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UNLOCKING POTENTIAL: THE SCHOOL-TO-PRISON-PIPELINE FOR STUDENTS WITH
DISABILITIES

by

NAVENA FELICIA CHAITOO

A dissertation submitted to the Graduate Faculty in Criminal Justice in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

2023

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APPROVAL

Unlocking Potential: The School-to-Prison-Pipeline for Students with Disabilities

by

Navena Felicia Chaitoo

This manuscript has been read and accepted for the Graduate Faculty in Criminal Justice in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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ABSTRACT

Unlocking Potential: The School-to-Prison-Pipeline for Students with Disabilities

by

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Advisor: Jeff Mellow, Ph.D.

This research uses quasi-experimental, matched sampling to examine the school-to-prison pipeline for students with disabilities using data from the National Longitudinal Study of Adolescent to Adult Health. This study presents novel insights into an at-risk group that has faced disproportionate rates of school discipline and incarceration. The study finds school suspension to be associated with future involvement in the criminal legal system and lower educational attainment. Disability was not found to mediate the relationship between suspension and future involvement in the criminal legal system or the relationship between suspension and academic outcomes. However, disability was found to be a statistically significant covariate of suspension in models estimating its effect on criminal legal involvement and various academic outcomes. These findings suggest the need for more research on the school-to-prison pipeline for students with disabilities and a closer look at school discipline policies as it relates to students with disabilities.

DEDICATION

To the Lord, my God. “Your word is a lamp for my feet and a light on my path” (*Holy Bible, CSB Translation, 2021, Psalms 119:105*).

ACKNOWLEDGEMENTS

I would like to acknowledge my committee: Dr. Jeff Mellow (chair), Dr. Brian Lawton, Dr. Heath Brown, and Dr. Sophie Mitra (external reader, Fordham University). I am grateful to each of you for lending your respective expertise in corrections, statistics, education policy, and disability. I am personally grateful to Dr. Mellow for taking a chance on me and this research after just a short initial meeting. His all-in approach and flexibility throughout the entire process helped make this a success. I am also thankful to Dr. Lawton and Dr. Brown who interviewed me for this program and also took a chance on me. And, I am so grateful to Dr. Mitra who took me under her wing as a young undergraduate at Fordham University, introduced me to research, and inspired me to do action research. Thank you all for your expertise and support.

I would also like to mention Clare Wilson, Manager of Student Disability Services at The Graduate Center (GC), City University of New York (CUNY), who ensured that I had my preferred computer assisted real-time (CART) captioners from the first day of my studies at the John Jay College of Criminal Justice. Clare, thank you for always making sure I had the accommodations I needed to succeed. A special thank you to Stanley Sakai, Mirabai Knight, Joshua Edwards, and Lauren Schechter who captioned my classes and made the content accessible to me. I would also like to recognize Shari Rodriguez, Academic Program Officer, and Kathy Mora, College Assistant, who answered many questions about registration and processes. Thank you both for helping me successfully navigate CUNY, the GC, and John Jay protocols.

I am also grateful to the CUNY GC and the John Jay College for allowing me to remain employed full-time while pursuing this degree. This gave me the opportunity to contribute in various ways to action research at the Vera Institute of Justice, New York City Mayor's Office of Criminal Justice, and Correctional Health Services, a division of New York City Health + Hospitals. Many thanks to all of my colleagues who have supported this work. A special thanks to Monica Katyal, Senior Director, and Janet Wiersema, Deputy Director, at Correctional Health

Services for not only allowing me the time to complete this work but also for cheering me on.

I would also like to express my deepest appreciation to my parents, Seunarine and Devatee Chaitoo. In a world made for hearing people, together you built spaces for people like me with hearing loss. This accomplishment and all others would not have been possible without your love, patience, and tireless advocacy. Thank you for the many late nights teaching me, listening to me moot presentations until they were perfect, and supporting my every dream.

I would also like to express my deepest gratitude to Dr. Matthew Grayson and Judge Barbara Moses who have been great mentors to me for the past two decades. Judge Moses (who was then a practicing lawyer) recommended me for a summer internship at the Manhattan District Attorney's Office at the young age of thirteen and set me on my current path as a criminal legal system reformer. And, Dr. Grayson spent many evenings helping me with complicated mathematical proofs and problems. Thank you both for providing the early-age exposure and foundation to effectively contribute to action research on criminal legal system reform.

I am also very thankful for Annette Elias who was my educational audiologist and provided hearing solutions for the classroom from fifth grade through twelfth grade. And, Debbie Acosta who captioned for me while I was a student at Stuyvesant High School and who later came out of retirement to caption for me again while I was a graduate student at Carnegie Mellon University. Thank you both for always making sure I was covered and had the resources I needed to be successful in the classroom. It is because of the strong foundation you helped build in my early education that I was able to pursue this degree.

I would also be remiss if I did not mention the many people who work behind the scenes to ensure that I perform optimally. I am particularly grateful to Dr. Ellen Lafargue (former Audiology Director) and Linda Kessler (Speech and Language Pathologist) of the Center for Hearing and Communication as well as John Ioannou (Audiology Director) of Lexington Hearing and Speech. Thank you all for everything you do to support my hearing and speech.

I am also extremely grateful to my family, including my church family at Canarsie Full

Gospel Chapel, whose support and prayers were instrumental in me seeing this work through. I am especially grateful to Pastor Kenneth Friedman, Director of Women's Ministry Lillian Friedman, and Director of Youth Ministry Mabel Martinez-Almonte for their fellowship. My thanks to you all for being a part of this journey with me.

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CHAPTER 1

INTRODUCTION

According to the latest data available from October 2021, the United States (US) imprisoned 629 people for every 100,000 people (Fair and Walmsley, 2021). If other forms of confinement are taken into consideration, the US incarceration rate amounts to 664 people for every 100,000 people (Widra and Herring, 2021). These other forms of confinement include youth held in juvenile detention facilities, people detained pretrial on federal offenses, people detained for immigration offenses, sex offenders who are indefinitely detained in civil commitment centers, and those who are committed to psychiatric facilities as a result of criminal charges or convictions (Widra and Herring, 2021). Whether considering the total number of people confined or just those incarcerated in prisons, the US has the highest per-capita rate in the world (Fair and Walmsley, 2021; Widra and Herring, 2021). Compared to other countries with high incarceration rates, the US is more aligned with nations with authoritarian governments or that recently underwent large-scale internal armed conflicts (Widra and Herring, 2021). Moreover, the US is more punitive than even those countries with similar violent crime rates, measured as an index of murder/ non-negligent manslaughter, rape/sexual violence, robbery, and aggravated/serious assault (Widra and Herring, 2021). In fact, the only countries that approach the incarceration and violent crime rates of the US are El Salvador (562), Panama (420), Turkey (335), and Peru (269) (Widra and Herring, 2021).

In reality, incarceration rates in the US are only indirectly related to crime rates (National Research Council, 2014). These high incarceration rates are actually the result of policy choices made on our behalf and in our name by elected officials (National Research Council, 2014). The growth in US incarceration was driven by punitive “tough on crime” strategies promoted by politicians in response to the increase in crime rates, social upheaval, racial tension, and

political unrest of the 1960s and 1970s (Clear and Frost, 2014; Garland, 2001; National Research Council, 2014). Fundamentally, the two drivers of the increase in the incarceration rate were: (1) increased admissions to jails and prisons through greater enforcement of drug offenses and (2) increased lengths of stay through the imposition of mandatory minimums and longer sentences (Clear and Frost, 2014; Garland, 2001; National Research Council, 2014).

As the US incarcerated, it also deinstitutionalized leading to transinstitutionalization (Harcourt, 2011). The development of the sedative Thorazine in 1954 was a significant advancement in available treatments for mental illness which previously only included treatments with debilitating side effects such as electroconvulsive therapy, insulin coma therapy, and lobotomy. In addition to offering more effective inpatient treatment, Thorazine also offered a treatment for mental illness that could be provided in outpatient settings as well making it possible to discharge many people back into their communities. Although the possibility of community-based treatment existed in the mid-1950s, it was the Community Mental Health Centers Act of 1963 and the establishment of Medicaid and Medicare in 1965 that provided the financial incentive for states to move patients out of their mental hospitals and into other institutions that were subsidized with federal money instead (Harcourt, 2011). States were further pressured to deinstitutionalize by litigation finding widespread abuse in mental hospitals (“ACLU History,” n.d.). Examples of such landmark cases include *Wyatt v. Stickney* (1972) and *Wyatt v. Aderholt* (1974) which challenged the conditions of hospitalization and led to increased funding for mental health and rehabilitative services in the community rather than state-run hospitals (“ACLU History,” n.d.). The state incentive to cost-shift mental health care to the federal government meant that more patients were being treated in the community and sustained by other federal programs such as Supplemental Security Income (SSI), which provided them with a basic monthly income allowance (Harcourt, 2011). However, an unforeseen consequence of deinstitutionalization was that once in the community, people with mental illness face heightened risk of arrest and incarceration often times for behavior related to their severe mental illness (Cook, Ludwig, and McCrary, 2011; J. Monahan, 1992; Rabkin, 1979; Torrey, 1997). In reality,

deinstitutionalization became transinstitutionalization accounting for approximately 4-7 percent of the incarceration growth between 1980 and 2000 (Raphael and Stoll, 2013).

Problem Statement

Today, disproportionately more people with severe mental illness are in our jails and prisons than in the general US population. Similarly, people with hearing, vision, cognitive, ambulatory, self-care, or independent living disabilities are also disproportionately represented in the US criminal legal system. The most comprehensive data on mental health needs and disability prevalence among people incarcerated in the US is the 2011-2012 National Inmate Survey (NIS) conducted in 233 state and federal prisons and 358 jails. The NIS is part of the National Prison Rape Statistics Program at the Bureau of Justice Statistics (BJS), which collects mandated data on the frequency of sexual assault in correctional facilities under the Prison Rape Elimination Act of 2003. BJS also used data from the 2009-2011 National Survey on Drug Use and Health (NSDUH) and the 2012 American Community Survey (ACS) to compare the prevalence of mental illness and disability among incarcerated populations to the non-institutionalized, general US population. BJS standardized the general population in the NSDUH and ACS on sex, age, race, and Hispanic origin to match the prison and jail populations. According to these standardized estimates, Bronson and Berzofsky (2017) found 14% of people in prison and 26% of people in jail versus 4% of people in the general population met the threshold for serious psychological distress (based on the Kessler-6 scale). Similarly, Bronson, Maruschak, and Berzofsky (2015) found 32% of people in prison versus 11% of people in the general population and 40% of people in jail versus 9% of people in the general population report having at least one disability. More recent data for people in prison only from the 2016 Survey of Prison Inmates (SPI) found that that 38% had at least one disability (Maruschak, Bronson, and Alper, 2021). Analyses of the SPI also found that 24% of all people incarcerated in state and federal prisons reported participating in special education classes and 14% reported being told

they had a learning disability (Maruschak et al., 2021).

A Prison Policy Institute briefing in 2017 observes that disabled people are overrepresented in all interactions with the criminal legal system and, at all points, the system is failing them. In particular, Oberholtzer (2017) notes that the “war on drugs” and other mass incarceration policies criminalize behaviors related to disability such as substance use which is often a method of self-medication for pain and other symptoms. Furthermore, the reliance on police officers as first responders to people in crisis dictates a criminal legal response (Oberholtzer, 2017). As opposed to social workers, mental health response teams, or other trained professionals, police officers can perceive atypical reactions to social cues as “disorderly conduct,” “threatening,” or “noncompliance” (Oberholtzer, 2017). Repeated interactions with the criminal legal system during times of crisis fuels a revolving door of arrest, incarceration, and sometimes homelessness which can result from broken social ties and limited economic opportunities (Oberholtzer, 2017).

Abrams (2020) further discusses the problem of police violence against Americans with disabilities through the intersecting lens of race and gender drawing attention to Marcus-David Peters who was shot and killed by a police officer in Richmond, Virginia in May 2018 after experiencing a psychiatric episode. Peters had no history of mental illness or drug use and no criminal record (Abrams, 2020). Abrams notes that there is no reliable national database tracking how many people with disabilities or who are experiencing a crisis are shot by police each year but estimates indicate the number is substantial – between one-third and one-half of all police killings. Racial justice and disability rights advocates such as Talila A. Lewis, a community lawyer and volunteer director of Helping Educate to Advance the Rights of Deaf Communities (HEARD), explains that police violence against people with disabilities exists because the US government uses “constructed ideas about disability, delinquency, and dependency, intertwined with constructed ideas about race to classify and criminalize people” (Abrams, 2020). Haben Girma, another lawyer and activist, who is both black and deaf-blind, adds that the danger for people with mental illnesses and other disabilities is “born of police departments’ compliance culture” in that for “anyone who immediately doesn’t comply, the police move on to force”

(Abrams, 2020). For Girma, this can mean that she is perceived as a threat if a police officer is yelling at her to do something and she does not hear and immediately comply (Abrams, 2020).

The disproportionate number of people with disabilities impacted by the criminal legal system can be explained, in part, by a phenomenon known as the school-to-prison pipeline. Though not the focus of this study, the disparity can also be explained by the health impacts of the criminal legal system itself which has been shown to have a deleterious effect (Binswanger, Redmond, Steiner, and Hicks, 2012; Fernandes, 2020; Sundaresh et al., 2020; Wang et al., 2021). The school-to-prison pipeline describes the pathway by which students with disabilities are more likely to be suspended, expelled, and eventually involved in the criminal legal system (Bronson et al., 2015; Losen, Hodson, Keith, Morrison, and Belway, 2015). Losen et al. (2015) finds that nearly 3.5 million public school students received at least one out-of-school suspension in 2011-12 and, of these, 1.6 million were suspended at least twice. Using an average suspension of 3.5 days, Losen et al. (2015) estimate that public school children in the US lost 18 million days of instruction during the 2011-12 academic year as a result of exclusionary discipline. Students with disabilities are suspended at nearly twice the national rate: 5.4% versus 2.6% at the elementary level and 18.1% versus 10.1% at the secondary level (Losen et al., 2015).

Despite these statistics, the school-to-prison pipeline scholarship does not adequately discuss the role disability plays in exposing children to school discipline and their future involvement in the criminal legal system. In 2019, Prison Policy Institute published aggregate statistics for the approximately 48,000 youths who were confined in facilities away from their homes explaining that nearly 20% are confined for technical violations or status offenses (Sawyer, 2019). However, while the report discusses racial and ethnic disparities in youth incarceration, it remains silent on the role of disability and the school-to-prison pipeline. This oversight prevents discussion and formation of policy solutions to address the school-to-prison pipeline for students with disabilities leaving them at risk for continued justice system involvement. Schools form the bedrock of this issue where zero-tolerance policies have resulted in a school-to-prison pipeline that disproportionately funnels children with disabilities into

the criminal legal system. This study uses quasi-experimental methods to examine the role of disability in exposing children to school discipline and the impact this has on their educational attainment and involvement in the criminal legal system. The findings from this study have the potential to impact school disciplinary policy and, in turn, reduce the footprint of the US criminal legal system.

Model

As Figure 1.1 shows, the study identifies a number of covariates associated with suspension that, in turn, can affect future criminal legal and educational outcomes. The potential for so many confounding factors necessitates a quasi-experimental research approach, which is why the study used matched sampling to construct a statistical control group for suspended versus not suspended students that was also balanced on disability status. Double-adjusted mediation analyses were conducted to adjust for any remaining imbalance after matching and decompose the relationships between suspension and criminal legal/academic outcomes. The analyses are described in greater detail in the methods section and results are reported in that section.

Research Questions and Hypotheses

The study sought to answer the following two primary research questions:

1. Is the relationship between suspension and criminal legal outcomes mediated by disability?
2. Is the relationship between suspension and academic outcomes mediated by disability?

Given that students with disabilities experience suspensions at disproportionate rates compared to their non-disabled peers, the study expects to find that disability mediates the relationship between suspension and criminal legal outcomes. The study also expects to find that disability mediates the relationship between suspension and academic outcomes given that students with disabilities experience a higher rate of suspension than students without disabilities

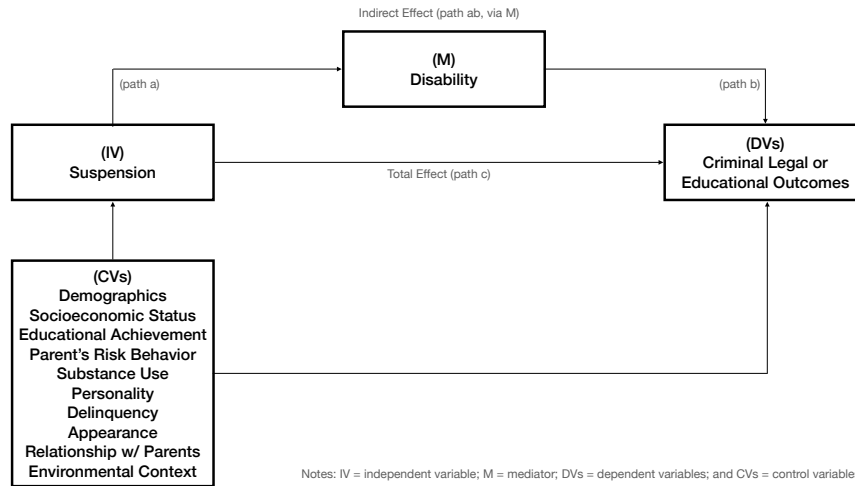


Figure 1.1: An integrative model of suspension, disability, and its related impacts on criminal legal and educational outcomes

and therefore are prohibited from attending schools for longer periods of time.

CHAPTER 2

DEFINITION OF TERMS

This section contains standardized definitions for key terms and concepts referenced throughout the study.

Disability

The goal of the study was to answer the following two research questions: (1) Does disability mediate the relationship between school discipline and criminal legal outcomes and (2) Does disability mediate the relationship between school discipline and educational outcomes. To test the hypotheses that disability mediates these relationships, disability has been defined in three ways: (1) Learning Disability/Receiving Special Education Services; (2) experiencing Serious Psychological Distress; and (3) Dual Disability. Each of the three disability types are defined in greater detail in the following subsections.

Learning Disability/Receiving Special Education Services

The study identifies students with learning disabilities or who receive special education services because these are students who are most likely to be known to school administrators and therefore higher risk for harsher school disciplinary practices (Losen et al., 2015). Students with learning disabilities or who are receiving special education services will have individualized education plans (IEPs) that describe their special education needs (Armstrong, Armstrong, and Barton, 2016). As a result, school administrators are not only aware of these students and their disability status but also have greater control over the educational settings in which they are able

to learn (Thomas and Loxley, 2007). In so doing, school administrators can choose to foster inclusive and accessible environments for students with disabilities or prevent them from being fully integrated and benefiting from the school setting (Christensen and Rizvi, 1996).

Serious Psychological Distress

Consistent with prior research in corrections settings (Bronson and Berzofsky, 2017; Bronson et al., 2015), this study uses the Kessler-6 (K6) scale, along with responses to other mental status questions, to estimate the prevalence of students experiencing serious psychological distress (Kessler et al., 2003).

The K6 consists of six questions asking, over the course of the past 30 days, how often respondents felt: (1) nervous; (2) hopeless; (3) restless or fidgety; (4) so depressed that nothing could cheer them up; (5) everything was an effort; or (6) worthless.

The use of self-reported mental health status questions to identify respondents experiencing serious psychological distress is also consistent with those used in disability surveys generally (Livermore, Whalen, Prenovitz, Aggarwal, and Bardos, 2011).

Dual Disability

The study also constructed a dual disability measure comprised of students who were identified as both having a learning disability/receiving special education services and experiencing serious psychological distress. This measure was designed to capture disability severity as existing survey measures were binary and did not assess the level of disablement the student experienced (Livermore et al., 2011; Pettinicchio and Maroto, 2021; Putz and Glickman, 2019). Under the dual disability measure, a student must not only be identified as having a learning disability or receiving special education services but also experiencing serious psychological distress as this may suggest poorer coping and adaptation to the school setting.

Students/school-aged children

This study focuses on students in grades seven through twelve who are between the ages of twelve and nineteen when they were first interviewed for the survey (Wave I-II), between eighteen and twenty-six in their first follow-up (Wave III), and between twenty-four and thirty-two in their second follow-up (Wave IV) (Harris et al., 2019). Given this, the study uses the terms students and school-age children when discussing respondents to the Wave I or Wave II surveys.

Educational Attainment

This study defines educational attainment consistent with existing literature as graduation from high school and earning a bachelor's degree (Bernburg and Krohn, 2003; Hirschfield, 2009; Kirk and Sampson, 2013; Sweeten, 2006; Widdowson, Siennick, and Hay, 2016; Wilczak, 2014). Graduation from high school was assessed by the time of the Wave III or Wave IV survey given the age band of survey respondents. Similarly, earning a bachelor's degree was assessed by the time of the Wave IV survey given the age band of survey respondents.

School-to-Prison Pipeline

This study examines the role of disability in upholding the school-to-prison pipeline. As such, the phrase "school-to-prison pipeline" will be used to describe the policies and practices that unduly expose students to school discipline and to the US criminal legal system. In response to rising crime, policymakers enacted more punitive sentencing and policing policies in the 1970s and 1980s such as federal and state mandatory minimum sentencing laws, "three strikes and you're out" laws, and broken windows policing that led to the US having the highest per-

capita incarceration rate in the world (Clear, 1994; Clear and Frost, 2014; Garland, 2001; Western, 2006). The policy drivers for the school-to-prison pipeline originated in this more punitive climate with the enactment of federal legislation that targeted drugs, gangs, and guns in schools, and also required schools to become accountable for “failing” students in the 1980s, 1990s, and early 2000s (Aull, 2012; Ayers, Dohrn, and Ayers, 2001; Price, 2009; Skiba and Knesting, 2001; Skiba and Peterson, 2000). The result of the Drug-Free Schools and Communities (1989), Gun-Free Schools (1994), and the No Child Left Behind (2001) Acts was the importation of the criminal legal apparatus into schools by fostering closer collaboration between school administrators, police, and juvenile legal systems in order to qualify for federal funding (Hirschfield, 2008; Kupchik and Monahan, 2006; Simon, 2007).

School Discipline

In this study, the phrase “school discipline” will be used to refer collectively to an education administrator’s decision to suspend or expel a student for an offense he/she deems an infraction under school rules. Schools receiving federal funding were obligated under the Gun Free Schools Act of 1994 to expel students who bring a firearm to school or within the school zone for a calendar year and to report that student to local law enforcement (Heitzeg, 2009). The intersection of school discipline and the criminal legal system was further formalized through the extension of zero tolerance policies for drugs (including alcohol) with the Drug-Free Schools and Communities Act of 1989 and more generally violence with the increase in the number of School Resource Officers (SRO) in schools to enforce not only school rules but the local penal codes as well (George, 2015; Heitzeg, 2009). SROs had wide latitude in the offenses they enforced given that their jurisdiction included federal, local, and school codes – this meant that students could be suspended for fighting or violating the dress code (George, 2015; Heitzeg, 2009). Given that states have broad authority over the enforcement standards of conduct in its schools, the Supreme Court held in *Goss v. Lopez* (1975) that students have a right to due process under the fourteenth

amendment to the US Constitution. This requires states to recognize a student's right to a public education, which is compulsory, and implement procedural safeguards to ensure that students receive notification of their suspension as well as a hearing.

This study uses definitions codified by the National Center for Education Statistics (NCES) to describe two main forms of school discipline: suspensions and expulsions. As the focus of the study is the school-to-prison pipeline, definitions for the criminal legal system and involvement in the criminal legal system.

Suspension Given data availability, this study focuses on the impact of an out-of-school suspension on criminal legal and academic outcomes. According to the NCES, an out-of-school suspension is defined as an instance in which a student is removed from his or her regular classroom for a period of at least half a day but less than the remainder of the school year and sent home for disciplinary reasons (Brey et al., 2018). Students in the US can also receive an in-school suspension for disciplinary reasons in which they are temporarily removed from their regular classroom(s) for a least half a day but remain under the direct supervision of school personnel (Brey et al., 2018). The data that used for this study only includes out-of-school suspensions and does not ask about in-school suspensions preventing analyses exploring the nuance between the two. Future survey research should consider collecting data on in-school suspensions.

Expulsion This study aimed to also investigate the impact of an expulsion on criminal legal and academic outcomes. According to the NCES, expulsions are defined as actions taken by a local education agency to remove a student from his or her regular school for the remainder of the academic year or longer for disciplinary reasons (Brey et al., 2018). For students found to be in violation of the Gun Free Schools Act of 1994, expulsions can last up to one calendar year (Brey et al., 2018). There were very few students in the sample who had been expelled, however, and this is most likely because the survey was administered in schools preventing students who were currently expelled from participating. For this reason, the study only investigates the impact of an out-of-school suspension on criminal legal and academic outcomes.

Criminal Legal System

The criminal legal system in the US is comprised of policing, prosecution, courts, and corrections. This study uses the phrase “criminal legal system” rather than “criminal justice system” in its discussion of the school-to-prison pipeline because these systems have not historically delivered justice (Bryant, 2021). For example, research has shown pretrial detention to have some of the most deleterious effects on earnings and household income, increased risk of parental separation, and reduced voter turnout (Dobbie, Goldin, and Yang, 2018; Grogger, 1995; A. White, 2019; Wildeman, Turney, and Yi, 2016). Other research argues that the criminal legal system has its legacy in slavery and, through highly punitive institutions, is used to reinforce pre-abolition racial hierarchy (Alexander, 2010; Gottlieb and Flynn, 2021). While, still other research argues that the criminal legal system was used to “manage the rabble” incarcerating a disadvantaged segment of the rural poor that struggled with addiction, mental illness, and homelessness (Irwin, 2013; Western, Davis, Ganter, and Smith, 2021). Despite the complexity of these issues, there is agreement in the literature that these policies have had disproportionate effects on Black people and people of color but also people with disabilities who are more likely to be suspended/expelled (Losen et al., 2015) and be incarcerated (Bronson and Berzofsky, 2017; Bronson et al., 2015).

Criminal Legal System Involvement Given data availability, this study defines criminal legal system involvement as inclusive of having contacts with any of the following parts of the system: policing, courts, and corrections.

This study uses self-reported information from respondents in Wave IV on whether they had ever been arrested, convicted, incarcerated, or paroled to measure involvement with the criminal legal system.

On average, it was expected that between a quarter and one-third of the sample will report an arrest, with variation by race and gender, consistent with previous studies (Barnes, Jorgensen,

Beaver, Boutwell, and Wright, 2015; Brame, Bushway, Paternoster, and Turner, 2014). It was also expected that 16.5% of the analytic sample will report being incarcerated based on a previous study (Barnert et al., 2018). Overall, the study found 28.8% of the sample to have had some involvement with the criminal legal system (cf., Table 5.1).

CHAPTER 3

LITERATURE REVIEW

Theoretical Framework

Developmental and Life-course Criminology

One conceptual explanation for the disproportionate number of people with disabilities impacted by the United States criminal legal system is that risk factors early in life affect outcomes later in life (Farrington, Kazemian, and Piquero, 2019). This is the prevailing viewpoint of many developmental and life-course criminologists who argue that school-age contact with the criminal legal system results in poorer educational outcomes. In particular, research shows that students who are arrested, convicted, or incarcerated are more likely to drop out of high school (Bernburg and Krohn, 2003; Hirschfield, 2009; Sweeten, 2006; Wilczak, 2014), less likely to attend college (Kirk and Sampson, 2013; Widdowson et al., 2016), and have overall lower educational attainment than their peers (Del Toro and Wang, 2021; J. Rosenbaum, 2020; Taylor, Mulvey, Russell, and Terpstra, 2018). Other research identifies school discipline practices as being predictive of future involvement in the criminal legal system (Gerlinger et al., 2021; K. Monahan, VanDerhei, Bechtold, and Cauffman, 2014).

Still more research identifies individual, early-life factors such as delinquency (Farrington, 1989; Sweeten, Bushway, and Paternoster, 2009), cognitive/psychological characteristics (Beaver, Boutwell, Barnes, Vaughn, and DeLisi, 2017; Freese, 2008; Guay, Ouimet, and Proulx, 2005; Hirschi and Hindelang, 1977; J. White et al., 1994), and low self-esteem (Boccio, Schwartz, and Beaver, 2021; Donnellan, Trzesniewski, Robins, Moffitt, and Caspi, 2005; Pratt, Barnes, Cullen, and Turanovic, 2016) as predictive of later-in-life involvement with the criminal

legal system. And, the research also indicates that heritable parental characteristics may also influence the likelihood of a child having future involvement with the criminal legal system (Liu, Motz, Tanksley, Barnes, and Harris, 2021; Stumm et al., 2020; Willoughby, McGue, Iacono, Rustichini, and Lee, 2021). As demonstrated in the available research, there is little agreement among scholars on how school-age risk factors influence involvement in the criminal legal system and how that involvement further affects educational outcomes. Their research is further limited by a number of unmeasured school-age factors – such as mental illness and disability – which has remained understudied in developmental and life-course criminology.

Labeling Theory

A second explanation is that people with disabilities bear attributes that convey devalued stereotypes in American society. This “stigma” was classically defined by Goffman (1986) as an “attribute that is deeply discrediting” (3). Drawing on Goffman, Link and Phelan (2001) expand the definition to include the role of power, in particular, they identify the stages by which people are stigmatized as: (1) distinguishing and labeling differences; (2) stereotyping differences by associating these differences with negative attributes; (3) separating those labeled from “us”; and (4) enforcing status loss and discrimination against those labeled. The process described by Link and Phelan helps explain the criminalization of certain disabilities in the United States.

Mental illness is a prominent example of a stigmatized disability where criminalization of its associated behaviors or attributes have been used as a form of social control. Scheff (1966) notes that the media plays an important role in their coupling of mental illness with violent crimes. This stereotype then results in people with mental illnesses receiving a prescribed set of responses from society (e.g., hospitalization, mandated outpatient treatment, incarceration) and this differentiation in how society treats those labeled as having a mental illness versus how society treats those who do not have a mental illness is what solidifies their identity as someone who is mentally ill and causes them to adopt being mentally ill as their own self-perception.

