

Examining the Black Gender Gap in Educational Attainment: The Role of Exclusionary School Discipline & Criminal Justice Contact

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Black men and women have different levels of average educational attainment, yet few studies have focused on explaining how and why these patterns develop. One explanation may be inequality in experiences with institutional punishment through exclusionary school discipline and criminal justice exposure. Drawing on intersectional frameworks and theories of social control, I examine the long-term association between punishment and the Black gender gap using data from the Children of the National Longitudinal Survey of Youth 1979 cohort (NLSY-C). Decomposition analyses reveal that about one third of the gender gap can be explained by gender differences in experiences with institutional punishments, net of differences in observed behaviors. These measures are predictive at key educational transition points, including finishing high school and earning a 4-year college degree. Though Black boys and girls have similar family backgrounds and grow up in similar neighborhoods, results suggest that Black girls have a persistent advantage in educational attainment due in part to their lower levels of exposure to exclusionary school discipline and the criminal justice system. In addition, I find that gender differences in early achievement, early externalizing behavioral problems, school experiences, and substance use in adolescence and early adulthood are associated with gender differences in educational attainment. Taken together, these results illustrate the importance of punishment disparities in understanding disparate educational outcomes over the life course of Black men and women.

Though the Black gender gap in education is larger in magnitude than gender gaps among men and women of other races, it remains understudied in comparison to racial or gender disparities in the aggregate. The degree of inequality between Black men and women in educational outcomes is striking given that, on average, Black boys and girls grow up in similar types of households

All errors are my own. I am grateful to David Grusky, Sean Reardon, Francis Pearman, Mitchell Stevens, Kaylee Matheny, Sonia Giebel, and the editor and reviewers from Social Forces for their thoughtful comments and suggestions on earlier drafts of this manuscript.

The research reported here was supported in part by the Institute of Education Sciences, U.S. Department of Education, through Grant R305B140009 to the Board of Trustees of the Leland Stanford Junior University and Grant R305B170015 to the University of Michigan. The opinions expressed are those of the author and do not represent views of the funding grantors.

Received: December 12, 2021. Revised: July 3, 2023. Accepted: July 13, 2023

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and neighborhoods (Autor et al. 2019). Upon kindergarten entry, Black boys and girls perform similarly on math and reading standardized tests (LoGerfo, Nichols, and Chaplin 2006). However, later in childhood, educational gender gaps favoring Black girls and women emerge and begin to grow. Black women make up about 65% of Black college graduates (McDaniel et al. 2011), have higher levels of intergenerational educational mobility (Ferrare 2016; Karlson 2023), and have higher standardized test scores in childhood and adolescence (LoGerfo, Nichols, and Chaplin 2006; McGraw, Lubienski, and Strutchens 2006) when compared to Black men. In contrast to gender gaps within other races, where women only began outpacing men in college completion in the 1980s, relative advantages for Black women do not represent a reversal but in fact a longstanding trend, as Black women have earned college degrees at higher rates than Black men since at least the 1940s (McDaniel et al. 2011; DiPrete and Buchmann 2014).

What happens in adolescence and early adulthood to create such large educational inequalities by gender, and which factors can explain the emergence and persistence of this gap? This study builds upon prior research and investigates these two key questions by assembling a comprehensive model that decomposes the Black gender gap. The timing of the emergence of the gap suggests that disparate experiences with exclusionary school discipline and exposure to the criminal justice system may be leading sources of this inequality. In the analyses that follow, I consider the extent to which exclusionary school discipline and contact with the criminal justice system help to explain the educational gender gap between Black men and women. Although studies have shown that boys' early (mis)behaviors negatively impact their educational opportunities later in life (Aucejo and James 2019; Owens 2016; DiPrete and Jennings 2012), comparatively less is known about how differences in *punishment* are associated with educational pathways while keeping constant differences in observed behaviors.

This is a consequential oversight for several reasons. In recent decades, disciplinary practices in schools have increasingly included direct interaction with the criminal justice system (Wald and Losen 2003; Hoffman 2014; Lacoë and Steinberg 2018). Black boys and men are subject to disproportionately high levels of exposure to both exclusionary school discipline (Morris and Perry 2017; Legewie and Fagan 2019; Barnes and Motz 2018; Owens 2022) and the criminal justice system (Western and Wildeman 2009; Barnes and Motz 2018; Alexander 2010). These disproportionate frequencies of punishment are not due to behaviors alone, as studies have shown that Black boys and men are cited for harsher punishment for the same infractions as others (Owens and McLanahan 2020; Jacobsen, Pace, and Ramirez 2019; Marit Rehavi and Starr 2014; Owens 2022). Thus, a comprehensive assessment of the sources of the Black gender gap must include an examination of the extent to which the disproportionate punishment of Black boys is associated with later disparities in educational attainment while accounting for observed behavioral and academic differences.

To address these concerns, I leverage data from the Children of the National Longitudinal Survey of Youth 1979 cohort (NLSY-C). NLSY-C is well suited to investigations of inequality over the life course because it includes detailed information on respondents' educational trajectories, behaviors, and exposure to exclusionary school discipline and the criminal justice system through their adolescence and into adulthood. I find that gender differences in experiences with institutional punishments (as captured by school suspensions/expulsions, non-traffic criminal convictions, incarceration, and probation) explain approximately one third of the overall gap in educational attainment. These measures continue to predict gender differences at key educational transition points throughout the life course.

This article offers a new angle on the drivers of the Black gender gap, which at present is poorly understood. Drawing on theories of intersectionality (Crenshaw 1989, 1991; Collins 1990; McCall 2005) and social control (Garland 1990, 2001; Janowitz 1975), I build on prior studies to demonstrate the enduring relationship between punishment and educational pursuits, suggesting that punishment has a disproportionately large association with the educational trajectories of Black boys.

Background

This study focuses on the educational trajectories of Black men and women. Theories of intersectionality posit that there are complex and non-additive effects of race, gender, and class (among others) on valued life outcomes, such as education, income, and experiences with discrimination (Purdie-Vaughns and Eibach 2008; Crenshaw 1991; Collins 1990; McCall 2005). Because of this, existing understandings of the educational gender gap in the aggregate cannot answer pressing questions about the mechanisms underlying the Black gender gap specifically. Studies taking an intersectional lens to the study of inequality may do so in multiple ways, from examining patterns across multiple overlapping social categories to rejecting categorization altogether (McCall 2005). This study takes an approach to intersectionality that seeks to reveal complexity within groups (in this case, within a sample of self-identified Black individuals) where gender inequality may have otherwise been overshadowed by the persistent racial inequality between Black and non-Black populations. Though gender and race are imperfect, socially constructed categories, the provisional adoption of these categories for analysis can reveal important structural barriers to social equality (McCall 2005). With this in mind, my approach focuses on revealing complexities in the educational trajectories of Black men and women.

