the cutoff who was not initially assigned to the school or a student with a random number above the cutoff who was initially assigned there.[12]

2.6 *Methods*

My identification strategy relies on the fact that some Boston Public high schools were oversubscribed during the study years. If each lottery were sufficiently large, a simple comparison of winners' and losers' mean outcomes would identify the causal effect of winning a given lottery. However, the BPS lottery is really many small lotteries, so estimating the effect of each individual lottery is not possible. Following Cullen, Jacob, and Levitt (2006) and Deming (2011), I estimate ordinary least squares regressions written:

$$Y_{ij} = \delta(WIN)_{ij} + \beta X_{ij} + \Gamma_j + \varepsilon_{ij}, \tag{2.1}$$

[12] A small number of students (N=79) who were not admitted to their top choice program were admitted to the school via another program that they had listed as a lower choice.

where Y_{ij} is the outcome of interest (arrest) for student i in lottery j; WIN_{ij} is a binary variable equal to 1 if student i had a random number below the cutoff for admission in lottery j; X_{ij} is a vector of covariates included for balance; Γ_j is a set of lottery fixed effects; and ε_{ij} is an error term.

In this equation, δ is the weighted mean difference in winners' and losers' outcomes across all lotteries, with weights equal to the number of students in the lottery times p*(1-p), where p is the probability of admission (Cullen, Jacob, and Levitt 2006; Deming 2011). δ thus captures the Intention-to-Treat (ITT) effect of winning admission to a first-choice school. Given that the average difference in outcomes between treated and untreated students cannot be calculated where p=0 or p=1, δ is estimated based on lotteries that admitted some, but not all, students.

Of the 12,450 students with valid data who participated in the BPS high school lottery between 2006 and 2010, over half (55%) belonged to lottery groups in which either all or no students gained admission to their first choice program. The remaining 5,648 students either won (N=2,463) or lost (N=3,185) admission to their top choice program based on a random number.

Table 2.3 presents descriptive statistics on all 8th graders who submitted the district lottery form between 2006 and 2010 (column 1), as well as the subset of students whose lottery groups were oversubscribed (N=5,532, see column 2). Comparing the statistics in columns 1 and 2 shows that the students who were in lottery groups where only some students were admitted — the students whose outcomes contribute to the models — are representative of the larger population of lottery participants in terms of demographics.

The characteristics of students who won and lost the lottery are roughly similar (columns 3 and 4). Lottery winners were more likely to be male and Hispanic and

were less likely to be black and Asian than were lottery losers. Winners were also more likely than losers to have experienced an arrest prior to September 1 of the lottery year. However, none of these differences is statistically significant within lottery groups. Regressions predicting each characteristic using an indicator for winning the lottery and lottery group fixed effects confirm that randomization worked (see column 5).

Table 2.3: Characteristics of 8th Grade BPS Lottery Participants, 2006-10

	(1) Submitted Lottery Form		(2) True Lottery $0 < p < 1$		(3) Winners		(4) Losers		(5) Randomization Check
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Age (yrs)[a]	14.9	.64	14.9	.65	14.9	.66	14.9	.65	.015 [.022]
Female	.50		.49		.47		.50		.019 [.017]
Black	.43		.45		.43		.47		.001 [.017]
Hispanic	.37		.37		.41		.33		.013 [.014]
Asian	.09		.09		.07		.11		-.015 [.009]
White	.07		.06		.07		.06		.004 [.008]
Ever arrested[a]	.04		.04		.05		.04		.001 [.007]
Number of arrests[a]	.07	.42	.06	.39	.07	.39	.06	.39	-.010 [.012]
Number of students	12,450		5,532		2,420		3,112		5,532

Note: Column 5 reports point estimates from a regression like Equation (2.1) with each row outcome as the dependent variable, with standard errors clustered at the lottery (i.e., year-school-program-priority group) level in brackets. [a]Age and arrest are measured on September 1 of the lottery year.

2.7 *Findings*

2.7.1 *Students' Preferences*

An important question is whether BPS 8th graders prefer high-quality schools. Here I examine school quality by traditional measures — math and ELA test scores — and by three alternative measures: average attendance, out-of-school suspension rate, and student arrest rate.

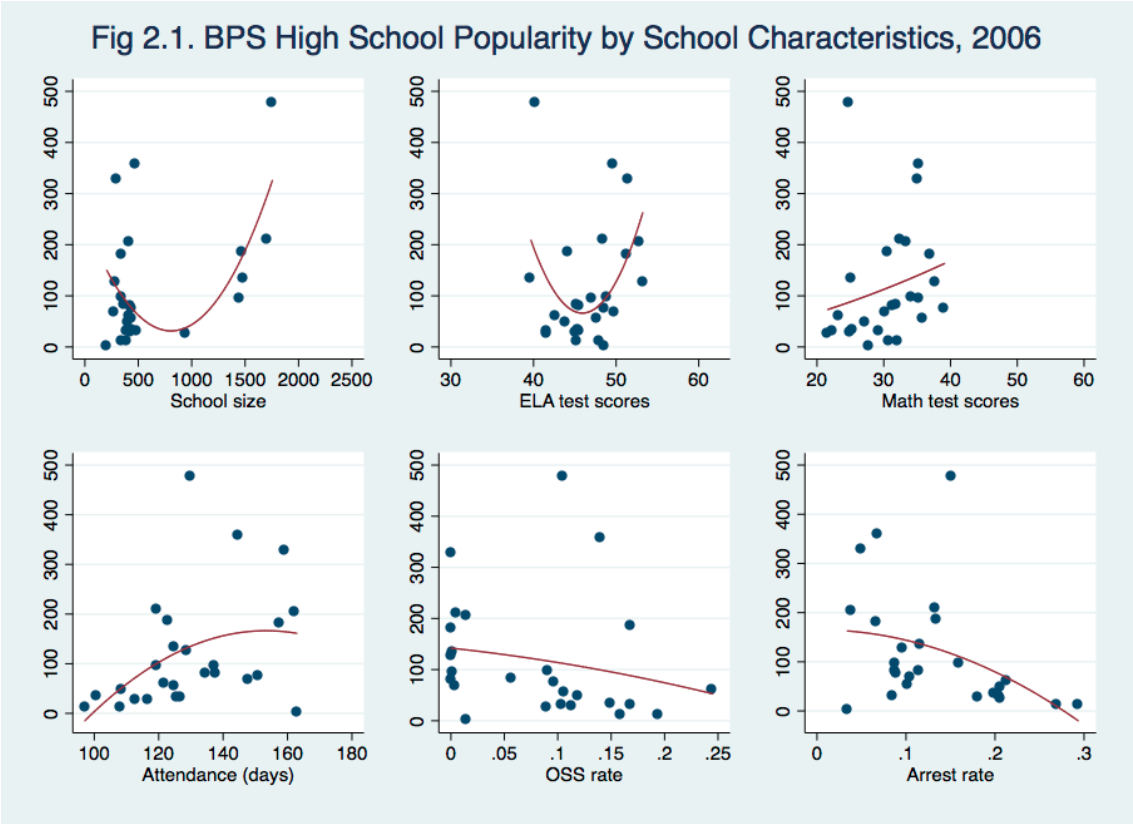
Figure 2.1 displays the popularity of BPS high schools during the 2006 lottery.[13] Popularity is measured by counting the number of 8th graders who listed each school as their first choice on the BPS district lottery form. In the aggregate, BPS 8th graders preferred high schools with higher math and ELA test scores, higher attendance rates, lower out-of-school suspension rates, and lower student arrest rates than the district averages. Nonetheless, not all highly-preferred high schools are "high-quality" by these metrics; instead, they are variable in quality. The most highly preferred school, selected by 476 students in 2006, is highly preferred even though its test scores are lower than the district average and its attendance, suspension, and arrest statistics are near the district averages.

Schools' test scores might have been public information during the study years, but suspension rates probably were not known to students and their families. Student arrest rates definitely were not public information; to my knowledge, this paper is the first to have calculated Boston students' arrest rates by school. This suggests either that 8th grade students and their parents had an intuitive sense of the high schools' overall reputations for student behavior and illegal activity, or that student behavior and arrest were correlated with other school characteristics that students and parents prioritized.

2.7.2 *Effects of Winning on Arrest*

Table 2.4 displays this essay's main results: regressions of post-treatment arrest on an indicator for winning the lottery, lottery group fixed effects, and covariates included for balance. In each column, results are presented for 3 variations of the

[13] Comparable figures displaying school popularity across all lottery years, 2006 through 2010, yield similar results.



Note: Popularity is measured by the number of 8th grade students who listed the school as their top choice on the Boston Public Schools' district lottery form in spring 2006 to gain admission in fall 2006. School characteristics are calculated using enrollment data from the end of the 2005-06 school year provided by the Massachusetts Department of Elementary and Secondary Education. [a]Math and ELA scores are measured on different scales. [b]The out-of-school suspension (OSS) rate is the number of students suspended from school during the 2005-06 school year divided by the total number of students enrolled. [c]The arrest rate is the number of students in the school who had ever been arrested in Boston by June 1, 2006, divided by the total number of students in the school.

dependent variable: an indicator of any post-treatment arrest, a count of all post-treatment arrests, and a count of post-treatment arrests for index crimes. Index crimes include homicide, rape, robbery, aggravated assault, burglaries, and thefts above $200.[14] Relative to the total arrests measure, the index arrests measure is limited to more serious offenses.

Column 1 presents results for all students. For the any arrest outcome, the point estimate on the lottery winner indicator is positive, at .006. It is not, however, statistically significant at the $p < .05$ level. Columns 2 through 5 present results for boys, girls, students with prior arrests, and students without prior arrests, respectively. Point estimates are positive in the regressions for boys and for students with and without priors, and are negative in the regression for girls. However, none of these point estimates is significant at the $p < .05$ level. Similarly, for the number of arrests and number of index arrests outcomes, none of the point estimates is statistically significant.

In Deming's (2011) study of Charlotte-Mecklenburg schools, effects were concentrated among students who were at highest risk of arrest before the lottery as predicted by regressions of arrest on demographic variables, prior academic performance, disciplinary history, and neighborhood characteristics. Effects were also concentrated in the longer term, between 4 and 7 years after assignment. To examine whether the overall results in Table 2.4 conceal variation across demographic subgroups or over time, Tables 2.5 and 2.6 cut the sample in different ways. Table 2.5 examines effects for 6 race-gender subgroups: white boys, black boys, Hispanic boys, white girls, black girls, and Hispanic girls. The point estimates are positive for white and Hispanic boys, negative for girls, and both positive and negative for black boys.

[14] Arsons do not appear in Boston Police Department data because they are typically reported to the fire department.

Table 2.4: Effect of Winning Lottery on Subsequent Arrest, by Gender and Arrest History

	(1) All	(2) Boys	(3) Girls	(4) Prior Arrests	(5) No Prior Arrests
Any post-treatment arrest					
b	.006	.022	-.014	.139	.002
	(.012)	(.017)	(.013)	(.140)	(.012)
Control Mean	.123	.163	.085	.525	.107
Number of arrests					
b	.008	.063	-.030	.685	.006
	(.044)	(.067)	(.029)	(.423)	(.043)
Control Mean	.284	.434	.138	1.737	.227
Number of index arrests					
b	.019	.048	-.010	.400	.011
	(.020)	(.031)	(.018)	(.304)	(.018)
Control Mean	.128	.181	.076	.729	.104
Observations	5532	2827	2705	235	5297

Note: Regressions predict arrests occurring between September 1 of the lottery year and June 30, 2013. All models include lottery fixed effects (dummy variables for each year-school-program-priority group, with one group omitted as a reference) and covariates for balance. The control mean is the intercept from a bivariate regression of the outcome on an indicator for winning the lottery. * $p < .05$, ** $p < .01$, *** $p < .001$.

However, none of these point estimates reaches statistical significance.

Table 2.6 divides the sample by lottery year. The 2006 lottery has a follow-up period of 7 years (through 2013), while the 2007, 2008, 2009, and 2010 lotteries have follow-up periods of 6, 5, 4, and 3 years, respectively. If effects are concentrated in the short-term, we should be most likely to see them with the 2010 lottery. If they only emerge in the longer term, they would be most visible in the 2006 lottery. However, the point estimate from the winner indicator is not statistically significant for any of the three dependent variables for any of the five outcomes.

Table 2.5: Effect of Winning Lottery on Subsequent Arrest, by Race and Gender

	(1) White Boys	(2) Black Boys	(3) Hispanic Boys	(4) White Girls	(5) Black Girls	(6) Hispanic Girls
Any post-treatment arrest						
b	.110	-.006	.029	-.023	-.035	-.009
	(.120)	(.031)	(.025)	(.091)	(.024)	(.020)
Control Mean	.131	.197	.156	.055	.116	.067
Number of arrests						
b	.218	-.011	.133	-.182	-.065	-.026
	(.279)	(.122)	(.101)	(.222)	(.053)	(.028)
Control Mean	.274	.590	.334	.099	.189	.103
Number of index arrests						
b	.096	.016	.090	-.065	-.019	-.010
	(.130)	(.054)	(.048)	(.158)	(.030)	(.021)
Control Mean	.107	.242	.141	.044	.112	.050
Observations	171	1291	1037	164	1210	991

Note: Regressions predict arrests occurring between September 1 of the lottery year and June 30, 2013. All models include lottery fixed effects (dummy variables for each year-school-program-priority group, with one group omitted as a reference) and covariates for balance. The control mean is the intercept from a bivariate regression of the outcome on an indicator for winning the lottery. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2.6: Effect of Winning Lottery on Subsequent Arrest, by Lottery Year

	(1)	(2)	(3)	(4)	(5)
	2006	2007	2008	2009	2010
Any post-treatment arrest					
b	.008	-.033	.014	.017	.017
	(.023)	(.029)	(.030)	(.022)	(.031)
Control Mean	.180	.156	.109	.095	.056
Number of arrests					
b	-.063	.005	-.014	.063	.049
	(.109)	(.090)	(.113)	(.076)	(.055)
Control Mean	.489	.340	.261	.177	.094
Number of index arrests					
b	.017	.037	.005	.009	.019
	(.045)	(.047)	(.054)	(.027)	(.029)
Control Mean	.228	.139	.124	.074	.049
Observations	1319	1198	1096	1067	852

Note: Regressions predict arrests occurring between September 1 of the lottery year and June 30, 2013. All models include lottery fixed effects (dummy variables for each year-school-program-priority group, with one group omitted as a reference) and covariates for balance. The control mean is the intercept from a bivariate regression of the outcome on an indicator for winning the lottery. * $p < .05$, ** $p < .01$, *** $p < .001$.

2.7.3 *Effects of Winning on Fall Enrollment Status*

Tables 2.4, 2.5, and 2.6 show that winning the lottery did not reduce arrest among any subgroup. To explain this finding, I first examine how gaining admission to a first-choice school affected students' enrollment outcomes during the following school year. This analysis excludes 2010 lottery participants, because I do not have 2011 enrollment data.

Simple comparisons of all lottery winners and losers show that 80% of students who won the initial lottery were enrolled in 9th grade in their first-choice high school in October following the lottery. Just 4.1% of lottery winners were enrolled in another non-selective BPS high school, 8.5% were enrolled in 9th grade in a selective BPS exam or pilot school, 3.9% were retained in 8th grade, and 3.6% had left BPS. Among students who lost the lottery, 20% were nonetheless enrolled in their first-choice school in October. These students obtained admission to the school after the initial lottery date through the wait list or another mechanism. The majority of students who lost the lottery (55%) were in another non-selective BPS high school. Sixteen percent were in a selective BPS exam or pilot high school, 3.1% were retained in 8th grade, and 6.6% had left BPS.

Table 2.7 presents results from regressions predicting each of these enrollment outcomes using an indicator for winning the lottery, lottery group fixed effects, and demographic variables for balance. As Table 2.7 shows, winning the lottery increased students' likelihood of enrolling in their top choice school by 47 percentage points on average, decreased their likelihood of enrolling in other non-selective BPS high schools by 45 percentage points, decreased their likelihood of enrolling in selective high schools by 2.4 percentage points, and had no effect on their likelihood of repeating 8th grade. The finding that lottery winners were significantly less likely than

losers to attend selective admission schools the following fall suggests that the lottery outcome influenced students' decisions about whether to accept offers from selective exam or pilot schools.

Importantly, column 5 shows that the lottery outcome did not have a statistically significant effect on students' likelihood of leaving BPS altogether.[15] Because the arrest data are limited to Boston, selective attrition outside of BPS could have introduced measurement error into the dependent variable if students who left BPS spent more time outside of Boston and less time at risk for arrest by the Boston Police Department. The finding that the lottery outcome did not influence students' likelihood of leaving BPS bolsters our confidence that the BPD arrest data are equally likely to capture lottery winners' and losers' arrests.

Table 2.7: Effects of Winning Lottery in 8th Grade on Fall Enrollment Status

	(1)	(2)	(3)	(4)	(5)
	Grade 9 at Preferred BPS School	Grade 9 at Another Non-Selective BPS School	Grade 9 at a Selective BPS School	Grade 8 in BPS	Not in BPS
Winner	.472***	-.446***	-.024*	.002	-.004
	(.031)	(.027)	(.010)	(.006)	(.008)
Control Mean	.195	.552	.156	.031	.066
Observations	4679	4679	4679	4679	4679
R^2	.447	.346	.097	.035	.038

Note: Regressions predict enrollment status of 8th grade lottery participants in October of the following school year. All models include lottery fixed effects (dummy variables for each year-school-program-priority group, with one group omitted as a reference) and covariates for balance. The control mean is the intercept from a bivariate regression of the outcome on an indicator for winning the lottery. * $p < .05$, ** $p < .01$, *** $p < .001$.

[15] See Abdulkadiroğlu et al 2011b:734 for a discussion of selective attrition among BPS pilot and charter school applicants.

2.7.4 *Effects of Winning on School Quality*

Related to the question of where students actually enroll in school is the quality of the schools they attend. Table 2.8 displays results from regressions predicting actual school quality measured in October following the lottery. Because students who chose the city's vocational school likely prioritized vocational training over college preparation, winning the lottery to the vocational school might not yield school quality gains to the same extent as winning the lottery to a general college preparation high school. For this reason, I present results for 2 samples: 1) all students, and 2) students who chose any school other than the vocational school.

The results presented in Table 2.8 reveal that winning the lottery did increase school quality in the aggregate across all five measures. Excluding students who chose the vocational school increased the magnitude of the gains. On average, students who won admission to a non-vocational school experienced the following improvements in school-level characteristics over students who lost the lottery: average test scores that were 2 points higher, average attendance rates that were 7 days higher, annual out-of-school suspension rates of 7% rather than 10%, and classmate arrest rates of 9% ever arrested rather than 12%.

2.8 *Discussion*

Eighth graders who won admission to their top choice, non-selective high school through the centralized Boston Public Schools lottery between 2006 and 2010 were no less likely to be arrested by 2013 than were similar students who lost the lottery. These findings are at odds with studies in Chicago Public Schools (Cullen et al. 2006) and Charlotte-Mecklenberg, NC (Deming 2011), which found that secondary school lottery winners experienced reductions in arrest and self-reported offending. The

Table 2.8: Effects of Winning Lottery on High School Characteristics

	(1) ELA Score	(2) Math Score	(3) Avg Attendance	(4) OSS Rate	(5) Arrest Rate
All Students					
Winner	1.132***	1.527***	6.359***	-.024***	-.023***
	(.306)	(.394)	(.876)	(.007)	(.003)
Control Mean	46.186	32.591	139.506	.097	.118
	(.272)	(.360)	(.773)	(.003)	(.002)
Observations	4345	4345	4564	4564	4340
Excluding Students who Chose the Vocational School					
Winner	1.719***	2.200***	7.119***	-.032***	-.028***
	(.252)	(.380)	(1.024)	(.007)	(.003)
Control Mean	46.762	33.291	140.502	.097	.116
	(.236)	(.330)	(.764)	(.003)	(.002)
Observations	3669	3669	3860	3860	3650

Note: Regressions predict school characteristics of 8th grade lottery participants in October of the following school year, when most are in 9th grade. All models include lottery fixed effects and covariates for balance. The control mean is the intercept from a bivariate regression of the school characteristic on an indicator for winning the lottery. * $p < .05$, ** $p < .01$, *** $p < .001$.

null effects in this study are robust to three variations of the dependent variable: an indicator of any post-treatment arrest, a count of all post-treatment arrests, and a count of post-treatment arrests for index crimes (similar to felonies).

These null effects have several possible explanations. One possibility is that lottery participants did not prefer the highest-quality schools. However, I find evidence that, on average, students do prefer schools with higher test scores, higher attendance rates, lower suspension rates, and smaller percentages of classmates with arrest records (see Figure 2.1). Nonetheless, there was some heterogeneity in the quality of top choice schools. To investigate whether the lottery's effects on arrest varied by the quality of the preferred school, I re-ran the main regression models interacting the "winner" indicator with four characteristics of students' preferred school (see Appendix A.1). None of these interaction terms was statistically significant.