Scheff's work is informed by Lemert (1951) who differentiated between primary and secondary deviance. According to Lemert, the distinction between primary and secondary deviance is that only the latter leads to a permanent label from society in response to a violation of social norms prompting the realignment of the person's identity with the stigmatized group.

Stigmatization of disability occurs in the same process defined by Link and Phelan (2001) and is evident in a school setting where these students are labeled, stereotyped, separated, suffer from loss of status, and discriminated against. In the school setting, disability labels assigned through the special education identification or reasonable accommodation process can change the person's own perceptions as well as others' (Higgins, Raskind, Goldberg, and Herman, 2002; Link, Cullen, Struening, Shrout, and Dohrenwend, 1989). Once students are labeled as disabled, they are often further stereotyped as being unable or incapable. For example, cognitive disabilities are stereotypically associated with socially devalued traits such as stupidity and laziness (Morrison and Cosden, 1997; Orenstein, 2000; Riddick, 2001). As these stereotypes take hold, students with disabilities become separated from their peers through special education programs that remove them from the classrooms of their peers (Green, Davis, Karshmer, Marsh, and Straight, 2005) and status loss through social rejection from their peers (Estell et al., 2008; Feldman, Davidson, Ben-Naim, Maza, and Margalit, 2016). The stigmatization process ultimately results in discrimination through bullying (Mishna, 2003; Rose, Monda-Amaya, and Espelage, 2011) and teachers submitting poorer assessments for students with disabilities (Daley and Rappolt-Schlichtmann, 2018; Fogel and Nelson, 1983).

Strain Theory

A third conceptual explanation is that people with disabilities experience status frustration because the US culture promises what its social structure cannot deliver (Cohen, 1971; Merton, 1938). Cohen (1971) argued that the mismatch between internalized middle-class standards and its attainment breeds a delinquent subculture where middle-class norms and values are replaced

with their antithesis. According to Cohen, the delinquent subculture is nonutilitarian – it steals for the sake of stealing and destroys for the sake of destroying. Applied to the school-to-prison pipeline, strain theory helps explain why some students become entrenched in the criminal legal system after being disciplined in school while others do not. Merton (1938) notes that there are five adaptations to this status frustration – or, strain. According to Merton, these adaptations include: conformity (accepting the cultural goal of success and trying to achieve it by legitimate means); innovation (accepting the cultural goal of success and trying to achieve it by illegitimate means); ritualism (abandoning the cultural goal of success but continuing to use legitimate means to make their living); retreatism (rejecting the cultural goal of success and also rejecting any legitimate means of achieving success); and rebellion (rejecting the cultural goal of success but replacing it with another primary goal and using any means necessary to achieve it).

Some of the limitations of these early conceptualizations is they failed to account for how much strain is needed before individuals adapt through deviance or the role of other experiences and factors, which limited its empirical application (Akers and Sellers, 2013; Burton, Cullen, Evans, and Dunaway, 1994). Agnew (1992) addressed this by incorporating micro-level explanations of crime and delinquency that explored the effect of an individual's social environment. In General Strain Theory, Agnew argues that deviance occurs when an individual fails to achieve positively valued goals, positively valued stimuli are removed, or the individual is confronted with negative stimuli. For the first condition, the literature demonstrates weak empirical support for deviance as a result of failure to achieve positively valued goals whether that is a mismatch between aspirations and expectations for future goals or a mismatch between aspirations and actual achievements for short-term goals (Agnew and White, 1992). This finding is confirmed in the educational literature as well with a mismatch between educational aspirations and expectations predicting strain and delinquency among students (Farnworth and Leiber, 1989; Hoffmann and Ireland, 2004).

For the second condition, Agnew (1992) argues that deviance occurs when positively valued stimuli are removed. Agnew discusses the serious illness or loss of a loved one as an

example of a strain or stress that contributes to deviance. Specific to the school-to-prison pipeline, a suspension or expulsion may also present a loss of positively valued stimuli because it removes students from an academic environment that generally predicates economic success. The literature demonstrates that suspension and expulsion is associated with depression, drug addiction, antisocial behavior, and suicidal ideation (Lamont et al., 2013; Sundius and Farneth, 2008). Moreover, students who are suspended or expelled do not receive the same opportunity to acquire prosocial skills, which assists in making and keeping friends that may enhance resiliency during times of stress (McGinnis-Smith, Sprafkin, and Goldstein, 2012).

In the third condition, Agnew (1992) finds that delinquency can occur when an individual is confronted with negative stimuli. Agnew cites a number of examples associated with this type of strain such as child abuse and neglect, victimization, poor peer relationships, strained family ties, and school. Agnew finds that strain from adverse school environments increases the risk of delinquency. The literature also shows some evidence that the effect would be greater for students with high negative emotionality and low constraint (Agnew, Brezina, Wright, and Cullen, 2002; Piquero and Sealock, 2000) with few, if any, differences between males and females (Hoffmann and Su, 1997).

The theoretical implications of strain theory to this study are further clarified given the history and evolution of public education in the US. Prior to the establishment of public schools, enrollment was optional and available only to those children whose families could afford tuition at private and boarding schools (Kober, 2020). The establishment of free public education originated in the foundation of American democracy, which would rest on the ongoing competency of its citizens to understand political and social issues to participate in civic life that, in turn, protects their rights and freedoms (Kober, 2020). In the 1830s, Horace Mann, a Massachusetts legislator and secretary of the state board of education, began to advocate for the creation of public schools that would be funded by the state and universally available, free of charge, to all children (Kober, 2020). Mann is credited with catalyzing the common school movement to establish public schools that would instill civic virtues while ensuring that

all children had foundational knowledge in reading, writing, arithmetic, history, geography, grammar, and rhetoric (Fife, 2016; Kober, 2020).

Despite the benevolent goals of the common school movement, the public education system that would be implemented did not initially accommodate girls or children with disabilities (Fife, 2016; Kober, 2020). Moreover, public schools remained highly racially and geographically segregated leading to disparities in the overall quality of education delivered until integration with the landmark *Brown v. Board of Education* decision in the mid-1950s (Reardon and Owens, 2014). Similarly, children with disabilities were also denied access to public schools or other opportunities to learn prior to the enactment of the Education for All Handicapped Children Act in 1975 (OSEP, 2020). This late integration – combined with state compulsory education laws – meant that children of color or with disabilities were now forced to attend schools that were either racially hostile or not well-equipped to meet the needs of their disabilities.

Beginning in the 1980s, calls for inclusive education led to increased offerings of specialized services in schools aimed at better accommodating students with disabilities (Armstrong, 2002). Formalizing this shift in education for students with disabilities, the Education for All Handicapped Children Act was reauthorized and renamed the Individuals with Disabilities Education Act (IDEA) in 1990 (Lambert, 2008). The expansion of these specialized services – termed “special education” – resulted in segregated educational spaces within schools in which children with disabilities were set apart from their nondisabled peers (Thomas and Loxley, 2007). Under IDEA, and its amendments in 1997, children with disabilities are identified by school administrators, including their general education teachers, by individual education plans (IEPs) that describes the learning problems associated with their disabilities and prescribe special education services (Armstrong et al., 2016; Lambert, 2008). Children who have experienced special education have therefore received a narrower education, achieved lower levels of academic attainment, and left school to enter other segregated arenas of work and education (Christensen and Rizvi, 1996).

These disparities were made worse by the No Child Left Behind Act of 2001 which sought to “promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access” (Goodley, 2016). School administrators who must now implement the common standards, assessment, and accountability guidelines associated with the enforcement of the No Child Left Behind Act must now do so with a homogeneous group of students in mind preventing the accommodation of any different learning needs that may arise from disability (Christensen and Rizvi, 1996). As a result, the No Child Left Behind Act has perpetuated the segregated special education of children with disabilities. According to General Strain Theory, delinquency can occur from the negative stimuli of this segregated educational environment (cf., Agnew, 1992). When the student is suspended or expelled as a result of delinquent behavior, positively valued stimuli is removed and the student fails to achieve positively valued goals because of disruptions to their education (cf., Agnew, 1992).

Interactional Model of Disability

When conceptualized as the interaction of the person and environment, disability also offers an explanation for the school-to-prison pipeline. Such an understanding of disability transcends traditional ones under the medical model which views the health condition or impairment as an individual, private problem (Dirth and Branscombe, 2017). Instead, under interactional models, disability results from the interaction of the person with an impairment or health condition with environmental factors (Goodley, 2016). Thus, under this framework, not all people with impairments or health conditions will be disabled.

One example of an interactional model of disability is the human development model of disability, health, and wellbeing developed by Mitra (2018). In this model, wellbeing results from the interaction between health deprivations (i.e., impairments, health conditions), personal factors (e.g., age), resources (e.g., information, income), and structural factors (e.g., policies,

physical structures, attitudes in the community) (Mitra, 2018). Under this model, the school-to-prison pipeline is operationalized when a student's health condition results in involvement in the criminal legal system given the deprivation experienced during a school suspension.

An Integrated Theoretical Framework

Life-course, strain, and labeling theories offer possible explanations for how disability may mediate the relationships between (1) suspension and involvement in the criminal legal system and (2) suspension and academic outcomes. For example, developmental and life-course criminology identifies individual, early-life factors such as delinquency (Farrington, 1989; Sweeten et al., 2009), cognitive/psychological characteristics (Beaver et al., 2017; Freese, 2008; Guay et al., 2005; Hirschi and Hindelang, 1977; J. White et al., 1994), and low self-esteem (Boccio et al., 2021; Donnellan et al., 2005; Pratt et al., 2016) as predictive of later-in-life involvement with the criminal legal system. And, the research also indicates that heritable parental characteristics may also influence the likelihood of a child having future involvement with the criminal legal system (Liu et al., 2021; Stumm et al., 2020; Willoughby et al., 2021).

Additionally, General Strain Theory suggests that delinquency can occur from the negative stimuli of the segregated educational environments associated with special education programs created under the IDEA (cf., Agnew, 1992). When the student is suspended or expelled as a result of delinquent behavior, positively valued stimuli is removed and the student fails to achieve positively valued goals because of disruptions to their education (cf., Agnew, 1992).

Finally, under labeling theory, disability labels are assigned through the special education identification or reasonable accommodation process. These labels can change the person's own perceptions as well as others' (Higgins et al., 2002; Link et al., 1989). Once students are labeled as disabled, they are often further stereotyped as being unable or incapable (Morrison and Cosden, 1997; Orenstein, 2000; Riddick, 2001). As these stereotypes take hold, students with disabilities become separated from their non-disabled peers through special education

programs that remove them from the classroom (Green et al., 2005) and status loss through social rejection (Estell et al., 2008; Feldman et al., 2016). The stigmatization process ultimately results in discrimination through peer bullying (Mishna, 2003; Rose et al., 2011) as well as teachers submitting poorer assessments for students with disabilities (Daley and Rappolt-Schlichtmann, 2018; Fogel and Nelson, 1983).

Grounded in disability studies and criminology, the study integrates life-course, strain, and labeling theories within an interactive model of disability presenting a new theoretical framework to guide future exploration of the school-to-prison pipeline for students with disabilities. Under this framework, involvement in the criminal legal system arises from life-course, strain, and labeling explanations for the suspension of students with disabilities.

School-to-Prison Pipeline

As the integrated framework demonstrates, students with disabilities are identified by IEPs under IDEA. The accommodations must then be carried out by school administrators and teachers who may not fully implement them. These students may then be unable to participate and perform effectively in the classroom setting. A possible negative consequence of this is that these students with disabilities are more likely to exhibit delinquent behaviors (e.g., life-course theory), experience the negative stimuli associated with special education programs (e.g. strain theory), or status loss and discrimination through stereotyping (e.g. labeling theory). As a result, students with disabilities have been more likely to be suspended, expelled, and eventually involved in the criminal legal system (Bronson et al., 2015; Losen et al., 2015). Losen et al. (2015) finds that nearly 3.5 million public school students received at least one out-of-school suspension in 2011-12 and, of these, 1.6 million were suspended at least twice. Using an average suspension of 3.5 days, Losen et al. estimate that public school children in the US lost 18 million days of instruction during the 2011-12 academic year as a result of exclusionary discipline. Students with disabilities are suspended at nearly twice the national rate: 5.4% versus

2.6% at the elementary level and 18.1% versus 10.1% at the secondary level (Losen et al., 2015).

Criminalization of Students

Morris and Perry (2016) observe that “contemporary regimes of school discipline ‘criminalize’ student misbehavior in ways that mirror the criminal justice system.” For example, Hirschfield (2008) argues that American schools define and manage student discipline through a prism of crime control and identifies three dimensions of school criminalization: (1) school punishment has become more formal and actuarial; (2) the transfer of disciplinary discretion from teachers and school authorities to disciplinary codes that stipulate exclusionary punishments such as suspensions and expulsions; and (3) the importation of criminal justice into schools. Barnes and Motz (2018) observe that school discipline practices are criminogenic particularly because students who receive school-based punishments such as suspensions and expulsions are consequentially labeled “troublemakers.” As discussed earlier, this stigma can become a self-fulfilling prophecy where these students accept their perceived roles as troublemakers, which, in turn, causes them to misbehave more frequently and possibly more severely.

1. Formalization and actuarialization of school punishment through zero tolerance policies According to Morris and Perry (2016), disciplinary reformers modeled zero tolerance policies after the “tough on crime” approaches that became popular in the late 1980s such as “three strikes” criminal sentencing guidelines which informed school disciplinary procedures for serious or repeated offenses. Garland (2001) explains that these approaches were thought to be critical to maintaining social order by providing swift and certain punishment. Hirschfield (2008) note that zero tolerance policies represented a shift in school discipline allowing it to become increasingly based on the uniform application of procedural and disciplinary guidelines around the nature of the offense rather than the discretion of teachers. When mandated to adopt zero tolerance approach to weapons with the 1994 passage of the Gun-Free Schools Act, Hirschfield (2008) argue that many school districts additionally adopted zero tolerance policies for alcohol,

tobacco, drugs, and violence.

2. *Transfer of disciplinary discretion from teachers and school authorities to disciplinary codes* Hirschfield (2008) observe that the transfer of disciplinary discretion from teachers and school authorities to disciplinary codes that stipulate exclusionary punishments such as suspensions and expulsions is a “symbolic form of criminalization.” Hirschfield (2008) and others – cf., Barnes and Motz (2018), Kupchik (2010), Morris and Perry (2016), and Welch and Payne (2010) – argue that the intensification of school punishment is borne disproportionately by youth of color and therefore reflects patterns in the criminal legal system. Their work, however, overlooks youth with disabilities and fails to identify students with disabilities as being more likely to be subjected to suspensions and expulsions as existing data show. This is problematic because misidentification of at-risk groups will continue to fuel the school-to-prison pipeline.

3. *Importation of criminal justice into schools* Hirschfield (2008) argue that declining teacher discretion and increased harshness in defining and punishing school misbehavior are better understood in the context of increased use of criminal justice technology, methodology, and personnel for disciplinary and security purposes. Kupchik (2010) details how a school resource officer functions as a police officer using standard investigative methods such as interviews, informants, and surveillance when he observed him do the following: search throughout a high school for a student who had her car stolen off school grounds; then called the front office to see if the student he suspected of stealing the car was present in school that day; visited a teacher’s class to ask about the suspected student’s attendance; visited another teacher’s class to discuss a student she was concerned about; spent time perusing students’ MySpace pages; went to the attendance office to find the location of a student; located the student and cited the student for smoking on school grounds; spoke with students in the hallway, including asking one student to find out who broke a teacher’s window; met with a student who was involved with a disagreement with other students (after being tipped off earlier that morning that the three might fight soon); went to the attendance office to find if any of the three students suspended for smoking marijuana were back in school; and filled out a police report for an iPod that was stolen

two weeks prior. Given the importation of policing into schools, it is not surprising, therefore, that these tactics result in criminal legal outcomes.

Criminal Legal Outcomes for Disciplined Students

J. Rosenbaum (2020) assesses criminal legal outcomes for disciplined youths 5- and 12-years after their first suspension. Compared to nonsuspended youths, J. Rosenbaum found that similar suspended youth were 40% more likely to have been arrested, 94% more likely to have been arrested as a minor, and 3.8 times as likely to have been convicted as a minor in the five years following their first suspension. These outcomes were similar twelve years after first suspension, with those youths being 30% more likely to have been arrested once, 51% more likely to have been arrested two or more times, 23% more likely to have been in prison, and 49% more likely to have been on probation than similar nonsuspended youths.

Academic Outcomes for Disciplined Students

In addition to future contact with the criminal legal system, increased use of school discipline is also associated with poorer academic outcomes. J. Rosenbaum (2020) examines academic outcomes for youths suspended for the first time versus matched non-suspended youth using a nationally representative sample and find that they were less likely to have earned bachelor's degrees or high school diplomas twelve years after suspension. Additionally, J. Rosenbaum found that five years after suspension, these youths were 2.7 times as likely to have been expelled than similar youth who had never been suspended. This study presents recent and novel use of longitudinal data to demonstrate the deleterious effect a suspension has on future academic outcomes. Furthermore, the study's analysis is particularly robust in its matching of suspended and non-suspended youths on 60 variables derived from 182 survey items about students' delinquency and health risk behaviors, parents' reports of their socioeconomic

status, interviewers' reports of respondents' appearance, and school administrators' reports of disciplinary policies.

Covariates of School Discipline, Criminal Legal Involvement, and Academic Outcomes

The literature indicates that student demographics, socioeconomic status, educational achievement, parents' risk behavior, substance use, personality, delinquency, appearance, relationship with parents, and environmental context are all correlated with school discipline, criminal legal involvement, and academic outcomes in the following ways:

Demographics Black boys are more likely to receive out-of-school suspensions and miss more days of school as a result (Heilbrun, Cornell, and Konold, 2018; Morris and Perry, 2016; Shollenberger, 2015). Black students who are suspended are more likely to be involved in the criminal legal system and have worse academic outcomes (J. Rosenbaum, 2020).

Socioeconomic Status Low-income students experience suspensions and expulsions at higher rates than their more affluent peers (Peguero, Popp, and Shekarkhar, 2015; Welsh and Little, 2018). Aside from income, higher parental educational attainment has also been shown to be negatively associated with student suspension rates (Hemphill, Plenty, Herrenkohl, Toumbourou, and Catalano, 2014; Kao and Thompson, 2003; Mizel et al., 2016; Sullivan, Klingbeil, and Van Norman, 2013).

Educational Achievement There is significant evidence demonstrating the deleterious effect of suspension on later academic outcomes (Anyon, Zhang, and Hazel, 2016; Goodman, 2014; Hinze-Pifer and Sartain, 2018; McNeely, Nonnemaker, and Blum, 2002; J. Rosenbaum, 2020). However, poor academic achievement is also associated with increased disciplinary problems in school (Anyon et al., 2016; Arcia, 2006; Maguin and Loeber, 1996).

Parents' Risk Behavior Family substance use is associated with higher student suspension rates (Mizel et al., 2016; Morrison and Skiba, 2001).

Substance Use Students who use drugs and alcohol are more likely to be suspended (Committee on School Health, 2003; Donovan, 1996; Sutherland and Shepherd, 2001).

Personality Students who exhibit rebellious traits are more likely to be suspended (Gottfredson and Gottfredson, 1999; Hemphill et al., 2014). Students with high levels of engagement and expectations for future academic achievement are less likely to be suspended (Costenbader and Markson, 1998; Morrison and Skiba, 2001).

Delinquency In many jurisdictions, schools can opt to discipline students for status offenses (truancy, running away, alcohol, or tobacco use) or choose to refer them to juvenile court for more serious offenses (fights, theft, or illicit drug use). Given this, delinquency is positively associated with school discipline and criminal legal involvement (Cho, Haight, Choi, Hong, and Piescher, 2019; Sampson, 2001).

Appearance In addition to race and gender, body build characteristics such as height and weight are also positively associated with school discipline (Graves and Wang, 2022).

Relationship with Parents Increased family cohesion is generally associated with greater school engagement and higher academic achievement (Fuligni, Tseng, and Lam, 1999; Rumbaut, 2005).

Environmental Context Students who resided in neighborhoods where graffiti, abandoned buildings / vehicles, loitering, and other social disorder related characteristics were present were more likely to experience school discipline (Gerlinger, 2020; Novak, 2019).

Disability, Disparities, and Gaps in the Research

Researchers are increasingly noting that people with disabilities experience significant disparities as a result of social and economic barriers rather than their specific conditions (Besser, 2019; Krahn, Walker, and Correa-De-Araujo, 2015; Powell, 2020). For example, compared to people without disabilities, people with disabilities have lower education and employment levels

(Brucker, Rollins, and Houtenville, 2018; Montez, Zajacova, and Hayward, 2017). They also experience higher food insecurity and poverty (Brucker and Coleman-Jensen, 2017; Brucker, Mitra, Chaitoo, and Mauro, 2015). Moreover, people with disabilities face additional barriers securing affordable and accessible housing (Schaak, Sloane, Arienti, and Zovistoski, 2017). People with disabilities are also more likely to be crime and intimate partner violence survivors (Harrell, 2021). Despite similarities between the experience of people with disabilities and those who are involved in the criminal legal system, there is a dearth of studies examining how having a disability may impact the school-to-prison pipeline or involvement in the criminal legal system more generally.

CHAPTER 4

METHODS

Data Source

This study uses the National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a nationally representative sample of students in seven through twelfth grades during the 1994 to 1995 school year. These students have been followed through 2018 resulting in five waves of data collection that includes a variety of socio-demographic, health, and environmental information. The Add Health data collection effort has been supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) as well as funding from 23 other federal agencies and foundations.

Add Health data are available in two distributions: public- and restricted-use. The public-use datasets are available for Waves I-IV and include all the survey data from the in-home interviews but only for a subset of the full Add Health sample. The smaller sample prevents deductive disclosure risk. Additionally, because the public-use data is de-identified, they do not contain ID numbers of friends, siblings, or romantic partners and it excludes sensitive health data such as obesity, genetics, alcohol density, and disposition. Similarly, to protect the identities of participants, the public-use datasets do not contain exact geocoded address data. Instead, addresses are geocoded to the census block group level to provide context on the neighborhood environment.

Access to the restricted-use files are limited to certified researchers. The application to become a certified researcher requires a security plan for limiting access to the Add Health data, an IRB approval letter, and a \$1,000 payment by check. A review of the data dictionaries and available documentation reveals that the public-use distribution includes data on one-half

the core sample, which is described in greater detail in later sections. In addition, the public-use distribution includes responses to all questions from the in-home surveys, which provides the same level of richness as the restricted-use files. Given this, the study uses the public-use distribution of the Add Health data. A detailed overview of the datasets and variables used in this research is given in Tables A.1 and A.2 of the Appendices.

To reduce data collection costs, the Add Health study design used a clustered sample in which the clusters were sampled with unequal probability (Chen and Chantala, 2014). Add Health survey administrators used the Quality Education Database as their primary sampling frame for High Schools with probability of selection being proportional to school size (Chen and Chantala, 2014). High Schools were then stratified by region, urbanicity, school type (public, private, parochial), ethnic mix, and size (Chen and Chantala, 2014). Add Health survey administrators then identified and recruited a feeder middle school for each High School selected for participation in the survey. The core Add Health sample – and the basis for the public distribution of the data used in this study – was derived from the school administration of the Add Health survey by randomly choosing students from each stratum to respond to the Wave I in-home survey (Chen and Chantala, 2014). Add Health survey administrators further drew supplemental samples based on nationality (Cuban, Puerto Rican, and Chinese), genetic relatedness to siblings (twins, full sibs, half sibs, and unrelated adolescents living in the same household), adoption status, and disability (Chen and Chantala, 2014). Add Health survey administrators also oversampled black adolescents with highly educated parents (Chen and Chantala, 2014). As a result of the survey design, students had unequal probabilities of being selected for inclusion in the Add Health core sample. As such, analyses must account for the fact that Add Health observational data cannot be considered to be independent and identically distributed. These methods are described later in the analysis section.

Ethical/Human Subjects Considerations

Prior to the commencement of any research activities, a protocol (2022-0192-JohnJay) describing the planned secondary data analyses of the publicly-available and de-identified distribution of the Add Health data was submitted to the City University of New York (CUNY) Human Research Protection Program (HRPP)/Institutional Review Board (IRB). CUNY HRPP/IRB reviewed the study with ethical and human subjects considerations in mind and found that it does not require CUNY HRPP or IRB review because it does not involve data obtained through interaction with the individual or identifiable private information.

Sample, Data Coding, and Verification Process

The sample for each wave of the publicly-available Add Health data collection is described in the table below.

Table 4.1: Add Health Waves, Data Collection Years, and Samples

Wave	Year	N
I	1994–95	6,504
II	1996	4,834 (of Wave I respondents)
III	2001-2002	4,882 (of Wave I respondents)
IV	2007-2008	5,114 (of Wave I respondents)

Generally, as demonstrated in Figure 4.1, response rates were high for all of the publicly-available Add Health surveys. Of 6,504 respondents in the publicly-available Wave I file: 4,834 (74.3%) responded to Wave II; 4,882 (75.1%) responded to Wave III; and 5,114 (78.6%) responded to Wave IV. Despite impressive response rates for each individual wave of survey data collection, a closer look at the Add Health data will reveal that not all respondents responded to every wave. In fact, as Figure 4.1 shows, respondents to Wave I were free to decline participation

in any subsequent wave of data collection. Thus, in Wave II, 1,670 (25.7%) of the Wave I respondents did not participate. In Wave III, 990 (15.2%) of Wave I respondents did not participate while 1,038 (16.0%) who did not participate in Wave II did. In Wave IV, 674 (10.4%) of Wave I respondents did not participate while 906 (13.9%) who did not participate in Wave III did.

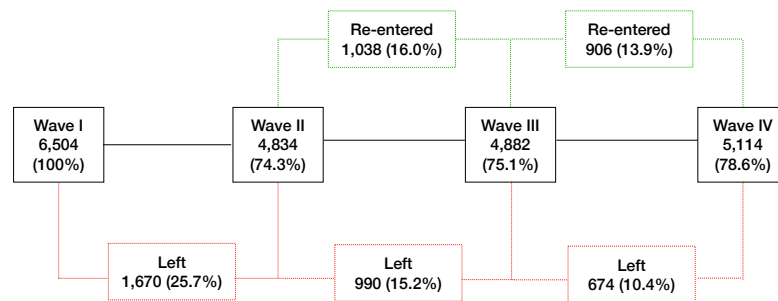


Figure 4.1: Attrition

The voluntary nature of the Add Health Survey and significant follow-up time (1994/1995 to 2007/2008) lends itself to significant attrition across the duration of the study. As a result, only 3,341 (51.4%) respondents in the original Wave I sample also responded to the subsequent three waves and had complete data available for analysis. These respondents comprise the analytic sample in Figure 4.2. Specifically, of 6,504 Wave I respondents: 308 (4.7%) were excluded from the analytic sample because they were lost to follow-up; 1,492 (22.9%) were excluded because they did not respond to Wave II; 1,038 (16.0%) were excluded because they did not respond to Wave III; 324 (5.0%) were excluded because they did not respond to Wave IV; and 1 (<0.1%) was excluded because survey data for this respondent was missing birth year, a critical variable to the study.

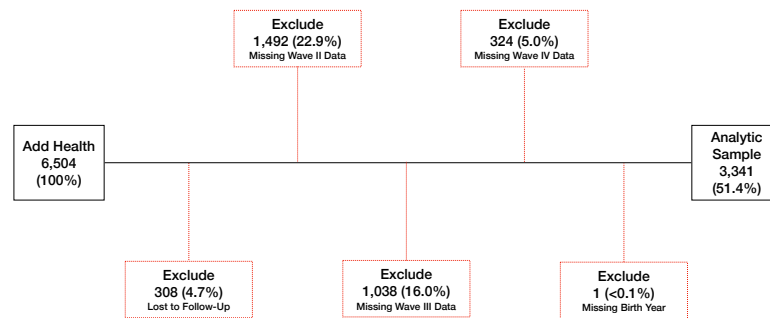


Figure 4.2: Analytic Sample

Variables

The following section describes the independent, dependent, mediator, and control variables used to answer the research questions posed in the current study: (1) Is the relationship between suspension and criminal legal outcomes mediated by disability? And, (2) Is the relationship between suspension and academic outcomes mediated by disability? These variables are further summarized in Tables A.1 and A.2 in the Appendices.

Independent Variable: School Suspension

Students responding affirmatively to the Wave II question “During this school year, did you receive an out-of-school suspension from school?” were coded as 1 and 0 otherwise. This identified 320 (9.6%) of 3,341 students who experienced an out-of-school suspension during the 1995-1996 school year. While the Add Health survey inquires about expulsion in Wave II by asking “During this school year, were you expelled from school?,” very few respondents responded affirmatively to this question. Of 3,341 students in the analytic sample, only 36 (1.1%)

reported being expelled from school. When students are suspended, they are generally prohibited from returning to school for the remainder of the academic year or for a longer period of time (Brey et al., 2018). As a result, the Wave II question may not be a valid instrument for assessing the incidence of suspension among the Add Health sample because it asks current students if they had been expelled during the current academic year. Given this and the small sample size, the current study is only able to substantively comment on how an out-of-school suspension impacts future criminal legal or education outcomes and how this affects students with disabilities versus students without disabilities.

Dependent Variables: Criminal Legal and Educational Outcomes

The goal of the study is to understand what, if any, impact the school-to-prison pipeline has had on students with disabilities. Given this, the study uses longitudinal Add Health data to examine how an out-of-school suspension affects criminal legal and educational outcomes later in life. Variable selection and construction for each of these outcomes are described in the following sections.

Criminal Legal Involvement Involvement in the criminal legal system was measured using Wave IV questions asking whether the respondent had been arrested, convicted, paroled, or incarcerated. Affirmative responses to these questions were re-coded 1 and 0 otherwise. The internal reliability of the composite variable was good ($\alpha = 0.85$) as computed using the Kuder-Richardson 20 formula (cf., Kuder and Richardson (1937); hereafter, KR-20).