Despite several unanswered questions, relatively few studies have examined how the Black gender gap in educational attainment emerges and which mechanisms can explain its persistence. In one such study, McDaniel et al. (2011) found that increases in the incarceration rates of Black men only modestly impacted historical educational gaps between Black men and women. They argued that, though there have been large increases in the proportion of Black men who are incarcerated since the mid-1970s, men who are incarcerated tend to be unlikely to complete college given that the factors that predict incarceration are also associated with low likelihoods of college entrance and completion. Likewise, in one of only a few studies to specifically investigate the various mechanisms explaining within-race gender gaps, Aucejo and James (2019) weighed the contribution of broad categories of behaviors and respondent characteristics. They found that both achievement measures and behavioral measures (which included school suspensions) help explain both overall gender gaps and gender gaps among Black children. In addition, they found that arrests have only a small association with these gaps. A key conclusion of this study rests on the suggested need to foster fewer behavioral problems among Black boys in order to reduce gender gaps (Aucejo and James 2019). However, this conclusion rests primarily on the behaviors themselves rather than on their sources or the consequences associated with them. The current study builds upon prior studies by examining the extent to which disparate experiences with punishment may help to explain gender gaps between Black men and women.

Achievement & Behavioral Differences by Gender

Gender differences in early behaviors and achievement can be linked to processes of gender construction both within and outside of school, particularly when boys exhibit opposition to school or underperform academically relative to girls (Morris 2012; Carter 2005; Musto 2019; Ferguson 2000). At kindergarten entry, girls have more advanced behavioral skills than boys, which contributes to their comparatively higher levels of academic achievement over the course of elementary school (DiPrete and Jennings 2012). Early behavioral differences are a key predictor of aggregate gender gaps in later outcomes, with Owens (2016) finding that behavior differences at ages four and five predict the aggregate gender gap in educational outcomes by age twenty-nine using a sample of students from NLSY-C. In addition, Owens found that a number of academic and behavioral problems in adolescence and early adulthood, including lower achievement and other behavioral issues, stemmed from behavioral differences at earlier stages. Likewise, gender gaps in non-cognitive skills have been shown to account for nearly 90% of the aggregate gender gap in college attendance (Jacob 2002). Within schools, there is also persistent racial inequality in how boys are reprimanded or rewarded for their behaviors by race and perceived level of academic abilities, which advantages White and Asian boys relative to Black and Latinx boys (Musto 2019).

Taken together, these studies illustrate the relationship between early behavioral and academic differences and later gender inequality in educational outcomes. However, though boys may indeed exhibit more disruptive behaviors in schools than girls, studies have indicated that even for the same behaviors as other students, Black boys are disproportionately likely to be punished (Owens and McLanahan 2020; Jacobsen, Pace, and Ramirez 2019; Owens 2022). This raises the possibility that differential punishment may exacerbate the Black gender gap in educational attainment.

Social Control and Institutional Punishment

Both exclusionary school discipline and exposure to the criminal justice system function as forms of social control, with punishment operating as a means of maintaining social order in schools and in society more broadly (Garland 1990, 2001; Western 2006; Perry and Morris 2014; Janowitz 1975; Engen, Steen, and Bridges 2002).

Theories of social control suggest several broad categories of explanations for how status characteristics such as race and gender shape outcomes under these systems. Most prominently, to explain racial disparities in both school discipline and criminal justice exposure, studies tend to rely on the competing theoretical avenues of (1) different behaviors and levels of involvement with these systems and (2) different treatment given similar behaviors and offenses (Owens and McLanahan 2020; Engen, Steen, and Bridges 2002). Importantly, the two explanations are not mutually exclusive. For example, when considering racial disparities in school suspensions among Black and White students, Owens and McLanahan (2020) found that 46% of the gap can be explained by differential treatment for the same observed behaviors, while differences in behavior explained 9% of the racial gap. However, most studies on the mechanisms underlying the Black gender gap have tended to rest conclusions on the first hypothesis by focusing on gender differences in behaviors, which may mask the influence of gender differences in punishments.

The connection between schools and the criminal justice system has resulted in what scholars and policymakers call the *school-to-prison pipeline*, which describes an educational system with both direct and indirect ties to the criminal justice system (Wald and Losen 2003; Morris and Perry 2016; Nicholson-Crotty, Birchmeier, and Valentine 2009; Mittleman 2018; Kupchik 2016). As the criminal justice system became increasingly harsh in the 1990s, schools tended to begin modeling this behavior with the introduction of zero-tolerance policies, which increased not only suspensions and expulsions but also racial gaps in school discipline (Hoffman 2014; Morris and Perry 2016). In addition, school discipline has increasingly included direct involvement with the criminal justice system for offenses committed at school (Hirschfield 2008; Perry and Morris 2014; Owens 2017). Indirect links between school discipline and criminal justice include the many ways that high levels of suspensions increase the likelihood of later incarceration (Jacobsen, Pace, and Ramirez 2019; Barnes and Motz 2018; Wald and Losen 2003; Mittleman 2018). For example, Mittleman (2018) found that children who experienced school suspension had more than twice the risk of later arrest compared to otherwise similar students. Exclusionary school discipline also tends to initiate a number of poor outcomes for children and adolescents, including substance use, repeated school sanction, and disruptive behavior (Mittleman 2018; Dong and Krohn 2020; Evans-Whipp et al. 2015).

Thus, differences in exposure to the criminal justice system are intricately connected to the issue of school discipline. In fact, Barnes and Motz (2018) estimated that 16% of the racial gap in arrests is due to racial differences in probabilities of school suspensions and expulsions. These direct and indirect connections between school discipline and criminal justice lend support for the argument that punishments over the life course are interrelated in their influence on educational attainment and should therefore be considered in tandem.