Second, it is possible that students preferred higher-quality schools, but that winning the lottery did not yield sizable school quality gains. In the aggregate, however, winning the lottery did increase the average test scores and attendance rates of students' high schools, and decreased their schools' suspension and student arrest rates (see Table 2.8). This is true despite the fact that students who lost the lottery were significantly more likely than students who won the lottery to be enrolled in selective-admission pilot or exam schools the following fall (Table 2.7). This suggests that offering students the chance to attend a high-quality, non-selective school reduces the likelihood that they will enroll in schools that select students based on 'merit.'

What can we take away from these results? The findings have a clear policy implication: winning the lottery to attend an oversubscribed high school does not reduce arrest in all large, urban school districts that offer school choice. Boston is geographically smaller than cities studied in prior research and has operated school choice

for more than two decades. Although the gains in school quality resulting from the lottery are statistically significant, they might not be as large as those experienced by students in Charlotte-Mecklenburg, NC. From a student perspective, these results suggest that Boston 8th graders who did not gain admission to selective high schools — disproportionately male, low-income, and limited English proficient — were unable to alter their arrest risk by winning admission to their top-choice school. Perhaps school choice is effective in reducing arrest only with younger secondary school students (middle but not high school) who are at especially high risk of arrest and whose default school environments are especially grim. If this is the case, the effects of school choice on crime demonstrated by prior research might result from gains in objective school quality rather than from better matching of students to schools.

On the theoretical side, these results suggest that future research on schools and crime requires better measures of school quality. The bivariate associations of the school quality measures I used in this essay with students' arrest outcomes were weak. However, these measures are mostly compositional — capturing the types of students the school is serving rather than measuring schools' impact on those characteristics — and may not be good measures of schools' potential to change student outcomes.

Future research should estimate schools' "value added" to arrest using observational data. Value-added models could predict arrest using controls for students' demographic characteristics and prior test scores, attendance, behavior, and arrests. Extending the value-added framework from test scores to crime and arrest could enable researchers to answer several larger research questions. For example, how variable are schools' contributions to crime across schools and districts? And do schools' contributions to test scores — the primary metric on which they are evaluated — cor-

relate with their effects on crime? In addition, given that neither Deming's study of Charlotte-Mecklenburg nor this study of Boston revealed effects for high school students, future research should examine the school quality-crime relationship earlier in the schooling career, during elementary school.

3. SCHOOL DISCIPLINE AND CRIME

3.1 Introduction

Over the past 40 years, U.S. schools broadly changed the way student behavior is managed. Corporal punishment declined; zero tolerance policies emerged and proliferated; and surveillance strategies once reserved for criminal justice were imported into schools (Hirschfield 2010; Robers, Zhang, and Truman 2010; Simon 2007). As these changes unfolded, school administrators across the United States relied increasingly on disciplinary strategies that exclude students from school in response to misbehavior. Out-of-school suspension (OSS)—barring students from the school building for one or more days—is now common in U.S. secondary schools. According to federal data, more than two million U.S. secondary school students were suspended at least once during the 2009-10 school year (Losen and Martinez 2013:4).

Like rising incarceration rates, the increasing use of OSS has been concentrated among black and Latino youth. The annual suspension rate for white secondary school students increased slightly between the early 1970s and the 2009-10 school year, rising from 6.0% to 7.1% (Losen and Martinez 2013:1). The rate for Latino students nearly doubled during the same time frame, increasing from 6.1% to 12% (ibid). Yet black students' annual rate increased by far the most, more than doubling from 11.8% to 24.3% (ibid). Among middle school students, who are the focus of this essay, 31% of black boys and 17% of black girls are suspended from school each year

(ibid, p.9).

School discipline researchers have documented strong associations between suspension and negative outcomes at both the school and student levels. Schools with high suspension rates tend to have low academic performance and poor school climate ratings (Christle, Nelson, and Jolivette 2004; Skiba, et al. 2014; Steinberg, Allensworth, and Johnson 2014; Wu et al. 1982). Individual students who are suspended are more likely than their peers to repeat grades, to leave high school without a diploma, and to be arrested and incarcerated (Arum and Beattie 1999; Balfanz, Byrnes, and Fox 2014; Bowditch 1993; Fabelo et al. 2011; Shollenberger 2014). Recent studies have found statistically significant relationships between suspension and negative outcomes even when important differences between suspended and non-suspended students are controlled. This suggests that suspension might cause students' outcomes to worsen, rather than simply co-occurring with other problems.

The strong association of suspension with juvenile and criminal justice outcomes, along with large black-white disparities in both domains, have fueled the image of a "school-to-prison pipeline" through which youth who are disciplined or underserved by schools are funneled into the juvenile and criminal justice systems. However, systematic evidence on the mechanisms linking school discipline to arrest and incarceration is underdeveloped. We have some evidence that zero tolerance policies—along with the presence of police in schools—have increased arrests on campus and referrals to the juvenile justice system (see, e.g., Krezmien et al. 2010). However, we know little about how suspension affects students' participation in behavior that could lead to arrest and incarceration. This gap in the research is striking given that school attendance is a well-known protective factor against delinquency.

Many of the behaviors for which students are suspended from school—such as

defiance, disruption, cutting class, and dress code violations—are neither violent nor criminal (Blake et al. 2014; Skiba et al. 2002; Vavrus and Cole 2002). Yet the strong association of suspension with arrest and incarceration suggests that many suspended students also engage in criminal behavior at some point. Whether and when serious delinquency and criminal activity begin relative to school punishment is an important, open question.

In this essay, I draw on school discipline research and criminological theory to examine the connection between out-of-school suspension and serious delinquency. I ask a simple, policy-relevant question that has not been addressed directly by prior research: *What is the effect of suspension on crime?* Are schools merely identifying students who are already at risk for arrest and incarceration due to the home, neighborhood, and personal characteristics with which they enter school? Or does suspension influence students' opportunities and decision-making about illegal activity?

To answer these questions, I use data from the National Longitudinal Survey of Youth 1997 (NLSY97). Defining a *young student subsample* that roughly corresponds to middle school students, I examine the effect of suspension on self-reported delinquency in both the short- and longer-term, controlling for a range of prior behavioral indicators and theoretically-relevant factors. Whereas prior research on school discipline has used school-based surveys that disproportionately exclude youth who are most at risk for delinquency, using the NLSY97 enables us to follow youth in the longer term even if they become disengaged from school or drop out altogether. The findings suggest that school discipline policy has unintended consequences for public safety and point to the need for a broader, interdisciplinary research agenda on the relationship between schooling and crime.

3.2 *Suspension and the "School-to-Prison Pipeline"*

Out-of-school suspension has become a common feature of the U.S. schooling experience. According to federal data, annual suspension rates increased dramatically between the early 1970s and the late 2000s (Losen and Martinez 2013). Although students who are suspended during one school year are likely to be suspended again, research following individual students across school years reveals that suspension casts a wide net. According to the National Longitudinal Survey of Youth, more than one in three youth (35%) born during the early 1980s was suspended at least once by age 18 (Shollenberger 2014). According to administrative data, 31% of Texas students who started 7th grade between 2000 and 2002 were suspended out-of-school at least once during secondary school (Fabelo 2011:ix). Research consistently finds that both annual suspension rates and the cumulative risk of suspension vary by race and gender. In a national survey of 10th graders, 56% of black boys, 43% of black girls, 39% of Hispanic boys, 27% of white boys, 24% of Hispanic girls, and 12% of white girls reported that they had been suspended or expelled from school at least once (Wallace et al. 2008).

Given the prevalence of out-of-school suspension, school discipline researchers have questioned its effects on student outcomes in the short- and longer-term. Longitudinal research has proliferated in recent years, documenting strong associations between suspension and negative educational outcomes, including low test scores, grade retention, and high school dropout (Arcia 2006; Fabelo et al. 2011; Raffaele Mendez 2003). A recent study by Balfanz et al. (2014) examined suspension and educational attainment among a cohort of Florida students. Using a logistic regression model to control for student demographics, school attendance, and course performance, the authors find that each suspension a student receives during 9th grade

decreased his or her odds of graduating high school by 20%. Research also shows that suspended students are less likely than their peers to enroll in and graduate from college (Balfanz et al. 2014; Shollenberger 2014; Terriquez, Chlala, and Sacha 2013).

Suspension is also associated with negative outcomes outside of education including arrest and incarceration. In a landmark study, Fabelo and colleagues at the Council of State Governments (2011) linked longitudinal school data on more than 900,000 Texas students to juvenile probation records. Controlling for more than 80 school and student characteristics, they found that Texas students who were suspended or expelled for a discretionary school violation were almost three times more likely than students who were not suspended or expelled to have contact with the juvenile justice system during the subsequent school year (2011:20).[1] Using the NLSY97, Shollenberger (2014) found that boys who were suspended a total of 10 days or more were 7 to 8 times more likely than boys who were never suspended to have been arrested 3 or more times or sentenced to confinement in a correctional facility by their late 20s.[2]

The association of suspension with low educational attainment, arrest, and incarceration has clear implications for the life chances of suspended youth. But what explains these associations? To date, the research has not rigorously examined whether the relationship between suspension and negative outcomes is causal. In addition, most research has failed to examine how students' behavior evolves over time. Reliance on administrative data has contributed to this situation, as longitudinal student

[1] The report's definition of contact with the juvenile justice system captures a wide range of interaction types, including paper referrals (completed by police officers after counseling and releasing youth for minor delinquency), detention, and arrest (Fabelo et al. 2011:62).

[2] Among white men who had been suspended 10 or more days, 43% had been arrested three or more times by their late 20s, and 32% had been sentenced to confinement in a juvenile or adult correctional facility (Shollenberger 2014). The comparable statistics for white men who had never been suspended were 6% and 4%, respectively (ibid). Similar patterns exist among black and Hispanic men.

records typically do not contain detailed information on student behavior, especially behavior occurring outside of school. Even linking school records to arrest records, as recent work in Texas has done (Fabelo et al. 2011), cannot distinguish changes in offending from changes in the likelihood of arrest conditional on offending.[3]

In the absence of empirical evidence on behavior, the association of suspension with arrest and incarceration can be interpreted in several ways. Some stakeholders believe that students arrive at school with serious behavior problems that cause both school discipline and arrest. Others argue that serious misbehavior in schools is rare and that suspension exacerbates students' academic and behavioral problems. Still others perceive suspension as a form of punitive social control and view racial discrimination rather than behavior as the primary driver of school discipline and arrest.

In this essay, I use survey data to place behavior at the center of an empirical analysis of the school-to-prison pipeline. I hypothesize that out-of-school suspension influences the subsequent behavior of suspended youth, which in turn influences the likelihood that they will be arrested or incarcerated. This perspective acknowledges that students enter the school environment with differing propensities toward crime and delinquency. It also acknowledges that schools' use of suspension might be excessive or discriminatory. Most importantly, however, it views schools as influential institutions that have the power to shape students' behavior above and beyond the particular characteristics with which they enter school.

[3] If getting into trouble at school increases students' visibility to law enforcement, it could increase students' risk of arrest even if it does not change their behavior.

3.3 *Theory and Research on Suspension and Behavior*

Should we expect suspension to have a causal effect on delinquency and crime? Criminological theory and prior research suggest three distinct hypotheses for how out-of-school suspension might affect delinquency: *deterrence*, which predicts decreased offending; *disruption*, which predicts increased offending; and *stability*, which predicts no change in offending. In this section, I describe the theory and empirical evidence that supports each of these hypotheses. Then, I present my own hypotheses based on the weight of the evidence. Because the empirical analysis focuses on students ages 12-14, when first-time suspensions are especially common, I tailor this discussion toward adolescents rather than young children. Likewise, I focus on how suspension might affect delinquency among suspended students only, bracketing any potential deterrent or disruptive effects on students who are not suspended.

3.3.1 *Deterrence*

If suspension functions as school staff intend, it might deter future misbehavior and improve student outcomes in the longer term. This could happen through at least two channels. First, suspended students might dislike suspension and change their behavior to avoid being suspended again. Since Cesare Beccaria and Jeremy Bentham, deterrence theorists have argued that individuals weigh the potential benefits of offending against the costs of punishment. Empirical evidence suggests that formal sanctions, like school discipline, reduce offending primarily through fear of social stigma (Nagin 1998:4). Suspended students who value instructional time or fear the social stigma of repeated suspension might view these costs as outweighing the benefits they receive from the behaviors that led to suspension and modify their actions accordingly.

Second, suspension might increase informal social control by increasing parental involvement in schooling. Like calling home or scheduling a parent-teacher conference, suspension might serve as a resource that allows teachers and administrators to communicate with parents and guardians, informing them of their children's behavior at school and enlisting their help in reducing nonconforming behavior.[4] The likelihood that adolescents will modify their problem behavior increases when they receive negative feedback consistently at school and at home.

Two studies tested the deterrence hypothesis explicitly using national, school-based surveys. Maimon, Antonaccio, and French (2012) examined the effect of school-level disciplinary climate on violent student behavior using the Add Health survey. Based on deterrence and rational choice theories, they hypothesized that students in secondary schools that respond to fighting with out-of-school suspension or expulsion on the first occurrence would report lower levels of violent activity than students attending schools that respond to first-time fighting with lesser sanctions that keep students in school. Using hierarchical models of students nested within schools, they found no evidence of deterrence in schools with harsher disciplinary climates during a 1-2 year follow-up period. Likewise, Way (2011) examined the deterrence hypothesis using multilevel models of students clustered within schools; however, her analysis predicted teachers' reports of disruptive classroom behavior rather than a more general measure of delinquency or antisocial behavior. Using the 1988 National Education Longitudinal Study (NELS), she found that more school rules and higher perceived strictness were associated with increases in disruptive behavior between 8th and 10th grade. Taken together, prior studies on school-level disciplinary

[4] As a teacher in public schools, I often heard school adults say that suspension makes a student "the parent's problem" for a day and thereby increases parental involvement. Whether suspension is truly a resource in this regard is an empirical question.

climate have found no evidence that strict punishments reduce nonconforming behavior. However, these studies have relied on school-level measures of disciplinary climate rather than individual students' experiences with discipline. In addition, because the studies used school-based samples, the estimates were generalizable only to students who remained enrolled in school during follow-up periods.

3.3.2 Disruption

Although school disciplinarians aim to deter problem behavior, theory suggests several mechanisms through which suspension might instead increase delinquency. Some of these mechanisms could affect delinquency immediately, whereas others would unfold in the weeks, months, and years following suspension. Immediate effects could occur on the days students are suspended. Criminological theories that focus on criminogenic situations rather than individual offenders—including routine activity theory (Cohen and Felson 1979) and situational crime prevention (Clarke 1983)—predict that students' opportunities to commit crime will be greater on days when they are out of school and lack formal supervision. In addition, suspended students might spend their time out of school with peers who are also suspended or truant. This could provide additional opportunities to offend and increase their learning about crime (Haynie and Osgood 2005; Sutherland and Cressey 1992).

One study investigated the immediate effects of suspension on crime. Monahan et al. (2014) examined the effect of time missed from school on arrest using monthly panel data from the Pathways to Desistance survey, which followed a sample of delinquent youth in two U.S. cities. Using fixed effects models, they found that students' risk of arrest increased during months when they were truant or were suspended or expelled from school. However, because arrest and school discipline were measured

concurrently, these findings do not reveal whether school discipline increased the risk of arrest, arrest increased the risk of school discipline, or neither.[5]

After the suspension period ends, there are at least three additional channels through which suspension could have lasting effects on delinquency and crime. First, suspension might interfere with students' human capital development. Students who are suspended from school are often suspended repeatedly, resulting in a substantial amount of lost instructional time (see Balfanz et al. 2014, for example). This could cause them to fall behind their classmates academically and become less invested in school. A human capital approach (Becker 1994; Lochner 2004) suggests that academic difficulties encountered as a result of suspension could alter students' perspectives on the relative costs and benefits of legal employment and illegal activity as they enter adulthood.

Second, suspension could reduce students' attachment to school and lead to distrust of formal authority. Strong relationships between students and school staff improve students' outcomes (Alexander, Entwisle, and Thompson 1987; Coleman 1988; Crosnoe, Johnson, and Elder 2004). If suspension undermines trust and caring in these relationships, it can decrease school connectedness (McNeely, Nonnemaker, and Blum 2002) and increase students' deviant behavior (Sampson and Laub 1993, chapter 5). In addition, students who come to view school rules as illegitimate may act out in defiance against the school community (Sherman 1993; Tyler 1990). Qualitative research generally supports the claim that harsh school discipline and excessive surveillance can alienate students from school (Ferguson 2001; Kupchik 2010; Nolan 2011; Rios 2011). Research on legal cynicism suggests that excessive use of suspen-

[5] Monahan et al. ran supplemental models (not presented in the paper) that lagged the suspension and expulsion variable. These models were "generally unstable" and showed "no association between suspension or expulsion and arrest in the following month" (2014:1120).

sion and other forms of harsh discipline may lead to distrust of formal authority more generally and detachment from social institutions in the longer term (Kirk and Papachristos 2011).

A third channel through which suspension could affect students' behavior in the longer term is labeling. A long tradition in education research has documented that teacher expectations can result in "self-fulfilling prophecies" (Rist 1970). When a student is suspended, teachers and other adults in the school can become aware of this disciplinary action and can come to view suspended students as "troublemakers" (Ferguson 2001). Teachers and other adults may then observe these students more carefully or single them out for behaviors that would go unnoticed among other students (Vavrus and Cole 2002). In addition, disciplinary action can remain on students' official school records, enabling administrators to build a case for excluding these students from school permanently (Bowditch 1993). Students' perceptions of themselves can also be influential: Lemert's (1967) concept of secondary deviance suggests that suspended students who internalize the perception of themselves as deviant might engage in serious misbehavior in accordance with that label.[6]

To my knowledge, only one study has used survey data to examine suspension's effects on individual students' behavior after the suspension has occurred.[7] Hemphill et al. (2006) examined data from a cross-national sample of 4,000 students ages 12-16 in Washington state and Victoria, Australia. The authors used multivariate regression

[6] In her ethnography of elementary school students, Ferguson argues that "kids recoup a sense of self as competent and worthy under extremely disparaging work [school] conditions... by getting in trouble" (2001:22).

[7] Two studies using the National Longitudinal Surveys of Youth (Jarjoura 1993; Sweeten, Bushway, and Paternoster 2009) examined the effect of high school dropout on self-reported offending, including suspensions and expulsions as one possible reason for dropout. However, because these analyses lumped students who were suspended and expelled together with students who left school for other "school reasons," the findings do not shed light on the effects of suspension per se on offending.

to control for individual, family, peer, school, and community level risk and protective factors. They find that having experienced suspension during the year prior to the first interview predicted increased antisocial behavior at a second survey administered one year later. However, the authors controlled for a range of risk and protective factors measured during the same time frame as suspension, so, as with Monahan et al.'s (2014) study, the conclusion here is associational rather than causal. In short, the research on disruption suggests that suspension and expulsion co-occur with arrest and that suspension is associated with increased antisocial behavior in the short-term. However, neither study examined suspension's longer-term effects on behavior.

3.3.3 Stability

A third possibility is that suspension has no effect on delinquency. Gottfredson and Hirschi's (1990) general theory of crime is consistent with this hypothesis. They argue that the source of delinquency is a lack of self-control, which must be cultivated consciously by parents, or, where parents fail, by other social institutions. Once set, an individual's propensity to offend is stable across the life course. By middle school, students have had extensive exposure to families, schools, neighborhoods, and other social institutions that have shaped their propensities to offend. Perhaps problem behavior is so ingrained by age 12 that schools' actions are not powerful enough to change it. Indeed, many practitioners view students' propensities to misbehave as fixed, rooted in experiences outside the school building. For example, educators who participated in focus groups discussing preliminary findings from the Council of State Governments study in Texas "cautioned that high rates of suspension and expulsion reflect unrealistic expectations that teachers alone can change behaviors that parents

and communities have had no success addressing" (Fabelo et al. 2011:7). Although no studies have examined the stability hypothesis explicitly, Maimon et al.'s (2012) findings are consistent with the stability hypothesis.

3.4 *Hypotheses*

Does school discipline merely identify students with heightened propensity toward delinquency, whose behavior will be a problem throughout their lives? Or does suspension change students' delinquent trajectories? Although deterrence and social control theories offer two mechanisms through which suspension might reduce crime, there is no empirical evidence that suspension has a large enough deterrent effect to be detected. Instead, prior studies have found that suspension is associated with increased classroom disruption and antisocial behavior in the short-term (Hemphill et al. 2006; Way 2011) and that suspension and expulsion co-occur with arrest among delinquent youth (Monahan et al. 2014). Taken together, theory and empirical evidence for disruption outweigh the reasons to expect deterrence or stability. Nonetheless, no existing study has examined the long-term consequences of suspension for precisely the types of behaviors that could lead to arrest and incarceration or examined outcomes among students who do not remain enrolled in school. Based on the bulk of the evidence, I offer two hypotheses.