Educational Attainment Educational attainment was measured using responses to Wave III and IV questions regarding high school completion status and highest educational attainment to date. Respondents indicating that they received a high school diploma in 2001 (Wave III) or 2008 (Wave IV) will be coded as having graduated from high school (1 versus 0). The internal reliability of the composite variable indicating high school graduation using Wave III or IV responses was good ($\alpha = 0.89$) as computed using KR-20. Respondents indicating that they

hold a bachelor's degree in 2008 (Wave IV) will be coded as having attained a bachelor's degree (1 versus 0). No composite variable was generated for attainment of a bachelor's degree because Add Health only measures highest educational attainment in Wave IV which is the most recent publicly available wave of data available for analysis.

Mediator Variables: Disability

Mediator analyses with a dichotomous disability variable will be conducted to determine if the relationship between school discipline and criminal legal outcomes or school discipline and academic outcomes is dependent on disability. The study measures disability in three ways: first, it identifies students known to the school as having a disability because they are identified in the Add Health data as having a "learning" disability or because receive "special education" services; second, it identifies students whose responses to questions related to their mental health status may be exhibiting serious psychological distress and therefore at-risk for suspension; and, third, as a measure of disability severity, students who were identified as having a learning disability/receiving special education services *and* experiencing serious psychological distress are identified as having a "dual disability". The following sections detail variable selection and construction for each type of disability measured.

Learning Disability or Receiving Special Education Services Disability data for each student was collected during the parent questionnaire in Wave I. Parents were asked to report if their child had a specific learning disability, such as difficulties with attention, dyslexia, or some other reading, spelling, writing, or math disability. Affirmative responses to this question were coded 1 and 0 otherwise. Similarly, parents were asked if their child had received any type of special education service in the past 12 months. Affirmative responses to this question were also coded 1 and 0 otherwise. The internal reliability of the composite variable indicating whether or not the child has a learning disability or received special education services using Wave I responses was good ($\alpha = 0.73$) as computed using KR-20.

Serious Psychological Distress Add Health asks several questions about students mental health status in Wave I. In particular, students were asked to report how often they were bothered by things that do not usually bother them, that they had had poor appetite or did not feel like eating, felt that they could not shake off the blues even with help from family and friends, that they were just as good as other people, had trouble keep their minds on what they were doing, felt depressed, were too tired to do things, felt hopeful about the future, thought their life had been a failure, felt fearful, were happy, talked less than usual, were lonely, felt people were unfriendly to them, enjoyed life, felt sad, felt that people disliked them, that it was hard to get started doing things, or that life was not worth living.

For each of these prompts, students were asked if they felt this way “never/rarely,” “sometimes,” “a lot of the time,” or “most/all of the time.” Negative response items were assigned scores of 0, 1, 2, and 3 respectively. The scoring scale was reversed for positive response items. For example, a student responding “never/rarely” to the prompt “felt fearful” would receive a 0 as it is a negative response item. However, if the student were to respond “never/rarely” to “were happy”, then that response would receive a 3 indicating that the student is unhappy “most/all of the time.” Standardizing the scores across negative and positive response items allowed for responses to all questions to be summed and then students scoring in the third quartile or higher to be categorized as experiencing serious psychological distress.

As available Add Health documentation does not indicate that the questions used in the survey conform to any currently available validated adolescent mental health screening instrument, scoring and assignment of the serious psychological distress designation was also based on the Kessler-6 (K6) scale that is commonly used in correctional settings (Bronson and Berzofsky, 2017; Bronson et al., 2015; Kessler et al., 2003). The K6 consists of six questions asking, over the course of the past 30 days, how often respondents felt: (1) nervous; (2) hopeless; (3) restless or fidgety; (4) so depressed that nothing could cheer them up; (5) everything was an effort; or (6) worthless. There was no analogous question in Add Health asking if students felt nervous and so the serious psychological distress designation was therefore based on students

scoring in the third quartile or higher of the sum of their responses to the other five K6 items.

Overall, 878 (26.3%) of 3,341 students met the criteria for serious psychological distress using the five-item K6 measure and, similarly, 835 (25.0%) of 3,341 met the criteria using all nineteen mental health status items asked in Wave I of Add Health. The internal measure of the composite variable indicating serious psychological distress using either of these measures as computed using KR-20 was good ($\alpha = 0.74$). Of 3,341 students, 1,123 (33.6%) met the criteria for serious psychological distress under the composite measure.

Dual Disability Add Health only asks about disability status in Wave I and, given that the survey was fielded in schools, the questions were limited to those about learning disabilities, receipt of special education services, and a point-in-time measure of mental health status. As a result, there was no way to assess disability severity or development of disability over time. To address this limitation, a dual disability measure was created that included students who identified as having *both* a learning disability/receiving special education services *and* experiencing serious psychological distress. The dual disability metric also aligns with the human development model of disability, health, and wellbeing which suggests that wellbeing results from the interaction between health deprivations, personal factors, resources, and structural factors (Mitra, 2018). Dual disability was measured as a binary response indicator with affirmative responses to having a learning disability/receiving special education *and* experiencing serious psychological distress coded 1 and 0 otherwise.

Control Variables

The study controls for potential confounders of the relationship between suspension and criminal legal/educational outcomes. The study is particularly well-informed by J. Rosenbaum (2020) who identified 60 potential confounders derived from 182 Add Health survey items including measures of demographics, socioeconomic status, educational achievement, parents' risk behavior, substance use, personality, delinquency, appearance, relationship with parent, and

environmental context.

Demographics Included as demographic controls in the study are: grade level/age, biological sex, race, Hispanic/Latinx ethnicity, and citizenship status.

Students were categorized by grade level as Add Health was first fielded as a school-based survey. Where information on grade level was missing – as was the case for 61 (1.8%) of 3,341 observations of the analytic sample – the most common grade associated with students' birth years in the sample were imputed. This method, known as frequent category imputation, was selected as a sensible means of preventing data loss for students who may not have a grade to report at the time of survey administration because they were facing disciplinary sanctions at school (i.e. suspension or expulsion).

The Add Health biological sex question categorizes students as male or female at birth regardless of gender identity. Data were recoded to a binary (0/1) indicator for female for analytic purposes. No responses were missing.

During the Add Health survey administration, respondents were asked to select their race from the following options: White, Black/African American, American Indian/Native American, Asian/Pacific Islander, Other, Not applicable. Binary (0/1) indicators for White, Black, Native American, Asian, and Other were created for analytic purposes. Separately, respondents were asked about Hispanic/Latinx ethnicity. Responses to this question were also recoded to a binary (0/1) indicator. Missing responses to the race or ethnicity question were treated as a negative response and coded 0.

Add Health also asks respondents whether or not they were born in the United States. A binary (0/1) indicator was created for this question as well where affirmative responses to this question were coded 1 while negative or missing responses were coded 0.

Socioeconomic Status Indicators of socioeconomic status include measures of family household income, whether or not the family had enough money to pay bills, educational attainment of the responding parent, employment status of the responding parent, and whether or not the responding parent is employed full-time.

Add Health measures household income for the family in thousands of 1994 dollars and includes the respondent's income, income of everyone else in the household, income from any welfare benefits, dividends, and all other sources. Of 3,341 observations, data were missing for 678 (20.3%). The average household income was imputed for these missing observations to avoid data loss.

Add Health also asks respondents if they had enough money to pay bills. A binary response variable was created for this question with affirmative responses coded 1 and 0 otherwise.

Add Health asks parent respondents to report their highest level of educational achievement. A binary (0/1) indicator for whether the parent has a high school diploma or higher education was created based on responses to this question.

The survey also asks about the employment status of responding parents. In particular, Add Health asks if the parent is employed and whether or not that employment is full-time. Binary response variables were created for each of these questions with affirmative responses coded 1 and 0 otherwise.

Educational Achievement Add Health collects data on educational achievement for each student respondent in Wave I by asking them to report their grades in English, math, history, and science during the most recent grading period. Available grade options for selection were: A, B, C, or D or lower. Based on their research standardizing credit and grade information among schools, districts, and states for the High School Transcript Study, the National Center for Education Statistics suggests the following mapping of letter grades to grade point average: A=4.0; B=3.0; C=2.0; D=1.0; and F=0.0 ("NAEP High School Transcript - How is Grade Point Average Calculated?" n.d.). Based on this mapping, achieving a B grade or higher would indicate above average academic achievement and a lower risk of suspension based on the review of available literature (Anyon et al., 2016; Arcia, 2006; Maguin and Loeber, 1996). Given this, binary response variables were created for each of the questions about grades earned in English, math, history, and science with 1 indicating that the student had earned a B or higher and 0 otherwise.

Parent's Risk Behavior Binary response variables of whether parents use alcohol regularly, binge drink, smoke, or have smokers in the household were created to measure the responding parent's risk behavior. These measures are indicators of the students exposure to such risk behaviors within their own households, outside of the school setting. A binary response variable reflecting regular alcohol use with 1 indicating alcohol consumption at least once or twice a week and 0 indicating alcohol consumption less frequently than that. Binge drinking is generally defined as five or more drinks on one occasion for men and four or more drinks on one occasion for women (CDC, 2019). Add Health asks all parents, regardless of sex, how often in the month prior to the Wave I survey administration did they have five or more drinks on one occasion. Any parent responding that they had had five or more drinks on one occasion at least once, regardless of sex, meets the Centers for Disease Control and Prevention (CDC) threshold for binge drinking. A binary response variable indicating binge drinking was created with 1 indicating yes and 0 indicating no. Binary response variables were also each created for responses to questions regarding whether there are smokers in the household and if the parent himself/herself smokes with 1 indicating affirmative responses and 0 otherwise.

Substance Use Add Health also asks students about their own substance use history in Wave I. In particular, the survey asks students if they have ever had more than 2-3 drinks in their lifetime, use alcohol regularly, binge drink, used marijuana at least twice in the past 30 days, or used any other type of illegal drug such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills without a doctor's prescription. A binary response variable was created to indicate students who ever had more than 2-3 drinks in their lifetimes with 1 indicating affirmative responses and 0 otherwise. Similarly, students who responded that they use alcohol 1-2 days a week or more frequently were coded as regular alcohol users and not otherwise. Unlike in its survey of parents, Add Health asks students to recall all the times they drank alcohol in the 12 months prior to the Wave I survey administration and report the total number of drinks they regularly consumed. Using this information and the CDC (2019) definition of binge drinking, male students who reported consuming five or more drinks and female students who reported consuming four

or more drinks were coded as binge drinkers and all other student respondents as not. Binary response variables for marijuana use at least twice in the past 30 days or use of other illegal drugs were created with affirmative responses coded 1 and 0 otherwise.

Personality Students were asked about their personality types in Wave I of the Add Health data collection. Specifically, they were asked to agree or disagree with the following statements: they never argue with anyone, get what they want because they worked hard, never get sad, or never criticize people. Binary response variables were created for each of these four variables with affirmative responses coded 1 and negative or missing responses coded 0.

Delinquency Add Health also asks students to report how often in the past 12 months they participated in the following delinquent activities: painting graffiti, damaging property, lying to parents about whereabouts, shoplifting, fighting, seriously injuring someone, running away from home, stealing a car, stealing something worth more than \$50, burglarizing a building, using or threatening someone with a weapon, selling drugs, stealing something worth less than \$50, group fighting, or behaving loud and unruly in a public place. Binary response variables for each of these questions were created with affirmative responses coded 1 and 0 otherwise.

Appearance Students were asked to report their height and weight during Wave I of the Add Health data collection. Of 3,341 responses, 35 (1.0%) were missing height information. For these students, average height by sex was imputed to prevent data loss. Similarly, of 3,341 responses, 80 (2.4%) were missing weight information. For these students, average weight by sex was imputed to prevent data loss.

Relationship with Parents Add Health asks students to report on their closeness to each of their parents. Binary response (0/1) variables indicating that respondents are close to mom or close to dad if they reported that they feel “quite” or “very” close to their mother or father during Wave I of survey administration.

Environmental Context Add Health asks responding parents questions about their neighborhood and neighbors. In particular, Wave I of the survey asks parents to report if they

would tell the neighbor if they thought the neighbor's child was in trouble. Similarly, the survey asks parents if they felt their neighbors would tell them if their own child was in trouble. The survey also asks if trash is a problem in the neighborhood or if drug users and dealing is a problem. Binary response variables were created for each of these four questions with affirmative responses coded 1 and all other responses 0.

Analysis Plan

All analyses described in this section were conducted using R version 4.2.1 (2022-06-23) statistical software. Where applicable, the statistical package used is also noted.

Propensity Score Matching

The literature demonstrates that demographics, socioeconomic status, educational achievement, parent's risk behavior, substance use, personality, delinquency, appearance, relationship with parents, and environmental context are all predictive of suspension. Given this and that the design of the Add Health survey resulted in observational data that are not independent and identically distributed, propensity score methods were used to develop a comparison group of non-suspended students who had similar probability of suspension. Conditional on the propensity score, the two groups of students – suspended vs. not suspended – will be similar on baseline covariates identified in the literature (P. Rosenbaum and Rubin, 1983).

Disability is also included as a covariate in the propensity score matching because one of the goals of the study is to understand if disability mediates the relationship between suspension and criminal legal outcomes or suspension and educational outcomes. This permits estimation of the following indirect effects: (1) difference between the potential value of the outcome among suspended students for students who are disabled versus not disabled and (2) difference between the potential value of the outcome among non-suspended students for students who are

disabled versus not disabled (Imai, Jo, and Stuart, 2011). Holding suspension status constant eliminates the direct effect of suspension and isolates the indirect effect of suspension on the outcome (either criminal legal system involvement, high school graduation, or attaining at least a bachelor's degree) that transmits through disability (Imai et al., 2011). As the study examines the role of three different types of disability, propensity scores were calculated separately for learning disability/receiving special education services, then for serious psychological distress, and finally for dual disability.

In order to understand the causal effect of suspension, two estimands were selected: the average treatment effect in the treated (ATT) and the average treatment effect in the population (ATE). The ATT is the difference in average outcomes observed for those suspended if they had not been suspended in the first place (Greifer and Stuart, 2021; Stuart, 2010). The ATE is the average treatment effect among all eligible students in the population – i.e., if they were all to be suspended vs. not suspended (Greifer and Stuart, 2021; Stuart, 2010). Given that the Add Health sample was intended to be nationally representative, this distinction between the target populations of the two estimands means that the ATE is generalizable to the US population while the ATT is limited to the sample.

Propensity scores were computed using the *MatchIt* package in R (Ho, Imai, King, and Stuart, 2011). For the ATT, nearest neighbor and optimal pair matching were both attempted with the former generally yielding better results. For the ATE, optimal full matching was used. Logistic regression models were used for the estimation of all propensity scores. Once propensity score matching was completed, the suspended and not suspended groups were considered balanced on all covariates if the standardized mean difference values were between -0.1 and +0.1 and the variance ratios were between 0.8 and 1.25 (Zhang, Kim, Lonjon, and Zhu, 2019). Love plots demonstrating covariance balance were generated using the *Cobalt* package in R (Greifer, 2022). ATT- and ATE-specific propensity score computations and balance diagnostics were completed for the three disability types under study separately.

Mediation and Outcome Analyses

Using the relevant matched samples for each disability type, logistic regression was used to estimate the ATT and ATE for the following outcomes: criminal legal involvement, high school graduation, and completing a bachelor's degree. Unconditional logistic regression is appropriate here because this is a retrospective cohort study seeking to analyze the mediating effect of disability on the relationships between (1) suspension and criminal legal outcomes and (2) suspension and academic outcomes. As the outcome models are intended to measure the ATT of suspension in the Add Health sample and the ATE of suspension in the population, unconditional logistic regression produces a 2×2 (suspension-outcome) stratum for each level of the disability mediator variable. The unconditional logistic regression produces an estimator with lower variance and no less validity than the conditional logistic regression because, for each level of the disability variable, it combines all students who have been suspended into one stratum versus all students with similar probabilities of being suspended into the comparison stratum (Kuo, Duan, and Grady, 2018; Pearce, 2016).

Add Health survey weights, based on probability of selection and response, were included in the estimates of the ATE. Horvitz-Thompson-type robust standard errors were computed for estimates of the ATE using the *survey* package in R (Lumley, 2020). However, the survey weights were excluded in the estimates of the ATT as using weights intended for the entire sample with a limited subsample would cause the variance to change in unpredictable ways (Chen and Chantala, 2014). Hessian-type robust standard errors were computed for estimates of the ATT using the *stats* package in R (R Core Team, 2022). While commonly used thresholds were used to assess balance between suspended and non-suspended groups across all covariates, residual imbalance may still remain between the two groups. For this reason, following Nguyen et al. (2017), all outcome models are double-adjusted and also include all covariates from the propensity score matching model.

Using mediation analyses, the total exposure-outcome effect were decomposed into a direct

effect and an indirect effect through a mediator variable (Rijnhart et al., 2021). The indirect effect was computed using the difference of coefficients approach (Judd and Kenny, 1981). Nonparametric resampling (bootstrap) methods were used to test the significance of the indirect effect (MacKinnon, Lockwood, Hoffman, West, and Sheets, 2002). This was accomplished using the *mediation* package in R (Tingley, Yamamoto, Hirose, Keele, and Imai, 2014). As applied in this study, this analytic method tests the following hypotheses: (1) disability mediates the relationship between suspension and criminal legal involvement; and (2) disability mediates the relationship between suspension and academic outcomes. Mediation analyses were conducted using matched samples to estimate the ATT and ATE for each outcome of interest and separately for each of the three types of disability under study – i.e., learning disability/receiving special education services, serious psychological distress, and dual disability.

CHAPTER 5

RESULTS

Results are reported as follows: first, a descriptive overview of the overall analytic sample derived from Add Health data is provided; second, for each disability type, ATT and ATE estimates are reported for criminal legal involvement, high school graduation status, and earning a Bachelor's degree or higher; third, results of the mediation analyses are reported. The results reported in this section will answer the research questions posed in this study: (1) Does disability mediate the relationship between suspension and criminal legal involvement? And, (2) Does disability mediate the relationship between suspension and academic outcomes? For simplicity, abbreviated tables describing the results of the outcome and mediation analyses are reported in this section and references are provided to the full double-robust models in the Appendices that include all covariates. Where applicable, references are also made to additional output in the Appendices.

Descriptive Overview of the Add Health Sample

As previously mentioned and demonstrated in Table 5.1, the analytic sample is comprised of 3,341 student respondents. On average, students were in the ninth grade at the time of the first wave of data collection. Respondents were generally White (69.0%), female (55.6%), residing in households in which the responding parent has a high school diploma or higher education (73.5%), is employed (66.0%), and feels that they have enough money to pay their bills (72.6%). Of 3,341 student respondents, 320 (9.6%) reported being suspended. In terms of disability, 451 (13.5%) have learning disabilities/received special education services, 1,123 (33.6%) reported experiencing serious psychological distress, and 192 (5.7%) have both learning

disabilities/received special education services and experienced serious psychological distress. In terms of outcomes of interest, 936 (28.0%) of the sample reported some involvement in the criminal legal system, 2,899 (86.8%) are high school graduates, and 1,165 (34.9%) have attained bachelor's degree or higher. Selected descriptive statistics for the sample are provided in Table 5.1.

Table 5.1: Descriptive Statistics for Selected Variables (n = 3,341)

	Mean/Count (SD/%)
<i>Grade, at time of Wave I survey response</i>	
Grade (imputed)	9.1 (1.5)
<i>Biological Sex</i>	
Female	1,856 (55.6%)
<i>Race/Ethnicity</i>	
White	2,304 (69.0%)
Black	742 (22.2%)
Other	152 (4.5%)
Asian	106 (3.2%)
Native American	35 (1.0%)
Hispanic or Latinx	343 (10.3%)
<i>Socioeconomic Status</i>	
Household Income (imputed)	49.4 (51.2)
Enough Money to Pay Bills	2,425 (72.6%)
Parent has HS Diploma or Higher Education	2,455 (73.5%)
Parent Employed	2,205 (66.0%)
Parent Employed Full-time	1,677 (50.2%)
<i>Independent Variable: School Discipline</i>	
Suspension	320 (9.6%)
<i>Mediator Variables: Disability, by type</i>	
Learning Disability or Receiving Special Education Services	451 (13.5%)
Serious Psychological Distress	1,123 (33.6%)
Dual Disability	192 (5.7%)
<i>Dependent Variables: Criminal Legal & Education Outcomes</i>	
Criminal Legal System Involvement	936 (28.0%)
High School Graduate	2,899 (86.8%)
Attained Bachelor's Degree or Higher	1,165 (34.9%)

Learning Disability/Receiving Special Education Services

Estimating ATT

To estimate the ATT, suspended youths were matched with non-suspended youths on demographics, socioeconomic status, educational achievement, parent's risk behavior, substance use, personality, delinquency, appearance, relationship with parents, environmental context, and learning disability/receiving special education services (hereafter, the covariates and the disability type of interest). Propensity scores were estimated using logistic regression. The exact matching method used was nearest neighbor matching without replacement, which was found to achieve better balance than the alternative optimal pair matching method. The standard mean difference for the distance between all covariates in the matched data was 0.0127 for nearest neighbor vs. 0.0385 for optimal pair matching. Figure A.1 in the Appendices is a Love plot demonstrating the balance of covariates included in the optimal pair propensity score matching model.

Propensity Score Matching Figure 5.1 is a Love plot describing the balance of all covariates included in the nearest neighbor propensity score matching (PSM) model. The resulting sample for ATT estimation includes 320 students who have been suspended matched on various covariates, including disability, with 320 students who have not been suspended.

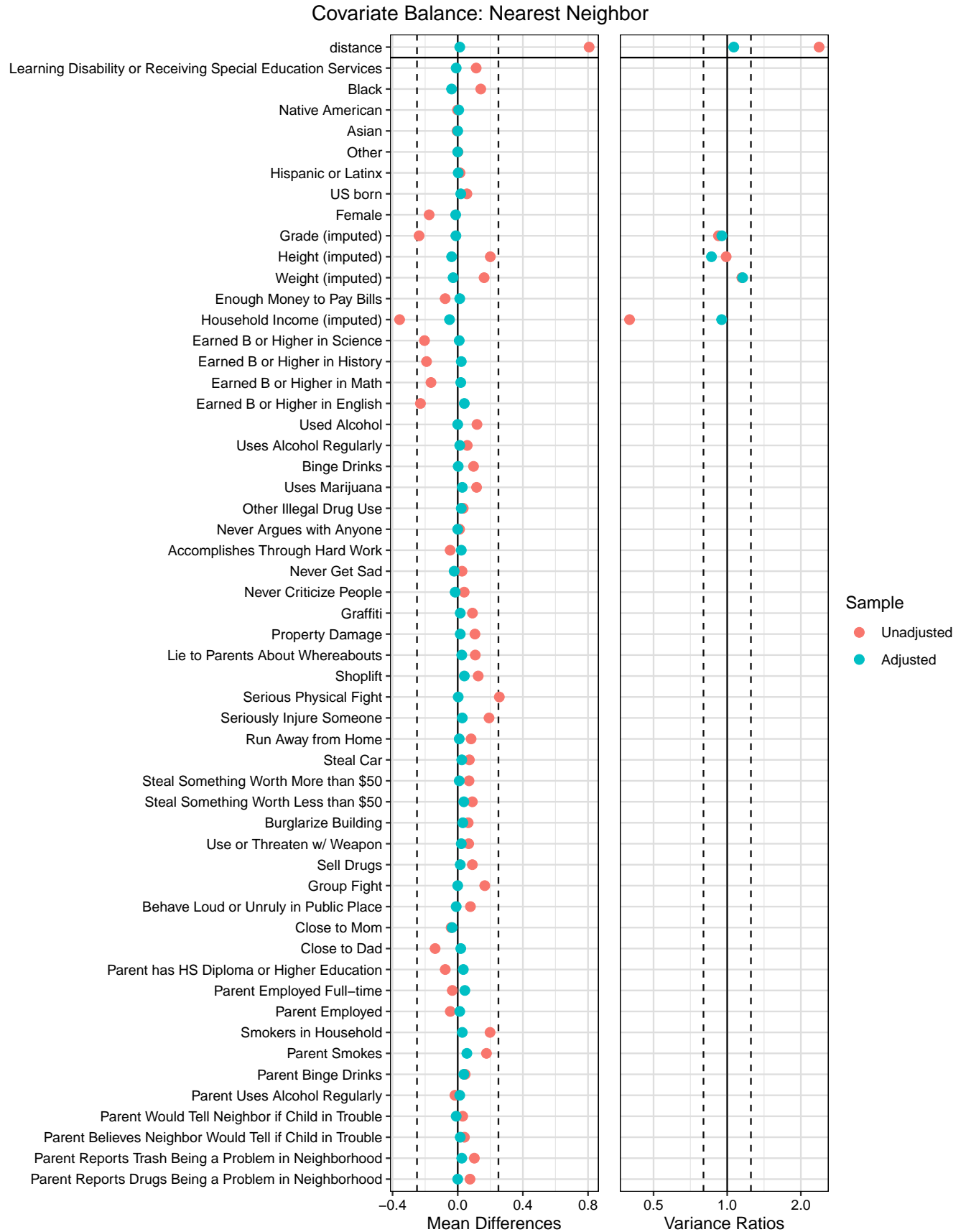


Figure 5.1: Nearest Neighbor PSM - Learning Disability/Receiving Special Education Services

Estimating ATE

To estimate the ATE, suspended youths were matched with non-suspended youths on covariates and the disability type of interest. Propensity scores were estimated using logistic regression. The exact matching method used was optimal full matching. The standard mean difference for the distance between all covariates in the matched data was 0.0019.

Propensity Score Matching Figure 5.2 is a Love plot describing the balance of all covariates included in the optimal full PSM model. The resulting sample for ATE estimation includes 320 students who have been suspended matched on various covariates, including disability, with 3,021 students who have not been suspended.

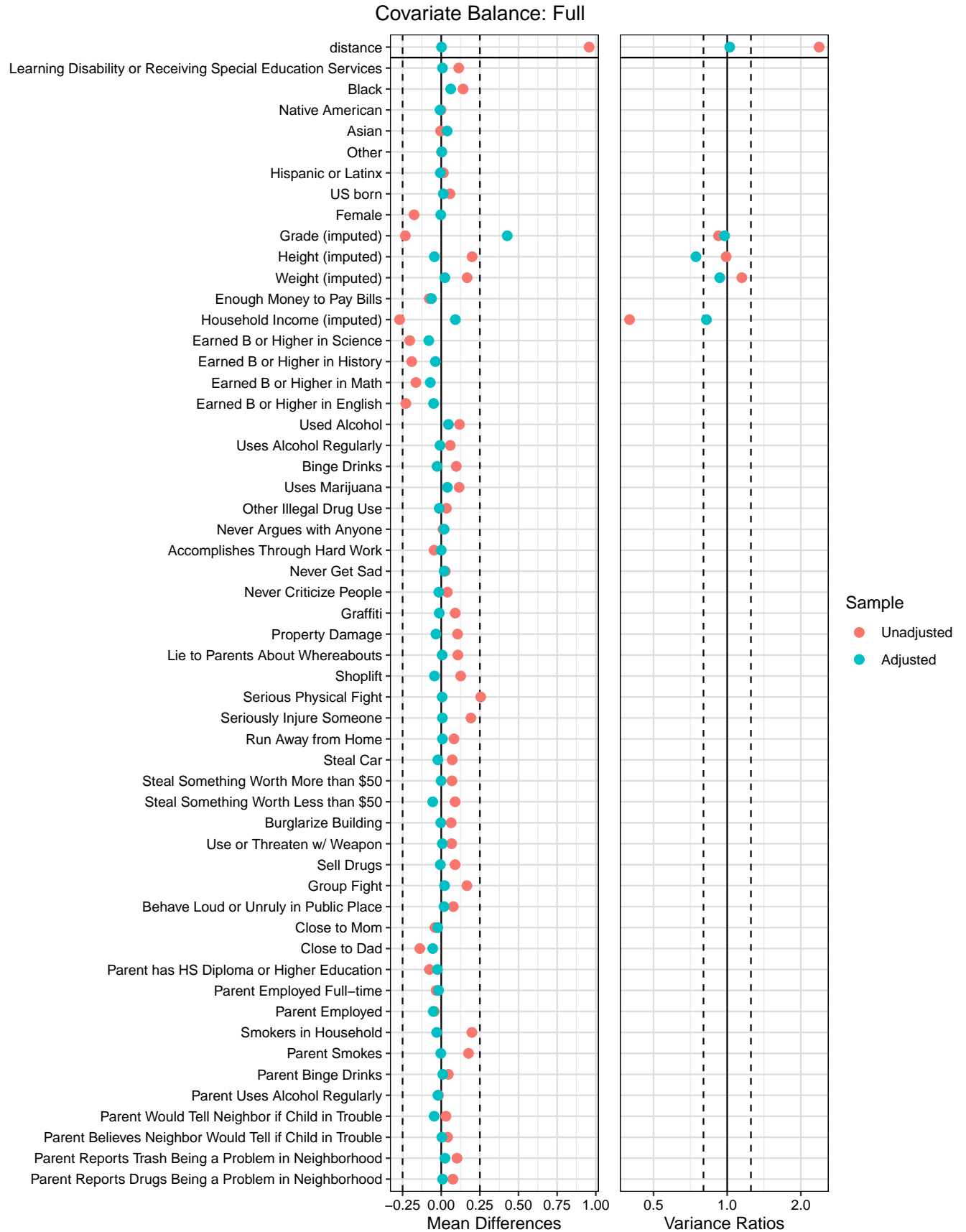


Figure 5.2: Optimal Full PSM - Learning Disability/Receiving Special Education Services

Outcome and Mediator Analyses

Using the matched samples, additional analyses were conducted to understand if learning disability/receiving special education services mediates the relationship between suspension and each of the three outcomes of interest: (1) criminal legal system involvement; (2) high school graduation; and (3) attaining a bachelor's degree or higher. To establish mediation, the independent variable (suspension) generally must be significantly associated with the mediator (learning disability/receiving special education services). As demonstrated in Table 5.2 (double-robust models reported in Table A.3), suspension is associated with a 0.333 increase in the log odds of having a learning disability/receiving special education in the full analytic sample and this finding is statistically significant at the 0.05 level. Table 5.2 also demonstrates that suspension is not associated with disability in the ATT or ATE matched samples. However, this finding is expected given that the PSM models predicting likelihood of suspension were balanced on disability. The total effect of suspension on the three outcomes of interest as well as the indirect effect of suspension plus the disability mediator variable is reported in the relevant subsections below.