Impacts of Punishment Disparities on Education

Racial disparities in exposure to exclusionary school discipline have been well documented. Black students, on average, are significantly more likely than their White peers to be suspended or

expelled from school, and they also have higher rates of citation for disciplinary infractions (Morris and Perry 2017; Jacobsen, Pace, and Ramirez 2019). Racial disparities in discipline persist even when controlling for a wide range of school- and individual-level factors (Gregory, Skiba, and Noguera 2010). Discipline gaps are especially large in cases where the severity of the offense is largely up to teacher discretion, such as disobedience or disruptive behavior in class (Forsyth et al. 2015), suggesting that disproportionately high suspensions for Black children are due in part to bias and discrimination (Okonofua and Eberhardt 2015; Owens 2022). In addition, as previously noted, a recent study by Owens and McLanahan (2020) found that the vast majority of the racial gap in school suspension and expulsion was associated with different treatment by race rather than different student behaviors. Finally, school districts with higher White–Black discipline disparities also tend to have larger White–Black achievement disparities (Pearman et al. 2019).

Among Black students, there is variation by gender in the severity and number of suspensions on average. Black boys are disproportionately likely to face punitive measures in school, such as suspension or detention, compared to Black girls (Morris and Perry 2017). Discipline gaps are not without cost, as suspensions have a negative consequence on students' achievement levels, decreasing performance in both math and reading (Lacoe and Steinberg 2019), and schools with harsh school discipline policies experience negative spillover effects even for students who have not been suspended (Perry and Morris 2014). Disproportionate exposure to the criminal justice system also negatively impacts educational pursuits, which disproportionately impacts Black men. For example, recent causal research on the 1986 Anti-Drug Act by Britton (2021) found that the Act's passage significantly increased the disproportionate incarceration of Black men, which led to a decrease in Black men's probabilities of enrolling in college. Increased exposure to neighborhood policing also decreases student-level educational outcomes among Black boys, a causal effect not found for Black girls (Legewie and Fagan 2019). Likewise, long-term exposure to neighborhood policing has a larger negative effect on Black children's high school graduation rates than on the graduate rates of students of other races (Legewie and Cricco 2022).

Study Overview

This study builds upon prior research and addresses an important gap in the existing literature: the impacts of institutional punishment on the Black gender gap in educational outcomes. This analysis differs from previous research on this question because it centers Black students and considers the separate contributions of differences in *behaviors* and differences in *punishment*.

Using decomposition analyses, I evaluate not only the extent to which gender differences in the likelihood of exposure to school discipline or the criminal justice system are associated with gender gaps, separately from the influence of behaviors, but also how these factors compare to important predictive measures such as gender differences in performance on cognitive and standardized tests, which have also been shown to have long-term consequences for educational attainment (Aucejo and James 2019; Eller and DiPrete 2018; Boudon 1974).

Data

The following analyses use data from the Children of the National Longitudinal Survey of Youth 1979 cohort (NLSY-C). The children in the NLSY-C sample are the children of women from the larger NLSY 1979 cohort. NLSY-C follows these children from early childhood to adulthood. NLSY-C therefore allows for an examination of educational and social experiences over the life course, incorporating measures from early childhood, adolescence, and early adulthood to offer a comprehensive picture of respondents' educational trajectories and attainments.¹ I focus only on the self-identified Black respondents in the NLSY-C sample (out of a total of 6873 NLSY-C respondents born between 1982 and 1993). The analytic sample includes 1600 Black respondents with varying levels of educational attainment in adulthood (out of 1784 total Black respondents born in the focal years). I restricted the sample to only those born between 1982 and 1993 to ensure that respondents were at most four years old in the first year of the survey (1986) and

at least twenty five years old in the most recently available wave (2018). In doing so, I ensure that the survey captures both early childhood experiences and behaviors at age four and adult educational attainment by age twenty five.

Missing Data

To account for respondents with missing data, I used multiple imputation with chained equations to generate twenty datasets with imputed values (Rubin 1976, 1987; Allison 2002). Analyses were run using the MI suite in Stata to carry out analyses, with results reported using pooled coefficients and standard errors. To conduct the imputation, I first imputed educational attainment before dropping observations that were missing this measure. Therefore, I excluded a total of 184 respondents (10.3% of the full sample of 1784 Black respondents born between 1982 and 1993).

Table A1 in the appendix compares the distribution of these measures from the sample of all Black respondents born in the focal years in NLSY-C ($n = 1784$) and to the full sample of NLSY-C respondents born in the focal years ($n = 6873$). The analytic sample does not differ meaningfully when the 184 respondents with missing educational attainment are excluded. However, given racial differences across a number of measures—including education, family and home background, achievement, and behaviors—there are large (and expected) differences between the Black respondents in the sample and the full NLSY-C sample that incorporates respondents of other races.

Measures

Outcomes

Analyses incorporate years of education attained (highest grade completed) by respondents at or after age twenty five as the primary outcome of interest. Because progression through educational pathways requires several steps and transitions, I also incorporate whether a respondent earned a standard high school diploma, entered college, and graduated from a two- or a four-year college or university (all binary indicator variables) as outcomes. Note that, for the purpose of these analyses, passing a General Educational Development (GED) test is not considered the same as a standard high school diploma. As such, models predicting receipt of a high school degree only include those who earned a standard high school diploma. However, because GED students can and do enter colleges, models predicting college entrance are conditional on earning either a high school diploma or GED. Likewise, models predicting college graduation are conditional on entering college (for full details, see the [Analytic Strategy](#) section).

Exclusionary school discipline and criminal justice contact

In addition, I include several measures related to respondents' experiences with institutional punishments. First, I incorporate whether or not a respondent was ever suspended or expelled from school. Unfortunately, the NLSY-C survey asked respondents about suspensions and expulsions together on a single question in the survey, which limits the possibility of further disentangling how suspensions may differ from expulsions and vice versa. In addition, the survey asked respondents whether they had ever been suspended or expelled, but not whether this suspension was an in-school or out-of-school suspension.

To capture convictions and incarceration, I created an indicator measure based on whether a respondent had ever been convicted of a crime (not including minor traffic incidents) or responded to a survey while incarcerated. In addition, I include indicators for whether a respondent had been on probation. These are included as exposure before adulthood (captured from all surveys for a given respondent before the age of eighteen) and during early adulthood (captured for all surveys completed while ages eighteen to twenty five) and are drawn from respondent self-reports.