- H1: *Controlling for prior behavioral differences, suspended youth will report increases in delinquency relative to non-suspended youth.*
- H2: *Suspension's effects on delinquency persist in the longer term, even after youth leave school.*

To examine these hypotheses, I use a research design that improves upon prior research in four ways. First, I focus explicitly on OSS, which has become a taken-for-granted response to serious misbehavior in schools. I do not lump this punishment together with other reasons for missing school or other forms of exclusionary punishment. Second, I use data from a national, household-based survey that recruited students without regard to their attendance at school and followed them in the longer term regardless of whether they remained enrolled in school. Third, I employ an identification strategy that uses prior suspension experiences to predict subsequent behavioral outcomes and includes a broad range of theoretically-relevant controls measured prior to suspension. Fourth, I examine suspension's long-term effects on behaviors that could warrant arrest or incarceration to better inform policy discussion around the "school-to-prison pipeline."

3.5 Data and Methods

The National Longitudinal Survey of Youth 1997 (NLSY97), administered by the Bureau of Labor Statistics, follows a cohort of 8,984 youth born between January 1, 1980 and December 31, 1984. Baseline interviews were conducted in 1997 when respondents were between 12 and 17 years old. Follow-up interviews are conducted annually. I use self-reported data from the first 7 survey waves, when respondents were asked about their participation in a range of delinquent behaviors on an annual basis.

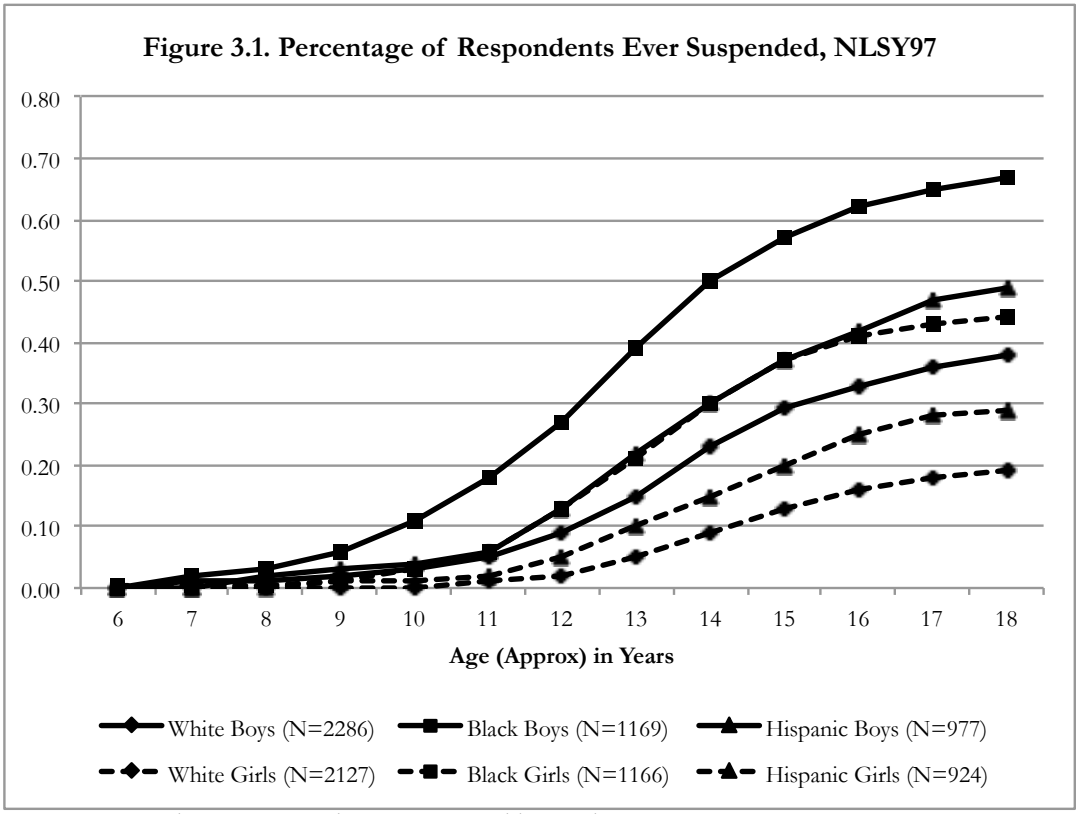
The NLSY97 has several advantages over administrative data commonly used to study school discipline, as well as other survey designs. First, the NLSY97 data are nationally representative rather than limited to a single state or school district. Second, NLSY97 respondents are asked about several theoretically-relevant domains

that are typically absent from administrative data, including family background, attitudes toward schooling, parental monitoring, and behavior. Third, respondents are followed for several years beyond K-12, allowing the examination of longer-term outcomes. Finally, youth were recruited into the study based on the households in which they were living. Thus, relative to surveys that recruit students at school, the NLSY is likely to include more youth who were not attending school regularly when the survey began, or who stopped their schooling altogether. Because suspension co-occurs with truancy and early school leaving (see Monahan et al. 2014, for example), excluding youth who are only marginally attached to school from this research would underestimate the prevalence of suspension in the population and could bias estimates of the effects of suspension on subsequent outcomes (see Way 2011:352-3 for a discussion of attrition in the NELS, which was a school-based survey begun a few years earlier).

3.5.1 The 'Young Student Subsample'

Figure 3.1 displays the cumulative percentages of NLSY97 youth who had ever experienced suspension by age.[8] Because prior research has documented large race and gender disparities in suspension, I disaggregate these statistics by race and gender. As Figure 3.1 shows, suspension is a common experience among U.S. youth and often occurs early in the schooling career, especially among black boys. The bulk of first-time suspensions (the steepest slopes in Figure 1) occur before age 15. These data are consistent with the fact that annual rates of suspension are higher in middle school than in elementary school. According to federal data, 11% of U.S. middle school stu-

[8] Suspension data are collected by academic year, so age is approximate. Age 12, for example, refers to the school year during which the respondent turned 12 years old. Early suspension data were collected retrospectively in wave 1.



Note: Early suspension data are reported by academic year, so age is approximate. Age 12, for example, refers to the school-year in which respondents turned 12 years old.

dents are suspended at least once each year, compared to only 2.4% of elementary school students (Losen and Martinez 2013:8).

Rather than isolating the effect of 'first suspension' at whatever point it occurs, I employ a research design that mimics the decision-making context that middle school educators face. If a student has never been suspended, what happens if we suspend her for the first time? If a student has been suspended previously, what happens when we suspend him again? To do this, I restrict the NLSY97 sample to the younger half of the cohort — respondents ages 12-14 at baseline — and consider suspensions

occurring between waves 1 and 2 as the treatment.[9] For some respondents, suspension during this window is a first-time experience; for others, it is a repeat occurrence. In the main models, I include all respondents and control for prior suspension experience. In models predicting long-term effects, I examine the effects of first-time and repeat suspension separately.

At wave 1, 4,688 respondents were between 12 and 14 years old. To construct the dependent variable and key predictor, I limit this sample to respondents who were re-interviewed at waves 2 and 3. This restriction results in 396 respondents (8.5%) being dropped. To ensure that each respondent was at risk for suspension throughout the treatment period, I also limit the sample to respondents who reported being enrolled in school at waves 1 and 2. This excludes an additional 241 respondents (5.6% of the 4,292 who were re-interviewed at waves 2 and 3).

The remaining 4,051 youth constitute the "young student subsample." The baseline characteristics of the young student subsample mirror those of the broader NLSY97 cohort, except that young students report less prior delinquency and higher academic achievement than the full sample, which we would expect given the sample restrictions. Appendix B.1 provides details.

For both descriptive statistics and regression results, I use custom weights created through the BLS website.[10] Standard errors are clustered by household.[11]

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[9] In previous versions of the analysis, I used dynamic measures of suspension (e.g., years since first suspension) as the independent variables of interest and ran the analysis at the person-year level. However, I eventually defined the treatment as occurring between waves 1 and 2 of the survey because this design maximizes first-time suspendees in the sample and ensures that the rich data collected at baseline occurred pre-treatment for all respondents.

[10] BLS weights account for several features of the sampling design and recruitment process including the probability of selection into the two samples, early nonresponse, and the oversampling of black and Hispanic youth. I use custom weights designed for respondents who completed waves 1, 2, and 3. Details are available at: https://www.nlsinfo.org/weights/nlsy97.

[11] In the full NLSY97 sample, 8,984 youth are clustered in 6,819 unique households. The young student

3.5.2 *Measuring Delinquency*

The NLSY97 contains extensive information on behavior, including annual self-reports of delinquency and crime. Respondents are asked at waves 1-7 about their participation in six activities: destruction of property, theft of items worth less than \$50, theft of items worth \$50 or more (including cars), other property crimes, illegal drug sales, and physical assault.[12] Questions about delinquency and other sensitive topics are self-administered; respondents enter their answers directly into a laptop rather than reporting them aloud to an interviewer.[13] At wave 1, respondents were asked whether they had *ever* participated in each behavior. They also were asked whether they had participated in 5 of the 6 activities (all except thefts $<$ \$50) during the past 12 months. At waves 2-7, they were asked whether they had participated in each activity since the date of the last interview (SDLI). These questions do not distinguish between behaviors that happen inside the school building and outside of school.

To create the dependent variable, I combine responses on 3 activities — theft of items worth \$50 or more (including vehicles), illegal drug sales, and physical assault — in a measure I call "serious delinquency." I selected the components of this measure for conceptual reasons: to distinguish these serious offenses from the types of minor misbehavior that could result in suspension from school but are less likely to

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subsample contains 4,051 respondents clustered in 3,672 households.

[12] Previous publications have described the physical assault measure as "engaging in assaultive behaviors" (Puzzanchera 2000:1) and "attacking someone with intent to hurt them seriously" (Sweeten, Bushway, and Paternoster 2009:64). The survey asks: *Have you ever attacked someone with the idea of seriously hurting them or have [sic] a situation end up in a serious fight or assault of some kind?* Fewer youth report this behavior than having fought at school in the previous six months (see Table 3.1), which suggests that they are describing something more serious than a simple fight.

[13] Respondents incarcerated in high-security correctional facilities are sometimes asked these questions aloud.

result in incarceration. However, I also examine four alternative measures of delinquency: any delinquency SDLI (a binary variable indicating participation in any of the six types), a variety index (counting each of the six types), and separate indicators for property offenses and violent activities. Appendix B.2 presents these results.

3.5.3 *Estimation Strategies*

The key challenge in estimating the causal effect of suspension on delinquency is selection of suspended students. As Table 3.1 shows, respondents who had been suspended before wave 1 were more likely than respondents who had not been suspended to report prior delinquency, recent delinquency, excessive absence from school, and fighting at school. They also reported lower levels of parental education and monitoring, fewer prosocial classmates, and higher rates of gun violence in their neighborhoods.

I use four strategies to address this selectivity problem and estimate the effect of suspension on delinquency. The key predictor in all analyses, S_i, is a binary variable indicating whether the respondent was suspended from school between waves 1 and 2. The dependent variable, y_{it}, is a binary variable indicating whether the respondent reported any serious delinquency since the date of previous interview. In the analysis of short-term effects, I examine delinquency occurring between survey waves 2 and 3, which I call t=1. In the analysis of longer-term effects, I also examine delinquency during four additional time periods (extending through wave 7): t= 2, 3, 4, and 5. (Note that t corresponds roughly to the number of years since the focal suspension(s).) Analyses of short-term effects predict y_{i1} only. Analyses of long-term effects also predict y_{i2}, y_{i3}, y_{i4}, and y_{i5}.

Multivariate Regression. First, I use multivariate regression to control explicitly

Table 3.1: Descriptive Statistics, NLSY97 Young Student Subsample, Wave 1

	Never Suspended	**Not Yet[a] Suspended**	**Previously Suspended**
Delinquency history			
Any delinquency	.36	.55	.70
Number of serious[b] types (0-3)	.12	.27	.57
Delinquency in past 12 months			
Destruction of property	.10	.23	.29
Thefts > $50	.01	.04	.08
Other property crimes	.01	.06	.08
Physical assault	.05	.12	.27
Illegal drug sales	.01	.03	.07
Alcohol or marijuana by age 12	.16	.31	.34
Behavioral-emotional problems scale (0-8)	1.86	2.31	2.61
Recent school behavior			
Excessive absence	.17	.22	.30
Fighting at school	.08	.20	.46
Academic performance and attitudes			
Math test score (percentile)	61.46	50.78	38.85
Number of grades repeated	.07	.15	.23
Positive perception of teachers	.94	.88	.79
Age (years)	13.64	13.51	13.76
Mother less than HS education	.13	.21	.30
Annual household income (median, 000s)	48.50	40.00	29.60
Two-parent household	.75	.64	.54
Parental monitoring scale (0-16)	11.13	10.30	9.55
School enrollment			
Public	.89	.94	.95
Private	.10	.05	.03
Other type	.01	.01	.02
Prosocial classmates (%)	.70	.67	.63
Hear gunshots in neighborhood	.14	.17	.29
Number of respondents	2,492	589	970

Note: The Young Student Subsample includes respondents ages 12-14 at baseline who were enrolled in K-12 at waves 1 and 2. Means are presented for all variables except household income, for which the median is presented. [a]The Not Yet Suspended group includes students who were suspended between waves 1 and 7, but not before wave 1. [b]Serious delinquency includes thefts > $50, illegal drug sales, and physical assault.

for several potential differences between suspended and non-suspended youth that could influence the likelihood of reporting delinquency. For each respondent i, I include several vectors of controls from the wave 1 survey. All controls are measured pre-treatment with respect to suspension occurring between waves 1 and 2.

Although the dependent variable is binary, its mean is not close to 0 or 1, so I use a linear probability model written:

$$y_{it} = \alpha_0 + \alpha_1 S_i + \beta_1 B_i + \beta_2 C_i + \beta_3 A_i + \beta_4 T_i + \varepsilon_{it}, \tag{3.1}$$

where ε_{it} is an error term.

B_i is a vector of controls for behavioral history, including previous involvement in serious delinquency.

- *Any delinquency* is a binary measure of having ever participated in any of the six delinquency types.
- *Number of types of serious delinquency* has integer values ranging from 0 to 3. This variable counts each of 3 activities in which the respondent had *ever* participated: theft of items worth \$50 or more, illegal drug sales, and physical assault.
- *Recent delinquency* is captured using 5 binary variables that indicate whether respondents had participated in each of 5 activities within the previous 12 months: destruction of property, theft of items worth $\geq$ \$50, other property crimes, illegal drug sales, and physical assault.
- *Drug and alcohol use* is a binary variable indicating whether the respondent reported drinking alcohol or using marijuana by age 12.
- *Behavioral and emotional problems* are measured using the Achenbach Youth Self-Report scale. Scores range from 0 to 8, with higher scores indicating more frequent and/or numerous behavior problems. There are separate scales for boys and for girls.

C_i is a vector of controls capturing recent school-related behaviors. Whereas the behavioral measures in B_i include all behavior regardless of where it occurs, C_i is

context-specific, providing insight into behaviors that, in many schools, could lead directly to suspension.

- *Excessive absence* indicates whether the respondent missed a total of 6 days or more during the fall semester prior to the interview.
- *Fighting at school* indicates whether the respondent reported having gotten into a physical fight at school during the past six months.

A_i is a vector of three or four measures of academic performance and attachment to school. Criminological literature has found that attachment to school is a protective factor against delinquency (e.g., Sampson and Laub 1993).

- *Test scores* are measured using the PIAT math test administered at baseline.
- *Number of grades repeated* counts the number of grades the respondent had ever repeated.
- *Positive perception of teachers* indicates whether respondents agreed or strongly agreed with the following statement about their school: "The teachers are good."

In models only that include all respondents, A_i also includes a binary control for *prior suspension*, indicating whether respondents had been suspended before wave 1.

Finally, T_i contains a broad set of theoretically-motivated, exogenous controls that prior research has associated with delinquency.

- *Age at interview date* is measured in years.
- *Parental education* is a binary variable indicating whether the respondent's mother completed less than a high school education. The reference group is comprised of respondents whose mothers earned high school degrees or attended at least some college.
- *Household income* is measured in thousands of dollars.
- *Family structure* is captured with a binary variable indicating whether the respondent lived with two parents, at least one of whom was a biological parent. The reference group is comprised of respondents who lived with only one parent, with adoptive or foster parents, with no adults, or in some other situation.

- *Parental monitoring* captures parents' awareness of respondents' activities. Values range from 0 to 16, with higher values denoting greater monitoring. The survey captures a value for each of up to four possible parents at baseline; I selected the highest value for each respondent.
- *School type* is captured with two binary variables. *Private/parochial* indicates that the respondent was enrolled in a private or parochial school at wave 1. *Other school type* indicates that the respondent was enrolled in a school setting other than a public, private, or parochial school. Public school students are omitted as the reference group.
- *Prosocial classmates* is the average of two estimates provided by respondents at baseline: the percentage of their classmates who participate in school activities and the percentage who plan to go to college. This measure falls somewhere between *peer effects* and *school context*.[14]
- *Neighborhood context* is operationalized with a binary variable indicating whether the respondent hears gunshots in his or her neighborhood during a typical week.[15]
- *Race and gender* are controlled using seven dummy variables for white girls, black girls, Hispanic girls, girls of other races, black boys, Hispanic boys, and boys of other races. White boys are the reference group.

This regression model could yield a poor estimate of α_1, the causal impact of suspension on delinquency and crime, if B_i, C_i, A_i, and T_i omit other unobserved characteristics that raise or lower the risk of suspension or subsequent delinquency (i.e., if ε and S are correlated). Though B_i and C_i contain extensive information on prior behavior, I employ three strategies to further address the nonrandom selection of youth into suspension.

[14] Previous publications using NLSY97 data (e.g. Sweeten et al. 2009) have referred to these measures as peer effects. I refer to classmates rather than peers because the question wording includes all classmates, not just those with whom the youth associates: *"Now I'm going to ask you some questions about all the kids in your grade. Please think about the percentage of kids who do the following..."* For example, *"What percentage of kids in your grade plan to go to college?"* Unfortunately, detailed information about peers with whom the respondent associates regularly is not available.

[15] The survey asks, *"In a typical week, how many days from 0 to 7 do you hear gunshots in your neighborhood?"* I recode this as a binary variable distinguishing not at all (0 days) from at least one day (1-7 days).

Regression with a High Risk Subsample. Research on formerly incarcerated adults has demonstrated that selecting comparison cases from the general population can produce biased estimates of causal effects (Lalonde 1986). Although suspension is more common than incarceration, comparing suspended students to a general population of non-suspended youth could still also lead to inaccurate causal inference. Following a strategy employed by Western (2002), I restrict the comparison group to youth who were especially likely to have been suspended from school. This high-risk subsample includes youth who reported at wave 1 that they had participated in at least one of the six delinquency types, or had fought at school during the previous six months.[16] Just over half (52%) of the 4,051 respondents in the young student subsample are high-risk by this definition (N=2,105).

Propensity Score Matching. In addition to regression, I use two individual-level matching techniques that trim the comparison group by pairing each suspended youth with one or more comparison youths whose particular characteristics best match those of the suspended youth. Propensity score matching (Rosenbaum and Rubin 1983) functions by regressing the treatment variable S_i on the set of characteristics contained in B_i, C_i, A_i, and T_i in equation (3.1). Based on these regression estimates, a propensity score (p-score) is calculated for each respondent reflecting how likely the respondent was to have been suspended based on his or her characteristics. Each suspended respondent is then matched to one or more comparison respondents using this p-score.

I use radius matching with a caliper = .01. Radius matching (Dehejia and Wahba 2002) selects all comparison individuals within the caliper, so multiple comparison individuals are selected for a single suspended individual when multiple strong com-

[16] Based on this definition, the high risk subsample has the additional advantage of limiting the estimates to respondents who have been willing to report delinquency or fighting at school in the past.

parisons exist. If no comparison case appears within the caliper, no match is made. To ensure that the results are robust to alternative choices for the matching algorithm, I also perform nearest neighbor matching, which selects the best comparison individual for each treatment individual regardless of the size of the difference in propensity scores. Appendix B.3 presents these results.

Coarsened Exact Matching. Coarsened exact matching (CEM) is an alternative to propensity score methods. Whereas p-score matching summarizes information about all covariates into a single measure, CEM improves balance by matching on each covariate separately. Unlike p-score methods, CEM guarantees improvement in the balance of each covariate without requiring post-matching balance checks and repeated specifications (Iacus, King, and Porro 2012).