Table 5.2: Relationship between Learning Disability/Receiving Special Education Services and Suspension

<i>Dependent variable:</i>			
Learning Disability or Receiving Special Education Services			
	<i>logistic</i>		<i>survey-weighted logistic</i>
	Full Analytic File	ATT Matched Sample	ATE Matched Sample
Suspension	0.333** (0.164)	-0.092 (0.211)	0.121 (0.275)
Constant	-1.106 (1.162)	0.031 (2.211)	-1.860 (1.467)
Observations	3,341	640	3,341

Log Likelihood	-1,127.424	-291.798	-1,180.798
Akaike Inf. Crit.	2,364.847	693.595	2,471.596

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Criminal Legal System Involvement According to Model 2 in Table 5.3 (double-robust models reported in Table A.4), the ATT of suspension is a 0.588 increase in the log odds of involvement in the criminal legal system, holding other factors including disability constant. This finding is statistically significant at the 0.01 level. The coefficient on disability is not significant and therefore it does not mediate the relationship between suspension and criminal legal system involvement for the sample.

According to Model 4 in Table 5.3, the ATE of suspension is a 0.514 increase in the log odds of involvement in the criminal legal system holding other factors including disability constant. This finding is statistically significant at the 0.05 level. Learning Disability or Receiving Special Education Services was introduced as a mediator variable in Model 4 of Table 5.3. The coefficient on disability is statistically significant at the 0.1 level and the difference of the coefficients associated with suspension in Model 3 versus Model 4 is 0.002 which can be said to be the indirect effect or mediating effect of disability on the association between suspension and involvement in the criminal legal system in the population.

To test the significance of this indirect effect, unstandardized indirect effects were computed for each of 1,000 bootstrapped samples and the 95% confidence interval was computed at the 2.5th and 97.5th percentiles of the simulated indirect effects. The bootstrapped indirect effect was 0.000221, and the 95% confidence interval ranged from 0.001718 to 0.000000. Thus, the indirect effect or mediating effect of disability on the association between suspension and involvement in the criminal legal system in the population is not statistically significant from 0.

Table 5.3: ATT and ATE of Suspension on Criminal Legal System Involvement

Dependent variable:

	Criminal Legal System Involvement			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i>	
	(1)	(2)	(3)	(4)
Suspension	0.574*** (0.195)	0.588*** (0.196)	0.516** (0.254)	0.514** (0.255)
Learning Disability or Receiving Special Education Services		0.297 (0.243)		0.267* (0.147)
Constant	4.395** (2.066)	4.279** (2.069)	-0.328 (1.269)	-0.377 (1.280)
Observations	640	640	3,341	3,341
Log Likelihood	-331.041	-330.291	-1,640.871	-1,637.531
Akaike Inf. Crit.	772.082	772.583	3,391.741	3,387.062

Notes:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are in parenthesis

High School Graduation According to Models 1 and 2 in Table 5.4 (double-robust models reported in Table A.5), the ATT of suspension on high school graduation is not statistically significant for the sample. However, in Model 2 of Table 5.4, having a learning disability/receiving special education services is independently associated with a 0.734 decrease in the log odds of high school graduation in the sample when holding all other factors constant, including suspension. This finding is statistically significant at the 0.01 level.

According to Model 3 in Table 5.4, the ATE of suspension is a 0.435 decrease in the log odds of high school graduation holding all factors constant except for disability. This finding is significant at the 0.1 level. When disability is added as a mediator variable to Model 4 of Table 5.4, the coefficient on suspension is no longer significant suggesting that disability may fully mediate the relationship between suspension and high school graduation in the population. In Model 4 of Table 5.4, learning disability/receiving special education services is independently associated with a 0.410 decrease in the log odds of high school graduation when holding all other

factors constant, including suspension. This finding is statistically significant at the 0.05 level.

To test the significance of this mediating effect, unstandardized indirect effects were computed for each of 1,000 bootstrapped samples and the 95% confidence interval was computed at the 2.5th and 97.5th percentiles of the simulated indirect effects. The bootstrapped indirect effect was 0.00236, and the 95% confidence interval ranged from -0.00380 to 0.00000. Thus, the mediating effect is not statistically significant from 0.

Table 5.4: ATT and ATE of Suspension on High School Graduation

	<i>Dependent variable:</i>			
	High School Graduate			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i> ATE	
	(1)	(2)	(3)	(4)
Suspension	-0.280 (0.207)	-0.300 (0.209)	-0.435* (0.258)	-0.426 (0.259)
Learning Disability or Receiving Special Education Services		-0.734*** (0.250)		-0.410** (0.187)
Constant	-4.232* (2.194)	-3.866* (2.217)	-4.567*** (1.528)	-4.506*** (1.529)
Observations	640	640	3,341	3,341
Log Likelihood	-302.460	-298.123		
Akaike Inf. Crit.	714.920	708.246		

Notes:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are in parenthesis

Attaining a Bachelor's Degree or Higher According to Model 2 of Table 5.5 (double-robust models reported in Table A.6), the ATT of suspension is a 1.120 decrease in the log odds of attaining a bachelor's degree or higher education, holding other factors constant including disability. This finding is statistically significant at the 0.01 level. The coefficient on disability is not significant in Model 2 and therefore it does not mediate the relationship between suspension

and attaining a bachelor's degree or higher education for the sample.

According to Model 3 in Table 5.5, the ATE of suspension is a 0.992 decrease in the log odds of attaining a bachelor's degree or higher education, holding all factors constant except for disability. This finding is significant at the 0.05 level. When disability is added as a mediator variable to Model 4 in Table 5.5, the coefficient on suspension remains significant but decreases suggesting that disability may partially mediate the relationship between suspension and attaining a bachelor's degree or higher education. In Model 4, learning disability/receiving special education services is independently associated with a 0.823 decrease in the log odds of attaining a bachelor's degree or higher education when holding all other factors constant, including suspension. This finding is statistically significant at the 0.01 level.

The difference between the coefficients on suspension between Model 3 and Model 4 in Table 5.5 is 0.012. To test the significance of the mediating effect of the ATE of suspension on attaining a bachelor's degree or higher education in the population, unstandardized indirect effects were computed for each of 1,000 bootstrapped samples and the 95% confidence interval was computed at the 2.5th and 97.5th percentiles of the simulated indirect effects. The bootstrapped indirect effect was 0.00210, and the 95% confidence interval ranged from -0.00503 to 0.00000. Thus, the indirect effect is not statistically significant from 0.

Table 5.5: ATT and ATE of Suspension on Earning a Bachelor's Degree or Higher

	<i>Dependent variable:</i>			
	Attained Bachelor's Degree or Higher			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		ATE	
	(1)	(2)	(3)	(4)
Suspension	-1.122*** (0.308)	-1.120*** (0.308)	-0.992** (0.394)	-0.980** (0.405)
Learning Disability or Receiving Special Education Services		-0.283 (0.449)		-0.823*** (0.220)

Constant	-8.798*** (3.387)	-8.585** (3.408)	-8.446*** (1.249)	-8.329*** (1.277)
Observations	640	640	3,341	3,341
Log Likelihood	-169.602	-169.398		
Akaike Inf. Crit.	449.205	450.796		

Notes:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are in parenthesis

Serious Psychological Distress

Estimating ATT

To estimate the ATT, suspended youths were matched with non-suspended youths on covariates and the disability type of interest. Propensity scores were estimated using logistic regression. The exact matching method used was nearest neighbor matching without replacement, which was found to achieve better balance than the alternative optimal pair matching method. The standard mean difference for the distance between all covariates in the matched data was 0.0078 for nearest neighbor vs. 0.0419 for optimal pair matching. Figure A.2 in the Appendices is a Love plot demonstrating the balance of covariates included in the optimal pair propensity score matching model.

Propensity Score Matching Figure 5.2 is a Love plot describing the balance of all covariates included in the nearest neighbor PSM model. The resulting sample for ATT estimation includes 320 students who have been suspended matched on various covariates, including disability, with 320 students who have not been suspended.



Figure 5.3: Nearest Neighbor PSM - Serious Psychological Distress

Estimating ATE

To estimate the ATE, suspended youths were matched with non-suspended youths on covariates and the disability type of interest. Propensity scores were estimated using logistic regression. The exact matching method used was optimal full matching. The standard mean difference for the distance between all covariates in the matched data was 0.0013.

Propensity Score Matching Figure 5.4 is a Love plot describing the balance of all covariates included in the optimal full PSM model. The resulting sample for ATE estimation includes 320 students who have been suspended matched on various covariates, including disability, with 3,021 students who have not been suspended.

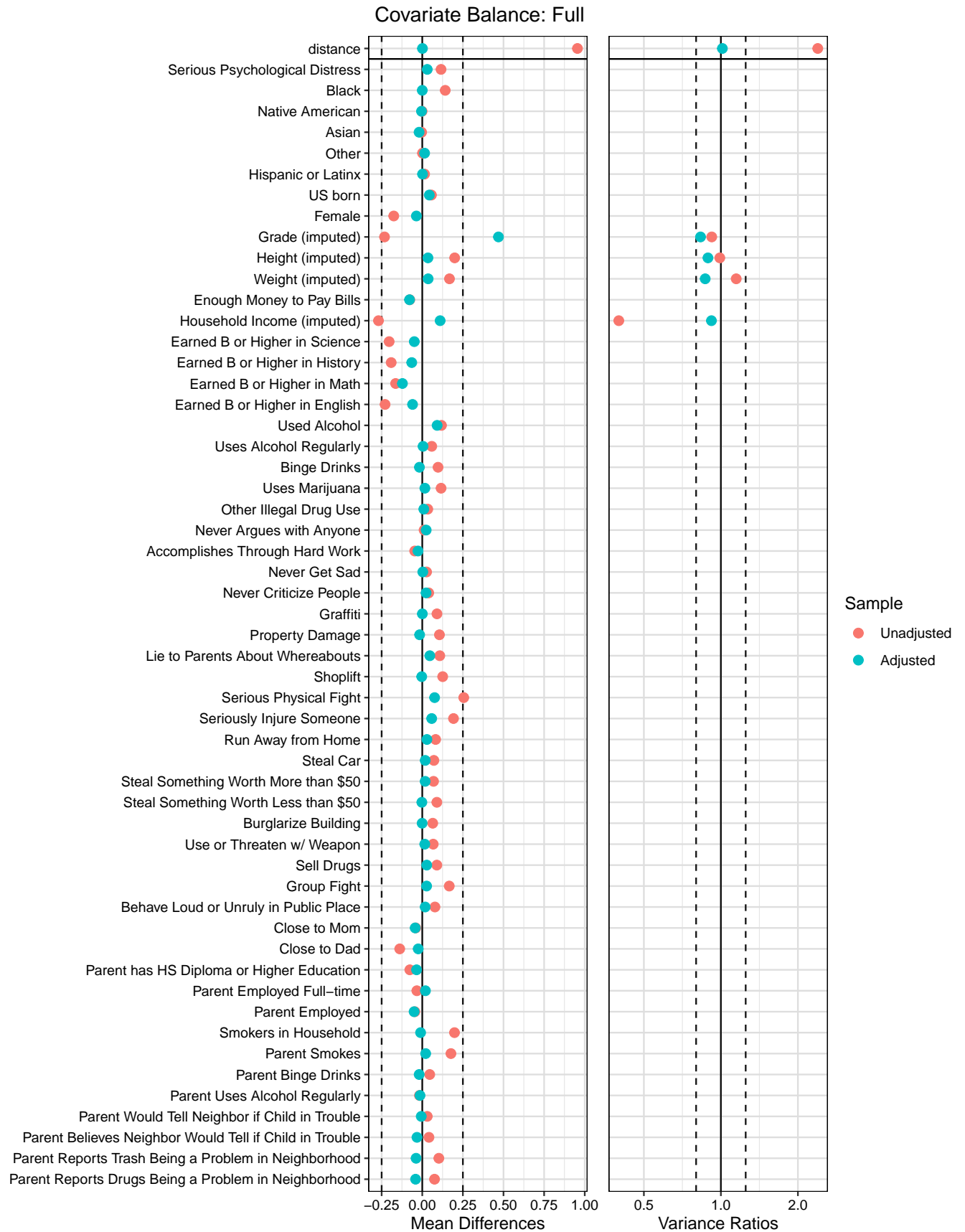


Figure 5.4: Optimal Full PSM - Serious Psychological Distress

Outcome and Mediator Analyses

Using the matched samples, additional analyses were conducted to understand if serious psychological distress mediates the relationship between suspension and each of the three outcomes of interest: (1) criminal legal system involvement; (2) high school graduation; and (3) attaining a bachelor’s degree or higher. To establish mediation, the independent variable (suspension) generally must be significantly associated with the mediator (serious psychological distress). As demonstrated in Table 5.6 (double-robust models reported in Table A.7), suspension is not significantly associated with serious psychological distress in the full analytic file, ATT, or ATE matched samples. As a result, disability cannot immediately be said to mediate the relationship between suspension and any of the three outcomes of interest. The finding that there is no statistically significant relationship between suspension and disability in the ATT and ATE matched samples is an expected one given that the PSM models predicting likelihood of suspension were balanced on disability. The subsections below report the total effect of suspension on the outcome variables as well as the indirect effect of the disability mediator variable to further test whether disability mediates the relationship between suspension and the outcomes of interest.

Table 5.6: Relationship between Serious Psychological Distress and Suspension

<i>Dependent variable:</i>			
Serious Psychological Distress			
	<i>logistic</i>	<i>survey-weighted</i>	
	Full Analytic File	ATT Matched Sample	<i>logistic</i> ATE Matched Sample
Suspension	0.061 (0.136)	−0.054 (0.177)	−0.032 (0.254)
Constant	0.823 (0.882)	1.302 (1.848)	0.803 (1.039)

Observations	3,341	640	3,341
Log Likelihood	-1,870.114	-383.811	-1,848.395
Akaike Inf. Crit.	3,850.228	877.622	3,806.791

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Criminal Legal System Involvement According to Model 1 in Table 5.7 (double-robust models reported in Table A.8), the ATT of suspension is a 0.462 increase in the log odds of involvement in the criminal legal system holding other factors except for disability constant. This finding is statistically significant at the 0.05 level. Serious Psychological Distress is introduced as a mediator variable in Model 2 in Table 5.7. The coefficient on disability is statistically significant at the 0.05 level and the difference of the coefficients associated with suspension in Model 1 versus Model 2 is 0.014 which can be said to be the indirect effect of disability on the association between suspension and involvement in the criminal legal system in the sample. To test the significance of this indirect effect, unstandardized indirect effects were computed for each of 1,000 bootstrapped samples and the 95% confidence interval was computed at the 2.5th and 97.5th percentiles of the simulated indirect effects. The bootstrapped indirect effect was 0.00194, and the 95% confidence interval ranged from -0.00803 to 0.01000. Thus, the indirect effect is not statistically significant from 0.

According to Model 3 in Table 5.7, the ATE of suspension is a 0.551 increase in the log odds of involvement in the criminal legal system holding other factors except for disability constant. This finding is statistically significant at the 0.05 level. Serious Psychological Distress is introduced as a mediator variable in Model 4 in Table 5.7. The coefficient on disability is statistically significant at the 0.1 level and the difference of the coefficients associated with suspension in Model 3 versus Model 4 is 0.004 which can be said to be the indirect effect of disability on the association between suspension and involvement in the criminal legal system. To test the significance of this indirect effect, unstandardized indirect effects were computed for each of 1,000 bootstrapped samples and the 95% confidence interval was computed at the 2.5th

and 97.5th percentiles of the simulated indirect effects. The bootstrapped indirect effect was 0.00317, and the 95% confidence interval ranged from -0.00272 to 0.00000. Thus, the indirect effect is not statistically significant from 0.

Table 5.7: ATT and ATE of Suspension on Criminal Legal System Involvement

	<i>Dependent variable:</i>			
	Criminal Legal System Involvement			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i> ATE	
	(1)	(2)	(3)	(4)
Suspension	0.462** (0.189)	0.448** (0.190)	0.551** (0.266)	0.547** (0.266)
Serious Psychological Distress		-0.499** (0.206)		-0.222* (0.132)
Constant	1.262 (1.931)	1.654 (1.949)	0.122 (1.304)	0.274 (1.300)
Observations	640	640	3,341	3,341
Log Likelihood	-348.041	-345.076	-1,646.816	-1,644.399
Akaike Inf. Crit.	806.082	802.153	3,403.631	3,400.799

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

High School Graduation According to Model 1 in Table 5.8 (double-robust models are reported in A.9), the ATT of suspension is a 0.487 decrease in the log odds of high school graduation holding other factors except for disability constant. This finding is statistically significant at the 0.05 level. Serious Psychological Distress is introduced as a mediator variable in Model 2 in Table 5.8. The coefficient on disability is statistically significant at the 0.1 level and the difference of the coefficients associated with suspension in Model 1 versus Model 2 is 0.011 which can be said to be the indirect effect of disability on the association between suspension and high school graduation. To test the significance of this indirect effect,

unstandardized indirect effects were computed for each of 1,000 bootstrapped samples and the 95% confidence interval was computed at the 2.5th and 97.5th percentiles of the simulated indirect effects. The bootstrapped indirect effect was 0.00039, and the 95% confidence interval ranged from -0.00544 to 0.01000. Thus, the indirect effect is not statistically significant from 0.

According to Model 3 in Table 5.8, the ATE of suspension of high school graduation on suspension is not statistically significant. The coefficient on serious psychological distress in Model 4 in Table 5.8 is also not statistically significant.

Table 5.8: ATT and ATE of Suspension on High School Graduation

	<i>Dependent variable:</i>			
	High School Graduate			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		ATE	
	(1)	(2)	(3)	(4)
Suspension	-0.487** (0.212)	-0.498** (0.213)	-0.298 (0.234)	-0.301 (0.235)
Serious Psychological Distress		-0.418* (0.226)		-0.108 (0.168)
Constant	-2.468 (2.261)	-2.250 (2.269)	-4.313*** (1.435)	-4.223*** (1.436)
Observations	640	640	3,341	3,341
Log Likelihood	-291.596	-289.879		
Akaike Inf. Crit.	693.192	691.757		

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Attaining a Bachelor's Degree or Higher According to Model 2 in Table 5.9 (double-robust models reported in A.10), the ATT of suspension is a 1.670 decrease in the log odds of attaining a bachelor's degree or higher education holding all factors constant including disability. This finding is significant at the 0.01 level. The coefficient on serious psychological distress in

Model 2 in Table 5.9 is not statistically significant indicating that disability does not mediate the relationship between suspension and attaining a bachelor's degree or higher education in the sample.

According to Model 4 in Table 5.9, the ATE of suspension is a 1.153 decrease in the log odds of attaining a bachelor's degree or higher education holding all factors constant including disability. This finding is significant at the 0.01 level. The coefficient on serious psychological distress in Model 4 in Table 5.9 is not statistically significant indicating that disability does not mediate the relationship between suspension and attaining a bachelor's degree or higher education in the population.

Table 5.9: ATT and ATE of Suspension on Earning a Bachelor's Degree or Higher

	<i>Dependent variable:</i>			
	Attained Bachelor's Degree or Higher			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		ATE	
	(1)	(2)	(3)	(4)
Suspension	-1.656*** (0.326)	-1.670*** (0.327)	-1.150*** (0.422)	-1.153*** (0.428)
Serious Psychological Distress		-0.501 (0.330)		-0.207 (0.141)
Constant	-10.377*** (3.111)	-10.109*** (3.129)	-8.563*** (1.256)	-8.450*** (1.269)
Observations	640	640	3,341	3,341
Log Likelihood	-169.383	-168.213		
Akaike Inf. Crit.	448.766	448.426		

Notes:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are in parenthesis

Dual Disability

Estimating ATT

To estimate the ATT, suspended youths were matched with non-suspended youths on covariates and the disability type of interest. Propensity scores were estimated using logistic regression. The exact matching method used was nearest neighbor matching without replacement, which was found to achieve better balance than the alternative optimal pair matching method. The standard mean difference for the distance between all covariates in the matched data was 0.0075 for nearest neighbor vs. 0.0385 for optimal pair matching. Figure A.3 in the Appendices is a Love plot demonstrating the balance of covariates included in the optimal pair propensity score matching model.

Propensity Score Matching Figure 5.5 is a Love plot describing the balance of all covariates included in the nearest neighbor PSM model. The resulting sample for ATT estimation includes 320 students who have been suspended matched on various covariates, including disability, with 320 students who have not been suspended.

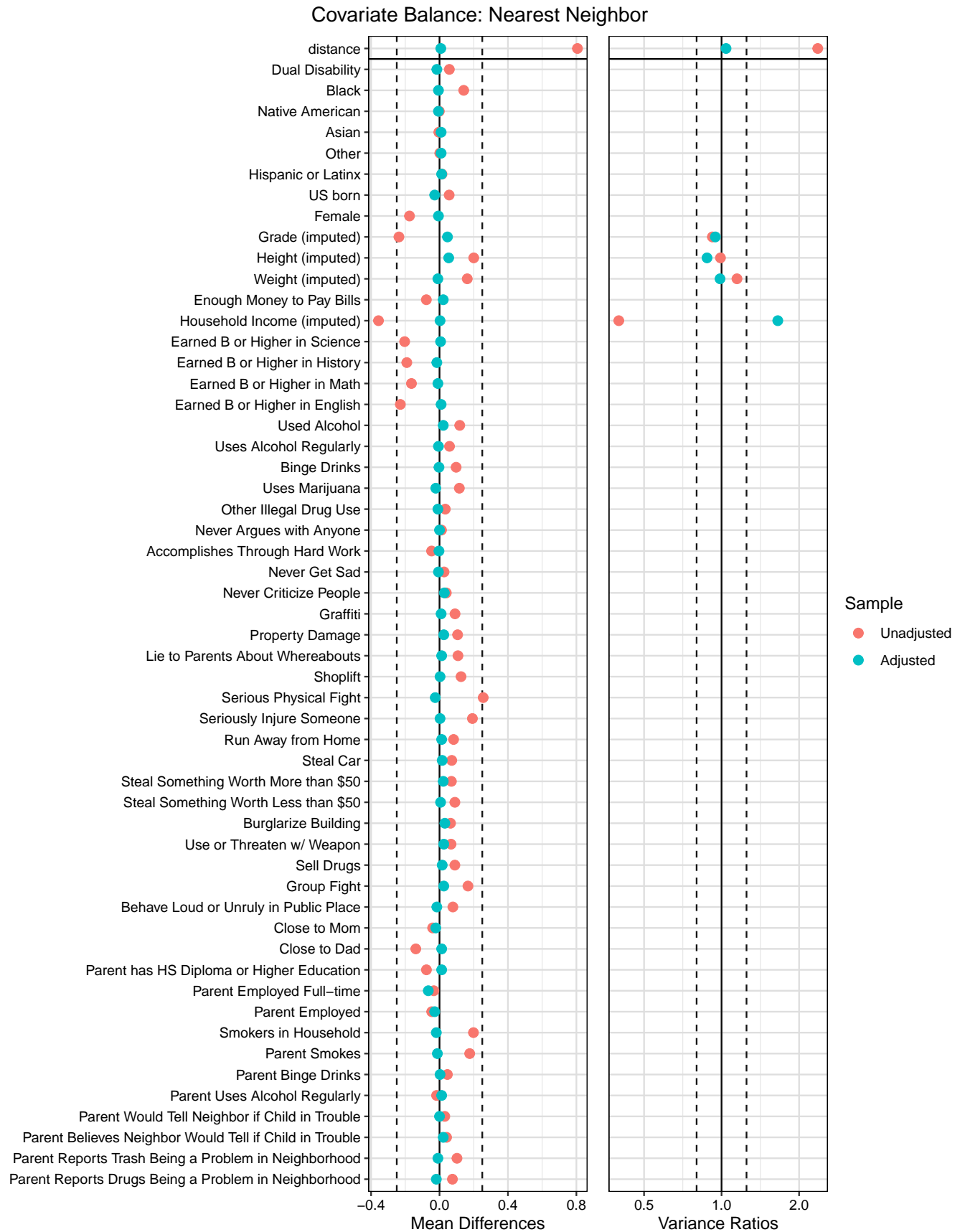


Figure 5.5: Nearest Neighbor PSM - Dual Disability

Estimating ATE

To estimate the ATE, suspended youths were matched with non-suspended youths on covariates and the disability type of interest. Propensity scores were estimated using logistic regression. The exact matching method used was optimal full matching. The standard mean difference for the distance between all covariates in the matched data was 0.0015.

Propensity Score Matching Figure 5.6 is a Love plot describing the balance of all covariates included in the optimal full PSM model. The resulting sample for ATE estimation includes 320 students who have been suspended matched on various covariates, including disability, with 3,021 students who have not been suspended.

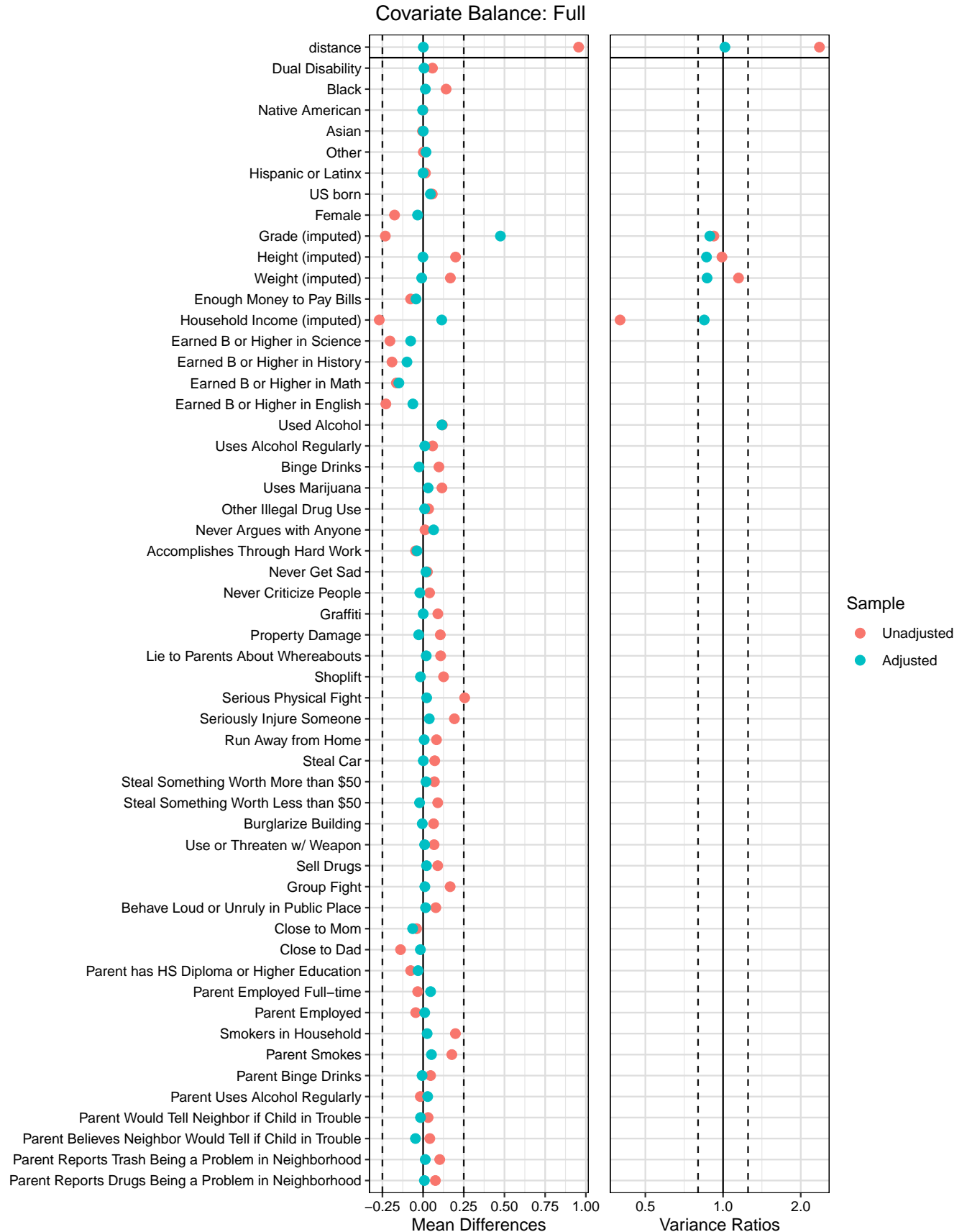


Figure 5.6: Optimal Full PSM - Dual Disability

Outcome and Mediator Analyses

Using the matched samples, additional analyses were conducted to understand if dual disability mediates the relationship between suspension and each of the three outcomes of interest: (1) criminal legal system involvement; (2) high school graduation; and (3) attaining a bachelor's degree or higher. To establish mediation, the independent variable (suspension) generally must be significantly associated with the mediator (dual disability). As demonstrated in Table 5.10 (double-robust models reported in A.11), suspension is significantly associated with dual disability so disability cannot immediately be said to mediate the relationship between suspension and any of the three outcomes of interest for the sample. The finding that there is no statistically significant association between suspension and disability is expected for the matched ATT and ATE samples given that the PSM models predicting likelihood of suspension were balanced on disability. Given this, the total effect of suspension on the three outcomes of interest as well as the indirect effect of suspension plus the disability mediator variable is reported in the relevant subsections below.