Behaviors

The measurement of behavioral problems is especially key for this study, which drove the choice of NLSY-C as the dataset for these analyses. NLSY-C includes items from the Behavior Problems Index (BPI), which are included as a scale to indicate severity of behavioral problems in young children (Peterson and Zill 1986). These measures have been widely used in studies leveraging NLSY, including as a correlate of an outcome of interest or as an outcome itself (Spencer et al. 2005). I draw from the overall index of BPI, which is included with NLSY-C. The overall BPI index measures children's likelihoods of internalizing problems or externalizing behaviors in one composite variable. Items are based on a mother's reports of childhood behavior for respondents in the sample. I include BPI overall indices measured at ages five or six (around the time respondents are in kindergarten or early elementary school), eight or nine (elementary school), and twelve or thirteen (middle school). Later measurements of behavioral problems on this scale (i.e., during respondents' high school years) were not available. Measures collected at ages five and six likely precede any reported school suspensions/expulsions, as well as later criminal convictions, incarceration, or probation. Because of the correlation between these measures, I created an index using the first principal component of the underlying behavior variables (see appendix for models that incorporate BPI 5–6 measures rather than the behavioral composite).

Substance use

In addition, to further examine the ways in which respondent behaviors and tendencies might be related to the educational attainment gap between men and women, I also include measures of substance use before the age of eighteen and in early adulthood (aged eighteen to twenty five). These measures are drawn from survey questions on respondent's use of marijuana or a number of other illicit drugs. However, these measures differ from other reported behaviors in important ways. Substance use measures were collected throughout adolescence and early adulthood, which makes it possible that any experiences with school suspensions/expulsions or criminal justice system exposure may have preceded any substance use. Because substance use measures could represent intermediate mechanisms stemming from behaviors, punishments, or early academic achievement, I do not consider substance use at these ages to be theoretically equivalent to early externalizing behavioral problems measured by the BPI, which I analyze separately in models.

Achievement

I use several measures of early achievement and cognitive abilities, which are drawn from standardized assessments conducted as a part of the NLSY-C survey during respondents' childhoods and school-aged years. First, I include standardized scores from the Peabody Picture Vocabulary Test (PPVT) at ages three to five as an indication of early childhood vocabulary and cognitive development. Second, I include total standard scores for the Peabody Individual Achievement Test (PIAT) in both reading recognition and math. The PIAT measures academic skills in these subjects. I include both PIAT reading and math scores at ages six to seven (i.e., early elementary school), ages eight to nine (elementary school), and ages twelve to thirteen (middle school). Due to the high degree of correlation between the achievement measures, I created a standardized index of achievement using the first principal component of the underlying variables.

Additional covariates

To control for a range of factors that might reasonably be expected to influence the Black gender gap, I also incorporate several background measures related to students' home and school contexts. I include mother's age at the respondent's birth, birth order of the respondent compared to siblings, mother's education, whether the respondents' biological father is present in their household, and an index indicating the quality of the respondents' home environment. The home environment measures are compiled within NLSY-C and are adapted from the Home Observation

Measurement of the Environment (HOME) inventory to give an indication of emotional support and cognitive stimulation in the child's home (Bradley and Caldwell 1984). In addition, I include an indicator measure for whether a student participated in a Head Start preschool program as an indication of early educational opportunities. To account for school context and experiences, I use several measures including whether or not the student was referred to special education tracks, whether they ever repeated a grade, and a composite measure of negative peer pressure experiences (including pressure to use commit crimes; skip school; or use drugs, cigarettes, and alcohol). These measures are included to ensure that a variety of processes are considered in the decomposition models, in addition to the key measures of interest. In addition, the measures included in this study mirror or are comparable to those used in similar studies of gender gaps in the aggregate (e.g., Owens (2016)) or by race (e.g., Aucejo and James (2019)).

Analytic Strategy

My approach includes two sets of analyses. First, I use a series of decomposition models to investigate the relationship between gender and educational attainment. The second set of models uses linear regression to determine the minimum and maximum expected contribution to the gender gap for each set of covariates, which avoids assumptions about the temporal ordering of the included covariates (Morgan, Gelbgiser, and Weeden 2013; Owens 2016).

First, I use both two- and three-fold Kitagawa–Oaxaca–Blinder (KOB) decomposition models (Blinder 1973; Oaxaca 1973; Kitagawa 1955) to model educational attainment and progression through several key educational transition points, including graduation from high school, entrance into college, and graduation from college. Models for entrance into college are conditional on graduating with a standard high school diploma or GED, while models for graduation from a college program are conditional on entering college.² This allows for an investigation of the factors predicting gender differences at each specific transition point, without including differences stemming from earlier educational transitions. Standard errors in all models are clustered by birth cohort.

Gender disparities in educational outcomes could emerge because men and women have different levels of key predictor variables or because the coefficients associated with these measures differ by gender. The goal of the KOB decomposition models is to test the portion of the overall observed gender gap that is associated with gender differences in either levels or coefficients of each measure, net other variables in the model.

Two- and three-fold decomposition models have different theoretical comparisons of interest, though both contribute to our understanding of the gender gap. First, three-fold KOB decomposition models decompose gaps into three components: differences attributable to endowments (i.e., levels), differences attributable to coefficients, and differences attributable to the interaction between the endowments and levels. Three-fold decompositions are also sensitive to the choice of reference coefficient. I include results using women's coefficients/levels as the reference in these cases. Two-fold decompositions, in contrast, can include estimates averaged using coefficients that are pooled across gender and decompose gaps into explained and unexplained components that approximate differences in levels and coefficients. However, two-fold decompositions do not include interaction components, which are subsumed into the unexplained variation.

In a three-fold model, the endowments portion of a decomposition model displays how large the gender gap might be in a hypothetical counterfactual case where Black men and women have women's levels (but their existing coefficients) of each of the covariates (for example, a counterfactual scenario where both groups have their existing returns to achievement, but average academic performance on standardized tests are set to women's averages). Likewise, estimates from the coefficients portion of the model indicate how large the gender gap might be if Black men and women had the women's returns/coefficients associated with a given measure given the existing distribution of that variable (for example, a scenario where men and women have their given distribution of achievement, but the returns to achievement are set equal to

women's returns). I interpret interaction terms based on the sign and statistical significance of the estimate only: interaction terms capture whether either group has a double advantage (or double disadvantage) based on simultaneous level and coefficient differences. Because I use women as the reference category, negative and statistically significant interaction terms indicate that there is an offsetting relationship between the coefficients and levels, while positive and statistically significant interaction terms indicate that men have a double disadvantage based on level and coefficients (Jann 2008). In contrast, because all two-fold decompositions are averaged using a pooled set of reference coefficients, explained and unexplained variation can be interpreted relative to a hypothetical counterfactual where either levels or coefficients are equalized by gender.