To implement CEM, each covariate is first 'coarsened' into bins. With binary variables, exact matching is possible. With continuous variables, the researcher assigns cutoff points within the distribution to create the bins. After covariates are coarsened, matches are made only among individuals who appear in the same set of bins. All treatment individuals with the same coarsened characteristics are then matched to all comparison individuals with those same features. Suspended individuals who have no matches are excluded from the analysis. Relative to the p-score approach, CEM produces somewhat more rigorous matches at the cost of increased pruning. An additional advantage of CEM is that the matching process is nonparametric and captures all possible interactions between covariates and higher-order terms. Like p-score matching, CEM produces a vector of weights that can be used to estimate the effect of suspension on delinquency.[17] To implement CEM, I used the STATA "cem"

[17] These weights give equal importance to multiple treatment individuals matched within the same cell. The weights on all matched treatment individuals sum to the total number of matched treatment individuals. For example, if a total of 100 treatment individuals are matched across 50 cells, the sum

routine.[18]

3.5.4 *Missing Data*

For regression models, I impute missing data on independent variables using the "mi impute chained" command in STATA 13. The covariates most often missing are household income (24%), number of grades repeated (12%), mother's education (6.9%), math test score (5.2%), and recent school attendance (2.2%). All other covariates are missing at rates of 0.8% or lower. Following von Hippel (2007), I include cases with missing dependent variables in the imputation models, then drop them before running analysis models.[19] Regression models are run on a maximum of 4,051 respondents across 10 imputed datasets. Sample sizes vary slightly across models due to missing data on the dependent variables. Results from regressions using complete cases only (not shown) do not differ substantively from results using imputed data. Matching analyses are conducted using complete cases only.

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of the weights of the treatment individuals in each cell will be 2. Likewise, all comparison individuals matched with a given cell have the same weight, and the weights on all matched comparison individuals sum to the total number of matched comparison individuals.

[18] Because some delinquency types are rare, I combine the 5 variables for recent delinquency into a single "any recent delinquency" measure to avoid excessive pruning of delinquent youth. I also exclude four variables from the matching procedure to increase sample size: the behavioral problems scale, math test score, household income, and parental monitoring. When these four variables are included in the models, the ATT increases, as does the standard error.

[19] This involves temporarily re-introducing data from 133 respondents who missed the wave 3 interview.

3.6 Findings

3.6.1 Predicting Suspension

At wave 1, 20% of respondents in the young student subsample reported that they had been suspended from school at least once. At wave 2, 14.6% reported that they had been suspended since the date of the wave 1 interview: 6.3% of respondents experienced suspension for the first time during this window, while 8.3% had been suspended before wave 1 and were suspended again.

Table 3.2 presents results from linear probability models predicting suspension between waves 1 and 2. Model 1 regresses suspension occurring between waves 1 and 2 on the full set of controls. For all eleven prior behavioral measures — seven measures of prior delinquency plus an indicator of early substance abuse, a scale of behavioral and emotional problems, and two markers of recent behavior in school — the coefficients are positive. This indicates that educators are indeed targeting students with existing behavioral problems when they administer suspension. Having a positive perception of teachers and high math scores are protective factors against suspension, each significant at the $p < .05$ level. All other point estimates are in the expected direction.

Consistent with prior research, race and gender are highly predictive of suspension. Controlling the 23 covariates in Model 1 does not explain race or gender disparities in suspension. Instead, there are large disparities in suspension between white boys and black boys and between white boys and white girls even when these factors are controlled. These results are consistent with prior research documenting unexplained black-white disparities in suspension after controlling for infraction type (Fabelo et al. 2011; Skiba et al. 2014) or general behavioral measures (Wallace et al.

Table 3.2: Predicting Suspension at Wave 2, NLSY97 Young Student Subsample

	Model 1		Model 2	
	b	SE	b	SE
Any delinquency	.012	.014	.004	.013
Number of serious[a] types (0-3)	.025	.027	.008	.025
Recent destruction of property	.074***	.022	.066**	.021
Recent thefts > $50	.039	.053	.039	.050
Recent other property crimes	.047	.047	.045	.045
Recent physical assaults	.063	.037	.052	.036
Recent drug sales	.083	.059	.074	.056
Alcohol or marijuana by age 12	.033*	.016	.029	.016
Behavioral-emotional problems scale (0-8)	.002	.004	.003	.004
Excessive absence	.035*	.015	.028	.015
Fighting at school	.124***	.020	.068***	.020
Math test score (percentile)	−.001**	.000	−.000	.000
Number of grades repeated	.031	.020	.022	.019
Positive perception of teachers	−.045	.023	−.021	.023
Age (years) - 12	−.011	.007	−.018**	.007
Mother less than HS education	.082***	.020	.069***	.019
Two-parent household	−.035*	.015	−.029*	.014
Parental monitoring scale (0-16)	−.002	.002	−.002	.002
Annual household income (000s)	−.000*	.000	−.000*	.000
Private school	−.030	.017	−.025	.017
Other school type	−.000	.052	−.028	.054
(Public school omitted)				
Prosocial classmates (%)	.006	.032	.023	.031
Hear gunshots in neighborhood	−.012	.016	−.020	.015
Black boy	.093***	.026	.044	.026
Hispanic boy	−.035	.025	−.047	.024
Other race boy	.019	.048	.031	.047
White girl	−.044***	.013	−.028*	.013
Black girl	−.007	.021	−.018	.021
Hispanic girl	−.066**	.022	−.050*	.021
Other race girl	−.069	.036	−.052	.037
(White boys omitted)				
Prior suspension			.232***	.021
Intercept	.362***	.106	.378***	.104
N	4051		4051	

Note: The Young Student Subsample includes respondents ages 12-14 at baseline who were enrolled in K-12 at waves 1 and 2. [a]Serious delinquency includes thefts > $50, illegal drug sales, and physical assault. *p < .05 ; **p < .01 ; ***p < .001.

2008) and demonstrate that disparities remain when a more comprehensive array of behavioral measures is controlled.

Model 2 adds one additional covariate: prior suspension. The coefficient on this variable is large and positive, at .232, and is statistically significant at the $p < .001$ level. Notably, including this measure attenuates the effect of race and gender on suspension between waves 1 and 2. White girls and Hispanic girls are still significantly less likely than white boys to be suspended, but the difference between black boys and white boys is no longer statistically significant once prior suspension is controlled. This does not mean that there is no racial bias in suspension during middle school. Rather, it means that, by the time boys reach ages 12-14, racial disparities in prior suspension explain much of the effect of race on receiving additional suspension(s). If middle schools use prior suspensions to determine future suspensions, which ethnographic research suggests they do (see Bowditch 1993:500), they would perpetuate any racial bias embedded in elementary school discipline.[20]

I used a variation of Model 2, run only on complete cases (N=2,315) to generate a propensity score for each respondent in the young student subsample. Based on these p-scores, 348 suspended youth were matched to 1,961 comparison youth using radius matching with a caliper = .01. None of the covariates has a mean difference that is statistically significant at the $p < .05$ level after matching. Through CEM, 100 suspended youth were matched to 585 comparison youth. Table 3.3 shows the covariate balance resulting from each matching process.

[20] See Rocque and Paternoster (2011) for a discussion of unexplained racial disparities in suspension during elementary school.

Table 3.3: Mean Covariate Balance After Propensity Score and Coarsened Exact Matching, NLSY97 Young Student Subsample

	Propensity Score				CEM	
	Treated	Control	% bias	t	Treated	Control
Any delinquency	.69	.68	2.6	.36	.29	.29
Number of serious types** (0-3)	.49	.52	-5.0	-.56	.16	.16
Recent destruction of property	.29	.29	.8	.09	.13	.12
Recent thefts > $50	.08	.09	-7.1	-.75	.02	.03
Recent other property crimes	.08	.08	.6	.07	.06	.03
Recent physical assaults	.23	.23	1.1	.12	.08	.05
Recent drug sales	.06	.06	-2.4	-.26	.00	.03
Alcohol or marijuana by age 12	.32	.31	3.9	.48	.11	.11
Behavioral-emotional problems scale (0-8)	2.54	2.57	-1.8	-.23	2.15	1.80
Excessive absence	.30	.30	-1.2	-.15	.13	.13
Fighting at school	.39	.40	-1.8	-.21	.12	.12
Math test score (percentile)	38.68	37.64	3.2	.43	49.66	51.94
Number of grades repeated	.22	.23	-2.4	-.27	.05	.05
Positive perception of teachers	.80	.80	.4	.04	.97	.97
Age (years) - 12	13.61	13.64	-3.9	-.52	13.54	13.54
Mother less than HS education	.32	.35	-5.7	-.70	.16	.16
Annual household income (000s)	34.33	33.38	2.6	.41	43.66	50.85
Two-parent household	.52	.51	2.7	.34	.63	.63
Parental monitoring scale (0-16)	9.79	9.77	.7	.09	10.73	11.07
Private school	.02	.04	-6.9	-1.15	.06	.06
Other school type	.01	.02	-1.7	-.21	.00	.00
Prosocial classmates (%)	.64	.65	-4.7	-.62	.68	.69
Hear gunshots in neighborhood	.26	.27	-2.5	-.32	.11	.11
White boy (reference)					.35	.35
Black boy	.22	.22	.3	.03	.13	.13
Hispanic boy	.12	.13	-1.5	-.18	.07	.07
Other race boy	.00	.00	-.4	-.13	.00	.00
White girl	.12	.13	-1.8	-.28	.23	.23
Black girl	.17	.18	-1.6	-.20	.15	.15
Hispanic girl	.08	.09	-1.6	-.22	.08	.08
Other race girl	.01	.01	.1	.01	.00	.00
Prior suspension	.59	.58	1.8	.21	.14	.14
N	345	1956			100	585

Note: The Young Student Subsample includes respondents ages 12-14 at baseline who were enrolled in K-12 at waves 1 and 2. [a]Serious delinquency includes thefts > $50, illegal drug sales, and physical assault.

3.6.2 *Short-Term Effects of Suspension on Delinquency*

Table 3.4 presents the findings of all four estimation strategies. Model 0 reports results from the bivariate regression of serious delinquency on suspension. The association between suspension and later delinquency is large and positive, at .234. Model 1 adds the full set of controls in B_i, C_i, A_i, and T_i in equation (3.1). The coefficient on suspension (.123) is reduced by nearly half relative to the bivariate model, but it remains large and statistically significant at $p < .001$. Model 2 reruns the full model using only the high risk subsample. The point estimate from this model (.134) is slightly higher than that derived from the full subsample. The 95% confidence interval is also slightly wider for Model 2 than for Model 1, as we would expect with a smaller sample.

Table 3.4: Effect Sizes from Five Analyses Predicting Serious Delinquency at Wave 3 Using Suspension at Wave 2, NLSY97 Young Student Subsample

	Model 0	**Model 1**	**Model 2**		**Model 3**	**Model 4**
b	.234***	.123***	.134***	ATT	.117***	.116**
SE	(.022)	(.023)	(.029)		(.029)	(.039)
Method	Regression	Regression	Regression		P-Score	CEM
Sample	Full	Full	High Risk		Full	Full
Controls	No	Yes	Yes			
				Treated	348	100
N	4026	4026	2095	Controls	1961	585

Note: *p < .05 ; **p < .01 ; ***p < .001. Matching models are run on complete cases only (N=2,315). T-statistics associated with the matching models are 3.97 (Model 3) and 3.02 (Model 4).

Models 3 and 4 are the propensity score and coarsened exact matching analyses. The ATT from the propensity score model is .117, with a 95% confidence interval of (.059, 1.74). The ATT from CEM is .116, with a 95% confidence interval of (.041, .192).

Results are generally consistent across the four estimation strategies. Point estimates are all positive and statistically significant. They range from .116 to .134. The

most conservative estimate comes from the CEM model. In all four models, the confidence interval contains the range (.077, .169). It seems most likely that the true effect size falls within this range.

Taken together, these results support H1. The probability of reporting serious delinquency during the first follow-up period is 11 to 13 percentage points higher for suspended students than for their comparable, non-suspended peers. The positive effect of suspension on crime is robust to 4 alternative measures of the dependent variable (see Appendix B.2).

3.6.3 Longer-Term Effects

The results in Table 3.4 show that suspension of students ages 12-14 predicts a short-term increase in serious delinquency even when a broad range of lagged behavioral measures and theoretically-relevant factors are controlled. The do not tell us how long this effect persists, or whether the effect of a first suspension differs from the effect of subsequent suspensions.

To answer these questions, I replicate the full regression model (Table 3.4, Model 1) for four additional follow-up periods (t=2, 3, 4, and 5), replacing the dependent variable y_{i1} with y_{i2}, y_{i3}, y_{i4}, and y_{i5} while retaining the original treatment variable S_i and all controls. These models do not include time-varying controls, nor do they include measures of suspension after wave 2. The goal is simply to examine whether the effects of suspension between waves 1 and 2 persist in the longer-term. For these analyses, I separate youth with no prior suspension history at wave 1 (for whom suspension during the treatment period would have been a first-time occurrence) from youth who had been suspended before wave 1.

As the left panel of Figure 3.2 shows, the effects of first-time suspension persist in

the longer-term. Across all five follow-up periods, the effect of suspension on delinquency net of pre-treatment controls is positive and statistically significant. Among youth who had been suspended prior to wave 1 and were suspended again between waves 1 and 2, however, the marginal effect of additional suspension(s) on delinquency fades out after one year (Figure 3.2, right panel). At subsequent follow-up interviews, the effect is statistically indistinguishable from zero at the $p < .05$ level. The finding that the effect of first-time suspension on delinquency persists for at least 5 years is robust to 2 alternative measures of delinquency: any delinquency (any of 6 types) and a variety index. However, the effect of first-time suspension on physical assault is statistically significant for only 4 years, and the effect on property crimes is statistically significant for only 1 year (see Appendix B.2). These findings provide partial support for H2, revealing that the effects of first-time suspensions persist in the longer-term, particularly for broad measures of delinquency that include physical assault.

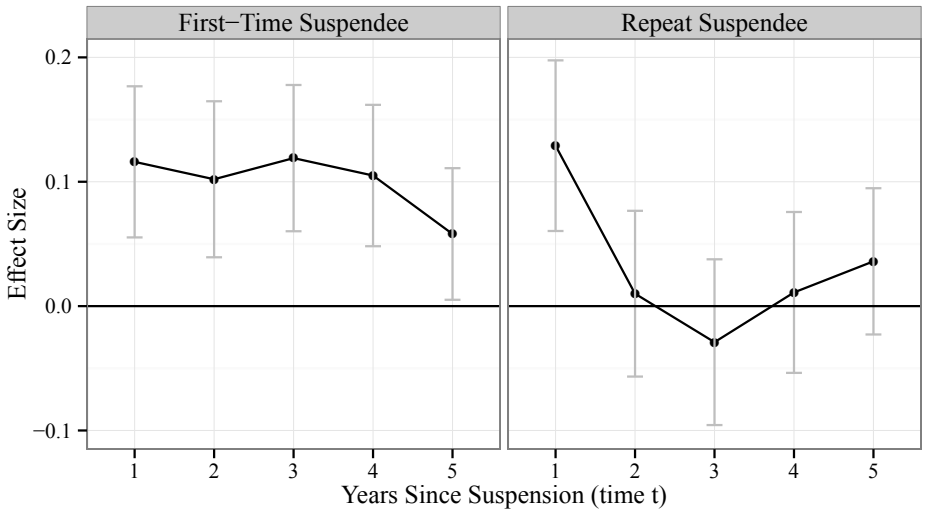
3.7 *Robustness Checks*

The main finding — that suspension increases self-reported delinquency in the short-term — is consistent across four distinct estimation strategies (see Table 3.4) and is robust to alternative measures of the dependent variable (see Appendix B.2). In this section, I address two possible threats to the results: delinquency change occurring just prior to suspension and variation in school context.

3.7.1 *Delinquency During the Treatment Period*

Although I control for numerous behavioral measures at baseline, it is possible that a change in delinquency occurs during the treatment window prior to suspension

Fig 3.2. Longer−Term Effects of Suspension on Serious Delinquency



Note: This figure displays the effect of suspension between waves 1 and 2 on serious delinquency reported at waves 3-7 for respondents in the NLSY97 young student subsample (N=4,051). Effects sizes are estimated using linear probability models regressing serious delinquency at time t on suspension occurring between waves 1 and 2 and all controls included in equation (3.1). Coefficients on the suspension variable are plotted on the y-axis. Time t, which roughly corresponds to the number of years since the wave 2 interview, is plotted on the x-axis. Regressions are run separately for respondents who had not been suspended before wave 1 (left panel, maximum N=3,081) and for respondents with a previous history of suspension (right panel, maximum N=970).

that I do not observe.[21] To address this concern, I re-ran the full regression model predicting delinquency at $t = 1$ (Table 3.4, Model 1) with all original controls plus a lagged measure of the dependent variable occurring during the treatment period (y_{i0}). The coefficient on this variable captures delinquency occurring just prior to suspension, on the actual days of suspension, and in the time between suspension and the subsequent interview wave. Because this variable includes delinquency occurring immediately after suspension (when the effects of suspension, which appear to decay over time, might be greatest), including it in the model will bias the coefficient on suspension toward 0. Indeed, the coefficient on suspension is reduced by one-third in this model, from .123 to .079; however, it remains statistically significant at $p = .001$ (SE=.023). This indicates that two-thirds of the effect of suspension on delinquency observed in the main model cannot be explained by behavioral change occurring prior to suspension.

3.7.2 *School Context*

Another potential source of omitted variable bias is school context. Certain school characteristics might be associated with schools' overall suspension rates; if these same characteristics also affect students' participation in delinquency, failing to control for them could overestimate the effect of suspension on delinquency. The models presented thus far control for three measures of school context: school type (public, private, or some other type) and students' assessments of teacher quality and classmate prosocial characteristics. To further control for school context, I re-ran the main regression and propensity score models (Table 3.4, Models 1-3) with several additional controls capturing students' school environments at baseline: school size;

[21] The mean time between waves 1 and 2 is 19.8 months.

teacher-to-student ratio; and students' reports of classmates' antisocial behavior, having been threatened at school recently, feeling safe at school, and perceiving school discipline as fair. I also include the region of the United States where respondents lived (northeast, north central, south, or west) and whether their residence was urban or rural. Attending a larger school and having been threatened at school predict suspension net of the original covariates. However, including these additional contextual variables does not alter the finding that suspension increases delinquency. Effect sizes from these models are .126, .133, and .139, respectively, with SEs of .025, .032, and .032.

A final school-level factor deserves special attention: the racial composition of schools. Multilevel research has found that the percentage of black students in a school predicts a student's risk of suspension even when that student's individual demographic characteristics are controlled (Rocque and Paternoster 2011; Skiba et al. 2014; Welch and Payne 2010). These studies did not include the comprehensive individual-level behavioral characteristics I control for here, which might explain away this association. Nonetheless, the models described above include controls for several factors that could explain the association between student racial composition and suspension rates: teacher quality, the availability of school adults, and various measures of classmates' behavior and perceptions of safety. However, if another feature of predominantly black schools drives both suspension risk and delinquency, failing to control for schools' racial composition could bias my estimates of suspension's effect on delinquency. To address this concern, I employ a final robustness check that exploits variation in the NLSY97 sampling procedure. Some black and Latino respondents are selected through a cross-sectional sample of households, while others are selected through an oversample of households in areas with high percentages

of black and Latino residents. In the aggregate, respondents recruited through the oversample should be more likely than respondents drawn from the cross-sectional sample to attend predominantly black schools. However, neither an indicator for being in the oversample nor an interaction term between being black and being in the oversample is statistically significant when included in the main regression model (Table 3.4, Model 1) with the school context measures described above. This provides suggestive evidence that schools' racial composition does not significantly alter a student's risk of suspension once that student's behavioral history, perceptions of school context, and other factors included in Equation (3.1) are controlled. Future research that incorporates administrative school data with behavioral surveys could test this claim directly.

3.8 Discussion

The results of this study provide support for the disruption hypothesis, that suspension increases crime. Students suspended at ages 12-14 are more likely than their peers to report serious delinquency in follow-up surveys even when 23 pre-treatment measures of delinquency history, recent school behavior, academic investment, and other theoretically-relevant factors are controlled. The most conservative estimate derived from four distinct estimation strategies is an increase of .116 in the probability of reporting serious delinquency in the short-term. For first suspensions, the effects of suspension on delinquency persist through at least five years of follow-up. This suggests that experiencing a first-time suspension at ages 12-14 sets in motion at least one disruptive longer-term process, such as reduced human capital or labeling, that affects students' behavior years after the suspension itself has ended. For repeat suspensions, in contrast, marginal effects of the additional suspension(s) fade out over

time, perhaps because longer-term processes are already under way from previous suspension(s).

3.8.1 Theoretical Implications

Prior research offers several possible explanations for the increasing use of suspension by U.S. schools. These possibilities include declining economic opportunities for students (Hirschfield 2008), racial threat (Welch and Payne 2010), and legal challenges that have undermined teachers' moral authority to discipline (Arum 2005). This essay instead draws attention to the *consequences* of schools' increasing reliance on suspension. By excluding students who misbehave, schools, which are institutions of formal social control, have perverse effects on crime. Life course criminology has demonstrated that most youth desist from crime by their early 20s (Hirschi and Gottfredson 1983). Moffitt (1993) argues that most adolescents will desist from crime as they enter adulthood unless they experience a "snare" resulting from their behavior that has lasting consequences. The findings of this essay suggest that suspension may be one such snare that can disrupt the desistance process.