Table 5.10: Relationship between Dual Disability and Suspension

	<i>Dependent variable:</i>		
	Dual Disability		
	<i>logistic</i>		<i>survey-weighted</i>
	Full Analytic File	ATT Matched Sample	ATE Matched Sample
Suspension	0.241 (0.220)	-0.085 (0.280)	0.029 (0.323)
Constant	-0.378 (1.688)	1.761 (2.756)	-2.128 (2.362)
Observations	3,341	640	3,341
Log Likelihood	-627.872	-188.004	-638.101
Akaike Inf. Crit.	1,365.743	486.008	1,386.202

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Criminal Legal System Involvement According to Model 2 in Table 5.11 (double-robust models are reported in A.12), the ATT of suspension is a 0.459 increase in the log odds of involvement in the criminal legal system holding other factors including disability constant. This finding is statistically significant at the 0.05 level. The coefficient on disability is not significant and therefore it does not mediate the relationship between suspension and criminal legal system involvement for the sample.

According to Model 4 in Table 5.11, the ATE of suspension is a 0.450 increase in the log odds of involvement in the criminal legal system holding other factors including disability constant. This finding is statistically significant at the 0.1 level. The coefficient on disability is not significant and therefore it does not mediate the relationship between suspension and criminal legal system involvement for the population.

Table 5.11: ATT and ATE of Suspension on Criminal Legal System Involvement

	<i>Dependent variable:</i>			
	Criminal Legal System Involvement			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i> ATE	
	(1)	(2)	(3)	(4)
Suspension	0.460** (0.190)	0.459** (0.190)	0.447* (0.254)	0.450* (0.254)
Dual Disability		-0.044 (0.317)		0.211 (0.211)
Constant	-1.115 (1.923)	-1.099 (1.926)	0.126 (1.253)	0.117 (1.252)
Observations	640	640	3,341	3,341

Log Likelihood	-343.378	-343.369	-1,634.477	-1,634.140
Akaike Inf. Crit.	796.757	798.737	3,378.953	3,380.279

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

High School Graduation According to Model 2 in Table 5.12 (double-robust models are reported in A.13), the ATT of suspension is a 0.434 decrease in the log odds of high school graduation holding other factors including disability constant. This finding is statistically significant at the 0.05 level. The coefficient on disability is not significant and therefore it does not mediate the relationship between suspension and high school graduation for the sample.

According to Model 4 in Table 5.12, the ATE of suspension is a 0.519 decrease in the log odds of high school graduation holding other factors including disability constant. This finding is statistically significant at the 0.05 level. The coefficient on disability is not significant and therefore it does not mediate the relationship between suspension and high school graduation for the population.

Table 5.12: ATT and ATE of Suspension on High School Graduation

	<i>Dependent variable:</i>			
	High School Graduate			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i>	ATE
	(1)	(2)	(3)	(4)
Suspension	-0.431** (0.209)	-0.434** (0.209)	-0.520** (0.236)	-0.519** (0.238)
Dual Disability		-0.166 (0.318)		-0.230 (0.242)
Constant	-0.566 (2.165)	-0.503 (2.168)	-4.594*** (1.528)	-4.599*** (1.537)
Observations	640	640	3,341	3,341
Log Likelihood	-297.730	-297.595		

Akaike Inf. Crit.	705.461	707.190
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Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Attaining a Bachelor's Degree or Higher According to Model 2 in Table 5.13 (double-robust models are reported in A.14), the ATT of suspension is a 1.074 decrease in the log odds of attaining a bachelor's degree or higher education holding other factors constant including disability. This finding is statistically significant at the 0.01 level. The coefficient on disability is not significant and therefore it does not mediate the relationship between suspension and attaining a bachelor's degree or higher education for the sample.

According to Model 3 in Table 5.13, the ATE of suspension is a 1.125 decrease in the log odds of attaining a bachelor's degree or higher education holding all factors constant except for disability. This finding is significant at the 0.01 level. When disability is added as a mediator variable to Model 4 in Table 5.13, the coefficient on suspension remains significant but decreases suggesting that disability may partially mediate the relationship between suspension and attaining a bachelor's degree or higher education in the population. In Model 4, dual disability is independently associated with a 0.854 decrease in the log odds of attaining a bachelor's degree or higher education when holding all other factors constant, including suspension. This finding is statistically significant at the 0.01 level.

The difference between the coefficients on suspension between Model 3 and Model 4 is 0.004. To test the significance of the mediating effect, unstandardized indirect effects were computed for each of 1,000 bootstrapped samples and the 95% confidence interval was computed at the 2.5th and 97.5th percentiles of the simulated indirect effects. The bootstrapped indirect effect was 0.000404, and the 95% confidence interval ranged from -0.00203 to 0.00000. Thus, the indirect effect is not statistically significant from 0.

Table 5.13: ATT and ATE of Suspension on Earning a Bachelor's Degree or Higher

Dependent variable:

Attained Bachelor's Degree or Higher				
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		ATE	
	(1)	(2)	(3)	(4)
Suspension	-1.090*** (0.307)	-1.074*** (0.308)	-1.125*** (0.397)	-1.121*** (0.395)
Dual Disability		-0.608 (0.674)		-0.854*** (0.307)
Constant	-12.173*** (3.294)	-11.929*** (3.316)	-8.490*** (1.276)	-8.346*** (1.271)
Observations	640	640	3,341	3,341
Log Likelihood	-170.349	-169.895		
Akaike Inf. Crit.	450.697	451.789		

Notes:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are in parenthesis

CHAPTER 6

DISCUSSION

A Rigorous Approach to a Novel Inquiry

Research Questions and Hypotheses

This study posed two research questions that have not been previously examined in the literature: (1) Does disability mediate the relationship between suspension and involvement in the criminal legal system? And, (2) Does disability mediate the relationship between suspension and academic outcomes? The study was motivated by observational data demonstrating higher rates of incarceration for people with disabilities (Bronson and Berzofsky, 2017; Bronson et al., 2015) as well as higher rates of suspensions for students with disabilities (Losen et al., 2015). Against the backdrop of existing literature about a school-to-prison pipeline (Aull, 2012; Ayers et al., 2001; George, 2015; Heitzeg, 2009; Hirschfield, 2008; Kupchik and Monahan, 2006; Price, 2009; Simon, 2007; Skiba and Knesting, 2001; Skiba and Peterson, 2000), these observational data led to the following hypotheses: (1) Disability mediates the relationship between suspension and involvement in the criminal legal system and (2) disability mediates the relationship between suspension and academic outcomes.

Theoretical Framework

Grounded in disability studies and criminology, the study integrates life-course, strain, and labeling theories within an interactive model of disability presenting a new theoretical framework to guide future exploration of the school-to-prison pipeline for students with disabilities.

Disability results from the interaction of the impairment or health condition, environment, personal, and contextual factors in an interactive model of disability (Goodley, 2016). As such, not all people with impairments or health conditions will be disabled. In this framework, involvement in the criminal legal system arises from life-course, strain, and labeling explanations for the suspension of students with disabilities.

Life-course, strain, and labeling theories offer possible explanations for how disability may mediate the relationships between (1) suspension and involvement in the criminal legal system and (2) suspension and academic outcomes. For example, developmental and life-course criminology identifies individual, early-life factors such as delinquency (Farrington, 1989; Sweeten et al., 2009), cognitive/psychological characteristics (Beaver et al., 2017; Freese, 2008; Guay et al., 2005; Hirschi and Hindelang, 1977; J. White et al., 1994), and low self-esteem (Boccio et al., 2021; Donnellan et al., 2005; Pratt et al., 2016) as predictive of later-in-life involvement with the criminal legal system. And, the research also indicates that heritable parental characteristics may also influence the likelihood of a child having future involvement with the criminal legal system (Liu et al., 2021; Stumm et al., 2020; Willoughby et al., 2021).

Additionally, General Strain Theory suggests that delinquency can occur from the negative stimuli of the segregated educational environments associated with special education programs created under the Individuals with Disabilities Education Act (cf., Agnew, 1992). When the student is suspended or expelled as a result of delinquent behavior, positively valued stimuli is removed and the student fails to achieve positively valued goals because of disruptions to their education (cf., Agnew, 1992).

Finally, under labeling theory, disability labels are assigned through the special education identification or reasonable accommodation process. These labels can change the person's own perceptions as well as others' (Higgins et al., 2002; Link et al., 1989). Once students are labeled as disabled, they are often further stereotyped as being unable or incapable. For example, cognitive disabilities are stereotypically associated with socially devalued traits such as stupidity and laziness (Morrison and Cosden, 1997; Orenstein, 2000; Riddick, 2001). As these stereotypes

take hold, students with disabilities become separated from their peers through special education programs that remove them from the classrooms of their peers (Green et al., 2005) and status loss through social rejection from their peers (Estell et al., 2008; Feldman et al., 2016). The stigmatization process ultimately results in discrimination through bullying (Mishna, 2003; Rose et al., 2011) and teachers submitting poorer assessments for students with disabilities (Daley and Rappolt-Schlichtmann, 2018; Fogel and Nelson, 1983).

Methods

To test the hypotheses that (1) disability mediates the relationship between suspension and involvement in the criminal legal system and (2) disability mediates the relationship between suspension and academic outcomes, the study used longitudinal data from a national study of Adolescent to Adult Health (Add Health) that was initially fielded in public schools during the 1994 to 1995 school year. To understand the causal effect of suspension, the study estimates the average treatment effect in the treated (ATT) of the Add Health sample and the average treatment effect in the population (ATE) given that the survey was intended to be nationally representative. The ATT and ATE were estimated using quasi-experimental propensity score methods based on the probability of suspension (Greifer and Stuart, 2021; Stuart, 2010). Using the propensity score matched samples, logistic regression was used to estimate the ATT and ATE for the outcomes of interest (i.e., involvement in the criminal legal system and academic outcomes). Add Health survey weights, based on the probability of selection and response, were included in the estimates of the ATE. However, the survey weights were excluded in the estimates of the ATT as using weights intended for the entire sample with a limited subsample would cause the variance to change in unpredictable ways (Chen and Chantala, 2014). While commonly used thresholds were used to assess balance between suspended and non-suspended groups across all covariates, residual imbalance may have still remained between the two groups. For this reason, following Nguyen et al. (2017), all outcome models are double-adjusted and also include all covariates

from the propensity score matching model.

Using mediation analyses, the total exposure-outcome effect were decomposed into a direct effect and an indirect effect through a disability mediator variable (Rijnhart et al., 2021). The indirect effect was computed using the difference of coefficients approach (Judd and Kenny, 1981). Nonparametric resampling (bootstrap) methods were used to test the significance of the indirect effect (MacKinnon et al., 2002). As applied, these analytic methods provided rigorous tests of the two hypotheses in this study: (1) that disability mediates the relationship between suspension and criminal legal involvement; and (2) that disability mediates the relationship between suspension and academic outcomes.

To test the hypotheses that disability mediates these relationships, disability was defined in three ways: (1) Learning Disability/Receiving Special Education Services; (2) experiencing Serious Psychological Distress; and (3) Dual Disability. The study identifies students with learning disabilities or who receive special education services because these are students who are most likely to be known to school administrators and therefore higher risk for harsher school disciplinary practices (Losen et al., 2015). Consistent with prior research in corrections settings (Bronson and Berzofsky, 2017; Bronson et al., 2015), this study uses the Kessler-6 (K6) scale, along with responses to other mental status questions, to estimate the prevalence of students experiencing serious psychological distress (Kessler et al., 2003). The Dual Disability measure was designed to capture disability severity as existing survey measures were binary and did not assess the level of disablement the student experienced (Livermore et al., 2011; Pettinicchio and Maroto, 2021; Putz and Glickman, 2019). The dual disability metric also aligns with the human development model of disability, health, and wellbeing which suggests that wellbeing results from the interaction between health deprivations, personal factors, resources, and structural factors (Mitra, 2018). Under this model, a student must not only be identified as having a learning disability or receiving special education services but also experiencing serious psychological distress as this may suggest poorer coping and adaptation to the school setting.

The outcomes of interest – involvement in the criminal legal system and academic

outcomes – were measured as follows: Involvement in the criminal legal system was measured as ever being arrested, convicted, incarcerated, or paroled (Barnert et al., 2018; Barnes et al., 2015; Brame et al., 2014). And, educational attainment was defined as (1) graduation from high school and (2) earning a bachelor’s degree (Bernburg and Krohn, 2003; Hirschfield, 2009; Kirk and Sampson, 2013; Sweeten, 2006; Widdowson et al., 2016; Wilczak, 2014).

Significant Findings

Disability, irrespective of type, was not found to mediate the relationship between suspension and future involvement in the criminal legal system. Similarly, disability was also not found to mediate the relationship between suspension and poorer academic outcomes. However, the study finds significant evidence that suspension is associated with future involvement in the criminal legal system and poorer academic outcomes. In so doing, the study lends additional support to the existing school-to-prison pipeline literature (Aull, 2012; Ayers et al., 2001; George, 2015; Heitzeg, 2009; Hirschfield, 2008; Kupchik and Monahan, 2006; Price, 2009; Simon, 2007; Skiba and Knesting, 2001; Skiba and Peterson, 2000). Furthermore, although disability was not found to mediate the relationships between suspension and future criminal legal involvement or between suspension and academic attainment, it was found to be a statistically significant covariate. Given that none of the existing school-to-prison pipeline literature reviewed for this study includes disability as a relevant explanatory variable, this omission may have therefore resulted in biased estimates of the impact of suspension on future criminal legal involvement and academic achievement in previous research. Significant ATE findings are summarized for each outcome of interest, by disability type, in the following sections.

Involvement in the Criminal Legal System

In general, suspension was associated with later involvement in the criminal legal system in all models estimating the ATE. This finding was statistically significant when controlling for each type of disability. Estimation of the ATE was significant, suggesting that the finding can be generalized beyond the Add Health population to the entire US population.

In models estimating the ATE of suspension on criminal legal system involvement, learning disability/receiving special education and serious psychological distress were statistically significant covariates. Dual Disability was not a statistically significant covariate in the model estimating the ATE of suspension on criminal legal system involvement.

High School Graduation

The ATE of suspension on high school graduation was not found to be statistically significant in models including learning disability/receiving special education services or serious psychological distress. In the ATE model, having a learning disability or receiving special education, controlling for all other factors including suspension, was found to have a statistically significant association with reduced odds of high school graduation.

For dual disability, the ATE of suspension on high school graduation was statistically significant. The coefficient on dual disability was not statistically significant in the ATE model.

Attaining a Bachelor's Degree or Higher

In general, the ATE of suspension on attaining a bachelor's degree or higher education was statistically significant for each type of disability. Moreover, the coefficient on learning disability/receiving special education services and dual disability were statistically significant indicating that these are possible covariates of suspension in the population.

Implications for Policy and Future Research

The study's findings are significant to national criminal legal and education policy because it confirms the need for ongoing research on the school-to-prison pipeline and suggests a need for additional research on how disability may affect school disciplinary experiences and latter involvement in the criminal legal system. The study also provides a theoretical and methodological foundation for this future research in its development of an integrated disability and criminology conceptual framework as well as its quasi-experimental matched sampling design to estimate the ATE of suspension on criminal legal and educational outcomes.

Criminal Legal

Specific to criminal legal policy, the study's findings lend support to calls to revisit the implementation of the Drug-Free Schools and Communities Act of 1989 and Gun Free Schools Act of 1994 which has been credited with the installment of school resource officers and increased punitiveness of school discipline policies (George, 2015; Heitzeg, 2009). Barring national policy change, schools can reduce their use of exclusionary discipline and implement positive behavioral interventions and instructional strategies as alternatives. An example of an evidence-based alternative approach to exclusionary discipline is Positive Behavioral Interventions and Support (PBIS). Evaluations of the implementation of PBIS school-wide in several jurisdictions have shown reduced office discipline referrals, in-school suspensions, and out-of-school suspensions with improved school climate ratings overall (Childs, Kincaid, George, and Gage, 2016; Luiselli, Putnam, and Sunderland, 2002).

Education

Specific to education policy, the study's findings suggest greater efforts are needed to fully realize the goals of inclusive education. In particular, policymakers should question whether the goals of the No Child Left Behind Act of 2001 were so neoliberal that it placed common standards, assessment, and the accountability of schools and students ahead of the formation of accessible and inclusive educational settings for students with disabilities. Many educational scholars argue that the result of the application of increasingly more stringent academic criteria and grade-based schooling requires a homogeneous group of students that forces schools to weed out troublesome students and select only the desirable ones (Christensen and Rizvi, 1996; Jung, 2002; Tomlinson, 2017).

Limitations of the Study

Despite implementation of quasi-experimental methods, the study's findings may not be fully generalizable to the US population. While the Add Health survey was fielded as a representative sample of students in seventh through twelfth grades in the US, it does not include students in non-standard educational settings. As a result, the survey may have failed to identify some students with disabilities, their school discipline experiences, and criminal legal and academic outcomes. This could also be the case because the first wave of survey administration in 1994-95 coincided with the early generation of students post-implementation of the Individuals with Disabilities Education Act in 1990 which sought to include students with disabilities in traditional classrooms as opposed to special education settings (Lambert, 2008).

The voluntary nature of the Add Health Survey and significant follow-up time (1994/1995 to 2007/2008) also lent itself to significant attrition across the duration of the study. As a result, only 3,341 (51.4%) respondents in the original Wave I sample also responded to the subsequent

three waves and had complete data available for analysis. While this nonresponse is accounted for in the sampling weights, students with the most severe disabilities who were identified for participation in the Add Health survey may have been lost to follow-up in subsequent waves of data collection. With respect to disability, the analytic sample contains: 451 (50.2%) of 898 Wave I students identified as having a learning disability/receiving special education services; 1,123 of 2,173 (51.7%) of Wave I students identified as experiencing serious psychological distress; and 192 (49.1%) of 391 Wave I students identified as having dual disabilities. The attrition rates for students with disabilities are similar to those of the overall sample and this could be because survey administrators oversampled this group to account for higher rates of nonresponse (Chen and Chantala, 2014). Despite this, within each disability type and aligned with the interactive model of disability, Add Health respondents may have been those more able to respond than those not included in the sample (Goodley, 2016; Mitra, 2018).

The survey may have also failed to identify some students who have been suspended or expelled. This could be because – as demonstrated in Table 5.1 – Add Health student respondents generally resided in affluent households in which their parents reported having a high school diploma, being employed, and having enough money to pay their bills and these factors have been shown to be negatively correlated with suspensions and expulsions (Hemphill et al., 2014; Kao and Thompson, 2003; Mizel et al., 2016; Peguero et al., 2015; Sullivan et al., 2013; Welsh and Little, 2018). And also because the survey may have failed to identify some students who have been suspended or expelled because they were simply not in school during the time of survey administration. Suspension was also measured in Wave II of the Add Health Survey administration where some Wave I respondents may have also declined to participate. The analytic sample, which contains complete data for respondents from all four waves of the Add Health survey administration, contains 320 (9.6%) of 3,341 respondents who reported being suspended. This proportion is slightly lower than in Wave II when this question was asked and 515 (10.7%) of 4,834 respondents reported being suspended.

In terms of outcomes of interest, Add Health administrators may have also failed to

identify students who were incarcerated in juvenile detention facilities during the time of survey administration and had greater difficulty reaching respondents who became involved in the criminal legal system for follow-up surveys. Of 3,341 respondents with complete data for all waves in the analytic sample, 936 (28.0%) had reported some involvement in the criminal legal system. This proportion is slightly lower than in Wave IV when these questions were asked and 1,486 (29.1%) of 5,114 respondents reported some involvement in the criminal legal system. This pattern was not observed for academic outcomes where the proportions reported in the wave of data collection were fairly similar or higher to those in the analytic sample. For example, high school graduation status was reported in Wave III and Wave IV. In Wave III and IV respectively, high school graduation was reported by 4,045 (82.9%) of 4,882 and 4,352 (85.1%) of 5,114 respondents. In the analytic sample, 2,767 (82.8%) and 2,857 (85.5%) of 3,341 respondents reported graduating from high school as of Wave III and Wave IV respectively. Respondents were asked if they had earned a bachelor's degree or higher in Wave IV with 1,668 (32.6%) of 5,114 reporting that they had. This proportion was slightly higher in the analytic sample that contained complete data for respondents who responded to all waves where 1,165 (34.9%) of 3,341 reported that they had attained at least a bachelor's degree.

Finally, the standard limitations of propensity score matching apply to this study as well. In particular, the probability of suspension can only be estimated based on observed covariates (P. Rosenbaum and Rubin, 1983). As a result, any differences between students who are suspended versus students who are not suspended that are due to *unobserved* or *unmeasured* covariates will not be accounted for and may bias the results of the study.

CHAPTER 7

CONCLUSION

Conclusion

The study presents a significant contribution to the academic literature on the school-to-prison pipeline by exploring the role disability plays in exposing children to school disciplinary practices, the impact this has on their educational attainment, and how it may lead to involvement with the criminal legal system later in life. This is the first study that questions whether disability could mediate the the relationship between suspension from school and involvement in the criminal legal system. While the study did not find evidence of a mediating effect, it found an independent association between having a learning disability or receiving special education services while in school and involvement in the criminal legal system later in life. This finding is critical because disability is: (1) overlooked and understudied as a correlate of criminal legal system involvement; (2) not included in current efforts to decarcerate; and (3) identified in early childhood through the special education and reasonable accommodation process in schools.

Disability is currently understudied and overlooked as a correlate of criminal legal system involvement. And, future research should investigate the ways in which disability affects involvement in the criminal legal system. This first requires significant efforts to (1) define and (2) measure disability. This study sets the foundation for this work by integrating criminology and disability studies to provide explanations for delinquent behavior using developmental/life-course, labeling, and strain theories within an interactive model of disability. In this study, students with health conditions are defined as having a disability if they have been *labeled* by school administrators as having a learning disability or requiring special education services. Under an interactive model of disability, the segregated learning environments associated with

special education services (labeling) may result in some students acting out (developmental/life-course) and failing to achieve positively valued goals such as a high school diploma or college education (strain) to the extent that some will become involved in the criminal legal system (e.g., Agnew, 1992; Farrington et al., 2019; Goodley, 2016; Higgins et al., 2002; Link et al., 1989; Mitra, 2018). Future work should critically engage with this model, expand on it, and develop new definitions of disability that meaningfully captures how the interaction of a health condition with personal, environmental, and social factors may lend itself to involvement in the criminal legal system.

Greater efforts are also needed to measure disability. Add Health is one of few datasets available that includes data on criminal legal involvement and disability status. However, given that this study finds disability to be a statistically significant correlate, all surveys seeking to measure involvement in the criminal legal system should also include a disability instrument. Aligned with an interactive model of disability, surveys should also ask respondents to consider the extent to which they feel personally, socially, or environmentally disabled by their health conditions as this could directly inform more inclusive policy making. Furthermore, this research demonstrated that childhood disability could be predictive of later in life involvement in the criminal legal system. Thus, it is also important that surveys ask the age of health condition onset and measure disability status across the life-course as this too may directly inform more inclusive policy making.

Because disability has been understudied and overlooked as a correlate of criminal legal system involvement, it is currently not included in ongoing efforts to decarcerate. Existing efforts are largely focused on what is believed to be the two main drivers of incarceration growth: (1) increased admissions to jails and prisons and (2) increased lengths of stay through the imposition of mandatory minimums and longer sentences (Clear and Frost, 2014; Garland, 2001; National Research Council, 2014). This study demonstrates a missed opportunity for intervention because it finds disability to be a correlate of criminal legal system involvement. Furthermore, the study demonstrates that a disability identified while the child is of school age can be associated with

later in life involvement in the criminal legal system. Given this, policymakers should identify where there are gaps in meeting the educational needs of children with disabilities and develop, pilot, and evaluate interventions aimed at breaking the school-to-prison pipeline for these children.

Disability is often identified in early childhood through the special education and reasonable accommodation process. This not only presents an opportunity for early intervention that may prevent latter involvement in the criminal legal system but also a renewed opportunity for inclusion. Policymakers should consider whether the implementation of grade-based schooling and strict academic criteria have prevented schools from fully including students with disabilities (Christensen and Rizvi, 1996; Jung, 2002; Tomlinson, 2017). This study finds that students with learning disabilities or who received special education services were less likely to graduate from high school or complete higher education. This finding is concerning and suggests that early efforts to support children with disabilities under the Individuals with Disabilities Education Act of 1990 were insufficient (Lambert, 2008). In making additional efforts to support the individual learning needs of students with disabilities, schools will need to become more flexible in how they implement grade-based schooling and academic criteria. This flexibility needs to also be extended to the application of school disciplinary policies which were codified under the Drug-Free Schools and Communities Act of 1989 and Gun Free Schools Act of 1994 so that students with disabilities are not penalized for behaviors that may be due to the nature of their health conditions and its interaction with the school environment (George, 2015; Heitzeg, 2009).

In sum, the study finds that school-age learning disability or receiving special education services is a correlate of involvement in the criminal legal system later in life. Furthermore, this disability designation is associated with overall poorer academic outcomes. Given this, criminal legal researchers and policymakers would be well-advised to consider the role of disability in criminal legal system involvement and how this pathway can be disrupted for future decarceration efforts. In addition, greater efforts are needed to fully include children

with disabilities in educational settings. Finally, defining and measuring disability in ways that meaningfully captures how the interaction of a health condition with personal, environmental, and social factors may lend itself to involvement in the criminal legal system will be critical in measuring progress in reducing the footprint of the criminal legal system for this population.

APPENDICES

Table A.1: Variables Used in the Current Research, by Dataset

Dataset	Variable Names	Variable Description	Values/Range
W I	demographics, socioeconomic status, educational achievement, parents' risk behavior, substance use, personality, delinquency, appearance, relationship with parent, and environmental context	statistical controls/ confounders	categorical recoded as binary (0/1)
	learning disability or receiving special education services, serious psychological distress	mediator variables	categorical recoded as binary (0/1)
W II	suspension	independent variable	categorical recoded as binary (0/1)
W III	high school graduate	dependent variable	categorical recoded as binary (0/1)
W IV	high school graduate, earned bachelor's degree, and criminal legal outcomes (arrested, convicted, paroled, or incarcerated)	dependent variables	categorical recoded as binary (0/1)

Table A.2: Detailed List of Variables Used in the Current Research, by Dataset

Dataset	Analytic Purpose	Category	Variable Name	Variable Description
W I	statistical controls/ confounders	demographics	H1G11M	birth month/year
			H1G11Y	
			H1G120	Grade
			BIO_SEX	Biological Sex
			H1G14	Hispanic/Latinx
			H1G18	race
		H1G111	born in US	
		socioeconomic status	PA55	family / household income
			PA56	enough money to pay bills
			PA12	parent’s educational attainment
			PA13	parent’s employment status
			PA17	parent employed full-time
		educational achievement	H1ED11	English language arts grade
			H1ED12	math grade
			H1ED13	social studies / history grade
			H1ED14	science grade
		parent’s risk behavior	PA61	frequency of alcohol use
			PA62	number of times more than 5 drinks in previous month
			PA63	smokers in household
			PA64	does parent personally smoke
		substance use	H1TO12	more than 2 or 3 alcoholic drinks in your life
			H1TO12	more than 2-3 drinks in lifetime
			H1TO15	frequency of alcohol use
			H1TO16	number of alcoholic drinks typically consumed
			H1TO31	number of times ever used marijuana
			H1TO32	number of times used marijuana in last 30 days
			H1TO41	other illegal drug use
		personality	H1PF7	agree/disagree: never argue with anyone
			H1PF8	agree/disagree: you get what you want because you worked hard
			H1PF10	agree/disagree: you never get sad
			H1PF13	agree/disagree: you never criticize other people
		delinquency (past 12 months)	H1DS1	painted graffiti or signs
			H1DS2	damaged property
			H1DS3	lie to parents about whereabouts
			H1DS4	shoplift
			H1DS5	in serious physical fight
			H1DS6	seriously injured someone
			H1DS7	run away from home
			H1DS8	stolen a car

		H1DS9	stolen something > \$50	
		H1DS10	burglarized a building	
		H1DS11	used / threaten with a weapon	
		H1DS12	sold drugs	
		H1DS13	stolen something < \$50	
		H1DS14	participated in a group fight	
		H1DS15	behaved loud / unruly in public place	
		appearance	H1GH59A	height in feet and inches
			H1GH59B	
			H1GH60	weight in pounds
		relationship with parent	H1WP9	closeness to mother
			H1WP13	closeness to father
		environmental context	PA31	tell if neighbor child in trouble
			PA32	neighbor would tell if your child in trouble
			PA33	trash / litter a problem in this neighborhood
	PA34		drug dealers / drug users a problem in this neighborhood	
	mediator variables	learning disability or receiving special education services	PC38	specific learning disability,such as difficulties with attention, dyslexia, or some other reading, spelling, writing, or math disability
			PC39	received any type of special education services within the past 12 months
	serious psychological distress	H1FS1	bothered by things that usually don't bother you	
		H1FS2	didn't feel like eating / poor appetite	
H1FS3		could not shake off the blues, even with help from family / friends		
H1FS4		felt you were just as good as other people		
H1FS5		trouble keeping mind on what you were doing		
H1FS6		felt depressed		
H1FS7		too tired to do things		
H1FS8		hopeful about future		
H1FS9		thought life had been a failure		
H1FS10		felt fearful		
H1FS11		were happy		
H1FS12		talked less than usual		
H1FS13		felt lonely		
H1FS14		people were unfriendly		
H1FS15		enjoyed life		
H1FS16		felt sad		
H1FS17		felt people disliked you		
H1FS18		hard to get started doing things		
H1FS19		felt life not worth living		
W II	independent variable	suspension	H2ED3	received an out-of-school suspension

W III	dependent variable	high school graduate	H3ED3	received HS diploma
W IV	dependent variables	high school graduate	H4ED1	high school graduation status
		earned bachelor's degree	H4ED2	highest level of education achieved to date
		arrested	H4CJ1	ever arrested
		convicted	H4CJ10	ever convicted or pled guilty to any charges other than minor traffic violation
		paroled	H4CJ16	ever paroled
		incarcerated	H4CJ17	ever spent time in a jail, prison, juvenile detention center, or other correctional facility