I normalize binary covariates following conventions from Yun (2004) and Jann (2008). Though there are several options for decompositions with binary outcomes, I use linear probability models for modeling transitions to high school and college to avoid issues with covariate ordering that can stem from decomposition with the binary outcome model (Jann 2008, 2018; Gelbach 2016). Finally, unexplained and coefficient columns include a constant, which indicates the remaining portion of the gap that is due to gender differences in unobserved factors. Factors may either positively or negatively predict the gap, and in some cases may even overpredict³ the gap. Though conventional decomposition models include detailed unexplained/coefficient variation alongside explained/endowment variation, it is important to note that unexplained/coefficient estimates are very sensitive to measurement, scaling, and choice of base category (Oaxaca and Ransom 1999; Jann 2018). In fact, estimates from a detailed unexplained/coefficient can vary significantly based on simple transformations of a given variable, such as standardization or changing the reference category. Explained/endowment estimates are not sensitive to such decisions. As such, readers should interpret all detailed unexplained/coefficient decomposition results with caution. However, the overall portion of the gap that is attributable to unexplained/coefficient variation is not sensitive to these measure issues and therefore can be interpreted directly.

In addition to the KOB decomposition models, I also estimate the minimum and maximum contribution of each set of covariates given different assumptions about their temporal ordering, following Morgan et al. (2013) and mirroring similar approaches used in prior studies decomposing gender gaps (see Owens (2016)). For these models, I focus on the overall gender gap in educational attainment rather than the various educational transition points. Maximum contributions measure the change in the gender gap that occurs when adding the variable in question to the simplest version of the baseline model, which includes only self-reported gender. The minimum contribution reflects the change in the gender gap that occurs when removing the measure of interest from the full model that includes all relevant covariates. These models give an indication of the contribution of each of the key measures under a number of assumptions about temporal orderings of the measures.

Finally, the analyses presented here are descriptive, and thus they cannot be interpreted using causal claims.

Results

Descriptive Statistics

Table 1 displays descriptive statistics for the analytic sample, with means and standard deviations (SDs) for the overall sample and for men and women separately. Educational attainment for female students in the sample is much higher than those for male students. The gender gap in educational attainment among Black respondents in the NLSY-C sample is 1.08 years of education. Overall, women are fourteen percentage points more likely to finish high school, twenty percentage points more likely to enter college, fifteen percentage points more likely to earn any type of college degree, and nine percentage points more likely to earn a four-year college degree.

As expected, most measures of family background and contextual measures do not vary significantly by gender, with the exception of slight differences in average levels of the

Table 1. Descriptive Statistics of the Analytic Sample

	Overall sample			Men		Women		Diff.
	Mean	SD	Missing (%) ^a	Mean	SD	Mean	SD	
Outcomes								
Highest grade completed	12.28	2.48	0%	11.73	2.52	12.80	2.34	***
HS degree (Yes = 1)	0.78		0%	0.71		0.85		***
College entrance (Yes = 1)	0.56		0%	0.45		0.65		***
2- or 4-Year college degree (Yes = 1)	0.29		0%	0.21		0.36		**
4-Year college degree (Yes = 1)	0.17		0%	0.13		0.22		**
Background & context								
Mother's age at birth	25.27	3.84	0%	25.43	3.79	25.12	3.88	*
Father present (Yes = 1)	0.43		7%	0.43		0.42		
Birth order	2.27	1.22	0%	2.30	1.23	2.25	1.21	
Mother's education (Years)	13.25	2.20	0%	13.26	2.28	13.23	2.12	
Home Environment Quality Index	877.78	171.04	12%	863.75	172.58	891.12	168.59	**
Head start (Yes = 1)	0.39		4%	0.40		0.39		
Achievement								
Achievement Index	0.00	1.69	19%	-0.21	1.76	0.19	1.59	***
Exclusionary school discipline								
School suspension/expulsion (Yes = 1)	0.35		4%	0.46		0.24		***
Criminal justice exposure								
Non-traffic criminal conviction/incarceration (by age 17; Yes = 1)	0.07		14%	0.10		0.04		*
Non-traffic criminal conviction/incarceration (age 18–25; Yes = 1)	0.15		2%	0.24		0.07		***
Probation (by age 17; Yes = 1)	0.09		22%	0.12		0.06		*
Probation (age 18–25; Yes = 1)	0.17		3%	0.26		0.08		***
Behaviors								
Behavior Index	0.00	1.42	19%	0.15	1.50	-0.15	1.32	**
Substance use								
Marijuana use (by age 17; Yes = 1)	0.18		6%	0.23		0.14		**
Marijuana use (age 18–25; Yes = 1)	0.48		17%	0.59		0.39		***
Other illicit drug use (by age 17; Yes = 1)	0.02		6%	0.04		0.01		*
Other illicit drug use (age 18–25; Yes = 1)	0.05		3%	0.07		0.04		*
School experiences								
Special education referral (Yes = 1)	0.15		32%	0.20		0.09		**
Repeated grade (Yes = 1)	0.28		3%	0.36		0.21		**
Peer Index	0.00	1.86	9%	0.15	1.95	-0.15	1.76	**
Observations		1600			780		820	

Source: NLSY-C. **Note:** To account for respondents with missing data, multiple imputation with chained equations was used to generate twenty datasets with imputed missing values. ^aThe Missing (%) column indicates amount of missingness in a given measure (analytic sample) before multiple imputation was performed (averaged over component variables for indices). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed tests for differences between genders).