This finding has clear implications for the life chances of suspended students. By increasing delinquency, suspension might increase students' likelihood of arrest and incarceration. Experiencing an arrest during high school, in turn, has an independent, negative effect on the likelihood of completing high school and enrolling in college (Hirschfield 2009; Kirk and Sampson 2013). Arrests resulting in incarceration carry additional costs, including difficulty finding employment (Pager 2003), lower wages (Western 2002), and negative outcomes for children (Murray, Farrington, and Sekol 2012). In addition, research on the transition to adulthood suggests that individuals who persist in delinquent behavior are less likely to make timely transitions in

domains like family formation, childbearing, school completion, and financial self-sufficiency (Massoglia and Uggen 2010:554).

I find no evidence that the size of the effect of suspension on crime varies by race or ethnicity (see Appendix B.4 for a discussion). However, because suspension is distributed unequally across the population, these findings are not race-neutral. Instead, suspension is especially detrimental for black youth, who are more likely to experience suspension than are students of other races. By disproportionately allocating suspensions' criminogenic effects to black youth, educators who suspend middle school students inadvertently perpetuate racial inequality in education, employment, and other domains and increase social stratification.

3.8.2 Policy Implications

Given the strong association of school discipline with academic problems, scholars have proposed that school discipline and the black-white achievement gap are "two sides of the same coin" (Gregory, Skiba, and Noguera 2010:59). The finding that suspension increases self-reported delinquency suggests that racial disparities in the juvenile and criminal justice system also might stem in part from disparities in school discipline. Criminal justice policymakers who care about improving public safety and reducing racial gaps in arrest and incarceration should look upstream to the contributions of schools. Not only do suspensions identify students who will go on to be chronic offenders (Shollenberger 2014), but they also contribute to that outcome. Reallocating juvenile and criminal justice dollars to support school discipline research and reform could yield benefits down the line.

At the same time, the findings in this essay underscore the need for effective strategies to address serious behavioral problems in schools. The positive coefficients

on prior delinquency measures in regression models predicting suspension (see Table 3.2) indicate that, in the aggregate, educators are perceiving real differences in underlying behavior — behavioral gaps that students themselves report — when they choose to suspend students. Recommending that schools reduce the use of out-of-school suspension requires proposing effective, affordable alternatives to address these behaviors. To this end, school discipline researchers should continue to evaluate promising practices, including restorative justice (González 2014) and School-Wide Positive Behavior Interventions and Supports (Vincent et al. 2014). They should also evaluate lower-cost alternatives to out-of-school suspension that will be viable options for schools with few resources. (It bears noting that out-of-school suspension is less resource-intensive than the closest alternatives, after-school detention and in-school suspension, which require both physical space in the school building and staff to supervise students.) This research agenda should examine the costs and benefits of alternative strategies not only for students who are disciplined, but also for their classmates, given the common argument that suspension improves the learning environment for students who remain in school.[22]

While this evidence is being developed, education policymakers should incorporate school suspension rates into accountability criteria, rewarding schools that improve student achievement while maintaining low out-of-school suspension and expulsion rates. Current approaches that focus only on test scores could be encouraging exclusionary discipline.[23] School disciplinarians, for their part, need not wait

[22] See Perry and Morris 2014 for empirical evidence refuting this claim.

[23] As Bowditch (1993) noted two decades ago, exclusionary discipline can accelerate truancy and dropout among youth "at risk" for leaving school. The evaluation criteria put in place by No Child Left Behind in 2001 might have provided additional incentives for administrators to suspend students they believe will not perform well on standardized testing or will help the school earn a "persistently dangerous" label. In addition, Booher-Jennings's (2005) concept of "educational triage" suggests that administrators under accountability pressures might be encouraged to suspend underachieving stu-

for policy change to explore alternatives to out-of-school suspension. Despite the widespread focus on zero tolerance policies, the overwhelming majority of suspensions are not mandated by policy, but are instead handed out at the discretion of school administrators.[24]

3.8.3 Limitations and Future Research

This essay has shown that behavioral change is an important component of the school-to-prison pipeline. Future research should maintain this focus on behavior, while extending the empirical analysis in several directions. First, new data sources (ethnographic observation, time-use diaries) are needed to assess the immediate effects of suspension on delinquency, both on the days students are excluded from school and in the weeks that follow. Second, future research should investigate the mechanisms through which suspension might increase delinquency, including lowered human capital, reduced attachment to school, and labeling. Third, researchers should explore how suspension's effects vary across social contexts, comparing outcomes for special education students to outcomes for general education students, and including more comprehensive measures of students' peer groups, school environments, and neighborhoods. Fourth, future research should examine the long-term effects of elementary school suspensions, which are less common and potentially more damaging than suspensions during secondary school.

Finally, this study highlights the need for a broader, interdisciplinary research agenda on the contributions of schools to crime. Fifteen years ago, Arum and Beattie noted that, "while numerous studies recognize overall educational experience as a de-

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dents in order to preserve resources for higher achievers.

[24] For example, Fabelo et al. (2011) report that 97% of in-school and out-of-school suspensions in Texas were discretionary.

terminant of imprisonment, existing research has largely ignored the actual character of schooling" (1999:516). Despite increased focus on school discipline and policing, this criticism still applies. Sociologists of education have documented the myriad functions that schools perform, including developing human capital, structuring social interaction with peers and adults, and shaping students' identities and aspirations. It is time to integrate these insights with criminological theory and examine empirically how the everyday actions of schools can prevent or facilitate crime.

4. PUNISHMENT AND THE LIFE COURSE

4.1 Introduction

Life course criminologists have established the concept of a "criminal career." In doing so, they have examined the onset of antisocial behavior during childhood and adolescence, investigated behavioral continuity from childhood to adulthood, and explored the causes of persistence and desistance from crime. A central concern within the criminal career literature is how individual offending trajectories change over time. Social control theorists are influential scholars in this arena. They argue that attachment to social institutions such as schools, marriage, and employment can reduce offending, while distancing one self from these institutions can have criminogenic effects (e.g., Sampson and Laub 1993).

As criminologists have developed and extended the criminal career paradigm, sociologists of punishment have documented dramatic changes in how social institutions respond to nonconforming behavior. Punishments that exclude deviant individuals from the general population have become taken-for-granted approaches to addressing behavioral issues in schools and communities across the United States.[1] Most notably, U.S. incarceration rates have more than quadrupled since the early 1970s. By 2013, 2.2 million Americans were incarcerated in prisons or jails, and an-

[1] Discipline today is not necessarily harsher than in the past; however, it is more formal and better documented. Schools' declining use of corporal punishment suggests that exclusionary measures like suspension and incarceration might be used as substitutes for physical punishment.

other 4.7 million were under community supervision (Glaze and Kaeble 2014). Exclusionary school discipline also increased dramatically between the 1970s and the 2000s. According to federal data, more than 2 million secondary school students were suspended from school at least once during the 2009-2010 school year (Losen and Martinez 2013).

Educators, criminal justice professionals, and policymakers often view these sanctions as necessary actions to ensure safety, maintain order, and hold noncompliant individuals accountable.[2] Nonetheless, theory and prior research suggest that parents, schools, police, and other actors who administer exclusionary punishment can sometimes have unintended effects on future offending. Moreover, large race and gender disparities in the administration of punishment have made exclusionary punishment a common experience among recent cohorts of black and Latino men and women (Brame et al. 2014; Pettit and Western 2004; Shollenberger 2014).

In this essay, I integrate the criminal career perspective with research on the increasing prevalence and unequal distribution of exclusionary punishment. Using data from the 1997 National Longitudinal Survey of Youth and the Boston Reentry Study, I answer three research questions. How are potentially harmful disciplinary experiences distributed across the population? How consistent are individuals' disciplinary experiences across the life course? How do individuals who experience high levels of harsh discipline view the interplay between offending and punishment?

To answer these questions, I first discuss what we know about common disciplinary responses and their effects on behavior in each of three domains: the family, the school, and the juvenile and criminal justice systems. I then advance the concept

[2] For example, educators discussing preliminary findings from the Council of State Governments' landmark school discipline study in Texas "cautioned that high rates of suspension and expulsion reflect unrealistic expectations that teachers alone can change behaviors that parents and communities have had no success addressing" (Fabelo et al. 2011:7).

of a *disciplinary career*, a lifetime of experiences with discipline and punishment beginning with family and continuing with schools and with the juvenile and criminal justice systems. Next, I document the prevalence and distribution of disciplinary experiences among nationally representative samples of white, black, and Latino men and women who were born during the early 1980s. I then draw on narratives from Boston Reentry Study participants born during the same years to discuss the interplay between discipline and behavior. I close by arguing that criminologists should view criminal careers and disciplinary careers as dual trajectories that unfold simultaneously and influence each other throughout the life course.

4.2 *Social Control and Punishment Across the Life Course*

Sampson and Laub's (1993) seminal work on crime and the life course argues that attachment to social institutions including school, employment, and marriage can curb offending. Often, however, these institutions are not only inclusive settings that draw people in; they also punish and exclude. In recent decades, corporal punishment has declined in popularity, while exclusionary strategies have proliferated. In addition, technological advances and improved record-keeping have made the consequences of punishment "stickier" (Uggen and Blahnik 2014) than in previous eras. In this section, I describe recent trends in parental discipline, school discipline, and juvenile and criminal justice sanctions. For each domain, I discuss what we know about how disciplinary climates and harsh punishment are distributed across the population and how common punishment strategies in that domain might shape future behavior.

4.2.1 *Family Discipline*

Family is typically the first setting in which behavior monitoring and discipline occur. Parents, guardians, older siblings, and other caregivers who interact with young children provide this supervision. For most individuals, parent or caregiver monitoring begins at birth, is most intense during early childhood, and becomes less intense during adolescence and early adulthood as youth spend increasing amounts of time outside the home.[3]

Trends and Distribution. For at least half a century, parenting researchers have attempted to categorize parenting styles and measure their effects on children's outcomes. Baumrind's (1968; 1971) influential typology of parenting styles contrasted authoritative and authoritarian parenting models. According to Baumrind, authoritative parenting consists of child-oriented discipline strategies that provide information and cognitive guidance, whereas authoritarian parenting is adult-oriented, restrictive, and coercive. Authoritarian parents often rely on negative sanctions such as harsh punishment and love withdrawal.

Building on Baumrind, researchers have focused on two features of parenting that predict its effectiveness: support and control. Support (also known as warmth) is the degree to which parents make children feel comfortable, accepted, and approved. It is generally viewed as a spectrum with affection, love, support, communication, and intimacy on one end and hostility, neglect and rejection on the other. Control (structure) consists of supervision, monitoring, limit-setting, and enforcement of rules. Maccoby and Martin (1983) bring together the support and control dimensions in a typology of 4 parenting styles: authoritarian (low support, high control), authoritative (high sup-

[3] Future research should extend this discussion to better incorporate homeless children and children in foster care.

port and control), permissive (high support and low control), and uninvolved (low support and control). Authoritative parenting — responsiveness to children's needs combined with close supervision and consistent enforcement of rules — is generally viewed as best meeting adolescents' developmental needs (see Gregory et al. 2010:484 for a discussion). Theory suggests that authoritative discipline fosters a positive emotional climate between parents and children that helps children and adolescents be more open to parental socialization (Darling and Steinberg 1993).

Regardless of overall parenting style, the vast majority U.S. parents use corporal punishment as a response to misbehavior at least some of the time. The share of the population who claims to approve of spanking a child declined from 94% in 1968 to 68% in 1994 (Straus and Mathur 1996). Nonetheless, ninety percent of U.S. parents report using corporal punishment on young children, and half slap or spank their children during early adolescence (Straus and Stewart 1999). In the aggregate, African-Americans (88%) are more likely than white Americans (66%) to support corporal punishment, but income, education, and region are also influential.[4] Severe poverty is associated with frequent corporal punishment, but this association is due to stress rather than income per se (Dietz 2000). Financial stress, parental stress, and low resources all predict the frequency and severity of physical punishment (Wolfner and Gelles 1993).

Effects on Behavior. Reviewing the literature, Hoeve and colleagues (2009) conclude that authoritative control generally has positive effects on child behavior, while authoritarian control has negative effects (see also Baumrind 1966). In longitudinal research, mothers' authoritarian child-rearing attitudes at age 5 predict increased

[4] While income is correlated with corporal punishment among U.S.-born parents, cultural considerations also come into play. For example, West Indian immigrants are likely to support corporal punishment regardless of class or income (Waters and Sykes 2009).

children's conduct problems at age 10 even when socioeconomic status and maternal psychological distress are controlled (Thompson, Hollis, and Richards 2003). The relationship between parental discipline and conduct problems persists through adulthood. In the landmark Cambridge Study of Delinquent Development, Farrington (1989) found that parents' authoritarian attitudes and harsh punishment in early childhood predicted aggression at ages 12-14, violence at ages 16-18, violence at age 32, and convictions for violent offenses. Loeber and Stouthamer-Loeber (1986) conducted a meta-analysis of studies on family factors and juvenile conduct problems and delinquency. They found that lack of parental supervision, parental rejection, and parent-child involvement are strong predictors of conduct problems and delinquency and that the effects of these factors are similar for girls and for boys.

4.2.2 *School Discipline*

Schools typically become involved in the social control project at approximately age 5 (earlier for students who attend preschool) and continue through age 18 or until an individual leaves school.[5] While schools are best known for their human capital function, they are also deeply involved in socialization. For example, Gottfredson and Hirschi (1990) argue that schools can pick up the process of instilling self-control where parents leave off. Teachers and other school adults typically have a range of options at hand for addressing student behavior, including informal warnings, parent phone calls, and after-school detentions.

Trends and Distribution. Over the past several decades, the methods used by schools to manage student behavior have undergone several visible shifts. Perhaps

[5] According to the National Center for Education Statistics, 55% of 3 and 4 year olds, 94% of 5 and 6 year olds, 98% of 7-15 year olds, and 94% of 16 and 17 year olds were enrolled in school as of October 2013.

the most widely discussed is the adoption of "zero tolerance" policies. In the wake of several high-profile mass shootings in the early 1990s, the 1994 Gun-Free Schools Act mandated school districts across the United States to administer one-year expulsions for possession of firearms at school. While some school districts had already had zero tolerance policies on the books, others adopted them for weapons possession to be in compliance with federal law and then expanded them to include less serious infractions (Skiba 2000:2). Critics argue that zero tolerance policies result in harsher punishments for students and increasing referrals to the juvenile and criminal justice systems.[6]

A second trend in school discipline is to import criminal justice surveillance strategies. These include security cameras, metal detectors, drug-sniffing dogs, and uniformed police. By the 2007-08 school year, fully two-thirds (66 percent) of students in a national survey reported that their schools had security cameras, and an even higher share (69 percent) reported that their schools had security guards or assigned police officers (Robers et al. 2010:81). Although these strategies are common in urban, rural, and suburban schools alike (Kupchik 2010), their consequences for students vary across school contexts. In schools viewed as safe and academically strong, surveillance strategies primarily serve to comfort parents and provide an appearance of prevention (Hirschfield 2010). In schools viewed as dangerous or under-performing, administrators have incentives to use these technologies to detect infractions (e.g., by viewing camera footage in real time) and to build a case for removing troublesome students from school (ibid).

Whereas zero tolerance and school policing have long caught the public eye, a

[6] The empirical evidence is consistent with this claim. For example, Krezmien, Leone, Zablocki, and Wells (2010) find that the share of referrals to juvenile courts originating in schools increased between 1995 and 2004 in four of the five states they examined. See also Eckholm 2013.

third trend — increasing use of out-of-school suspension — has garnered national attention recently. Suspension rates have increased dramatically since the 1970s, mostly among black and Latino students (see Chapter 3 in this dissertation). According to federal, school-level data, suspension rates peak during secondary school (Losen and Martinez 2013). According to youth self-report data, first-time suspensions are most common between the ages of 11 and 15 (see Figure 4.1). During middle school, 31 percent of black boys, 17 percent of black girls, 17 percent of Latino boys, 12 percent of American Indian boys, 10 percent of white boys, 8 percent of Latina girls, 6 percent of American Indian girls, 3 percent of Asian boys, 3 percent of white girls, and 1 percent of Asian girls in U.S. public schools are suspended each year (Losen and Martinez 2013:9).[7]

Although school discipline research tends to describe an increasingly punitive approach to discipline, the decline of corporal punishment is an important countertrend.[8] Qualitative research suggests that educators and police commonly used severe corporal punishment on delinquent youth in schools (see, for example, Sampson and Laub 1993 for a discussion of the Glueck data). Today, only 19 states still permit school officials to use corporal punishment.[9] Even in those states, its use has decreased.

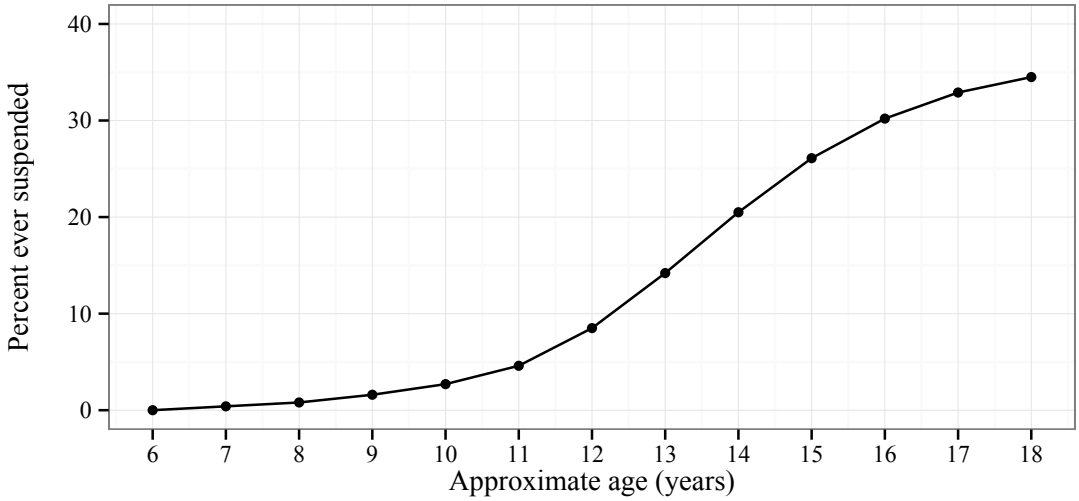
Effects on Behavior. Education researchers have applied the authoritative vs. au-

[7] These estimates are derived from school- and district-level data from the U.S. Department of Education Office for Civil Rights. The Elementary and Secondary Civil Rights Compliance Survey — more commonly referred to as the Civil Rights Data Collection (CRDC) — is administered every two years in all 50 states and includes school-level data on out-of-school suspension from roughly one-third of U.S. school districts.

[8] See Gregory et al. 2010 for a thorough review of the corporal punishment literature.

[9] According to the Center for Effective Discipline, New Jersey was the first state to ban corporal punishment in 1867. More than one hundred years passed before another state followed suit; then, 30 states and the District of Columbia banned the use of corporal punishment between 1971 and 2011.

Fig 4.1. Cumulative Suspension Risk Through Age 18, NLSY97



Note: This figure is created using self-report data from the 1997 National Longitudinal Survey of Youth (author's estimates). Suspension data are collected by academic year, so age is approximate. Age 12, for example, refers to the school year during which the respondent turned 12 years old.

thoritarian distinction from the parenting literature to the school context. They have found that teachers who use an authoritative style have relatively low rates of student misbehavior in their classrooms (see Gregory et al. 2010:485). Examining disciplinary style at the school level, Gregory and Cornell (2009) argue that *authoritative school discipline* — an approach that provides both structure and support — is necessary to achieve an optimal level of school safety. In a statewide survey of Virginia high schools, Gregory et al. (2010) find that schools that provide both clear rules and expectations and supportive adults who help students when they need it have lower student-reported rates of victimization and bullying. More generally, student perceptions of school rules as clear and fair are associated with compliance (Gottfredson, Gottfredson, and Hybl 1993; Hollingsworth, Lufler, and Clune 1984; Welsh 2000).

Although school disciplinarians aim to improve the learning environment, the

use of exclusionary measures like suspension and expulsion appear to have the opposite effect. Survey research has found that strict suspension policies do not reduce violence during secondary school (Maimon et al. 2012), and instead increase teacher-reported classroom disruption (Way 2011). In addition, suspended students report higher levels of antisocial behavior and serious delinquency in follow up surveys than do comparable non-suspended students when prior behavior is controlled (Hemphill et al. 2006; see also chapter 3, this dissertation). Suspensions during 9th grade strongly predict high school dropout (Balfanz et al. 2014) and are sometimes used strategically by administrators to encourage that outcome (Bowditch 1993). Expulsion, for its part, predicts increased offending in the short-term when associated with leaving school altogether (Jarjoura 1993; Sweeten et al. 2009).