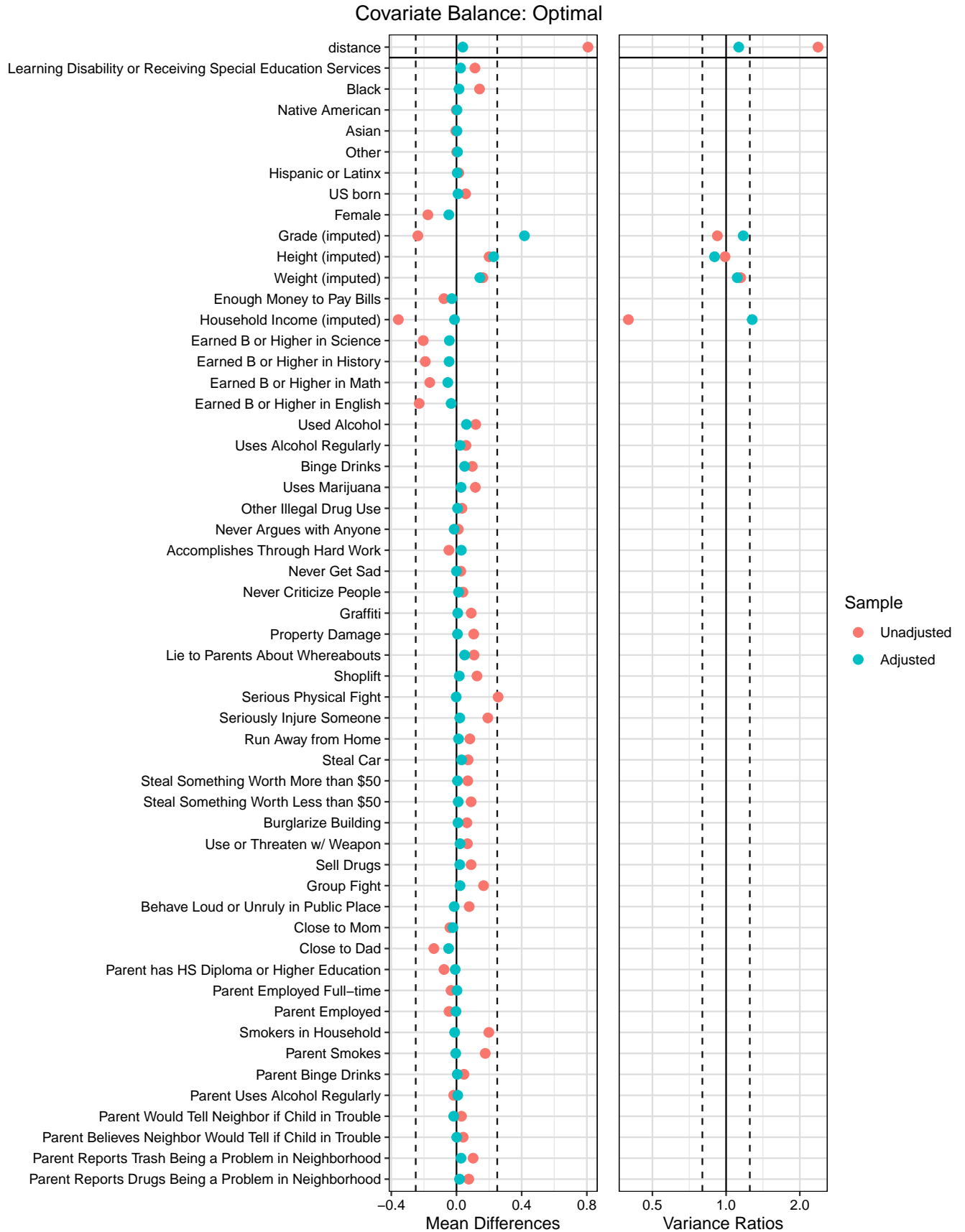


Figure A.1: Optimal Pair PSM - Learning Disability/Receiving Special Education Services

Table A.3: Relationship between Learning Disability/Receiving Special Education Services and Suspension

	<i>Dependent variable:</i>		
	Learning Disability or Receiving Special Education Services		
		<i>logistic</i>	<i>survey-weighted</i>
			<i>logistic</i>
	Full Analytic File	ATT Matched Sample	ATE Matched Sample
Suspension	0.333** (0.164)	-0.092 (0.211)	0.121 (0.275)
Black	-0.752*** (0.157)	-0.947*** (0.268)	-0.598** (0.233)
Native American	-0.518 (0.586)	-0.291 (1.236)	-0.146 (0.886)
Asian	-0.718 (0.455)	-1.615* (0.930)	-0.379 (0.462)
Other	0.059 (0.320)	-0.845 (0.637)	0.128 (0.429)
Hispanic or Latinx	-0.221 (0.231)	0.262 (0.400)	-0.296 (0.365)
US born	0.076 (0.133)	-0.267 (0.265)	-0.054 (0.150)
Female	-0.544*** (0.136)	-0.547** (0.276)	-0.600*** (0.174)
Grade (imputed)	-0.115*** (0.044)	-0.069 (0.089)	-0.124** (0.053)
Height (imputed)	0.0001 (0.019)	-0.031 (0.035)	0.019 (0.023)
Weight (imputed)	0.005*** (0.002)	0.011*** (0.003)	0.002 (0.002)
Enough Money to Pay Bills	0.219 (0.142)	0.632** (0.257)	-0.013 (0.167)
Household Income (imputed)	0.003*** (0.001)	-0.003 (0.004)	0.003** (0.001)
Earned B or Higher in Science	-0.390*** (0.123)	-0.158 (0.244)	-0.414*** (0.141)
Earned B or Higher in History	-0.640*** (0.123)	-0.365 (0.246)	-0.713*** (0.147)
Earned B or Higher in Math	-0.329***	-0.099	-0.229

	(0.120)	(0.236)	(0.145)
Earned B or Higher in English	-0.503***	-0.058	-0.615***
	(0.125)	(0.256)	(0.170)
Used Alcohol	-0.180	-0.619**	-0.183
	(0.135)	(0.278)	(0.160)
Uses Alcohol Regularly	0.267	0.380	0.354
	(0.212)	(0.361)	(0.255)
Binge Drinks	-0.094	0.049	-0.244
	(0.170)	(0.304)	(0.251)
Uses Marijuana	-0.180	-0.548	-0.311
	(0.206)	(0.345)	(0.239)
Other Illegal Drug Use	-0.305	0.408	-0.340
	(0.251)	(0.451)	(0.288)
Never Argues with Anyone	0.322*	0.870***	0.446**
	(0.174)	(0.314)	(0.175)
Accomplishes Through Hard Work	-0.282**	-0.340	-0.188
	(0.123)	(0.237)	(0.142)
Never Get Sad	-0.218	-0.110	-0.357
	(0.172)	(0.302)	(0.220)
Never Criticize People	0.252*	0.141	0.407***
	(0.133)	(0.255)	(0.152)
Graffiti	0.211	0.367	0.287
	(0.211)	(0.339)	(0.265)
Property Damage	-0.281*	-0.267	-0.363*
	(0.170)	(0.309)	(0.202)
Lie to Parents About Whereabouts	-0.082	-0.148	-0.049
	(0.125)	(0.248)	(0.145)
Shoplift	0.213	0.245	0.264
	(0.182)	(0.317)	(0.213)
Serious Physical Fight	0.174	0.618**	0.245
	(0.137)	(0.263)	(0.166)
Seriously Injure Someone	0.460***	0.238	0.512**
	(0.154)	(0.269)	(0.199)
Run Away from Home	0.456**	0.195	0.518**
	(0.204)	(0.323)	(0.249)
Steal Car	0.195	0.580*	0.356
	(0.189)	(0.313)	(0.215)
Steal Something Worth More than \$50	-0.299	-0.167	-0.392
	(0.278)	(0.429)	(0.395)
Steal Something Worth Less than \$50	-0.330*	-0.382	-0.524**
	(0.200)	(0.346)	(0.214)

Burglarize Building	0.034 (0.282)	-0.358 (0.454)	-0.478 (0.347)
Use or Threaten w/ Weapon	0.084 (0.262)	0.077 (0.422)	0.433 (0.304)
Sell Drugs	-0.076 (0.247)	0.181 (0.383)	-0.201 (0.306)
Group Fight	0.144 (0.152)	0.098 (0.264)	-0.096 (0.181)
Behave Loud or Unruly in Public Place	-0.394*** (0.127)	-0.352 (0.250)	-0.413*** (0.143)
Close to Mom	0.128 (0.166)	-0.183 (0.314)	0.173 (0.191)
Close to Dad	-0.082 (0.120)	0.182 (0.228)	-0.096 (0.143)
Parent has HS Diploma or Higher Education	0.176 (0.148)	0.182 (0.260)	0.374** (0.185)
Parent Employed Full-time	0.092 (0.157)	0.279 (0.307)	0.180 (0.216)
Parent Employed	0.116 (0.176)	0.041 (0.331)	0.094 (0.232)
Smokers in Household	0.147 (0.161)	-0.415 (0.321)	0.192 (0.193)
Parent Smokes	0.111 (0.170)	0.604* (0.319)	0.211 (0.182)
Parent Binge Drinks	-0.195 (0.189)	-0.245 (0.354)	-0.367* (0.210)
Parent Uses Alcohol Regularly	0.215 (0.178)	0.383 (0.375)	0.113 (0.174)
Parent Would Tell Neighbor if Child in Trouble	0.492*** (0.169)	0.870** (0.351)	0.650*** (0.229)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.186 (0.135)	-0.390 (0.270)	-0.219 (0.192)
Parent Reports Trash Being a Problem in Neighborhood	0.181 (0.122)	0.212 (0.238)	0.226* (0.135)
Parent Reports Drugs Being a Problem in Neighborhood	0.290** (0.122)	0.242 (0.235)	0.258* (0.153)
Constant	-1.106 (1.162)	0.031 (2.211)	-1.860 (1.467)
Observations	3,341	640	3,341
Log Likelihood	-1,127.424	-291.798	-1,180.798

Akaike Inf. Crit.	2,364.847	693.595	2,471.596
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Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis

Table A.4: ATT and ATE of Suspension on Criminal Legal System Involvement

	<i>Dependent variable:</i>			
	Criminal Legal System Involvement			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i>	ATE
	(1)	(2)	(3)	(4)
Suspension	0.574*** (0.195)	0.588*** (0.196)	0.516** (0.254)	0.514** (0.255)
Learning Disability or Receiving Special Education Services		0.297 (0.243)		0.267* (0.147)
Black	0.359 (0.236)	0.399* (0.239)	0.401*** (0.130)	0.420*** (0.130)
Native American	-0.234 (1.692)	-0.296 (1.688)	0.883 (0.539)	0.894 (0.551)
Asian	-1.382* (0.821)	-1.336 (0.827)	-0.333 (0.340)	-0.320 (0.336)
Other	-0.849 (0.614)	-0.814 (0.618)	0.021 (0.294)	0.018 (0.296)
Hispanic or Latinx	0.508 (0.414)	0.495 (0.415)	-0.096 (0.198)	-0.086 (0.199)
US born	0.333 (0.257)	0.351 (0.257)	0.320*** (0.121)	0.325*** (0.119)
Female	-1.961*** (0.268)	-1.948*** (0.268)	-1.313*** (0.128)	-1.295*** (0.129)
Grade (imputed)	-0.131 (0.082)	-0.129 (0.082)	-0.080* (0.043)	-0.076* (0.044)
Height (imputed)	-0.039 (0.033)	-0.038 (0.033)	0.006 (0.022)	0.006 (0.022)
Weight (imputed)	-0.003 (0.003)	-0.003 (0.003)	-0.001 (0.002)	-0.001 (0.002)
Enough Money to Pay Bills	-0.189 (0.229)	-0.211 (0.230)	-0.020 (0.138)	-0.016 (0.137)
Household Income (imputed)	-0.0005 (0.003)	-0.0003 (0.003)	0.0003 (0.001)	0.0002 (0.001)
Earned B or Higher in Science	-0.411* (0.220)	-0.406* (0.220)	-0.223* (0.118)	-0.212* (0.119)

Earned B or Higher in History	-0.082 (0.223)	-0.064 (0.223)	-0.095 (0.136)	-0.069 (0.138)
Earned B or Higher in Math	-0.337 (0.215)	-0.328 (0.215)	-0.148 (0.109)	-0.140 (0.109)
Earned B or Higher in English	-0.526** (0.230)	-0.528** (0.230)	-0.235* (0.127)	-0.215* (0.128)
Used Alcohol	0.070 (0.252)	0.098 (0.253)	0.218 (0.146)	0.226 (0.146)
Uses Alcohol Regularly	0.852** (0.347)	0.854** (0.348)	0.865*** (0.183)	0.855*** (0.185)
Binge Drinks	0.390 (0.272)	0.384 (0.272)	0.101 (0.160)	0.108 (0.158)
Uses Marijuana	0.623** (0.305)	0.657** (0.307)	0.429* (0.222)	0.438* (0.223)
Other Illegal Drug Use	0.813* (0.455)	0.798* (0.457)	0.017 (0.255)	0.025 (0.256)
Never Argues with Anyone	-0.152 (0.317)	-0.211 (0.322)	-0.164 (0.167)	-0.188 (0.168)
Accomplishes Through Hard Work	0.182 (0.220)	0.199 (0.221)	0.090 (0.140)	0.096 (0.140)
Never Get Sad	0.052 (0.271)	0.061 (0.272)	0.311* (0.168)	0.325* (0.167)
Never Criticize People	-0.432* (0.243)	-0.436* (0.243)	0.009 (0.138)	-0.003 (0.138)
Graffiti	-0.051 (0.321)	-0.073 (0.323)	-0.059 (0.202)	-0.067 (0.201)
Property Damage	-0.192 (0.274)	-0.175 (0.275)	0.160 (0.170)	0.173 (0.170)
Lie to Parents About Whereabouts	0.286 (0.232)	0.295 (0.232)	0.179 (0.116)	0.178 (0.117)
Shoplift	0.233 (0.291)	0.218 (0.291)	0.155 (0.185)	0.148 (0.185)
Serious Physical Fight	0.548** (0.233)	0.528** (0.234)	0.290** (0.122)	0.282** (0.122)
Seriously Injure Someone	0.016 (0.253)	0.006 (0.253)	0.073 (0.149)	0.056 (0.150)
Run Away from Home	-0.301 (0.306)	-0.313 (0.307)	0.081 (0.203)	0.064 (0.206)
Steal Car	-0.039 (0.302)	-0.068 (0.304)	0.317* (0.164)	0.303* (0.164)
Steal Something Worth More than \$50	-0.357	-0.328	0.017	0.037

	(0.402)	(0.402)	(0.242)	(0.241)
Steal Something Worth Less than \$50	-0.429	-0.412	-0.048	-0.033
	(0.315)	(0.315)	(0.177)	(0.177)
Burglarize Building	0.971**	0.983**	0.297	0.313
	(0.427)	(0.427)	(0.322)	(0.319)
Use or Threaten w/ Weapon	0.046	0.041	0.230	0.218
	(0.414)	(0.416)	(0.235)	(0.235)
Sell Drugs	0.346	0.338	0.188	0.197
	(0.369)	(0.370)	(0.223)	(0.222)
Group Fight	0.262	0.257	-0.007	0.001
	(0.238)	(0.238)	(0.134)	(0.133)
Behave Loud or Unruly in Public Place	-0.014	-0.004	-0.020	-0.010
	(0.229)	(0.230)	(0.125)	(0.125)
Close to Mom	-0.205	-0.201	-0.101	-0.107
	(0.270)	(0.271)	(0.170)	(0.169)
Close to Dad	-0.501**	-0.513**	-0.181	-0.174
	(0.211)	(0.211)	(0.125)	(0.125)
Parent has HS Diploma or Higher Education	-0.010	-0.021	-0.117	-0.129
	(0.240)	(0.240)	(0.157)	(0.156)
Parent Employed Full-time	0.170	0.159	-0.077	-0.087
	(0.287)	(0.287)	(0.195)	(0.194)
Parent Employed	-0.409	-0.409	-0.025	-0.029
	(0.311)	(0.311)	(0.220)	(0.219)
Smokers in Household	0.143	0.159	-0.102	-0.105
	(0.293)	(0.294)	(0.175)	(0.174)
Parent Smokes	0.058	0.031	0.459***	0.445**
	(0.292)	(0.293)	(0.171)	(0.170)
Parent Binge Drinks	-0.281	-0.263	0.180	0.196
	(0.331)	(0.331)	(0.203)	(0.202)
Parent Uses Alcohol Regularly	0.476	0.454	0.112	0.109
	(0.373)	(0.374)	(0.196)	(0.195)
Parent Would Tell Neighbor if Child in Trouble	0.124	0.092	-0.053	-0.074
	(0.297)	(0.299)	(0.161)	(0.159)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.085	-0.071	0.042	0.050
	(0.257)	(0.258)	(0.141)	(0.141)
Parent Reports Trash Being a Problem in Neighborhood	-0.117	-0.123	0.049	0.040
	(0.226)	(0.226)	(0.128)	(0.128)
Parent Reports Drugs Being a Problem in Neighborhood	-0.199	-0.207	-0.011	-0.019
	(0.227)	(0.227)	(0.115)	(0.115)
Constant	4.395**	4.279**	-0.328	-0.377
	(2.066)	(2.069)	(1.269)	(1.280)

Observations	640	640	3,341	3,341
Log Likelihood	-331.041	-330.291	-1,640.871	-1,637.531
Akaike Inf. Crit.	772.082	772.583	3,391.741	3,387.062

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Table A.5: ATT and ATE of Suspension on High School Graduation

	<i>Dependent variable:</i>			
	High School Graduate			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i>	ATE
	(1)	(2)	(3)	(4)
Suspension	-0.280 (0.207)	-0.300 (0.209)	-0.435* (0.258)	-0.426 (0.259)
Learning Disability or Receiving Special Education Services		-0.734*** (0.250)		-0.410** (0.187)
Black	0.441* (0.257)	0.336 (0.260)	0.205 (0.209)	0.179 (0.209)
Native American	0.091 (1.518)	-0.011 (1.453)	0.504 (0.993)	0.457 (0.992)
Asian	0.457 (0.796)	0.350 (0.797)	-0.400 (0.493)	-0.409 (0.493)
Other	0.307 (0.614)	0.272 (0.621)	0.708 (0.430)	0.726* (0.428)
Hispanic or Latinx	0.112 (0.432)	0.101 (0.426)	-0.108 (0.263)	-0.124 (0.262)
US born	-0.008 (0.274)	-0.022 (0.275)	-0.040 (0.181)	-0.048 (0.178)
Female	0.226 (0.269)	0.170 (0.273)	0.019 (0.209)	-0.017 (0.204)
Grade (imputed)	0.427*** (0.092)	0.429*** (0.093)	0.349*** (0.057)	0.341*** (0.058)
Height (imputed)	-0.010 (0.035)	-0.016 (0.036)	0.028 (0.025)	0.029 (0.025)
Weight (imputed)	0.001 (0.004)	0.003 (0.004)	-0.004 (0.003)	-0.004 (0.003)
Enough Money to Pay Bills	0.274 (0.236)	0.363 (0.240)	0.441*** (0.163)	0.442*** (0.163)
Household Income (imputed)	0.008 (0.005)	0.008 (0.005)	0.004 (0.005)	0.004 (0.005)
Earned B or Higher in Science	0.469** (0.238)	0.464* (0.241)	0.475*** (0.168)	0.453*** (0.166)

Earned B or Higher in History	0.911*** (0.243)	0.896*** (0.247)	0.984*** (0.185)	0.948*** (0.189)
Earned B or Higher in Math	0.622*** (0.234)	0.612*** (0.236)	0.637*** (0.152)	0.630*** (0.152)
Earned B or Higher in English	0.474* (0.250)	0.464* (0.252)	0.622*** (0.177)	0.594*** (0.179)
Used Alcohol	-0.089 (0.269)	-0.170 (0.272)	-0.422** (0.198)	-0.445** (0.196)
Uses Alcohol Regularly	-0.191 (0.343)	-0.145 (0.349)	-0.899*** (0.244)	-0.884*** (0.242)
Binge Drinks	-0.050 (0.291)	-0.028 (0.293)	0.261 (0.203)	0.258 (0.200)
Uses Marijuana	-0.238 (0.310)	-0.329 (0.313)	-0.504** (0.247)	-0.537** (0.243)
Other Illegal Drug Use	-0.130 (0.429)	-0.090 (0.432)	-0.489* (0.254)	-0.495* (0.251)
Never Argues with Anyone	-0.089 (0.331)	0.074 (0.340)	-0.110 (0.243)	-0.050 (0.247)
Accomplishes Through Hard Work	0.098 (0.231)	0.061 (0.233)	0.075 (0.169)	0.063 (0.169)
Never Get Sad	0.141 (0.301)	0.117 (0.306)	-0.238 (0.244)	-0.274 (0.241)
Never Criticize People	0.280 (0.254)	0.315 (0.257)	-0.063 (0.198)	-0.038 (0.199)
Graffiti	0.194 (0.327)	0.228 (0.329)	0.427 (0.287)	0.442 (0.282)
Property Damage	0.222 (0.298)	0.195 (0.301)	0.486* (0.245)	0.468* (0.244)
Lie to Parents About Whereabouts	0.481** (0.242)	0.454* (0.244)	0.405** (0.179)	0.405** (0.179)
Shoplift	0.028 (0.307)	0.069 (0.310)	-0.140 (0.232)	-0.111 (0.230)
Serious Physical Fight	-0.277 (0.250)	-0.229 (0.253)	-0.183 (0.179)	-0.180 (0.181)
Seriously Injure Someone	0.093 (0.268)	0.131 (0.272)	-0.147 (0.212)	-0.129 (0.210)
Run Away from Home	-0.186 (0.303)	-0.184 (0.306)	-0.733*** (0.263)	-0.716*** (0.260)
Steal Car	-0.403 (0.296)	-0.311 (0.301)	-0.176 (0.241)	-0.142 (0.241)
Steal Something Worth More than \$50	-0.718* (0.296)	-0.792** (0.301)	-0.687** (0.241)	-0.728** (0.241)

	(0.392)	(0.395)	(0.332)	(0.328)
Steal Something Worth Less than \$50	-0.005	-0.063	-0.166	-0.200
	(0.332)	(0.334)	(0.226)	(0.228)
Burglarize Building	0.224	0.210	-0.596*	-0.636**
	(0.410)	(0.413)	(0.311)	(0.307)
Use or Threaten w/ Weapon	-0.593	-0.580	-0.384	-0.351
	(0.390)	(0.395)	(0.336)	(0.335)
Sell Drugs	0.121	0.171	0.012	0.005
	(0.375)	(0.379)	(0.314)	(0.314)
Group Fight	-0.219	-0.200	-0.054	-0.053
	(0.254)	(0.257)	(0.195)	(0.193)
Behave Loud or Unruly in Public Place	0.172	0.152	0.265	0.244
	(0.249)	(0.252)	(0.177)	(0.178)
Close to Mom	-0.121	-0.146	0.201	0.205
	(0.290)	(0.292)	(0.174)	(0.171)
Close to Dad	0.220	0.254	0.263*	0.259*
	(0.223)	(0.226)	(0.152)	(0.151)
Parent has HS Diploma or Higher Education	0.706***	0.730***	0.974***	0.992***
	(0.248)	(0.250)	(0.163)	(0.162)
Parent Employed Full-time	-0.332	-0.322	-0.094	-0.078
	(0.322)	(0.326)	(0.261)	(0.260)
Parent Employed	0.477	0.530	0.308	0.328
	(0.336)	(0.339)	(0.292)	(0.293)
Smokers in Household	-0.439	-0.484	-0.355	-0.356
	(0.312)	(0.314)	(0.220)	(0.221)
Parent Smokes	-0.025	0.034	-0.260	-0.240
	(0.300)	(0.303)	(0.222)	(0.226)
Parent Binge Drinks	-0.134	-0.181	-0.601**	-0.637**
	(0.331)	(0.333)	(0.241)	(0.242)
Parent Uses Alcohol Regularly	-0.192	-0.136	0.250	0.265
	(0.380)	(0.387)	(0.268)	(0.269)
Parent Would Tell Neighbor if Child in Trouble	0.340	0.418	-0.150	-0.123
	(0.312)	(0.316)	(0.269)	(0.267)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.194	-0.252	0.047	0.047
	(0.273)	(0.276)	(0.173)	(0.171)
Parent Reports Trash Being a Problem in Neighborhood	0.402	0.441*	-0.051	-0.035
	(0.248)	(0.251)	(0.200)	(0.200)
Parent Reports Drugs Being a Problem in Neighborhood	-0.591**	-0.588**	-0.318*	-0.318*
	(0.239)	(0.241)	(0.173)	(0.172)
Constant	-4.232*	-3.866*	-4.567***	-4.506***
	(2.194)	(2.217)	(1.528)	(1.529)

Observations	640	640	3,341	3,341
Log Likelihood	-302.460	-298.123		
Akaike Inf. Crit.	714.920	708.246		

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Table A.6: ATT and ATE of Suspension on Earning a Bachelor's Degree or Higher

	<i>Dependent variable:</i>			
	Attained Bachelor's Degree or Higher			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i> ATE	
	(1)	(2)	(3)	(4)
Suspension	-1.122*** (0.308)	-1.120*** (0.308)	-0.992** (0.394)	-0.980** (0.405)
Learning Disability or Receiving Special Education Services		-0.283 (0.449)		-0.823*** (0.220)
Black	0.471 (0.339)	0.440 (0.343)	0.316* (0.188)	0.276 (0.186)
Native American	-13.469 (967.250)	-13.304 (984.937)	-0.083 (0.495)	-0.089 (0.502)
Asian	1.276* (0.709)	1.224* (0.713)	0.803*** (0.265)	0.802*** (0.268)
Other	-0.461 (1.309)	-0.558 (1.318)	-0.282 (0.285)	-0.264 (0.290)
Hispanic or Latinx	-0.805 (0.791)	-0.748 (0.799)	-0.091 (0.228)	-0.113 (0.231)
US born	0.135 (0.373)	0.093 (0.380)	-0.091 (0.129)	-0.094 (0.126)
Female	0.701* (0.378)	0.673* (0.381)	0.322** (0.153)	0.296* (0.155)
Grade (imputed)	0.097 (0.120)	0.093 (0.120)	0.227*** (0.052)	0.223*** (0.052)
Height (imputed)	0.060 (0.052)	0.058 (0.052)	0.045** (0.019)	0.045** (0.019)
Weight (imputed)	-0.007 (0.006)	-0.006 (0.006)	-0.005** (0.002)	-0.005** (0.002)
Enough Money to Pay Bills	-0.740** (0.362)	-0.717** (0.364)	-0.015 (0.153)	-0.017 (0.157)
Household Income (imputed)	0.011*** (0.004)	0.011*** (0.004)	0.010*** (0.003)	0.010*** (0.003)
Earned B or Higher in Science	0.755** (0.342)	0.747** (0.343)	0.801*** (0.150)	0.767*** (0.151)

Earned B or Higher in History	1.129*** (0.349)	1.107*** (0.351)	0.901*** (0.131)	0.855*** (0.135)
Earned B or Higher in Math	0.476 (0.320)	0.480 (0.320)	0.715*** (0.126)	0.703*** (0.128)
Earned B or Higher in English	0.537 (0.344)	0.536 (0.345)	0.775*** (0.152)	0.722*** (0.154)
Used Alcohol	-0.006 (0.369)	-0.019 (0.371)	-0.185 (0.122)	-0.183 (0.125)
Uses Alcohol Regularly	-0.691 (0.667)	-0.698 (0.665)	0.191 (0.214)	0.206 (0.214)
Binge Drinks	-0.325 (0.425)	-0.302 (0.426)	0.122 (0.199)	0.111 (0.197)
Uses Marijuana	0.437 (0.496)	0.418 (0.497)	-0.201 (0.204)	-0.218 (0.205)
Other Illegal Drug Use	-0.502 (0.887)	-0.488 (0.884)	-0.303 (0.282)	-0.356 (0.280)
Never Argues with Anyone	-0.417 (0.547)	-0.418 (0.551)	-0.064 (0.176)	-0.074 (0.185)
Accomplishes Through Hard Work	0.414 (0.353)	0.401 (0.354)	-0.054 (0.120)	-0.071 (0.122)
Never Get Sad	-0.064 (0.432)	-0.060 (0.432)	0.242 (0.173)	0.234 (0.180)
Never Criticize People	0.083 (0.372)	0.094 (0.373)	-0.178 (0.136)	-0.150 (0.138)
Graffiti	0.811* (0.479)	0.816* (0.480)	0.215 (0.227)	0.240 (0.221)
Property Damage	0.083 (0.420)	0.062 (0.421)	0.249 (0.181)	0.227 (0.181)
Lie to Parents About Whereabouts	-0.022 (0.344)	-0.011 (0.345)	0.028 (0.111)	0.019 (0.110)
Shoplift	-0.056 (0.453)	-0.028 (0.456)	0.149 (0.215)	0.150 (0.213)
Serious Physical Fight	-0.309 (0.374)	-0.292 (0.376)	-0.359** (0.150)	-0.345** (0.149)
Seriously Injure Someone	0.154 (0.427)	0.158 (0.427)	-0.162 (0.201)	-0.104 (0.203)
Run Away from Home	-0.054 (0.535)	-0.026 (0.536)	0.065 (0.292)	0.109 (0.291)
Steal Car	0.489 (0.483)	0.515 (0.483)	-0.290 (0.213)	-0.277 (0.213)
Steal Something Worth More than \$50	-1.416* (0.483)	-1.416* (0.483)	-0.060 (0.213)	-0.091 (0.213)