NLSY-C-created home environment index and mother's age at birth. This suggests that, on average, Black boys and girls in the sample are growing up in similar kinds of households and communities. When considering achievement measured through cognitive and standardized tests, girls have much higher composite achievement levels relative to boys. Men and boys also have a much higher levels of suspensions/expulsions and criminal justice system contact compared to women and girls. In fact, about 46% of boys and men report having been suspended or expelled from school compared to 24% of girls and women. Similarly, much higher fractions of boys and men report having been convicted of a non-traffic crime, incarcerated, or put on probation compared to girls and women. Likewise, men report much higher rates of marijuana usage in both adolescence and early adulthood, as well as higher rates of other illicit drug use compared to women (though fractions of respondents reporting using non-marijuana drugs at

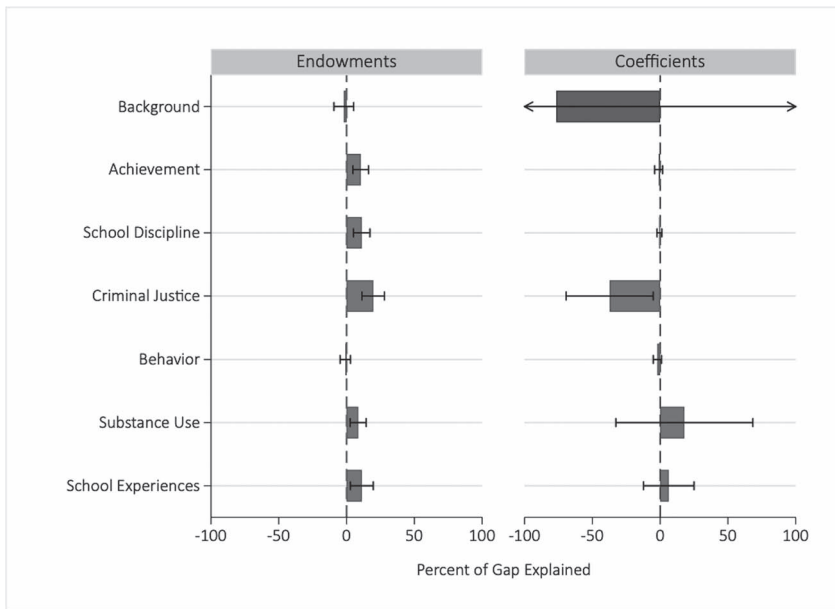


Figure 1. Coefficients from KOB decomposition of factors explaining gender differences in years of educational attainment (three-fold model). *Source:* NLSY-C. *Notes:* Error bars indicate 95% confidence intervals. Constant and interaction estimates omitted for brevity.

any age were quite low). Levels of reported behavioral problems are also higher for boys than girls. Finally, boys are also more likely to have been referred to special education, to have repeated a grade, and to experience negative peer pressure during school.

Decomposition of Overall Attainment Gap

Table 2 reports the results of KOB decompositions of the overall gap in educational attainment. As previously noted, the gender gap (without including any control measures) in years of educational attainment between Black men and women in the NLSY-C sample is about 1.1 years of education. Panel A in table 2 reports results from a two-fold KOB decomposition, while Panel B includes the three-fold KOB decomposition estimates. Estimates for each grouping of measures represent an aggregate contribution, which can be interpreted as the combined contribution of differences in levels or coefficients across all variables in a group (i.e., the combined influence of gender differences in substance use across all ages). Importantly, decomposition models show the explanatory contribution of each covariate net the contribution of other factors in the model, and the percentages indicated here are separate contributions to the overall gap. Results from the three-fold decompositions in table 2 are also summarized in figure 1, and detailed two- and three-fold decomposition (and the underlying separate regressions by gender) can be found in appendix tables A3–A5.

A number of factors predict gender differences in educational attainment between Black men and women. I focus the discussion of results on the three-fold decomposition models, which use women's endowments and coefficients as the reference category. However, it is also useful to compare these estimates to the two-fold decomposition, which shows the extent to which the gap might change if levels and coefficients were set equal by gender. In addition, as previously noted, I focus the discussion of results on the explained/endowments columns, which indicate how differences in levels of an underlying variable are associated with gender gaps. Gender differences in performance on vocabulary, reading, and math tests over childhood

Table 2. KOB Decomposition of Factors Explaining Gender Differences in Respondent Years of Educational Attainment

Women's average:			12.80			
Men's average:			11.73			
Gender gap (women-men):			1.08			
PANEL A: TWO-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Explained		Unexplained			
Background	-0.01 (0.03)	-1%	-0.81 (1.07)	-75%		
Achievement	0.12 *** (0.03)	11%	0.00 (0.00)	0%		
Exclusionary school discipline	0.10 *** (0.02)	10%	-0.02 (0.04)	-2%		
Criminal justice exposure	0.16 *** (0.04)	14%	-0.57 (0.19)	** -53%		
Behaviors	0.01 (0.01)	1%	0.00 (0.01)	0%		
Substance use	0.11 *** (0.03)	11%	0.23 (0.29)	22%		
School experiences	0.13 ** (0.04)	12%	0.09 (0.13)	8%		
Constant			1.52 (1.26)	>100%		
Total explained	0.63 *** (0.08)	58%	0.45 (0.14)	** 42%		
PANEL B: THREE-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Endowments		Coefficients		Interaction	
Background	-0.02 (0.04)	-2%	-0.82 (1.07)	-77%	0.02 (0.03)	2%
Achievement	0.11 *** (0.03)	10%	-0.01 (0.02)	-1%	0.02 (0.03)	2%
Exclusionary school discipline	0.12 *** (0.03)	11%	-0.01 (0.01)	-1%	-0.04 (0.06)	-3%
Criminal justice exposure	0.21 *** (0.05)	20%	-0.40 (0.18)	* -37%	-0.22 (0.06)	*** -21%
Behaviors	-0.01 (0.02)	-1%	-0.02 (0.02)	-2%	0.04 (0.03)	4%
Substance use	0.09 ** (0.03)	9%	0.19 (0.28)	18%	0.06 (0.04)	6%
School experiences	0.12 ** (0.05)	11%	0.07 (0.10)	6%	0.04 (0.05)	3%
Constant			1.52 (1.26)	>100%		
Total explained	0.62 *** (0.09)	58%	0.52 (0.15)	*** 48%	-0.07 (0.09)	-6%
Observations			1600			

Source: NLSY-C. **Note:** Standard errors in parentheses, clustered by birth cohort. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

(measured using one composite index of academic achievement) across childhood account for 10% (0.11 years) of the overall observed gap. Gender differences in the likelihood of having been suspended or expelled from school predicts 11% (0.12 years) of the total observed gap. When considered collectively, gender differences in likelihoods of having experience with the criminal justice system (whether through non-traffic criminal convictions, having been incarcerated, or being on probation) predicts 20% (0.21 years) of the overall gap. Stated differently, in a hypothetical counterfactual scenario where men have women's levels of contact with the criminal justice system (and controlling for all else), we might expect the gender gap to be 0.21 years smaller. The estimate for the coefficient on criminal justice exposure and the interaction are both significant,

suggesting both that there are gender-specific returns to exposure to the criminal justice system and that there is an offsetting relationship between level and coefficient differences (as suggested by the negative and significant interaction term). In addition to experiences with various institutional punishments, differences in levels of substance use (operating primarily through gender differences in marijuana use) explain 9% of the gap (0.09 years). Gender differences in likelihoods of using other non-marijuana illicit drugs did not significantly predict the gap. Finally, gender differences in levels of school experiences (operating primarily through differences in having repeated a grade) predict about 11% (0.12 years) of the overall gap, net other factors in the model.