4.2.3 Law Enforcement

Law enforcement is a third domain of formal social control that typically becomes relevant during adolescence, but sometimes earlier. Here I refer to the actions of police, courts, corrections, probation, and parole. While police interact with individuals of all ages, other actors — including judges and probation officers — tend to specialize in either the juvenile or the adult criminal justice system. In most states, youth remain under the jurisdiction of the juvenile justice system until at least age 16, and are handled through the criminal justice system by age 18.

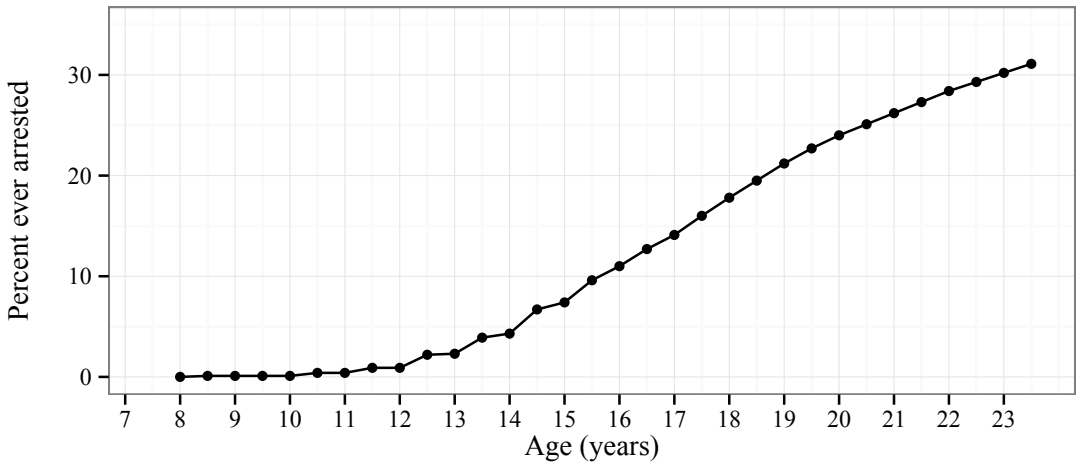
Trends and Distribution. Although formal arrests of individuals under 10 years old are rare, contact with police and the juvenile and criminal justice systems is common during adolescence and can continue throughout adulthood. Figure 4.2 displays estimates from Brame et al. (2012) on the cumulative risk of arrest through age 23 using the NLSY97. First-time arrests — designated by the vertical change in the point

estimate for year to year – climb steadily from ages 15 to 23. This means that formal arrests become increasingly common around the transition from middle to high school — when school discipline is most common – and continue to rise steadily throughout late adolescence and early adulthood. Comparing these estimates to projections made during the 1960s suggests that the cumulative risk of arrest was lower for the NLSY97 cohort than in the past until age 15, roughly comparable from ages 16 to 18, and higher from ages 18 to 23 (see Brame et al. 2012:23). By age 23, Brame and colleagues (2012) estimate that 30.2% of U.S. men and women had been arrested, compared to Christensen's (1967) estimate of 22%.

The risk of arrest is higher for men than for women and varies by race. Brame and colleagues (2014) estimate that the cumulative risk of arrest by age 18 is 22% for white males and 30% for black males. By age 23, these rates have increased to 38% and 49% (ibid). Incarceration in adult correctional facilities has also become more common among recent cohorts of U.S. men, especially African-American men with low levels of education (Pettit and Western 2004). Since 2008, when annual incarceration rates began to level off and even decline in some states, probation and parole numbers have held fairly steady, at 3.9 million and 850,000, respectively (Glaze and Kaeble 2014).

Effects on Behavior. Unlike parental and school discipline, law enforcement typically focuses more on structure — the consistent enforcement of rules — than on support. To the extent that warmth or support enters the discussion, it is typically in regards to the declining rehabilitative orientation of corrections or the legitimacy of police and other authorities. Despite a robust tradition of deterrence theory, empirical evidence suggests that harsh punishments including arrest and incarceration can sometimes increase offending and can lead to other negative consequences. Experiencing an arrest during high school is independently associated with dropout

Fig 4.2. Cumulative Arrest Risk Through Age 23, NLSY97
(Data from Brame et al. 2012)



Note: This figure is created using data published in *Pediatrics* by Brame, Turner, Paternoster, and Bushway (2012). Brame et al.'s estimates are made using data from the 1997 National Longitudinal Survey of Youth. The statistics plotted here assume that missing data are missing at random (MAR).

(Hirschfield 2009; Kirk and Sampson 2013). Juvenile arrest can also increase the risk of both secondary deviance and secondary sanctioning (Lemert 1967; Liberman, Kirk, and Kim 2014). Juvenile incarceration increases the risk of adult incarceration (Aizer and Doyle 2011). Adult incarceration and felony records can reduce employment and earnings potential (Pager 2003; Western 2002) and have negative effects on children (Murray, Farrington, and Sekol 2012).

4.2.4 *The Disciplinary Career*

By definition, discipline is intended to shape behavior; however, its effects are not always corrective. Scholars of parenting, school discipline, and criminal justice sanctions have developed different terminology to discuss this concept. In general, though, they describe two ways discipline and punishment can affect behavior. In

some instances, disciplinary strategies can be beneficial, reducing problem behavior and improving individual-level outcomes. In other instances, disciplinary strategies can be harmful, reducing individuals' respect for authority figures and sometimes increasing offending. Disciplinary strategies tend to be beneficial when rules are clear and when enforcement is consistent, swift, certain, and viewed as legitimate. Inclusive, restorative, and authoritative are other terms that apply to this type of discipline. Disciplinary strategies tend to be harmful when rules are unclear and when enforcement is inconsistent, unpredictable, overly harsh, and viewed as arbitrary or illegitimate. Exclusionary, authoritarian, punitive, and stigmatizing are additional terms associated with these strategies. Whether a given disciplinary response is corrective or harmful depends on both the nature of the response and the context in which it is used.

Developmental and interactional theories spanning several literatures describe a dynamic, mutually influential relationship between behavior and disciplinary responses during childhood and adolescence. For example, Moffit's (1993) well-known typology of life-course persistent (LCP) and adolescent limited (AL) offenders argues that LCP individuals begin with neurological deficits in early childhood that solidify over time, through repeated negative interactions with parents and teachers, as a stable propensity toward offending. Likewise, Thornberry's (1987) interactional theory holds that delinquency and parenting styles are mutually influential during adolescence. Empirical evidence on parenting, school discipline (Maimon et al. 2012; Way 2011; see also chapter 3 in this dissertation), and juvenile arrest and incarceration (Aizer and Doyle 2011; Liberman, Kirk, and Kim 2014) tends to support the notion that disciplinary approaches can have feedback effects on behavior. By and large, however, the effects of parenting strategies, school discipline, and criminal justice

sanctions are studied separately, by researchers in separate disciplines. Experiences across domains have been integrated through labeling theory (Lemert 1951, 1967; Tannenbaum 1938), which examines the development of a deviant or criminal reputation over time and the internalization of that label. Here I take a broader view, considering exposure to both beneficial and harmful disciplinary experiences across social institutions and across the life course.

Parental discipline, school discipline, and law enforcement are all age-graded institutions of social control that together monitor behavior and administer discipline across childhood, adolescence, and early adulthood. From an individual's perspective, experiences across these domains constitute a *disciplinary career*. Far from minimizing the role of behavior in shaping an individual's outcomes, the "disciplinary career" concept is meant to complement the criminal career framework and draw attention to the interplay between offending and disciplinary responses over time.

4.3 *Research Questions*

The discussion above suggests that there is wide variation in the disciplinary climates of U.S. homes, schools, and law enforcement jurisdictions, with some climates promoting positive outcomes and others inflicting harm. Research spanning several disciplines — psychology, education, economics, sociology, and criminal justice — has demonstrated that experiencing harsh punishment can increase antisocial behavior and crime. But how do disciplinary experiences across domains come together in the lives of individual youth? And how do individuals who receive harsh discipline perceive its effects on their behavior during childhood, adolescence and early adulthood?

In the remainder of this paper, I tackle three empirical questions about discipline

across the early life course:

1. How are beneficial and harmful disciplinary climates distributed across the population?

2. How consistently do individuals experience beneficial or harmful discipline across their disciplinary careers?

3. How do individuals who experience harsh discipline perceive the interplay between discipline and offending over time?

Because prior research has demonstrated large race and gender disparities in the prevalence of exclusionary punishment and offending, I present results separately for white, black, and Latino men and women.

4.4 *Data and Methods*

In describing disciplinary careers, I rely on two data sources: the 1997 National Longitudinal Survey of Youth and the Boston Reentry Study.

4.4.1 *National Longitudinal Survey of Youth*

The National Longitudinal Survey of Youth 1997 (NLSY97), administered by the Bureau of Labor Statistics, follows a cohort of 8,984 youth born between January 1, 1980 and December 31, 1984. Baseline interviews were conducted in 1997 when respondents were between 12 and 17 years old. Follow-up interviews are conducted annually. I use data through the 2010 survey, when respondents were between 26 and 31 years old (mean age 28).

The NLSY97 is well-suited to study discipline and punishment during adolescence and early adulthood. At the baseline survey, respondents were asked detailed

questions about their household structures and their relationships with parents and caregivers. At the baseline survey and at follow-up surveys, they were asked about suspension from school, arrest, and delinquent activity. Retrospective data were collected at baseline, providing some information on delinquency, school discipline, and arrest during early childhood. For all analyses, I apply weights to produce nationally representative estimates.[10]

4.4.2 *The Boston Reentry Study*

The quantitative results are supplemented by qualitative data from a sample of recently incarcerated adults who participated in the Boston Reentry Study (BRS). The BRS is a longitudinal survey of 122 men and women released from Massachusetts prisons between 2010 and 2012.[11] Participants were interviewed in person five times across a one-year time span. Researchers called respondents regularly between scheduled interviews, achieving a retention rate over 90% at the final, 12-month interview. After data collection was complete, the research team integrated survey responses and open-ended discussions from across the interviews and phone calls to create an abbreviated life history for each respondent. These timelines include retrospective accounts of parenting and schooling experiences, illegal activity, and interactions with law enforcement. When possible, respondents' reports were supplemented by interviews with a family member or partner.

Not surprisingly, BRS participants reported harsh disciplinary experiences and

[10] These weights account for several features of the sampling design and recruitment process including the probability of selection into the two samples, early nonresponse, and the oversampling of black and Hispanic youth.

[11] See Western, Braga, and Kohl 2014 for details on the study.

high rates of trauma and violence across the life course.[12] At the 12-month interview, respondents were asked a series of questions about their childhood.[13] Nearly half (47%) reported that a parent or caregiver had hurt them physically. More than four in five (81%) had been suspended or expelled from school. When asked about their adolescence, 85% reported having gotten into trouble with police, 88% reported using drugs or alcohol, and 92% reported that they had gotten into physical fights. Consistent with national trends, younger respondents were more likely than older respondents to report they had been suspended or expelled from school, and older respondents were more likely than younger respondents to report that a parent or caregiver had hurt them.[14]

Twenty-six men and two women in the BRS sample were born during the same years as the NLSY97 cohort (1980-1984). These individuals are not representative of their cohort; instead, they are a select group among whom punishment and offending were especially common. In their late 20s or early 30s at the time of BRS data collection, these respondents reflected on their experiences during childhood, adolescence, and early adulthood. Table 4.1 describes the full BRS sample and the subsample of respondents belonging to the NLSY97 cohort.

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[12] See Western 2015 for a thorough treatment of violence across the life course.

[13] These questions included: *"When you were growing up, did a parent or adult in your household ever hit, beat, kick, or physically hurt you in any way? Do not include spanking."*; *"When you were growing up, were you ever removed from your home by the state, county, or court and sent to live in an institution or with people other than your primary caregivers? This might include foster care, juvenile incarceration, or a legal change in custody."*; *"When you were growing up, did you ever get suspended or expelled from school?"*; and *"When you were growing up, did you ever get into trouble with the police?"* Affirmative answers led to follow-up questions and an open-ended dialogue.

[14] Note that BRS age subgroups should not be viewed as representative of their respective cohorts. Because desistance occurs with age in the population, older respondents are likely more disadvantaged than younger respondents in the sample, having remained system-involved throughout adulthood as less serious offenders aged out of offending and arrest.

Table 4.1: Descriptive Statistics, Boston Reentry Study[a]

	Full Sample N=122	Respondents Born 1980-1984 N=28
Demographics		
Male	.87	.93
Black	.51	.46
White	.30	.32
Latino	.19	.21
Min. Age	19	27
Max. Age	59	32
Median Age	34	30
Data availability		
12-month interview	N=109	N=26
Timeline	N=42	N=11
Experiences at age 14		
Hurt by parent	.47	.46
Custody change	.39	.56
Lived with others	.50	.48
Suspended or expelled	.81	.88
Trouble with police	.85	.76
Used drugs or alcohol	.88	.92
Got into fights	.92	.96

Note: [a]The Boston Reentry study was conducted by Bruce Western, Anthony Braga, and Rhiana Kohl.

4.5 Findings

4.5.1 Distribution of Disciplinary Climates

Parental discipline begins at birth, school discipline begins by age 5, and interactions with law enforcement typically begin during late childhood or adolescence. Some youth avoid punishment or experience clear, consistent, and supportive discipline in each of these domains, whereas others experience unpredictable, punitive, or exclusionary sanctions. How common are various disciplinary climates in each of these domains? And how are they distributed across the population?

Table 4.2 presents descriptive statistics using NLSY97 self-report data from wave 1. In describing their parents, respondents answered a series of questions for each parent that measured the intensity of monitoring and the closeness of the relationship. Then researchers combined these responses into scales and categorized each parent as authoritative, authoritarian, permissive, or uninvolved as of the wave 1 survey.[15]

As the rightmost column shows, 40% of all youth born in the early 1980s experienced authoritative discipline from their residential mothers, whereas 12% experienced authoritarian discipline. One in twenty-five (4%) reported no residential mother, and nearly one in four (24%) reported no residential father. Those who did have a residential father reported that their fathers were more likely than their mothers to be authoritarian and were less likely to be permissive. At school, the vast majority of youth reported that their teachers were good and were interested in students. Seventy-two percent reported that they thought discipline in their school was fair. In the aggregate, NLSY97 youth reported a one-in-ten chance that they would be arrested during the subsequent year, and a one-in-twenty chance that they would be

[15] Future research should use dynamic measures of parenting styles.

Table 4.2: Distribution of Disciplinary Climates, NLSY97

	Boys			*Girls*			All
	White	Black	Hispanic	White	Black	Hispanic	Youth[a]
Parenting Style - Residential Mother							
Uninvolved	.09	.07	.09	.11	.10	.14	.10
Permissive	.36	.29	.34	.36	.30	.32	.34
Authoritarian	.10	.13	.10	.12	.15	.13	.12
Authoritative	.40	.46	.42	.38	.40	.37	.40
No Res. Mother	.04	.05	.05	.04	.04	.04	.04
Parenting Style - Residential Father							
Uninvolved	.10	.07	.09	.10	.09	.09	.09
Permissive	.25	.10	.21	.25	.14	.18	.22
Authoritarian	.14	.11	.12	.17	.12	.17	.15
Authoritative	.34	.25	.32	.28	.18	.26	.29
No Res. Father	.18	.47	.26	.20	.47	.30	.24
School Climate							
Teachers are...							
...good	.89	.82	.88	.90	.80	.87	.88
...interested in students	.86	.82	.89	.86	.81	.87	.86
Discipline is fair	.73	.68	.77	.72	.63	.73	.72
I feel safe at school	.90	.80	.88	.90	.77	.85	.87
Law Enforcement							
Likelihood of...							
...arrest if stole car	.64	.51	.55	.65	.50	.55	.59
...jail if stole car	.45	.45	.50	.44	.42	.44	.45
...arrest by next year	.11	.18	.15	.06	.07	.08	.10
...jail by age 20	.06	.08	.09	.03	.03	.04	.05
Max. number of respondents	2286	1169	977	2127	1166	924	8984

Note: All statistics are measured at wave 1, when NLSY97 respondents were ages 12-17. Means are presented for all variables. [a]Disaggregated statistics are presented for white, black, and Latino youth only; the full sample includes youth of other races.

in jail by age 20.

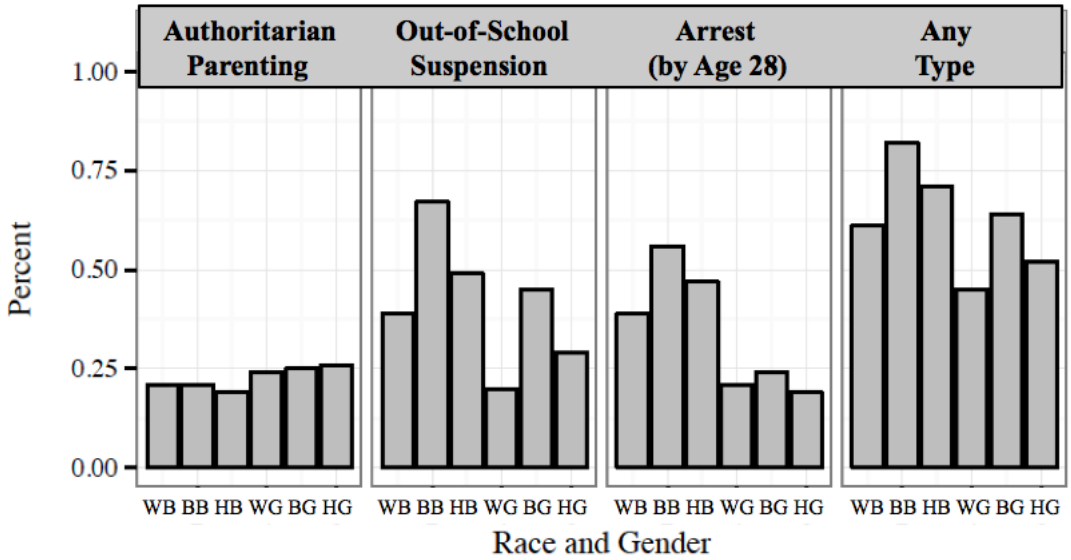
The other columns in Table 4.2 reveal variation in disciplinary climates across race and gender subgroups. Girls were slightly more likely than boys to have mothers who were authoritarian or uninvolved. Black boys (46%) were most likely to have mothers who used an authoritative — that is, beneficial — approach. White youth were most likely to have permissive parents, whereas black youth were most likely to have a missing resident father. White boys were especially likely to have authoritative fathers. In the school domain, black girls had the least favorable views of teachers and were least likely to think that school discipline was fair. White youth were most likely to believe that they would be arrested if they stole a car, but black and Hispanic boys perceived the highest actual risk of being arrested within the subsequent year.

4.5.2 Consistency of Discipline

Having described overall disciplinary climates, I now examine exposure to harsh discipline specifically using one indicator of harsh discipline from each domain: authoritarian parenting, out-of-school suspension, and arrest. Each of these measures has been associated with increased offending in prior research. Respondents are coded as experiencing authoritarian parenting if either their residential mother or their residential father used authoritarian parenting.

Figure 4.3 summarizes the results. From left to right, the four panels in the figure report the prevalence of authoritarian parenting, out-of-school suspension (by age 18), arrest (by mean age 28), and any of these forms of discipline. Results are presented for six subgroups: white boys, black boys, Hispanic boys, white girls, black girls, and Hispanic girls. To examine white boys' experiences, for example, view the first bar in each of the four panels.

Fig 4.3. Prevalence of Harsh Discipline, NLSY97



Note: From left to right, the four panels display the prevalence of authoritarian parenting, suspension by age 18, arrest by age 28, and any of these 3 punishments. The six bars in each panel report statistics for white boys, black boys, Hispanic boys, white girls, black girls, and Hispanic girls, respectively. Respondents of other or multiple races are excluded.

As the leftmost panel of Figure 4.3 shows, roughly 1 in 4 youth experience authoritarian parenting, and this experience is fairly evenly distributed across the race and gender subgroups. The second panel shows that out-of-school suspension is more common than authoritative parenting. Roughly half of black girls and Hispanic boys — and two-thirds of black boys — are suspended from school at least once by age 18. The third panel shows that arrest is gendered. Fewer than one in four girls is arrested at least once by mean age 28, compared to roughly one in two boys. The rightmost panel brings these statistics together, revealing wide variation in the prevalence of any harsh discipline. At the high end, 82% of black boys experience harsh discipline in at least one of the three domains. At the low end, 45% of white girls experience harsh discipline. Rates for Hispanic boys (71%), black girls (64%), white boys (61%), and Hispanic girls (52%) fall in between.