	(0.825)	(0.824)	(0.322)	(0.325)
Steal Something Worth Less than \$50	0.112	0.089	-0.097	-0.115
	(0.500)	(0.501)	(0.244)	(0.236)
Burglarize Building	0.440	0.414	0.150	0.148
	(0.723)	(0.724)	(0.334)	(0.334)
Use or Threaten w/ Weapon	-0.146	-0.165	-0.409	-0.417
	(0.794)	(0.794)	(0.362)	(0.364)
Sell Drugs	-1.000	-0.972	0.319	0.315
	(0.722)	(0.721)	(0.311)	(0.310)
Group Fight	-0.302	-0.298	-0.372**	-0.401**
	(0.371)	(0.372)	(0.175)	(0.177)
Behave Loud or Unruly in Public Place	1.017***	0.994***	0.390***	0.368***
	(0.353)	(0.355)	(0.134)	(0.131)
Close to Mom	0.039	0.039	0.279	0.301*
	(0.459)	(0.460)	(0.176)	(0.176)
Close to Dad	-0.018	-0.008	0.213*	0.213*
	(0.321)	(0.322)	(0.118)	(0.120)
Parent has HS Diploma or Higher Education	1.275***	1.264***	1.068***	1.119***
	(0.469)	(0.470)	(0.178)	(0.182)
Parent Employed Full-time	-0.376	-0.360	-0.366**	-0.371**
	(0.403)	(0.405)	(0.147)	(0.151)
Parent Employed	0.341	0.322	0.416**	0.413**
	(0.455)	(0.458)	(0.166)	(0.168)
Smokers in Household	-0.481	-0.499	-0.525***	-0.509***
	(0.415)	(0.417)	(0.158)	(0.156)
Parent Smokes	-0.320	-0.297	-0.186	-0.189
	(0.457)	(0.458)	(0.180)	(0.179)
Parent Binge Drinks	-0.468	-0.463	-0.484**	-0.489**
	(0.643)	(0.644)	(0.240)	(0.239)
Parent Uses Alcohol Regularly	0.057	0.047	0.850***	0.864***
	(0.625)	(0.625)	(0.183)	(0.186)
Parent Would Tell Neighbor if Child in Trouble	0.079	0.113	-0.173	-0.125
	(0.485)	(0.489)	(0.173)	(0.176)
Parent Believes Neighbor Would Tell if Child in Trouble	0.185	0.174	-0.148	-0.190
	(0.428)	(0.428)	(0.151)	(0.155)
Parent Reports Trash Being a Problem in Neighborhood	0.016	0.011	-0.382***	-0.385***
	(0.344)	(0.344)	(0.138)	(0.137)
Parent Reports Drugs Being a Problem in Neighborhood	-0.546	-0.519	-0.219	-0.192
	(0.359)	(0.363)	(0.141)	(0.142)
Constant	-8.798***	-8.585**	-8.446***	-8.329***
	(3.387)	(3.408)	(1.249)	(1.277)

Observations	640	640	3,341	3,341
Log Likelihood	-169.602	-169.398		
Akaike Inf. Crit.	449.205	450.796		

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis



Figure A.2: Optimal Pair PSM - Serious Psychological Distress

Table A.7: Relationship between Serious Psychological Distress and Suspension

	<i>Dependent variable:</i>		
	Serious Psychological Distress		
	<i>logistic</i>	<i>survey-weighted</i>	
	Full Analytic File	ATT Matched Sample	ATE Matched Sample
Suspension	0.061 (0.136)	-0.054 (0.177)	-0.032 (0.254)
Black	0.293*** (0.103)	0.253 (0.219)	0.432*** (0.133)
Native American	0.377 (0.378)	-0.597 (1.181)	-0.179 (0.498)
Asian	0.648*** (0.227)	0.213 (0.542)	0.714*** (0.251)
Other	0.338 (0.220)	-0.363 (0.532)	0.281 (0.301)
Hispanic or Latinx	0.195 (0.156)	0.656* (0.382)	0.282 (0.196)
US born	-0.066 (0.094)	0.009 (0.226)	-0.113 (0.098)
Female	0.435*** (0.102)	0.694*** (0.222)	0.378*** (0.126)
Grade (imputed)	0.018 (0.032)	-0.027 (0.077)	0.026 (0.037)
Height (imputed)	-0.022 (0.014)	-0.024 (0.030)	-0.023 (0.017)
Weight (imputed)	0.002 (0.001)	0.004 (0.003)	0.001 (0.002)
Enough Money to Pay Bills	0.045 (0.102)	-0.042 (0.211)	0.008 (0.130)
Household Income (imputed)	-0.001 (0.001)	0.002 (0.003)	-0.0002 (0.001)
Earned B or Higher in Science	-0.038 (0.091)	0.183 (0.199)	-0.062 (0.113)
Earned B or Higher in History	-0.115 (0.091)	-0.275 (0.202)	-0.185* (0.107)
Earned B or Higher in Math	-0.172**	-0.145	-0.203*

	(0.087)	(0.192)	(0.115)
Earned B or Higher in English	-0.300***	0.044	-0.215*
	(0.095)	(0.207)	(0.127)
Used Alcohol	0.168*	0.173	0.140
	(0.097)	(0.229)	(0.122)
Uses Alcohol Regularly	0.016	-0.005	0.044
	(0.165)	(0.309)	(0.196)
Binge Drinks	0.034	0.136	0.117
	(0.121)	(0.254)	(0.146)
Uses Marijuana	0.349**	0.678**	0.238
	(0.148)	(0.274)	(0.175)
Other Illegal Drug Use	0.383**	-0.081	0.264
	(0.180)	(0.374)	(0.200)
Never Argues with Anyone	-0.005	-0.319	0.010
	(0.138)	(0.287)	(0.164)
Accomplishes Through Hard Work	-0.402***	-0.527**	-0.420***
	(0.090)	(0.205)	(0.135)
Never Get Sad	-0.438***	0.186	-0.462**
	(0.135)	(0.267)	(0.186)
Never Criticize People	-0.037	-0.043	0.115
	(0.102)	(0.215)	(0.130)
Graffiti	-0.058	0.071	0.127
	(0.156)	(0.294)	(0.198)
Property Damage	0.163	0.059	0.084
	(0.119)	(0.254)	(0.153)
Lie to Parents About Whereabouts	0.450***	0.509**	0.589***
	(0.090)	(0.209)	(0.114)
Shoplift	0.206	-0.072	0.186
	(0.135)	(0.262)	(0.167)
Serious Physical Fight	0.208**	0.111	0.145
	(0.102)	(0.226)	(0.123)
Seriously Injure Someone	0.284**	0.534**	0.230
	(0.121)	(0.239)	(0.156)
Run Away from Home	0.393**	0.273	0.351*
	(0.160)	(0.286)	(0.209)
Steal Car	0.001	0.072	-0.088
	(0.138)	(0.266)	(0.183)
Steal Something Worth More than \$50	0.267	0.354	0.251
	(0.209)	(0.342)	(0.285)
Steal Something Worth Less than \$50	-0.234	-0.096	-0.159
	(0.147)	(0.291)	(0.177)

Burglarize Building	-0.034 (0.210)	-0.064 (0.373)	0.152 (0.247)
Use or Threaten w/ Weapon	0.104 (0.203)	-0.004 (0.342)	0.218 (0.255)
Sell Drugs	-0.348* (0.185)	-0.577* (0.323)	-0.309* (0.181)
Group Fight	0.053 (0.112)	-0.114 (0.226)	0.048 (0.124)
Behave Loud or Unruly in Public Place	0.114 (0.090)	-0.143 (0.210)	0.135 (0.113)
Close to Mom	-0.519*** (0.112)	-0.704*** (0.238)	-0.449*** (0.121)
Close to Dad	-0.370*** (0.086)	-0.342* (0.190)	-0.303*** (0.114)
Parent has HS Diploma or Higher Education	-0.150 (0.109)	-0.271 (0.218)	-0.096 (0.128)
Parent Employed Full-time	0.030 (0.119)	0.026 (0.277)	-0.004 (0.125)
Parent Employed	-0.264** (0.131)	0.029 (0.296)	-0.323** (0.144)
Smokers in Household	0.061 (0.122)	-0.141 (0.278)	-0.119 (0.146)
Parent Smokes	-0.032 (0.134)	0.005 (0.278)	0.122 (0.181)
Parent Binge Drinks	0.101 (0.145)	0.199 (0.287)	0.257 (0.189)
Parent Uses Alcohol Regularly	0.003 (0.140)	-0.165 (0.326)	-0.166 (0.180)
Parent Would Tell Neighbor if Child in Trouble	-0.066 (0.118)	-0.559** (0.281)	0.093 (0.140)
Parent Believes Neighbor Would Tell if Child in Trouble	0.070 (0.102)	0.305 (0.244)	0.086 (0.119)
Parent Reports Trash Being a Problem in Neighborhood	0.038 (0.092)	0.415* (0.220)	-0.093 (0.117)
Parent Reports Drugs Being a Problem in Neighborhood	0.171* (0.093)	-0.070 (0.215)	0.181 (0.124)
Constant	0.823 (0.882)	1.302 (1.848)	0.803 (1.039)
Observations	3,341	640	3,341
Log Likelihood	-1,870.114	-383.811	-1,848.395

Akaike Inf. Crit.	3,850.228	877.622	3,806.791
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Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis

Table A.8: ATT and ATE of Suspension on Criminal Legal System Involvement

	<i>Dependent variable:</i>			
	Criminal Legal System Involvement			
	<i>logistic</i>	<i>survey-weighted</i>		
	ATT	<i>logistic</i> ATE		
	(1)	(2)	(3)	(4)
Suspension	0.462** (0.189)	0.448** (0.190)	0.551** (0.266)	0.547** (0.266)
Serious Psychological Distress		-0.499** (0.206)		-0.222* (0.132)
Black	0.430* (0.230)	0.469** (0.232)	0.307** (0.138)	0.331** (0.141)
Native American	-0.431 (1.462)	-0.486 (1.404)	0.938* (0.487)	0.924* (0.491)
Asian	-2.723*** (1.003)	-2.774*** (1.032)	-0.129 (0.338)	-0.088 (0.338)
Other	-0.366 (0.580)	-0.404 (0.581)	0.309 (0.288)	0.322 (0.294)
Hispanic or Latinx	0.672 (0.412)	0.736* (0.415)	0.005 (0.192)	0.018 (0.192)
US born	0.460* (0.247)	0.455* (0.249)	0.339*** (0.122)	0.335*** (0.123)
Female	-1.405*** (0.247)	-1.348*** (0.249)	-1.285*** (0.131)	-1.270*** (0.130)
Grade (imputed)	-0.117 (0.082)	-0.125 (0.083)	-0.100** (0.039)	-0.099** (0.039)
Height (imputed)	0.006 (0.031)	0.005 (0.031)	0.0004 (0.021)	-0.001 (0.021)
Weight (imputed)	-0.005 (0.003)	-0.004 (0.003)	-0.001 (0.002)	-0.001 (0.002)
Enough Money to Pay Bills	-0.194 (0.227)	-0.195 (0.228)	0.008 (0.134)	0.012 (0.133)
Household Income (imputed)	0.0001 (0.004)	0.0003 (0.004)	0.0003 (0.001)	0.0003 (0.001)
Earned B or Higher in Science	-0.253 (0.211)	-0.238 (0.212)	-0.111 (0.118)	-0.113 (0.118)

Earned B or Higher in History	-0.069 (0.214)	-0.098 (0.216)	0.022 (0.130)	0.014 (0.129)
Earned B or Higher in Math	-0.514** (0.206)	-0.533** (0.208)	-0.208* (0.115)	-0.217* (0.114)
Earned B or Higher in English	-0.367* (0.216)	-0.369* (0.217)	-0.255* (0.129)	-0.264** (0.131)
Used Alcohol	-0.081 (0.242)	-0.061 (0.243)	0.318** (0.142)	0.323** (0.143)
Uses Alcohol Regularly	0.562* (0.331)	0.585* (0.334)	0.724*** (0.200)	0.731*** (0.198)
Binge Drinks	0.258 (0.274)	0.285 (0.276)	0.161 (0.146)	0.169 (0.146)
Uses Marijuana	0.547* (0.294)	0.636** (0.299)	0.396* (0.207)	0.414* (0.209)
Other Illegal Drug Use	0.052 (0.408)	0.050 (0.410)	0.307 (0.218)	0.322 (0.218)
Never Argues with Anyone	-0.289 (0.304)	-0.309 (0.306)	-0.188 (0.175)	-0.187 (0.175)
Accomplishes Through Hard Work	-0.022 (0.215)	-0.071 (0.218)	0.014 (0.140)	-0.004 (0.137)
Never Get Sad	-0.028 (0.277)	-0.020 (0.279)	0.289* (0.155)	0.271* (0.154)
Never Criticize People	-0.100 (0.228)	-0.122 (0.229)	0.032 (0.134)	0.035 (0.133)
Graffiti	0.126 (0.318)	0.136 (0.319)	-0.077 (0.201)	-0.075 (0.201)
Property Damage	0.092 (0.275)	0.082 (0.278)	0.107 (0.183)	0.110 (0.182)
Lie to Parents About Whereabouts	0.173 (0.227)	0.217 (0.229)	0.159 (0.119)	0.181 (0.120)
Shoplift	0.072 (0.283)	0.075 (0.284)	0.140 (0.174)	0.148 (0.173)
Serious Physical Fight	0.303 (0.236)	0.323 (0.238)	0.352*** (0.124)	0.359*** (0.125)
Seriously Injure Someone	-0.058 (0.254)	-0.010 (0.257)	0.177 (0.173)	0.187 (0.175)
Run Away from Home	-0.004 (0.309)	0.028 (0.309)	0.088 (0.197)	0.109 (0.197)
Steal Car	0.020 (0.294)	0.023 (0.295)	0.249 (0.169)	0.245 (0.169)
Steal Something Worth More than \$50	0.054	0.096	-0.057	-0.038

	(0.372)	(0.372)	(0.250)	(0.246)
Steal Something Worth Less than \$50	-0.353	-0.366	0.046	0.039
	(0.319)	(0.320)	(0.174)	(0.174)
Burglarize Building	0.241	0.242	0.280	0.293
	(0.401)	(0.399)	(0.313)	(0.308)
Use or Threaten w/ Weapon	-0.047	-0.051	0.264	0.275
	(0.374)	(0.376)	(0.239)	(0.238)
Sell Drugs	0.838**	0.769**	-0.020	-0.035
	(0.359)	(0.362)	(0.216)	(0.217)
Group Fight	0.387	0.385	-0.012	-0.011
	(0.241)	(0.242)	(0.148)	(0.148)
Behave Loud or Unruly in Public Place	0.009	-0.007	-0.107	-0.105
	(0.224)	(0.226)	(0.133)	(0.133)
Close to Mom	-0.003	-0.063	-0.065	-0.086
	(0.255)	(0.259)	(0.166)	(0.167)
Close to Dad	-0.422**	-0.451**	-0.231*	-0.246*
	(0.203)	(0.205)	(0.125)	(0.125)
Parent has HS Diploma or Higher Education	-0.036	-0.071	-0.115	-0.125
	(0.229)	(0.232)	(0.146)	(0.147)
Parent Employed Full-time	0.047	0.057	-0.014	-0.015
	(0.298)	(0.298)	(0.186)	(0.186)
Parent Employed	0.007	-0.0005	-0.108	-0.118
	(0.314)	(0.314)	(0.213)	(0.212)
Smokers in Household	0.257	0.242	-0.112	-0.123
	(0.299)	(0.300)	(0.179)	(0.178)
Parent Smokes	0.362	0.364	0.494***	0.501***
	(0.296)	(0.297)	(0.177)	(0.178)
Parent Binge Drinks	-0.299	-0.281	0.169	0.179
	(0.307)	(0.309)	(0.205)	(0.203)
Parent Uses Alcohol Regularly	0.488	0.471	-0.035	-0.043
	(0.349)	(0.349)	(0.185)	(0.185)
Parent Would Tell Neighbor if Child in Trouble	-0.048	-0.108	0.161	0.169
	(0.298)	(0.301)	(0.162)	(0.163)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.553**	-0.536**	-0.136	-0.132
	(0.261)	(0.262)	(0.142)	(0.142)
Parent Reports Trash Being a Problem in Neighborhood	0.231	0.279	-0.037	-0.037
	(0.226)	(0.228)	(0.130)	(0.130)
Parent Reports Drugs Being a Problem in Neighborhood	-0.241	-0.249	-0.023	-0.018
	(0.227)	(0.228)	(0.115)	(0.114)
Constant	1.262	1.654	0.122	0.274
	(1.931)	(1.949)	(1.304)	(1.300)

Observations	640	640	3,341	3,341
Log Likelihood	-348.041	-345.076	-1,646.816	-1,644.399
Akaike Inf. Crit.	806.082	802.153	3,403.631	3,400.799

Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis

Table A.9: ATT and ATE of Suspension on High School Graduation

	<i>Dependent variable:</i>			
	High School Graduate			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		ATE	
	(1)	(2)	(3)	(4)
Suspension	-0.487** (0.212)	-0.498** (0.213)	-0.298 (0.234)	-0.301 (0.235)
Serious Psychological Distress		-0.418* (0.226)		-0.108 (0.168)
Black	0.275 (0.265)	0.318 (0.268)	0.235 (0.204)	0.248 (0.205)
Native American	0.988 (1.758)	0.931 (1.777)	0.601 (0.980)	0.597 (0.991)
Asian	0.029 (0.700)	0.039 (0.706)	-0.497 (0.513)	-0.475 (0.508)
Other	0.162 (0.616)	0.125 (0.624)	0.544 (0.503)	0.543 (0.503)
Hispanic or Latinx	-0.258 (0.429)	-0.190 (0.434)	-0.120 (0.277)	-0.118 (0.278)
US born	-0.260 (0.285)	-0.263 (0.286)	-0.112 (0.173)	-0.112 (0.173)
Female	-0.091 (0.271)	-0.019 (0.274)	-0.060 (0.197)	-0.050 (0.201)
Grade (imputed)	0.433*** (0.097)	0.435*** (0.098)	0.404*** (0.056)	0.403*** (0.056)
Height (imputed)	-0.023 (0.036)	-0.024 (0.036)	0.016 (0.023)	0.016 (0.023)
Weight (imputed)	0.004 (0.004)	0.005 (0.004)	-0.002 (0.003)	-0.002 (0.003)
Enough Money to Pay Bills	0.153 (0.244)	0.155 (0.244)	0.496*** (0.165)	0.499*** (0.166)
Household Income (imputed)	0.005 (0.005)	0.005 (0.005)	0.004 (0.005)	0.004 (0.005)
Earned B or Higher in Science	0.299 (0.238)	0.326 (0.240)	0.459*** (0.160)	0.457*** (0.160)

Earned B or Higher in History	0.873*** (0.243)	0.852*** (0.244)	1.000*** (0.178)	0.995*** (0.176)
Earned B or Higher in Math	0.849*** (0.239)	0.858*** (0.240)	0.640*** (0.149)	0.633*** (0.149)
Earned B or Higher in English	0.450* (0.248)	0.463* (0.249)	0.564*** (0.163)	0.563*** (0.163)
Used Alcohol	0.032 (0.274)	0.033 (0.275)	-0.571*** (0.195)	-0.570*** (0.196)
Uses Alcohol Regularly	-0.348 (0.341)	-0.357 (0.340)	-1.036*** (0.225)	-1.034*** (0.225)
Binge Drinks	-0.141 (0.298)	-0.105 (0.300)	0.230 (0.196)	0.234 (0.196)
Uses Marijuana	-0.201 (0.307)	-0.152 (0.307)	-0.194 (0.227)	-0.186 (0.225)
Other Illegal Drug Use	-0.588 (0.401)	-0.597 (0.401)	-0.502** (0.228)	-0.497** (0.227)
Never Argues with Anyone	-0.189 (0.337)	-0.184 (0.339)	-0.140 (0.227)	-0.138 (0.228)
Accomplishes Through Hard Work	0.384 (0.237)	0.327 (0.239)	0.078 (0.164)	0.068 (0.167)
Never Get Sad	0.046 (0.311)	0.065 (0.312)	-0.202 (0.234)	-0.209 (0.234)
Never Criticize People	0.142 (0.256)	0.118 (0.257)	-0.099 (0.184)	-0.098 (0.184)
Graffiti	0.023 (0.332)	0.041 (0.333)	0.685** (0.272)	0.687** (0.271)
Property Damage	0.479 (0.309)	0.487 (0.310)	0.376 (0.236)	0.379 (0.235)
Lie to Parents About Whereabouts	0.192 (0.250)	0.229 (0.253)	0.368** (0.152)	0.379** (0.152)
Shoplift	0.066 (0.305)	0.056 (0.304)	-0.206 (0.207)	-0.202 (0.208)
Serious Physical Fight	-0.226 (0.271)	-0.203 (0.272)	-0.255 (0.180)	-0.251 (0.180)
Seriously Injure Someone	-0.193 (0.279)	-0.147 (0.280)	-0.087 (0.225)	-0.082 (0.225)
Run Away from Home	0.083 (0.328)	0.110 (0.328)	-0.586** (0.250)	-0.579** (0.249)
Steal Car	-0.121 (0.310)	-0.119 (0.311)	-0.235 (0.222)	-0.235 (0.223)
Steal Something Worth More than \$50	-0.761**	-0.749**	-0.641**	-0.634**

	(0.375)	(0.378)	(0.311)	(0.311)
Steal Something Worth Less than \$50	-0.204	-0.211	-0.021	-0.025
	(0.332)	(0.333)	(0.229)	(0.229)
Burglarize Building	-0.178	-0.162	-0.723**	-0.713**
	(0.409)	(0.409)	(0.277)	(0.276)
Use or Threaten w/ Weapon	-0.565	-0.592	-0.111	-0.100
	(0.374)	(0.375)	(0.324)	(0.328)
Sell Drugs	0.072	0.042	-0.132	-0.139
	(0.358)	(0.360)	(0.297)	(0.296)
Group Fight	-0.163	-0.169	-0.147	-0.150
	(0.261)	(0.262)	(0.176)	(0.177)
Behave Loud or Unruly in Public Place	-0.126	-0.153	0.344**	0.345**
	(0.255)	(0.256)	(0.170)	(0.170)
Close to Mom	-0.223	-0.280	0.219	0.204
	(0.288)	(0.290)	(0.177)	(0.182)
Close to Dad	0.075	0.067	0.280*	0.276*
	(0.227)	(0.228)	(0.151)	(0.151)
Parent has HS Diploma or Higher Education	0.717***	0.703***	0.953***	0.947***
	(0.252)	(0.252)	(0.149)	(0.149)
Parent Employed Full-time	-0.392	-0.397	-0.234	-0.229
	(0.344)	(0.344)	(0.219)	(0.219)
Parent Employed	0.340	0.350	0.376	0.369
	(0.361)	(0.362)	(0.239)	(0.236)
Smokers in Household	-0.514	-0.551	-0.528**	-0.538***
	(0.334)	(0.335)	(0.201)	(0.202)
Parent Smokes	-0.264	-0.241	-0.165	-0.160
	(0.316)	(0.316)	(0.206)	(0.206)
Parent Binge Drinks	-0.240	-0.223	-0.393*	-0.388*
	(0.321)	(0.321)	(0.223)	(0.224)
Parent Uses Alcohol Regularly	-0.313	-0.321	0.419	0.414
	(0.365)	(0.363)	(0.263)	(0.262)
Parent Would Tell Neighbor if Child in Trouble	0.508	0.449	-0.349	-0.347
	(0.328)	(0.330)	(0.229)	(0.229)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.108	-0.093	0.170	0.172
	(0.283)	(0.284)	(0.156)	(0.155)
Parent Reports Trash Being a Problem in Neighborhood	0.299	0.330	-0.039	-0.041
	(0.261)	(0.263)	(0.194)	(0.195)
Parent Reports Drugs Being a Problem in Neighborhood	-0.653***	-0.657***	-0.316**	-0.312**
	(0.251)	(0.252)	(0.155)	(0.155)
Constant	-2.468	-2.250	-4.313***	-4.223***
	(2.261)	(2.269)	(1.435)	(1.436)

Observations	640	640	3,341	3,341
Log Likelihood	-291.596	-289.879		
Akaike Inf. Crit.	693.192	691.757		

Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis

Table A.10: ATT and ATE of Suspension on Earning a Bachelor's Degree or Higher

	<i>Dependent variable:</i>			
	Attained Bachelor's Degree or Higher			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		<i>logistic</i> ATE	
	(1)	(2)	(3)	(4)
Suspension	-1.656*** (0.326)	-1.670*** (0.327)	-1.150*** (0.422)	-1.153*** (0.428)
Serious Psychological Distress		-0.501 (0.330)		-0.207 (0.141)
Black	0.332 (0.360)	0.348 (0.361)	0.275 (0.176)	0.285 (0.176)
Native American	-12.511 (972.896)	-12.694 (950.366)	-0.004 (0.468)	-0.022 (0.460)
Asian	0.426 (0.729)	0.458 (0.739)	0.718** (0.295)	0.750** (0.303)
Other	1.752 (1.229)	1.829 (1.216)	-0.395 (0.305)	-0.377 (0.304)
Hispanic or Latinx	-2.034** (1.012)	-2.058** (1.007)	-0.083 (0.220)	-0.065 (0.218)
US born	-0.640* (0.346)	-0.645* (0.350)	-0.161 (0.139)	-0.166 (0.140)
Female	0.618* (0.365)	0.679* (0.371)	0.319** (0.151)	0.334** (0.151)
Grade (imputed)	0.165 (0.134)	0.178 (0.135)	0.271*** (0.046)	0.273*** (0.046)
Height (imputed)	0.090* (0.051)	0.088* (0.052)	0.039** (0.019)	0.038** (0.019)
Weight (imputed)	-0.007 (0.006)	-0.007 (0.006)	-0.004** (0.002)	-0.004** (0.002)
Enough Money to Pay Bills	-0.644* (0.362)	-0.661* (0.363)	-0.111 (0.160)	-0.114 (0.161)
Household Income (imputed)	0.007 (0.005)	0.008* (0.005)	0.009*** (0.003)	0.009*** (0.003)
Earned B or Higher in Science	0.524 (0.332)	0.537 (0.334)	0.837*** (0.148)	0.837*** (0.148)

Earned B or Higher in History	0.963*** (0.352)	0.934*** (0.356)	0.816*** (0.135)	0.809*** (0.136)
Earned B or Higher in Math	1.353*** (0.318)	1.334*** (0.318)	0.702*** (0.124)	0.699*** (0.125)
Earned B or Higher in English	0.676** (0.340)	0.670** (0.341)	0.820*** (0.151)	0.807*** (0.151)
Used Alcohol	0.308 (0.366)	0.332 (0.367)	-0.214* (0.127)	-0.208 (0.128)
Uses Alcohol Regularly	-0.784 (0.676)	-0.811 (0.673)	0.163 (0.206)	0.180 (0.203)
Binge Drinks	-1.014** (0.467)	-0.990** (0.465)	0.033 (0.197)	0.034 (0.197)
Uses Marijuana	-0.159 (0.511)	-0.073 (0.510)	-0.104 (0.206)	-0.094 (0.208)
Other Illegal Drug Use	-1.135 (0.868)	-1.160 (0.866)	-0.402 (0.278)	-0.398 (0.279)
Never Argues with Anyone	-1.248** (0.532)	-1.346** (0.542)	-0.249 (0.174)	-0.252 (0.174)
Accomplishes Through Hard Work	-0.335 (0.349)	-0.377 (0.352)	-0.043 (0.124)	-0.057 (0.123)
Never Get Sad	0.362 (0.432)	0.360 (0.435)	0.275 (0.187)	0.259 (0.186)
Never Criticize People	0.405 (0.368)	0.477 (0.373)	-0.029 (0.156)	-0.025 (0.157)
Graffiti	0.474 (0.541)	0.476 (0.545)	0.243 (0.231)	0.260 (0.231)
Property Damage	-0.050 (0.419)	-0.024 (0.422)	0.306 (0.186)	0.310* (0.186)
Lie to Parents About Whereabouts	0.047 (0.342)	0.121 (0.347)	0.096 (0.126)	0.118 (0.125)
Shoplift	0.772* (0.466)	0.784* (0.471)	0.127 (0.220)	0.133 (0.218)
Serious Physical Fight	-0.309 (0.361)	-0.288 (0.366)	-0.353** (0.145)	-0.350** (0.144)
Seriously Injure Someone	-0.297 (0.412)	-0.249 (0.416)	-0.207 (0.204)	-0.198 (0.204)
Run Away from Home	-0.283 (0.578)	-0.231 (0.581)	0.112 (0.292)	0.131 (0.294)
Steal Car	-0.234 (0.473)	-0.255 (0.479)	-0.323 (0.228)	-0.333 (0.230)
Steal Something Worth More than \$50	-0.348	-0.313	0.136	0.145

	(0.635)	(0.644)	(0.340)	(0.339)
Steal Something Worth Less than \$50	-0.388	-0.454	-0.136	-0.141
	(0.543)	(0.550)	(0.243)	(0.242)
Burglarize Building	0.118	0.164	0.207	0.204
	(0.710)	(0.720)	(0.341)	(0.346)
Use or Threaten w/ Weapon	-0.083	0.007	-0.468	-0.457
	(0.699)	(0.697)	(0.350)	(0.350)
Sell Drugs	0.074	-0.088	0.332	0.321
	(0.658)	(0.671)	(0.291)	(0.290)
Group Fight	0.062	0.045	-0.359**	-0.353**
	(0.398)	(0.399)	(0.174)	(0.174)
Behave Loud or Unruly in Public Place	0.887**	0.900***	0.376***	0.385***
	(0.346)	(0.348)	(0.140)	(0.140)
Close to Mom	0.653	0.555	0.278	0.261
	(0.444)	(0.451)	(0.176)	(0.176)
Close to Dad	0.565*	0.503	0.230**	0.212*
	(0.324)	(0.327)	(0.113)	(0.115)
Parent has HS Diploma or Higher Education	1.604***	1.583***	1.201***	1.208***
	(0.451)	(0.452)	(0.192)	(0.194)
Parent Employed Full-time	-0.253	-0.247	-0.363**	-0.366**
	(0.439)	(0.442)	(0.150)	(0.151)
Parent Employed	0.307	0.326	0.301	0.291
	(0.484)	(0.488)	(0.185)	(0.185)
Smokers in Household	-0.325	-0.323	-0.521***	-0.516***
	(0.439)	(0.440)	(0.160)	(0.159)
Parent Smokes	-0.108	-0.120	-0.068	-0.069
	(0.468)	(0.469)	(0.179)	(0.180)
Parent Binge Drinks	-1.157**	-1.128*	-0.476**	-0.465*
	(0.587)	(0.588)	(0.235)	(0.238)
Parent Uses Alcohol Regularly	-0.020	-0.020	0.790***	0.786***
	(0.656)	(0.666)	(0.174)	(0.173)
Parent Would Tell Neighbor if Child in Trouble	-0.500	-0.544	-0.114	-0.110
	(0.448)	(0.454)	(0.176)	(0.177)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.101	-0.060	-0.070	-0.071
	(0.420)	(0.423)	(0.151)	(0.152)
Parent Reports Trash Being a Problem in Neighborhood	-0.377	-0.329	-0.416***	-0.420***
	(0.362)	(0.367)	(0.139)	(0.139)
Parent Reports Drugs Being a Problem in Neighborhood	-0.092	-0.109	-0.278**	-0.270**
	(0.367)	(0.370)	(0.133)	(0.134)
Constant	-10.377***	-10.109***	-8.563***	-8.450***
	(3.111)	(3.129)	(1.256)	(1.269)