In all, punishment (exclusionary school discipline and contact with the criminal justice system) is associated with nearly one third (31%) of the total gap, net other factors such as achievement, early externalizing behaviors, and substance use. Because girls and women on average are much less likely to be suspended/expelled, convicted, incarcerated, or put on probation relative to boys and men, equalizing these measures by gender would be expected to shrink the gender gap considerably. In all, gender differences in endowments/levels explain 58% of the overall 1.08-year gender gap in educational attainment, leaving the remaining 42% explained by coefficients and interactions between levels and coefficients.

I next turn to discussing the minimum and maximum contribution of each of these measures, given that the interconnectedness and unclear temporal ordering of the covariates warrants additional scrutiny. For example, it is both possible and likely that there is overlap between the contribution of achievement, externalizing behaviors, substance use, and school discipline or criminal justice exposure. These measures may serve as mediators for the true underlying influence of one of the measures, such as gender differences in behaviors. To further investigate these processes, I estimate the minimum and maximum contribution of each of the measures of interest without imposing assumptions about their temporal ordering (see table 3). Main estimates from the KOB models can be found in table 2 in the previous section. Consistent with the decomposition models for overall educational attainment, these results suggest that gender differences in levels of exclusionary discipline and criminal justice exposure exert a large influence on observed gender gaps. These measures contribute 6–26% (for suspension/s/expulsions) and 8–32% (for non-traffic criminal convictions, incarceration, and probation) of the overall observed gap. In contrast, externalizing behavioral measures (as captured by the Behavioral Problems Index) contribute 0–10% of the gap. Pathways operating through substance use contribute 7–17% of the overall gap in minimum and maximum contexts. Measures related to achievement and cognitive tests contribute at minimum 5% to the gender gap and at most around 20%. These results suggest that, regardless of which temporal order is assumed (i.e., whether behavioral problems precede and predict institutional punishments, or vice versa), disproportionate exposure to institutional punishment is a key measure underlying the Black gender gap. This holds true in spite of gender differences in negative externalizing behavior problems, which contribute a smaller proportion of the gap in both minimum and maximum contribution contexts.

Figures 2 and 3 illustrate the predicted years of education for men and women with and without experiences with either exclusionary school discipline or the criminal justice system. As with earlier models, these figures suggest that boys and men who experience either a suspension/expulsion (figure 2) or who have contact with the criminal justice system (figure 3) have much lower levels of educational attainment than women with the same levels of exposure/contact with these systems. Likewise, men who experience institutional punishments have lower predicted educational attainment than both men and women without any experiences with these punishments.

Finally, as an additional robustness check to better disentangle the underlying contribution of externalizing behaviors from that of exclusionary school discipline and criminal justice exposure, I also estimate two alternate sets of KOB decomposition models. These models can be seen in the appendix. Table A2 includes two alternate specifications related to early externalizing behavioral problems. The first model (Panel A) uses only early behavioral measures (measured at ages 5–6),

Table 3. Decomposition of Minimum and Maximum Contribution of Measures to the Overall Gender Gap in Educational Attainment

Women's average:	12.80	
Men's average:	11.73	
Gender gap (women-men):	1.08	
Contribution to gender gap due to differences in:		
	Min.	Max.
Achievement	5.4%	20.1%
Exclusionary school discipline	6.3%	25.8%
Criminal justice exposure	8.0%	31.5%
Behaviors	-0.2%	9.8%
Substance use	6.7%	16.9%
School experiences	6.9%	32.0%
Observations	1600	

Source: NLSY-C. **Note:** Standard errors in parentheses, clustered by birth cohort. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

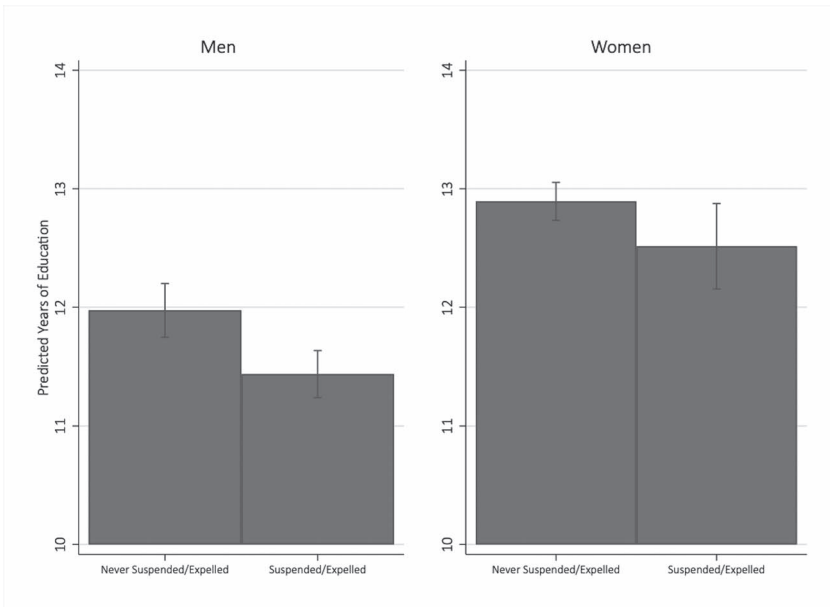


Figure 2. Predicted years of educational attainment for those with and without reported exposure to exclusionary school discipline. *Source:* NLSY-C. *Notes:* Error bars indicate 95% confidence intervals. Model controls for all characteristics shown in Table 1, in addition to interactions of each measure with gender.

without any additional controls or measures of institutional punishments, to predict adult outcomes. The second model (Panel B) again uses only early behavioral problems (measured at ages 5–6), rather than the full composite index of behavioral problems over early and middle childhood, but includes other non-behavioral covariates (including punishments, school experiences, and achievement). These analyses give an indication of how early behaviors, which may shape subsequent behavioral problems at older ages, as well as later issues related to substance use, are related to the gap. In both models, the endowment component of behavior (representing differences resulting from gender gaps in levels of behavioral problems) is substantively small and not statistically significant, while both gender differences in suspensions and in criminal justice contact play a large role in predicting the overall gap.