4.5.3 Pathways Through Punishment

Whereas Figure 4.3 shows the prevalence of each type of punishment and any punishment, Table 4.3 shows overlap across the three domains. Each respondent is categorized based on having experienced authoritarian parenting, out-of-school suspension by age 18, and/or arrest by age 28. For the full sample, and for 5 of the 6 subgroups, the most likely pathway is to avoid harsh discipline in all three domains. For black boys, however, the most common pathway is to be both suspended and arrested (33%), followed by suspended only (19%). Fewer than 1 in 5 black boys (18%) avoid harsh discipline in all three domains.

Among Hispanic and white boys, experiencing both suspension and arrest was the second most common pathway, experienced by 23% and 17% of boys, respectively. Among black girls, experiencing only suspension was common (22%), as was both

suspension and arrest (12%). White girls experienced the lowest overlap in harsh disciplinary experiences, with more than half (55%) reporting no harsh discipline, and just 16% reporting harsh discipline in more than one domain. By contrast, more than half of black boys (51%) experience harsh discipline in multiple domains. For Hispanic boys, white boys, black girls, and Hispanic girls, the comparable statistics are 37%, 30%, 25%, and 19%.

Table 4.3: Exposure to Harsh Discipline Across Domains (Mean Age 28), NLSY97

	Boys			*Girls*			All
	White	Black	Hispanic	White	Black	Hispanic	Youth[a]
None	.39	.18	.29	.55	.36	.48	.42
Parent only	.08	.04	.06	.14	.12	.15	.11
School only	.11	.19	.15	.07	.22	.12	.11
Arrest only	.12	.09	.13	.08	.06	.05	.10
Parent and School	.04	.04	.04	.03	.07	.05	.04
Parent and Arrest	.03	.03	.03	.03	.02	.02	.03
School and Arrest	.17	.33	.23	.06	.12	.08	.14
Parent, School, and Arrest	.06	.11	.07	.04	.04	.04	.06
Number of respondents	2184	1106	930	2041	1119	887	8580

Note: Arrest statistics are through wave 10, when NLSY97 respondents were ages 26-31. Means are presented for all variables. [a]Disaggregated statistics are presented for white, black, and Latino youth only; the full sample includes youth of other races.

4.5.4 *Individual Narratives*

Table 4.3 revealed that 58% of all youth born in the early 1980s experienced at least one form of harsh discipline at home, at school, or at the hands of police. More than one in four (27%) experienced harsh punishment in more than one domain. Experiencing harsh discipline consistently across multiple social contexts was especially common for black and Latino men.

So how do individuals who experience harsh discipline across multiple domains view the interplay between their behavior and the disciplinary responses they experi-

ence? In this section, I examine retrospective accounts of offending and punishment from 28 individuals born during the same years as NLSY97 respondents but selected based on their deep involvement with offending and punishment. Recruited into the Boston Reentry Study as they exited Massachusetts prisons in their late 20s or early 30s, these respondents reflected on their disciplinary experiences during childhood, adolescence, and early adulthood. I begin with one respondent's story, which raises several common themes.

4.5.5 Carlos's Story

Growing up in public housing in Brooklyn, Carlos[16] witnessed violence on a regular basis. He fought frequently, beginning around age 8. At age 10, he witnessed someone murdered for the first time.

> *I saw people get killed and all that. Shot, stabbed... growing up in New York looking out the window you see everything. Coming out in the hallway you see people arguing, fighting, things like that. I saw a couple of people get killed growin' up.*

Carlos described his mother as the most supportive adult in his life. However, she was also strict, relying heavily on physical punishment to administer discipline.

> *I used to get my ass whooped. For real for real. With cable wires and shit like that. That's when my moms ain't even know no better anyway...*
> I: What types of things would you do that would set her off?
> *Just being young, just, I don't even remember. Being young, being stupid, stealing, [laughs] getting suspended from school, stealing food from the fridge [laughs], sneak eating in the middle of the night. Oh my God. [pause] Just straight lyin' to her [about sneaking food]. She didn't like that. That's why we don't lie to her now but... My mom still disciplines us. I mean she, yeah, she still, shit, come at my mom sideways, she smacks us and everything. She don't play around.*

[16] I use pseudonyms and alter biographical details when necessary to protect anonymity.

Carlos's stepfather drank heavily and was addicted to heroin. To escape his influence, Carlos's mother moved her children from NYC to Boston when Carlos was 14. As a child, Carlos had wanted to become a police officer. He would speak with police when they responded to his stepfather overdosing or to his having witnessed a crime. He had a positive relationship with police until age 14, when he was arrested for a crime he says he did not commit. When the police tried to cuff him, he fought back in confusion; his mother joined in the scuffle, trying to convince the officers of his innocence. Eventually, he "beat the case," but only after spending time incarcerated in a juvenile facility. He described that time in DYS (juvenile detention) as a turning point.

> *They charged me for arson. They held me for, um, I wanna say about 10 months to a year. And, um, I ended up...taking the case to trial. I ended up beatin' the case, but through the time it kinda like um it gave me a different perspective of how prison... how, not pri-... well, prison, it was prison to me, because it was being incarcerated anyways... I didn't know that there was levels to it, like, oh, right, juvenile, things like that. So... when I first got locked up, I thought it was just basically prison, and it was more like... damn... I'm here for something that I didn't do. And growin' up, I wanted to be a cop, so it was like everything just kinda like straight flipped on me... I was never supposed to have gotten locked up... I think that if honestly I would've never gotten locked up for somethin' that I never did, I think I would've made it a lot further. And, you know, it's just like, it was a mental thing with me. I got locked up for somethin' I didn't do, then I ended up doin' that time. I ended up meetin' a whole bunch of people that, you know, they lived street, and then, just, everything else carried on from there... That's how everything really actually started, cause I got my police report, I got everything there. After that everything just took off... like I became somebody else.*

When he came home after being locked up, he began selling drugs and found that peers looked up to him. From ages 14 to 18, he "stayed everywhere" with various friends and girlfriends. He also spent another 2-3 years in DYS. He was suspended from school many times, for fighting and other behaviors, and was expelled from

high school after getting locked up. He enrolled in another high school for a year, but "lost focus" and stopped attending school altogether in the 11th grade.

From ages 18-33, Carlos accumulated dozens of drug charges, as well as assault and battery charges. In his early 20s, he stayed mostly with his mother, worked as a prep cook, and supplemented his income selling drugs. By age 33, he estimated that he had spent 7 to 8 full years incarcerated since age 18, including a long stretch from ages 25-30. Carlos took GED courses while incarcerated, but did not earn his GED. He had three children, at ages 21, 25, and 32. Throughout the year we interviewed Carlos, he reported struggling with physical health problems, depression, and anxiety. He traced his depression to childhood:

> *My mom, everybody. We was all depressed, shit. They didn't even know it. Depressed and still smiling.*

Carlos described difficulty finding work due to his CORI (criminal record) and gaps in his resume. He perked up when discussing his relationship with his infant son, noting that he had missed his other children's early years while incarcerated. Age 33 at his final interview, Carlos reported this was the first time since his childhood that he had not been incarcerated for an entire year.

4.5.6 Themes

Like many BRS respondents, Carlos was among the 6% of U.S. youth born in the early 1980s who experienced harsh discipline in all three domains: at home, at school, and through the juvenile and criminal justice systems (see Table 4.3). Viewing these experiences within a broader life narrative reveals that these punishments co-occurred with parental drug abuse, residential instability, and other challenges. Importantly, Carlos's story draws attention to the interplay between behavior and of-

fending. Carlos did not perceive his disciplinary experiences as emerging out of thin air. Rather, he was candid about having broken his mother's rules at home, having fought at school, and having sold illegal drugs. Nonetheless, his perception of these punishments and their effects on his behavior varied. He laughed when recounting corporal punishment at home, but he struck a serious tone in discussing his first arrest and incarceration. Perhaps this was because he trusted his mother more than the police. Or perhaps it was because the link between his behavior and the response seemed stronger at home than in the community. Carlos described his first arrest and incarceration period, which he perceived to be illegitimate, as a turning point toward increased offending and a negative perception of police.

In the remainder of this section, I draw on additional respondents' stories to elaborate three themes: violent responses to extreme discipline, the sometimes weak link between offending and arrest, and the changing implications of a criminal reputation over time. Consistent with labeling theory, BRS respondents' stories illustrate how negative sanctions can have lasting effects; however, they suggest that the concept of secondary deviance is insufficient for understanding how individuals with long histories of offending and harsh discipline understand their ongoing participation in crime during adulthood.

4.5.7 Violent Responses to Extreme Discipline

Many BRS respondents described chaotic home environments and physical abuse from or among the adults in their households. Luis, a Hispanic male born in Puerto Rico, moved frequently as a child. His family member reported, "I don't think he had a stable home... his mom and dad split when they were young so [he] bounced around a lot, like a ping-pong machine."

Luis experienced multiple parenting styles: His mother was permissive, but she gave his stepfather permission to physically discipline him, which he took to the extreme. At one point, Luis was sent out of state to live with his father, who was more structured, authoritarian in his parenting style, and harder to please. About his stepfather's use of corporal punishment, Luis explained,

> *basically what I felt was a grown man picking a fight with an eleven, ten year old kid, you know what I mean, a ten year old boy and hitting him like a grown man, hitting that boy like a grown man, you know. I wanna say it stopped when, umm, the last time was when I was like 14 cause I was bigger then... well, I gave him a stern threat, I told him, 'if it happens one more time, I'm gonna have to fight back.' So use your words and not your hand, you know.*

Travis, a white male who cycled in and out of prison throughout his 20s, attributed his anxiety and violent thinking in part to long stretches of time spent in solitary confinement, another form of extreme physical punishment.

> *I'm real like edgy like one little thing like you bump into me you don't say excuse me I wanna freakin' flip out you know? I wanna punch your head in. Don't disrespect me. Stuff like that, you know, like the way people talk to me, you know. Give me respect; I'll give you respect, you know... I [need] to learn how to just walk away. That's what I gotta do...*
> I: What [does] the shrink say? What do they say about that?
> *It got worse being in prison most of the time and growin' up on the street always fightin'. I even did a lot of hole time over the years you know, my mind ain't right from that. I'm always on my toes.*

Both Travis and Luis perceived their violent thoughts and actions as stemming at least in part from extremely punitive discipline administered at home and by the criminal justice system.

4.5.8 An Arbitrary First Arrest

Although some respondents recounted serious, violent incidents that precipitated their first arrests, a substantial share described nonviolent incidents for which they did not expect to be arrested or confined. Some, like Carlos, maintained their innocence. Others described circumstances in which they were involved in illegal activity accidentally or unknowingly.

Arnold, an African-American male, described his first time in juvenile detention.

> *The first time I had went in [to DYS] I was 13. Um..I had pushed a, um...a carriage into... I did it by accident. I had pushed a carriage. It was an undercover police officer, and I pushed a carriage into his car. And he got out, so I ran out of just being scared. And I kept running, I kept running, and you know they called him in, and more police came [pause]. They got me with um...[pause] destruction of a police vehicle or something like that and fleeing, and fleeing the scene of a um... something like that. I was like 13 like, yeah, like it was an accident, too. So that was my first time. I sat down for 6 months for that one.*

Karl, an African-American male, was several years older than Arnold was at the time of his first arrest, yet also described the event as confusing. Born in Jamaica, Karl moved to Boston at age 2 and was arrested for the first time at age 17.

> I: What happened then?
> *Uh, somebody was driving the car, a friend of mines. I just got in, and it was stolen. I was in the back seat. Everybody ran outside out, and the police arrested me.*
> I: Why'd you stay in?
> *Cause I really didn't know what was going on.*
> I: Yeah. You were just kinda... did you know it was stolen? You got in?
> *No. No. [They had] the keys and everything. I didn't even really think about it to tell you the truth. It wasn't even a thought.*
> I: The friends that you were with in the car... had they ever gotten into trouble before?
> *Um, probably because, um, [friend], the one that had the car, was in DYS after that.*
> I: Did you do time for that incident?

Um... nah, they, um, put me on probation. That's where it started at.

For both Karl and Arnold, the link between behavior and responses seemed weak when they were first arrested. Neither was participating in behavior they believed to be serious enough to merit an arrest.

4.5.9 The Changing Value of a Criminal Reputation

Arnold, the respondent first arrested at age 13, described age 17 as the time when his illegal activity increased. At age 17, he was shot by friend who thought he had killed another friend.

> *Seventeen was like, kinda like, umm, that patch where everything just escalated.*
> I:Yeah.
> *Everything started happening... Everybody knows your name.*
> I: Yeah. And was there anything that happened, you know, right before you turned 17 or any major changes where you noticed that it started to escalate?
> *[pause] yeah, um, I started, like the street, the street we lived on, I started like, you know, repping it more harder and harder. You know, now we have, our numbers were growing, instead of 5 of us, now there was 20 of us, and were all from this one area. You know? Our names was starting to be out there. The recognition is there, and, as kids, that's what you really want. You want that recognition.*

Like Arnold, Carlos also initially enjoyed the reputation he gained during his first incarceration period.

> *...so now I'm in there, and people now notice that because of my size me being the person I am me being big and me speaking with a different accent... people would respect me a little more and I would think and I thought it was different. I thought that I was gonna be in there, I was gonna be scared, and people were scared of me, so it was more like that was glorifying to me. At the time, you understand what I'm saying? But I see that now that I'm older, you know what I'm saying. I can speak about that cause back then I would never have been like, I was just, it was crazy, just, like, I went in there for something I didn't do, and then I went in there, met a whole bunch of people and then my life just took a*

turn for the worse. It just took a turn for the worse. I started selling drugs and then everything just went right along in there like it's just crazy...

Although Carlos initially viewed his reputation as "glorifying," by his early 30s, he had come to see it another way.

Sam, a white male, described his criminal reputation as a burden during adulthood. He reported a chaotic home environment, beatings from his mother's boyfriends, frequent suspensions, and a suicide attempt that led to his expulsion from school. In his early 30s, he continued to struggle with mental health problems. He described the effect that institutionalization and his felony record had had on him over the years.

> *I come from a very cold neighborhood, pretty cold household. My house wasn't like you know, wasn't like totally, totally... I don't know, I guess to other people it would be totally insane. It was normal to me. But uh, you know, I grew up, my entire life, I've been to in and out of institutions: between mental hospitals, DYS, lock-ups, county jail, state prison, you know, Bridgewater. The whole nine yards. I've been to a lot of these places. And it makes you cold as a person. You're forced to really, uh, you know, just be around a lot of people that just don't give a fuck. And the people that are employed by these places are even worse than the inmates, a lot of them. And then come out on the streets, right, and it's like, nobody wants to give you a chance, know what I mean? Nobody wants to give you a chance once they learn that you're a convicted felon, and, they just think that you're a damaged person. They think that you choose to live that way, know what I mean? And some people do. But when you come out to the streets, and they literally just open the front door and say 'See you later,' and there's nothing to go to, there's no services. People need to survive, and a lot of the time, people commit crimes not cause they want to. It's our necessity to live, you know what I mean? And people don't seem to understand that. Cause they've never struggled. They don't what it's like to shelter for yourself, and have kids, on top of all that stuff. Like myself, you know? I really never committed a crime because I enjoy committing crimes. Never. I don't enjoy committing crimes. I don't like to hurt people. I'm a good person, you know what I mean?*

Having spent most of his life institutionalized, Sam had a long criminal record and was open about his involvement in illegal activity. Nonetheless, he did not embrace

a criminal identity. Instead, he discussed illegal activity as a means of survival and described himself as a "good person."

Finally, Kevin, an African-American male, spoke about what his criminal record meant for ongoing encounters with police. He described two traffic stops since his recent release from prison.

> I: So why were you stopped?
> *Oh well they said that I had yellow fog lights and I needed to change 'em clear.... But I know what they did. They ran my plate, they saw [I was] out of jail in July and got a gun charge so we're gonna go talk to him. And I appreciate it, for the talk... The other time was, that was an intersection. Said I revved my engine, and they just pulled me over, but they gave me a warning. And it didn't make no sense. They just wanna, they just wanna talk. Say hi. They miss you.*
> I: ... did they give you any indication that they were watching you or anything like that?
> *No they're not watching me or nothing like that... They just wanna know if I have guns. I got a gun charge so it don't matter who I'm with in the world. If I was in your car and you got pulled over, they'll talk to you, they'll run my ID, we're both gonna get out the car and they're gonna search our car. Cause that the problem with cops, cause I have a gun charge on my record, so do whatcha gotta do. There's no guns here. There's no drugs in here. I don't do drugs. I don't have guns, so... Everything's fine. I don't care.*

Kevin described experiencing intense surveillance from police that he expected to continue indefinitely. Notably, it is not only police officers who know Kevin who can monitor him closely. Electronic records enable officers to access Kevin's records immediately even if they have no prior experience with him. This intense surveillance — an ongoing consequence of Kevin's earlier behavior — could place Kevin at increased risk of re-arrest relative to individuals who engage in similar behaviors but do not have a gun charge on their record. In other words, Kevin's earlier arrest could place him at increased risk for subsequent arrest conditional on behavior. This is an extension of labeling theory that Liberman, Kirk, and Kim (2014) have called

"secondary sanctioning."

4.6 Discussion

Research has demonstrated that some disciplinary approaches can be effective at reducing problem behavior, whereas others can be alienating and increase the behaviors they are designed to deter. Exposure to these disciplinary approaches, and the common punishment strategies that accompany them, can have ongoing effects on individuals' offending trajectories over time. In this essay, I introduce the notion of a disciplinary career and use data from the NLSY97 to generate national estimates of the prevalence of harmful discipline among U.S.-born men and women who were young children during the 1980s, adolescents during the mid-1990s, and entering their early 30s at the time of data collection in 2012 and 2013.

I find that 58% of U.S youth born in the early 1980s experienced at least one form of harsh discipline by age 28: authoritarian parenting, out-of-school suspension, and/or arrest. Among white girls, harsh discipline was most prevalent at home. Among black and Hispanic girls, harsh discipline was most prevalent in school. Among boys, both suspension and arrest were common. More than half (51%) of black boys, 37% of Hispanic boys, and 30% of white boys experienced harsh punishment in multiple domains.

For a subsample of individuals born in the early 1980s who were deeply involved in discipline and crime, parental discipline had relied heavily on corporal punishment, first arrests were often confusing, and probation or confinement frequently served as a turning point toward increased offending. Perhaps individuals who were more closely connected to family and school were deterred from subsequent antisocial behavior by harsh parental discipline or suspension, as deterrence theorists

would predict. But among BRS respondents, harsh punishment appeared to have the opposite effect. It facilitated new connections with delinquent peers, altered career aspirations, and created records and reputations that followed individuals into adulthood. During late childhood and adolescence, respondents found some utility and even glamor in a criminal reputation; by their early 30s, however, they discussed addiction, poverty, and difficulty finding employment in explaining ongoing offending. Even with long arrest records, most did not embrace a criminal label.

4.6.1 Theoretical Implications

With this essay, I hope to move theory forward in viewing disciplinary experiences as a trajectory that unfolds across the life course. Although I focus on parents, schools, and criminal justice here, a broader treatment of disciplinary careers could include other institutions (e.g., the church) and mechanisms of social control (e.g., divorce, eviction, being fired from a job). I see criminal careers and disciplinary careers as dual trajectories that unfold simultaneously and reinforce each other over time. When youth fail to conform with the expectations of institutions — first the family, then the school and the law — they are met with punishments that in turn shape their future behavior. Thus, although the behavior of youth is consequential for stratification and public safety, so too are the institutional responses they experience over time.

4.6.2 Policy Implications

Traditionally, life course criminologists have asked, "At what point do individuals begin offending, how often do they offend, and what are the effects of their offending on public safety and the social order?" The framework outlined here encourages us to ask, "At what age are individuals first identified as deviant; how harshly and

consistently are they punished for deviance or noncompliance by social institutions across the life course; and how do their disciplinary experiences affect their future decisions about offending?" From a policy perspective, we can then ask not only, "What interventions will reduce the effects of offending on public safety?," but also, "What interventions can reduce exclusionary punishment and curb its criminogenic effects?"

5. DISCUSSION

The three essays in this dissertation present novel empirical evidence on how schools can shape crime. The first essay adds nuance to recent school choice research in Chicago, IL, and Charlotte-Mecklenburg, NC, by demonstrating that winning access to a first-choice secondary school does not reduce students' risk of arrest in all large, urban school districts. In the Boston Public Schools — a district that covers a smaller geographic area than Chicago or Charlotte-Mecklenburg and has operated citywide high school choice for more two decades — 8th graders who won admission to their top-choice, non-selective high school through the centralized district lottery system between 2006 and 2010 were as likely as 8th graders who lost the lottery to be arrested during a follow-up period of up to seven years. Lottery winners obtained school quality gains as measured by test scores, attendance rates, and other features of the schools in which they later enrolled; yet those gains were decoupled from their individual-level arrest risk.