Observations	640	640	3,341	3,341
Log Likelihood	-169.383	-168.213		
Akaike Inf. Crit.	448.766	448.426		

Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis



Figure A.3: Optimal Pair PSM - Dual Disability

Table A.11: Relationship between Dual Disability and Suspension

	<i>Dependent variable:</i>		
	Dual Disability		
	<i>logistic</i>		<i>survey-weighted</i>
	Full Analytic File	ATT Matched Sample	ATE Matched Sample
Suspension	0.241 (0.220)	-0.085 (0.280)	0.029 (0.323)
Black	-0.337 (0.209)	-0.750** (0.351)	0.001 (0.254)
Native American	-0.726 (0.814)	-0.429 (1.161)	-1.602** (0.643)
Asian	-1.194 (0.783)	-16.028 (907.062)	-0.240 (0.817)
Other	0.158 (0.438)	-0.954 (0.955)	0.210 (0.445)
Hispanic or Latinx	-0.062 (0.320)	0.041 (0.553)	-0.129 (0.422)
US born	-0.188 (0.186)	-0.185 (0.357)	-0.346* (0.200)
Female	-0.210 (0.201)	-0.045 (0.356)	-0.177 (0.238)
Grade (imputed)	-0.043 (0.064)	-0.045 (0.123)	-0.038 (0.079)
Height (imputed)	-0.039 (0.027)	-0.074* (0.045)	-0.004 (0.034)
Weight (imputed)	0.008*** (0.002)	0.010** (0.004)	0.004 (0.003)
Enough Money to Pay Bills	-0.047 (0.192)	0.220 (0.325)	-0.095 (0.250)
Household Income (imputed)	0.002 (0.001)	-0.008 (0.007)	-0.0001 (0.004)
Earned B or Higher in Science	-0.438** (0.178)	-0.609* (0.327)	-0.481** (0.238)
Earned B or Higher in History	-0.457** (0.177)	-0.208 (0.321)	-0.595*** (0.199)
Earned B or Higher in Math	-0.257	0.243	-0.010

	(0.174)	(0.302)	(0.199)
Earned B or Higher in English	-0.532***	-0.077	-0.541**
	(0.181)	(0.323)	(0.234)
Used Alcohol	-0.201	-0.173	-0.424*
	(0.198)	(0.369)	(0.243)
Uses Alcohol Regularly	-0.079	-0.250	0.143
	(0.288)	(0.450)	(0.347)
Binge Drinks	0.080	0.369	0.268
	(0.226)	(0.379)	(0.323)
Uses Marijuana	0.038	0.012	-0.197
	(0.255)	(0.403)	(0.299)
Other Illegal Drug Use	-0.161	-0.417	-0.391
	(0.322)	(0.541)	(0.386)
Never Argues with Anyone	0.409	1.283***	0.559**
	(0.251)	(0.435)	(0.241)
Accomplishes Through Hard Work	-0.419**	-0.400	-0.381*
	(0.171)	(0.320)	(0.218)
Never Get Sad	-0.426	-1.227**	-0.498
	(0.278)	(0.546)	(0.304)
Never Criticize People	0.024	-0.065	0.196
	(0.200)	(0.358)	(0.209)
Graffiti	0.577**	0.576	0.800***
	(0.266)	(0.442)	(0.288)
Property Damage	-0.324	0.178	-0.515*
	(0.233)	(0.400)	(0.261)
Lie to Parents About Whereabouts	0.467**	0.245	0.576**
	(0.183)	(0.337)	(0.262)
Shoplift	0.650***	0.710*	0.903**
	(0.235)	(0.382)	(0.347)
Serious Physical Fight	0.142	0.345	0.101
	(0.196)	(0.374)	(0.256)
Seriously Injure Someone	0.801***	0.747**	0.821***
	(0.208)	(0.355)	(0.290)
Run Away from Home	0.455*	0.593	0.719**
	(0.251)	(0.379)	(0.306)
Steal Car	0.194	0.145	0.110
	(0.237)	(0.396)	(0.275)
Steal Something Worth More than \$50	0.032	-0.052	-0.398
	(0.344)	(0.504)	(0.424)
Steal Something Worth Less than \$50	-0.723***	-1.302***	-0.907***
	(0.264)	(0.445)	(0.255)

Burglarize Building	-0.623 (0.404)	-0.990 (0.606)	-0.958* (0.518)
Use or Threaten w/ Weapon	0.162 (0.331)	0.262 (0.509)	0.708** (0.345)
Sell Drugs	-0.363 (0.322)	0.528 (0.450)	-0.288 (0.334)
Group Fight	0.044 (0.207)	-0.122 (0.361)	0.032 (0.231)
Behave Loud or Unruly in Public Place	-0.335* (0.181)	-0.409 (0.330)	-0.298 (0.216)
Close to Mom	-0.242 (0.210)	-0.267 (0.377)	-0.362* (0.208)
Close to Dad	-0.155 (0.168)	0.235 (0.304)	-0.089 (0.232)
Parent has HS Diploma or Higher Education	0.361* (0.212)	0.369 (0.364)	0.455* (0.262)
Parent Employed Full-time	0.431* (0.254)	0.408 (0.481)	0.479 (0.329)
Parent Employed	-0.437 (0.274)	-0.419 (0.504)	-0.626* (0.360)
Smokers in Household	-0.109 (0.245)	-0.158 (0.428)	-0.152 (0.277)
Parent Smokes	0.484* (0.250)	0.042 (0.413)	0.668** (0.287)
Parent Binge Drinks	-0.199 (0.262)	-0.535 (0.461)	-0.326 (0.292)
Parent Uses Alcohol Regularly	0.425* (0.252)	0.530 (0.529)	0.410 (0.297)
Parent Would Tell Neighbor if Child in Trouble	0.528** (0.247)	0.365 (0.426)	0.630* (0.326)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.269 (0.191)	-0.202 (0.349)	-0.390 (0.259)
Parent Reports Trash Being a Problem in Neighborhood	0.178 (0.177)	0.767** (0.339)	0.243 (0.226)
Parent Reports Drugs Being a Problem in Neighborhood	0.203 (0.176)	-0.004 (0.310)	0.221 (0.232)
Constant	-0.378 (1.688)	1.761 (2.756)	-2.128 (2.362)
Observations	3,341	640	3,341
Log Likelihood	-627.872	-188.004	-638.101

Akaike Inf. Crit.	1,365.743	486.008	1,386.202
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Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis

Table A.12: ATT and ATE of Suspension on Criminal Legal System Involvement

	<i>Dependent variable:</i>			
	Criminal Legal System Involvement			
	<i>logistic</i>	<i>survey-weighted</i>		
	ATT	<i>logistic</i> ATE		
	(1)	(2)	(3)	(4)
Suspension	0.460** (0.190)	0.459** (0.190)	0.447* (0.254)	0.450* (0.254)
Dual Disability		-0.044 (0.317)		0.211 (0.211)
Black	0.032 (0.232)	0.030 (0.233)	0.333** (0.136)	0.331** (0.135)
Native American	1.006 (1.027)	1.008 (1.025)	0.903* (0.474)	0.915* (0.474)
Asian	-1.942** (0.867)	-1.949** (0.869)	-0.205 (0.329)	-0.203 (0.326)
Other	-0.398 (0.615)	-0.401 (0.615)	0.371 (0.308)	0.368 (0.308)
Hispanic or Latinx	0.564 (0.418)	0.564 (0.418)	-0.019 (0.194)	-0.017 (0.195)
US born	0.471* (0.261)	0.471* (0.261)	0.381*** (0.119)	0.385*** (0.119)
Female	-1.411*** (0.245)	-1.412*** (0.245)	-1.348*** (0.128)	-1.346*** (0.127)
Grade (imputed)	-0.175** (0.081)	-0.176** (0.081)	-0.078* (0.039)	-0.077* (0.039)
Height (imputed)	0.033 (0.031)	0.033 (0.031)	-0.002 (0.021)	-0.002 (0.021)
Weight (imputed)	0.0001 (0.003)	0.0001 (0.003)	-0.001 (0.002)	-0.001 (0.002)
Enough Money to Pay Bills	-0.046 (0.221)	-0.045 (0.221)	0.059 (0.137)	0.060 (0.137)
Household Income (imputed)	0.002 (0.004)	0.002 (0.004)	0.0002 (0.001)	0.0002 (0.001)
Earned B or Higher in Science	-0.171 (0.214)	-0.172 (0.214)	-0.201* (0.119)	-0.196 (0.120)

Earned B or Higher in History	-0.406*	-0.407*	-0.035	-0.027
	(0.214)	(0.214)	(0.132)	(0.132)
Earned B or Higher in Math	-0.486**	-0.486**	-0.201*	-0.204*
	(0.205)	(0.205)	(0.110)	(0.110)
Earned B or Higher in English	-0.417*	-0.416*	-0.220*	-0.214*
	(0.215)	(0.215)	(0.124)	(0.123)
Used Alcohol	0.369	0.369	0.318**	0.323**
	(0.245)	(0.245)	(0.140)	(0.139)
Uses Alcohol Regularly	0.708**	0.706**	0.775***	0.774***
	(0.339)	(0.340)	(0.181)	(0.182)
Binge Drinks	0.345	0.348	0.140	0.137
	(0.274)	(0.275)	(0.161)	(0.160)
Uses Marijuana	0.360	0.360	0.437**	0.438**
	(0.288)	(0.288)	(0.206)	(0.206)
Other Illegal Drug Use	0.249	0.245	0.090	0.096
	(0.410)	(0.411)	(0.229)	(0.229)
Never Argues with Anyone	-0.275	-0.270	-0.193	-0.202
	(0.304)	(0.307)	(0.178)	(0.178)
Accomplishes Through Hard Work	0.166	0.163	0.028	0.033
	(0.220)	(0.221)	(0.134)	(0.134)
Never Get Sad	0.330	0.327	0.260	0.265*
	(0.273)	(0.274)	(0.158)	(0.158)
Never Criticize People	-0.090	-0.090	0.048	0.045
	(0.235)	(0.235)	(0.133)	(0.133)
Graffiti	0.073	0.077	-0.159	-0.170
	(0.330)	(0.331)	(0.199)	(0.201)
Property Damage	0.422	0.422	0.108	0.115
	(0.282)	(0.282)	(0.176)	(0.177)
Lie to Parents About Whereabouts	0.044	0.044	0.210*	0.203*
	(0.228)	(0.228)	(0.117)	(0.117)
Shoplift	0.043	0.047	0.185	0.173
	(0.284)	(0.286)	(0.181)	(0.180)
Serious Physical Fight	0.266	0.267	0.371***	0.370***
	(0.238)	(0.238)	(0.122)	(0.122)
Seriously Injure Someone	-0.209	-0.206	0.136	0.124
	(0.253)	(0.254)	(0.172)	(0.175)
Run Away from Home	-0.123	-0.119	0.108	0.093
	(0.310)	(0.311)	(0.191)	(0.195)
Steal Car	0.352	0.354	0.269	0.263
	(0.305)	(0.305)	(0.170)	(0.171)
Steal Something Worth More than \$50	-0.185	-0.185	0.045	0.055

	(0.384)	(0.384)	(0.259)	(0.260)
Steal Something Worth Less than \$50	-0.297	-0.303	0.034	0.045
	(0.311)	(0.314)	(0.180)	(0.179)
Burglarize Building	0.213	0.209	0.392	0.403
	(0.413)	(0.414)	(0.315)	(0.313)
Use or Threaten w/ Weapon	0.194	0.195	0.183	0.173
	(0.410)	(0.410)	(0.233)	(0.232)
Sell Drugs	0.280	0.280	0.004	0.012
	(0.349)	(0.349)	(0.216)	(0.217)
Group Fight	0.241	0.241	-0.050	-0.049
	(0.252)	(0.252)	(0.141)	(0.140)
Behave Loud or Unruly in Public Place	-0.079	-0.080	-0.079	-0.075
	(0.222)	(0.222)	(0.124)	(0.125)
Close to Mom	0.221	0.221	-0.099	-0.095
	(0.272)	(0.272)	(0.148)	(0.147)
Close to Dad	-0.654***	-0.653***	-0.223*	-0.221*
	(0.212)	(0.213)	(0.127)	(0.128)
Parent has HS Diploma or Higher Education	0.188	0.188	-0.028	-0.033
	(0.238)	(0.238)	(0.145)	(0.144)
Parent Employed Full-time	0.192	0.193	-0.098	-0.103
	(0.306)	(0.306)	(0.186)	(0.186)
Parent Employed	-0.058	-0.059	-0.064	-0.059
	(0.329)	(0.329)	(0.209)	(0.209)
Smokers in Household	-0.095	-0.096	-0.154	-0.149
	(0.299)	(0.299)	(0.170)	(0.171)
Parent Smokes	0.354	0.355	0.561***	0.549***
	(0.292)	(0.292)	(0.172)	(0.173)
Parent Binge Drinks	-0.121	-0.124	0.114	0.119
	(0.320)	(0.321)	(0.197)	(0.195)
Parent Uses Alcohol Regularly	0.181	0.184	-0.016	-0.021
	(0.372)	(0.372)	(0.190)	(0.190)
Parent Would Tell Neighbor if Child in Trouble	-0.201	-0.200	0.080	0.071
	(0.278)	(0.278)	(0.159)	(0.157)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.165	-0.166	-0.113	-0.107
	(0.244)	(0.244)	(0.140)	(0.141)
Parent Reports Trash Being a Problem in Neighborhood	-0.046	-0.044	-0.050	-0.053
	(0.224)	(0.224)	(0.122)	(0.123)
Parent Reports Drugs Being a Problem in Neighborhood	0.134	0.133	0.029	0.026
	(0.222)	(0.222)	(0.113)	(0.113)
Constant	-1.115	-1.099	0.126	0.117
	(1.923)	(1.926)	(1.253)	(1.252)

Observations	640	640	3,341	3,341
Log Likelihood	-343.378	-343.369	-1,634.477	-1,634.140
Akaike Inf. Crit.	796.757	798.737	3,378.953	3,380.279

Notes:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are in parenthesis

Table A.13: ATT and ATE of Suspension on High School Graduation

	<i>Dependent variable:</i>			
	High School Graduate			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		ATE	
	(1)	(2)	(3)	(4)
Suspension	-0.431** (0.209)	-0.434** (0.209)	-0.520** (0.236)	-0.519** (0.238)
Dual Disability		-0.166 (0.318)		-0.230 (0.242)
Black	0.387 (0.262)	0.375 (0.263)	0.245 (0.214)	0.248 (0.214)
Native American	1.572 (1.267)	1.552 (1.263)	0.594 (0.983)	0.572 (0.983)
Asian	0.443 (0.815)	0.416 (0.816)	-0.651 (0.479)	-0.651 (0.479)
Other	-0.160 (0.634)	-0.178 (0.636)	0.744 (0.455)	0.753 (0.455)
Hispanic or Latinx	-0.471 (0.426)	-0.468 (0.426)	-0.145 (0.248)	-0.140 (0.249)
US born	-0.159 (0.291)	-0.160 (0.291)	-0.152 (0.175)	-0.157 (0.173)
Female	-0.462* (0.265)	-0.464* (0.265)	-0.034 (0.203)	-0.034 (0.202)
Grade (imputed)	0.330*** (0.093)	0.329*** (0.093)	0.410*** (0.058)	0.408*** (0.058)
Height (imputed)	-0.036 (0.035)	-0.037 (0.035)	0.024 (0.024)	0.024 (0.024)
Weight (imputed)	0.005 (0.004)	0.005 (0.004)	-0.004 (0.003)	-0.004 (0.003)
Enough Money to Pay Bills	0.280 (0.234)	0.284 (0.234)	0.501*** (0.162)	0.501*** (0.162)
Household Income (imputed)	0.009* (0.005)	0.008 (0.005)	0.002 (0.004)	0.002 (0.004)
Earned B or Higher in Science	0.117 (0.238)	0.112 (0.238)	0.488*** (0.168)	0.479*** (0.166)

Earned B or Higher in History	0.990*** (0.241)	0.988*** (0.242)	1.066*** (0.183)	1.058*** (0.183)
Earned B or Higher in Math	0.488** (0.227)	0.491** (0.228)	0.606*** (0.151)	0.610*** (0.151)
Earned B or Higher in English	0.752*** (0.244)	0.754*** (0.244)	0.570*** (0.172)	0.565*** (0.172)
Used Alcohol	-0.259 (0.272)	-0.263 (0.272)	-0.496** (0.196)	-0.504** (0.195)
Uses Alcohol Regularly	-0.243 (0.332)	-0.248 (0.333)	-1.144*** (0.228)	-1.141*** (0.227)
Binge Drinks	0.072 (0.290)	0.074 (0.290)	0.325 (0.197)	0.329* (0.197)
Uses Marijuana	-0.447 (0.294)	-0.443 (0.295)	-0.424* (0.231)	-0.430* (0.230)
Other Illegal Drug Use	0.298 (0.401)	0.290 (0.401)	-0.405 (0.246)	-0.411* (0.244)
Never Argues with Anyone	-0.242 (0.332)	-0.219 (0.335)	-0.274 (0.227)	-0.258 (0.223)
Accomplishes Through Hard Work	0.259 (0.235)	0.251 (0.235)	0.119 (0.164)	0.112 (0.165)
Never Get Sad	-0.133 (0.300)	-0.146 (0.302)	-0.150 (0.255)	-0.158 (0.255)
Never Criticize People	0.025 (0.254)	0.025 (0.255)	-0.145 (0.187)	-0.140 (0.186)
Graffiti	-0.115 (0.340)	-0.111 (0.340)	0.438* (0.263)	0.453* (0.261)
Property Damage	0.247 (0.313)	0.254 (0.313)	0.454* (0.230)	0.447* (0.230)
Lie to Parents About Whereabouts	0.296 (0.249)	0.295 (0.249)	0.437*** (0.155)	0.441*** (0.156)
Shoplift	0.103 (0.299)	0.119 (0.301)	-0.219 (0.221)	-0.195 (0.220)
Serious Physical Fight	-0.297 (0.265)	-0.293 (0.265)	-0.174 (0.187)	-0.176 (0.187)
Seriously Injure Someone	-0.443 (0.273)	-0.429 (0.274)	-0.168 (0.236)	-0.151 (0.235)
Run Away from Home	0.267 (0.325)	0.281 (0.326)	-0.610** (0.262)	-0.593** (0.261)
Steal Car	-0.351 (0.309)	-0.346 (0.310)	-0.261 (0.226)	-0.250 (0.228)
Steal Something Worth More than \$50	-0.603	-0.607	-0.474	-0.489

	(0.382)	(0.383)	(0.322)	(0.323)
Steal Something Worth Less than \$50	-0.198	-0.221	0.052	0.034
	(0.322)	(0.325)	(0.233)	(0.233)
Burglarize Building	-0.107	-0.129	-0.800***	-0.819***
	(0.412)	(0.414)	(0.279)	(0.279)
Use or Threaten w/ Weapon	-0.517	-0.507	-0.272	-0.252
	(0.389)	(0.390)	(0.332)	(0.336)
Sell Drugs	-0.123	-0.113	0.134	0.127
	(0.356)	(0.356)	(0.306)	(0.306)
Group Fight	-0.032	-0.035	-0.202	-0.201
	(0.270)	(0.270)	(0.181)	(0.181)
Behave Loud or Unruly in Public Place	0.265	0.259	0.311*	0.305*
	(0.250)	(0.250)	(0.173)	(0.173)
Close to Mom	-0.368	-0.373	0.157	0.148
	(0.298)	(0.299)	(0.164)	(0.164)
Close to Dad	0.338	0.344	0.281*	0.281*
	(0.230)	(0.230)	(0.155)	(0.154)
Parent has HS Diploma or Higher Education	0.394	0.395	1.015***	1.021***
	(0.254)	(0.254)	(0.150)	(0.149)
Parent Employed Full-time	-0.350	-0.344	-0.225	-0.216
	(0.337)	(0.337)	(0.224)	(0.224)
Parent Employed	0.084	0.084	0.318	0.314
	(0.362)	(0.361)	(0.237)	(0.237)
Smokers in Household	-0.850***	-0.860***	-0.473**	-0.486**
	(0.327)	(0.328)	(0.208)	(0.209)
Parent Smokes	-0.026	-0.022	-0.219	-0.203
	(0.305)	(0.305)	(0.207)	(0.210)
Parent Binge Drinks	-0.273	-0.279	-0.615**	-0.625**
	(0.318)	(0.319)	(0.242)	(0.240)
Parent Uses Alcohol Regularly	-0.322	-0.310	0.513*	0.518*
	(0.386)	(0.386)	(0.267)	(0.267)
Parent Would Tell Neighbor if Child in Trouble	0.620**	0.621**	-0.220	-0.212
	(0.306)	(0.305)	(0.226)	(0.227)
Parent Believes Neighbor Would Tell if Child in Trouble	-0.008	-0.007	0.139	0.139
	(0.261)	(0.261)	(0.155)	(0.154)
Parent Reports Trash Being a Problem in Neighborhood	0.179	0.193	-0.131	-0.125
	(0.245)	(0.246)	(0.192)	(0.192)
Parent Reports Drugs Being a Problem in Neighborhood	-0.583**	-0.587**	-0.328**	-0.327**
	(0.237)	(0.237)	(0.153)	(0.154)
Constant	-0.566	-0.503	-4.594***	-4.599***
	(2.165)	(2.168)	(1.528)	(1.537)

Observations	640	640	3,341	3,341
Log Likelihood	-297.730	-297.595		
Akaike Inf. Crit.	705.461	707.190		

Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis

Table A.14: ATT and ATE of Suspension on Earning a Bachelor's Degree or Higher

	<i>Dependent variable:</i>			
	Attained Bachelor's Degree or Higher			
	<i>logistic</i>		<i>survey-weighted</i>	
	ATT		ATE	
	(1)	(2)	(3)	(4)
Suspension	-1.090*** (0.307)	-1.074*** (0.308)	-1.125*** (0.397)	-1.121*** (0.395)
Dual Disability		-0.608 (0.674)		-0.854*** (0.307)
Black	0.441 (0.359)	0.419 (0.359)	0.276 (0.172)	0.274 (0.171)
Native American	-16.208 (1,869.463)	-16.204 (1,858.951)	-0.125 (0.479)	-0.160 (0.479)
Asian	1.597* (0.861)	1.508* (0.862)	0.710** (0.294)	0.710** (0.302)
Other	-16.145 (1,098.991)	-16.202 (1,096.723)	-0.349 (0.320)	-0.346 (0.321)
Hispanic or Latinx	0.087 (0.612)	0.084 (0.615)	-0.089 (0.219)	-0.102 (0.218)
US born	0.026 (0.381)	-0.014 (0.385)	-0.102 (0.125)	-0.118 (0.125)
Female	0.541 (0.390)	0.543 (0.390)	0.261* (0.153)	0.256* (0.153)
Grade (imputed)	0.219* (0.124)	0.219* (0.125)	0.253*** (0.047)	0.253*** (0.047)
Height (imputed)	0.111** (0.051)	0.109** (0.051)	0.041** (0.020)	0.039** (0.020)
Weight (imputed)	-0.006 (0.006)	-0.006 (0.006)	-0.004** (0.002)	-0.004** (0.002)
Enough Money to Pay Bills	-0.639* (0.331)	-0.611* (0.333)	-0.040 (0.154)	-0.037 (0.153)
Household Income (imputed)	0.003 (0.004)	0.003 (0.004)	0.009*** (0.003)	0.009*** (0.003)
Earned B or Higher in Science	0.468 (0.328)	0.425 (0.331)	0.947*** (0.148)	0.931*** (0.147)

Earned B or Higher in History	1.072*** (0.353)	1.051*** (0.353)	0.944*** (0.129)	0.924*** (0.130)
Earned B or Higher in Math	0.530* (0.313)	0.543* (0.315)	0.678*** (0.122)	0.675*** (0.123)
Earned B or Higher in English	0.661** (0.336)	0.650* (0.336)	0.713*** (0.159)	0.693*** (0.161)
Used Alcohol	0.379 (0.372)	0.358 (0.373)	-0.212* (0.125)	-0.222* (0.126)
Uses Alcohol Regularly	-0.814 (0.659)	-0.825 (0.659)	0.001 (0.211)	0.022 (0.213)
Binge Drinks	-0.456 (0.434)	-0.419 (0.439)	0.136 (0.201)	0.145 (0.202)
Uses Marijuana	-0.260 (0.476)	-0.287 (0.478)	-0.191 (0.196)	-0.195 (0.197)
Other Illegal Drug Use	-0.219 (0.709)	-0.231 (0.710)	-0.138 (0.256)	-0.171 (0.253)
Never Argues with Anyone	-0.986* (0.553)	-0.952* (0.554)	-0.159 (0.174)	-0.158 (0.173)
Accomplishes Through Hard Work	0.075 (0.344)	0.073 (0.344)	-0.098 (0.119)	-0.105 (0.120)
Never Get Sad	0.356 (0.408)	0.335 (0.409)	0.280 (0.184)	0.265 (0.184)
Never Criticize People	-0.714* (0.404)	-0.719* (0.406)	-0.118 (0.138)	-0.113 (0.138)
Graffiti	0.067 (0.545)	0.119 (0.551)	0.097 (0.255)	0.140 (0.253)
Property Damage	0.500 (0.433)	0.469 (0.435)	0.257 (0.180)	0.242 (0.177)
Lie to Parents About Whereabouts	0.135 (0.339)	0.167 (0.341)	0.034 (0.117)	0.053 (0.117)
Shoplift	0.076 (0.476)	0.113 (0.480)	0.147 (0.234)	0.171 (0.236)
Serious Physical Fight	-0.151 (0.355)	-0.152 (0.354)	-0.350** (0.147)	-0.349** (0.147)
Seriously Injure Someone	0.276 (0.392)	0.317 (0.396)	-0.140 (0.222)	-0.103 (0.225)
Run Away from Home	-0.725 (0.541)	-0.697 (0.545)	0.170 (0.327)	0.189 (0.328)
Steal Car	0.071 (0.466)	0.065 (0.466)	-0.088 (0.221)	-0.086 (0.219)
Steal Something Worth More than \$50	-0.168	-0.180	0.479	0.454

	(0.655)	(0.658)	(0.392)	(0.388)
Steal Something Worth Less than \$50	0.114	0.070	-0.063	-0.090
	(0.514)	(0.518)	(0.268)	(0.267)
Burglarize Building	0.350	0.327	-0.020	-0.036
	(0.651)	(0.654)	(0.338)	(0.338)
Use or Threaten w/ Weapon	-0.290	-0.326	-0.612	-0.605
	(0.746)	(0.746)	(0.372)	(0.374)
Sell Drugs	-0.497	-0.479	0.464*	0.443*
	(0.665)	(0.666)	(0.269)	(0.266)
Group Fight	-0.882**	-0.887**	-0.392**	-0.397**
	(0.423)	(0.425)	(0.174)	(0.175)
Behave Loud or Unruly in Public Place	0.322	0.309	0.321**	0.315**
	(0.333)	(0.335)	(0.144)	(0.143)
Close to Mom	-0.323	-0.357	0.333*	0.334*
	(0.413)	(0.415)	(0.184)	(0.183)
Close to Dad	0.518	0.511	0.193*	0.188*
	(0.323)	(0.323)	(0.110)	(0.110)
Parent has HS Diploma or Higher Education	0.902**	0.925**	1.167***	1.192***
	(0.451)	(0.452)	(0.183)	(0.185)
Parent Employed Full-time	0.208	0.218	-0.390**	-0.387**
	(0.466)	(0.466)	(0.163)	(0.162)
Parent Employed	-0.198	-0.222	0.324*	0.309
	(0.527)	(0.529)	(0.193)	(0.192)
Smokers in Household	-0.132	-0.107	-0.609***	-0.603***
	(0.426)	(0.427)	(0.161)	(0.160)
Parent Smokes	-0.427	-0.454	-0.051	-0.038
	(0.441)	(0.443)	(0.189)	(0.188)
Parent Binge Drinks	-0.718	-0.719	-0.464**	-0.461**
	(0.610)	(0.609)	(0.217)	(0.218)
Parent Uses Alcohol Regularly	0.438	0.470	0.700***	0.719***
	(0.647)	(0.647)	(0.177)	(0.180)
Parent Would Tell Neighbor if Child in Trouble	0.555	0.580	-0.124	-0.102
	(0.442)	(0.444)	(0.179)	(0.178)
Parent Believes Neighbor Would Tell if Child in Trouble	0.046	0.020	-0.063	-0.091
	(0.381)	(0.383)	(0.154)	(0.154)
Parent Reports Trash Being a Problem in Neighborhood	-0.277	-0.287	-0.425***	-0.428***
	(0.350)	(0.352)	(0.137)	(0.137)
Parent Reports Drugs Being a Problem in Neighborhood	-0.158	-0.163	-0.280**	-0.272**
	(0.352)	(0.352)	(0.131)	(0.132)
Constant	-12.173***	-11.929***	-8.490***	-8.346***
	(3.294)	(3.316)	(1.276)	(1.271)

Observations	640	640	3,341	3,341
Log Likelihood	-170.349	-169.895		
Akaike Inf. Crit.	450.697	451.789		

Notes:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Standard errors are in parenthesis

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