The second essay examines how schools respond to students' nonconforming behavior. The results reveal that out-of-school suspension — arguably today's taken-for-granted response to serious misbehavior in U.S. secondary schools — has perverse effects on crime. Youth who are suspended from school for the first time between the ages of 12 and 14 reported higher levels of serious delinquency in follow-up surveys than did comparable students who were not suspended; moreover, this difference persisted for at least five years. Although I found no evidence that the magnitude

of suspension's effects on delinquency varied by students' race and gender, huge disparities in the prevalence of suspension across the population make suspension's criminogenic character especially detrimental for black and Latino students. Because persistence in delinquency can lead to arrest and the stigma of a criminal record, as well as a delayed transition to adulthood, racial disparities in high school completion rates, college attendance rates, arrest, incarceration, employment, and earnings can all be traced in part to school discipline.

The third essay views schools' responses to nonconforming behavior in the broader context of disciplinary experiences across the early life course. Inspired by labeling theory (e.g., Lemert 1967) and recent research on the "criminalization" of minor misbehavior and the hyper surveillance of black and Latino youth (Ferguson 2001; Hirschfield 2008; Rios 2011), I propose the *disciplinary career* as a useful framework for thinking about the interplay between disciplinary experiences and offending across the life course. Using data from a nationally-representative sample of U.S. citizens who were teenagers in the 1990s, I find that girls' harsh disciplinary experiences occur most commonly at home and at school, whereas boys tend to experience arrest in conjunction with exclusionary school discipline. Among members of this cohort who had been incarcerated in Massachusetts prisons as adults, disciplinary responses sometimes seemed unpredictable and only weakly linked to behavior. For some respondents, experiencing an arrest or incarceration that seemed unfair served as a turning point toward increased offending and an adversarial view of law enforcement. Extreme forms of punishment, including physical abuse from parents and solitary confinement in correctional facilities, increased subsequent violence. Future research should examine the interplay between offending and disciplinary responses among the broader population and across the life course.

5.1 *Theoretical Implications*

These essays' empirical findings have implications for criminology, the sociology of education, and legal scholarship. First, they remind education and crime researchers that schools' policies and practices can affect students' non-academic outcomes, including delinquency and crime. Specifically, schools' responses to troublesome student behavior appear to increase delinquency in the aggregate. Future research is needed to examine how suspensions' effects on behavior vary across school and neighborhood contexts.

Second, to understand schools' contributions to crime, we need a more comprehensive definition of school quality that captures the multiple pathways through which schools can affect students' behavior. The standard definition of school quality in education research — contributions to test scores as measured by student growth or value-added models — is insufficient for thinking about schools' effects on non-cognitive outcomes like crime. A more comprehensive measure should consider how schools shape human capital development, exposure to neighborhoods and peers, opportunities to offend, labeling, and direct exposure to the police and the courts (see Table 2.1). In addition, schools' contributions to crime appear to be highly variable, even within the same school district (Cullen et al. 2006; Deming 2011). Using a value-added modeling approach to estimate schools' effects on student arrests could enable researchers to quantify this variation across schools and districts. In addition, researchers could examine whether schools' contributions to test scores correlate with their contributions to crime.

Third, because schools' resources and disciplinary practices are unevenly distributed across racial groups (e.g., Welch and Payne 2010), racial disparities in the juvenile and criminal justice systems are previewed by and partially attributable to

school discipline. For this reason, researchers attempting to understand and address the underlying causes of disproportionate minority contact (DMC) in the juvenile justice system, racial disparities in adult incarceration (Pettit and Western 2004), distrust of police in communities of color (Tyler 2004), and current protests against police officers' use of force should incorporate schools more thoroughly into their analyses. For example, Fagan and Tyler (2005) describe legal socialization as a developmental process. They write, "with age comes increasing exposure to rules, norms, and legal controls across multiple contexts of social control, and the accumulation of these experiences can influence the development of children's notions about law and legal actors" (p. 222). Nonetheless, schools — which provide extensive exposure to rules and regulations enforced by adult authority figures and are the most structured social settings in many adolescents' lives — do not feature prominently in the theoretical discussion. Instead, greater emphasis is devoted to parental supervision, neighborhoods, peers, and exposure to violence.

5.2 *An Integrated Policy Approach*

Just as theory and research on schools and crime should be integrated, so too should policy development across these two domains. The finding that out-of-school suspension increases delinquency in the longer-term reveals one way in which the everyday actions of schools — in this case, their responses to nonconforming behavior — can have unintended consequences for public safety. Likewise, empirical studies of juvenile arrest (Hirschfield 2009; Kirk and Sampson 2013) have revealed that criminal and juvenile justice sanctions can have unintended consequences for educational attainment. These examples call for an integrated policy approach that maintains student engagement in school while holding youth accountable for their behavior.

Spurred by the Council of State Governments' landmark study of suspension in Texas (Fabelo et al. 2011), a recent federal initiative is trying to do exactly that. On July 21, 2011, Attorney General Eric Holder and Secretary of Education Arne Duncan launched the Supportive School Discipline Initiative (SSDI), a collaborative effort between the Departments of Justice and Education.[1] In January 2014, the initiative released guidelines for school districts encouraging them to reserve out-of-school suspension as a punishment of last resort.

As with many educational issues, the most aggressive school discipline reform efforts have been happening at the state and district levels. Pioneering districts in Denver, CO; Baltimore, MD; and Oakland, CA, made early changes to address the use of exclusionary discipline. More recently, and especially since the new federal guidelines were issued, state- and district-level policy reforms have centered around two goals: reducing overall suspension rates and eliminating racial disparities. A broad array of policy responses have emerged to meet these goals. Some of these attempt to limit the use of suspension by reducing the range of behaviors suspension can be used to address. For example, on May 15, 2013, the Los Angeles Unified School District became the first school district in the country to ban the use of suspensions for 'willful defiance,' a subjective category that made up roughly half of all suspensions in California[2] and drives high rates of suspension among black girls (Blake et al. 2014). Other initiatives have aimed to address racial disparities directly. In November 2014, Minneapolis Public Schools Superintendent Bernadeia Johnson announced that the district administration would review all out-of-school suspensions of nonwhite students. This was a controversial decision she later defended in a *Washington Post*

[1] Source: http://www.justice.gov/opa/pr/2011/July/11-ag-951.html

[2] Source: http://www.npr.org/2013/05/15/184195877/l-a-schools-throw-out-suspensions-for-willful-defiance

editorial.[3] We urgently need evaluations of these reforms to determine whether they are achieving their intended goals and to identify any unintended consequences they may have on student achievement, school climate, and school safety.

An integrated policy approach would invest criminal justice policymakers in school issues and arm them with the knowledge that schools are charged with performing multiple functions using limited resources. As Hirschfield (2008) notes, a key issue in schools is how to invest resources, whether to expend more on the most troubled students or to conserve resources for those perceived as having a greater chance of success. Educators need tools to promote an environment that is conducive to learning, and there are tradeoffs among the various options they might pursue. The policy discussion should center around identifying effective strategies that schools can afford to implement and that acknowledge educators' competing obligations of ensuring safety for all students and imparting human capital.

The potential for positive outcomes of suspension should be taken seriously and weighed against any negative outcomes that are found for suspended students. Reflecting on recent scholarship that focuses on the negative consequences of incarceration, Sampson (2011) argues that a new wave of research is needed to consider both the costs and benefits of mass incarceration. His argument can be extended to thinking about school discipline and exclusionary punishment. Schools need strategies for addressing serious misbehavior, but we have yet to evaluate systematically how the various options — including in-school suspension, out-of-school suspension, expulsion, transfer to alternative classrooms or schools, and restorative justice programs — perform relative to one another.

An integrated policy approach would also encourage education policymakers

[3] Source: http://www.washingtonpost.com/posteverything/wp/2014/11/26/critics-say-my-new-discipline-policy-is-unfair-to-white-students-heres-why-theyre-wrong/

to tie school discipline reform to ongoing discussions of school accountability. As Bowditch (1993) noted more than two decades ago, school disciplinary practice can accelerate dropout among youth "at risk" for leaving school. In the current policy context, evaluation of schools based on standardized testing (and published crime statistics) may provide additional incentives for administrators to exclude (or "push out") students who will not test well or whose behavior could help to earn a "persistently dangerous" label.[4] Given that suspension increases behavioral problems in the aggregate (Way 2011; see also chapter 3), school accountability frameworks should include suspension rates in their evaluation system, and policies should be designed carefully to avoid creating incentives to exclude students.

5.3 *An Interdisciplinary Research Agenda*

I view this dissertation as part of a longer-term research agenda that seeks to bring together insights from education research and criminology. I hope to convince education researchers and policymakers to consider the long-term consequences of schools' policies and practices for individual students' behavioral trajectories and for public safety more generally. At the same time, I hope to convince criminologists of the importance of taking education seriously: not as a marker of human capital or employability to be controlled away in regression analyses, but rather as a process that unfolds over time and has important implications for how youth see themselves, how they perceive the legitimacy of institutional actors and rules, and the extent to which they will become (or become viewed as) threats to public safety.

[4] See Booher-Jennings (2005) for a discussion of "educational triage" under accountability pressures.

APPENDIX

A. APPENDIX TO CHAPTER 2

A.1 Heterogeneous Effects by Quality of Preferred School

Here I re-run the main regression presented in Table 2.4, column 1 for the any arrest outcome, interacting each of the first four mechanisms described in Table 2.1 with the winner indicator. None of the interaction terms is statistically significant.

Table A.1: Regressions Interacting Winning with Preferred High School Characteristics

	(1) Original	(2) Human Capital	(3) Peers	(4) Opportunity	(5) Labeling	(6) All Four Mechanisms
Winner	.008	.084	.001	-.261	.035	-.700
	(.044)	(.301)	(.117)	(.670)	(.056)	(1.035)
Characteristics of Preferred High School:						
Avg math test score		.014*				-.012
		(.007)				(.009)
Win * Avg math score		-.002				-.008
		(.009)				(.011)
Peer arrest rate			-1.939**			-3.780*
			(.665)			(1.491)
Win * Peer arrest rate			.079			1.090
			(1.276)			(1.720)
Avg attendance (days)				.003		-.001
				(.003)		(.005)
Win * Avg attendance				.002		.006
				(.005)		(.006)
Out-of-school suspension rate					71.249***	2.770***
					(18.029)	(.536)
Win * OSS rate					-.315	-.405
					(.760)	(.863)
Constant	.114**	-.257	.338***	-.266	-.046	.940
	(.038)	(.229)	(.056)	(.429)	(.072)	(.895)
Observations	5532	5406	5406	5406	5406	5406
R^2	.196	.196	.196	.196	.196	.197
Adjusted R^2	.170	.170	.170	.170	.170	.170

Note: Regressions predict number of arrests occurring between Sept 1 of lottery year and June 30, 2013. All models include lottery fixed effects (dummy variables for each year-school-program-priority group, with one group omitted as a reference) and covariates for balance. * $p < .05$, ** $p < .01$, *** $p < .001$.

B. APPENDIX TO CHAPTER 3

B.1 Descriptive Statistics

Table B.1: Descriptive Statistics, NLSY97, Wave 1

	Full Sample N=8,984		Young Student Subsample N=4,051	
	Mean	SD	Mean	SD
Delinquency history				
Any delinquency	.50		.45	
Number of serious[a] types (0-3)	.32	.65	.23	.54
Delinquency in past 12 months				
Destruction of property	.16		.16	
Thefts > $50	.05		.03	
Other property crimes	.04		.03	
Physical assault	.12		.10	
Illegal drug sales	.05		.03	
Alcohol or marijuana by age 12	.20		.22	
Behavioral-emotional problems scale (0-8)	2.11	1.57	2.07	1.56
Recent school behavior				
Excessive absence	.25		.21	
Fighting at school	.15		.17	
Academic performance and attitudes				
Math test score (percentile)	51.84	33.97	55.51	33.37
Number of grades repeated	.16	.41	.11	.34
Positive perception of teachers	.88		.90	
Age (years)	14.85	1.46	13.64	.78
Mother less than HS education	.18		.17	
Annual household income (median, 000s)	43.30	44.59	43.66	43.76
Two-parent household	.68		.69	
Parental monitoring scale (0-16)	10.58	3.14	10.70	3.09
School enrollment				
Public	.90		.91	
Private	.07		.08	
Other type	.02		.01	
Prosocial classmates (%)	.66	.19	.68	.19
Hear gunshots in neighborhood	.18		.17	
Max. number of respondents	8984		4051	

Note: The Young Student Subsample includes respondents ages 12-14 at baseline who were enrolled in K-12 at waves 1 and 2. Means are presented for all variables except household income, for which the median is presented. [a]Serious delinquency includes thefts > $50, illegal drug sales, and physical assault.

B.2 Predicting Alternative Delinquency Outcomes

The dependent variable used in the main analysis is a binary measure of *serious delinquency* indicating theft of items worth $50 or more, physical assault, or illegal drug sales since the date of last interview. Here I explore four additional delinquency outcomes that capture behavior occurring since the date of last interview:

1. *Any delinquency* is a binary variable (0/1) that indicates whether the respondent has participated in any of six behaviors: destruction of property, theft of items worth less than $50, theft of items worth $50 or more (including vehicles), other property crimes, illegal drug sales, or physical assault.
2. *A variety index* —number of delinquency types — is a count (range 0 to 6) of the number of behaviors captured by the "any delinquency" outcome in which the respondent has participated.
3. *Any property offense* is a binary variable (0/1) indicating destruction of property, theft of items worth less than $50, theft of items worth $50 or more, and other property crimes.
4. *Physical assault* is a binary variable (0/1) indicating whether the respondent has engaged in physical assault or attacking behaviors.

Table B1 presents the results of regression models predicting each of these four alternative outcomes alongside the results of models predicting the serious delinquency outcome presented in the paper. Sample sizes vary slightly due to missing data on the dependent variables. The top portion of the table presents results for the full young student subsample, whereas the bottom portion presents results for the subset of respondents with no prior suspension history at wave 1 (maximum N=3,081). The "Short-Term" column (top portion) replicates the full regression model from Table 3.4, Model 1. The "Longer-Term" columns (bottom portion) replicate the findings presented in the left panel of Figure 3.2.

Table B.2: Effect Sizes from Regressions Predicting Alternative Outcomes, NLSY97 Young Student Subsample

	Short-Term[a]		Longer-Term[b]		
Years since suspension (time t)	1	2	3	4	5
Survey year	1999	2000	2001	2002	2003
All suspensions					
Serious delinquency[c]	.123***	.066**	.055*	.062**	.044*
	(.023)	(.023)	(.023)	(.022)	(.020)
	4026	3908	3828	3802	3724
Any delinquency[d]	.130***	.047	.042	.041	.039
	(.024)	(.025)	(.025)	(.023)	(.022)
	4025	3909	3828	3803	3727
Variety index (0-6)[d]	.313***	.126	.034	.082	.076
	(.066)	(.065)	(.053)	(.051)	(.041)
	4023	3907	3827	3800	3723
Any property[e]	.087***	.025	.011	.015	.007
	(.023)	(.022)	(.020)	(.019)	(.016)
	4026	3909	3828	3803	3726
Physical assault	.103***	.061**	.013	.058**	.030*
	(.020)	(.020)	(.018)	(.019)	(.015)
	4030	3911	3830	3805	3729
First-time suspensions					
Serious delinquency[c]	.116***	.102**	.119***	.105***	.058*
	(.031)	(.032)	(.030)	(.029)	(.027)
	3063	2985	2944	2908	2845
Any delinquency[d]	.137***	.089**	.097**	.081**	.066*
	(.033)	(.035)	(.033)	(.030)	(.030)
	3062	2985	2944	2908	2846
Variety index (0-6)[d]	.338***	.206*	.143*	.153*	.110*
	(.093)	(.092)	(.071)	(.063)	(.054)
	3061	2984	2943	2906	2845
Any property[e]	.095**	.038	.017	.034	.021
	(.032)	(.032)	(.026)	(.025)	(.021)
	3063	2985	2944	2908	2846
Physical assault	.091***	.082**	.058*	.076**	.027
	(.027)	(.027)	(.023)	(.025)	(.018)
	3067	2987	2946	2909	2847

Note: This table presents effect sizes from regressions of self-reported delinquency at waves 3-7 on suspension occurring between waves 1 and 2 and all controls in Equation (3.1). Standard errors are in parentheses. Sample sizes vary due to missing data on the dependent variables. * $p < .05$, ** $p < .01$, *** $p < .001$. [a]The top portion of the "Short-Term" column replicates Table 3.4, Model 1. [b]The bottom portion of the "Longer-Term" columns replicates Figure 3.2 (left panel). [c]Serious delinquency includes thefts > \$50, illegal drug sales, and physical assault. [d]Any delinquency and the variety index include the 3 offenses in the serious delinquency variable, plus thefts of items under \$50, destruction of property, and other property crimes. [e]Any property crimes include destruction of property, thefts less than and over \$50, and other property crimes.

B.3 Nearest Neighbor Matching

The main paper (Table 3.4, Model 3) presents results from propensity score matching using radius matching with a caliper = .01. I also used nearest neighbor matching, which matched 421 suspended students to 279 comparison students. Table C1 shows the covariate balance after nearest neighbor matching. The mean difference between treatment and comparison individuals in this model was .133, which was .016 higher than the estimate derived from radius matching, but within the 95% confidence interval. The associated t-statistic is 3.53.

Table B.3: Mean Covariate Balance After Nearest Neighbor Matching

	Treated	Control	% bias	t
Any delinquency	.69	.69	-.5	-.07
Number of serious[a] types (0-3)	.51	.59	-11.3	-1.32
Recent destruction of property	.31	.33	-5.9	-.74
Recent thefts > $50	.09	.11	-9.5	-1.05
Recent other property crimes	.08	.08	2.2	.25
Recent physical assaults	.24	.29	-13.3	-1.56
Recent drug sales	.06	.07	-2.4	-.28
Alcohol or marijuana by age 12	.33	.30	6.0	.82
Behavioral-emotional problems scale (0-8)	2.56	2.51	3.6	.49
Excessive absence	.30	.28	3.3	.45
Fighting at school	.43	.37	13.2	1.69
Math test score (percentile)	38.75	35.69	9.3	1.39
Number of grades repeated	.23	.27	-7.9	-.92
Positive perception of teachers	.79	.78	3.4	.42
Prior suspension	.62	.62	.5	.07
Age (years) - 12	13.62	13.69	-8.5	-1.23
Mother less than HS education	.34	.36	-2.7	-.36
Annual household income (000s)	33.83	32.15	4.7	.82
Two-parent household	.53	.52	2.0	.28
Parental monitoring scale (0-16)	9.77	9.54	7.0	.98
Private school	.02	.03	-4.3	-.83
Other school type	.02	.02	-4.1	-.50
Prosocial classmates (%)	.65	.64	4.0	.58
Hear gunshots in neighborhood	.25	.29	-8.9	-1.24
Black boy	.26	.26	.0	.00
Hispanic boy	.12	.11	.8	.11
Other race boy	.00	.00	.0	.00
White girl	.12	.14	-5.6	-.91
Black girl	.15	.15	.0	.00
Hispanic girl	.07	.09	-5.8	-.88
Other race girl	.01	.00	3.9	.82
N	421	279		

Note: [a]Serious delinquency includes thefts > $50, illegal drug sales, and physical assault.

B.4 Heterogenous Effects by Race and Gender

We might expect suspension to be most stigmatizing—and labeling most intense—among students for whom it is least likely to occur. Based on race and gender disparities in the prevalence of suspension (see Figure 3.1), we might expect the effect of suspension on delinquency to be largest for white girls and smallest for black boys, with the effects for other groups falling in between. On the other hand, considering cultural stereotypes of deviance and criminality might lead us to the opposite prediction: that suspension will be most disruptive among youth who best fit the pervasive image of criminality. The association between black masculinity and crime has a long history in the United States, dating back to at least 1890 (Muhammad 2011). Ferguson's (2001) ethnography of elementary school boys reveals how racialized perceptions of criminality can manifest themselves in the school setting. She notes the ease with which a school adult describes a 10-year-old, African-American boy as having "a jail-cell with his name on it" (p.1). If educators and police tend to view black students as more criminal than white students, and boys as more criminal than girls, we might expect black and Latino boys to be especially susceptible to the long-term consequences of labeling and the possibility of secondary deviance.

To test formally whether the effect of suspension on delinquency differs across race-gender subgroups, I re-run the main regression model and the high-risk subsample regression model (Table 3.4, Models 1 and 2) with race-gender moderating effects, including 7 variables that interact each of 7 race-gender subgroups — black boys, Hispanic boys, boys of other races, white girls, black girls, and girls of other races — with the suspension variable. (The interaction term for white boys is omitted as the reference.) None of the race-gender interaction terms is significant at the $p < .05$ level in these models; and including these additional variables does not sat-

isfy an incremental F-test. This indicates that the size of the effect of suspension on delinquency does not vary significantly by race and gender, but is instead large and positive for boys and girls of all four racial and ethnic groups.

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