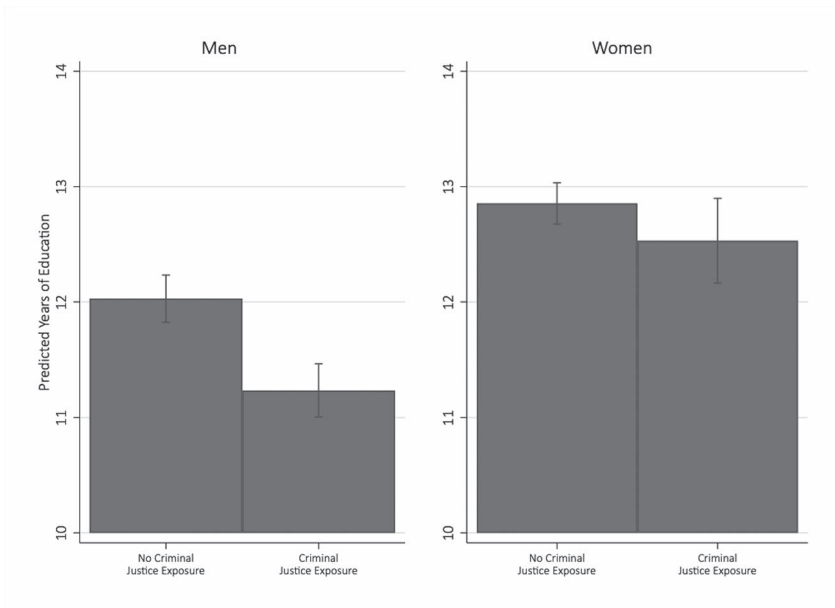


Figure 3. Predicted years of educational attainment for those with and without reported contact with the criminal justice system. Source: NLSY-C. Notes: Error bars indicate 95% confidence intervals. Model controls for all characteristics shown in Table 1, in addition to interactions of each measure with gender. Measures indicating exposure to the criminal justice system (conviction/incarceration and probation) are condensed into one indicator measure.

High School Graduation, College Entrance, and College Degree Attainment

I next focus on three key milestones in students' educational trajectories. Tables 4–7 display KOB decompositions results predicting gender differences in earning a standard high school diploma, entering college, earning any college degree, and earning a four-year degree alone, respectively. Because standard high school diplomas and college acceptances tend to be received around the time individuals are eighteen years old, I did not include measures collected between the ages of eighteen and twenty five in models predicting high school completion or entering college, though these measures are included in models predicting college degree attainment.

There is a gap of thirteen percentage points between Black men and women in the likelihood of finishing a standard high school diploma. In general, the factors that predict the gap in high school graduation rates are largely the same as those in prior models predicting respondents' overall levels of educational attainment (see table 4). As with prior models, I focus on the estimates from the three-fold models and present the two-fold models for additional consideration. When predicting the completion of high school as an outcome, three-fold estimates suggest that gender differences in levels of suspensions/expulsions predict 22% of the gap, while differences in contact with the criminal justice system (up to the age of 17) predict 11% of the gap. Finally, gender differences in school experiences, operating primarily through likelihoods of having repeated a grade, explains 26% of the gender gap in likelihoods of finishing high school. Gender differences in other measures, including early childhood cognitive and achievement tests, behavior, and substance use, did not appear to significantly impact the gender gap at this educational stage. I also do not observe evidence of gender specific returns to any of the included measures. In sum, among the NLSY-C sample respondents, the gap at the high school transition point is largely related to three factors: boys have higher incidents of institutional punishments (through both

Table 4. KOB Decomposition of Factors Explaining Gender Differences in Likelihood of Finishing a High School Degree

Women's average:	0.85					
Men's average:	0.71					
Gender gap (women-men):	0.13					
PANEL A: TWO-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Explained			Unexplained		
Background	-0.00 (0.01)	-2%	-0.25 (0.22)	<-100%		
Achievement	0.00 (0.00)	2%	0.00 (0.00)	0%		
Exclusionary school discipline	0.02 (0.00)	*** 15%	-0.02 (0.01)	-11%		
Criminal justice exposure	0.02 (0.01)	* 11%	0.01 (0.05)	6%		
Behaviors	0.00 (0.00)	3%	0.00 (0.00)	0%		
Substance use	0.00 (0.00)	3%	-0.05 (0.05)	-40%		
School experiences	0.03 (0.01)	*** 25%	-0.01 (0.02)	-9%		
Constant			0.37 (0.24)	>100%		
Total explained	0.08 (0.01)	*** 58%	0.06 (0.02)	** 42%		
PANEL B: THREE-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Endowments		Coefficients		Interaction	
Background	-0.00 (0.01)	-2%	-0.25 (0.22)	<-100%	0.00 (0.00)	1%
Achievement	0.00 (0.00)	2%	-0.00 (0.00)	0%	0.00 (0.01)	0%
Exclusionary school discipline	0.03 (0.01)	*** 22%	-0.00 (0.00)	-3%	-0.02 (0.01)	-16%
Criminal justice exposure	0.01 (0.01)	* 11%	0.01 (0.05)	6%	0.00 (0.01)	0%
Behaviors	0.00 (0.00)	0%	-0.00 (0.00)	-3%	0.01 (0.00)	5%
Substance use	0.01 (0.00)	5%	-0.05 (0.05)	-37%	-0.01 (0.01)	-4%
School experiences	0.03 (0.01)	** 26%	-0.01 (0.02)	-7%	-0.00 (0.01)	-2%
Constant			0.37 (0.24)	>100%		
Total explained	0.08 (0.02)	64%	0.07 (0.02)	*** 52%	-0.02 (0.02)	-16%
Observations	1600					

Source: NLSY-C. **Note:** Standard errors in parentheses, clustered by birth cohort. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

experiences with exclusionary school discipline and in exposure to the criminal justice system) and are more likely to repeat a grade. In all, roughly 64% of the overall gender gap is attributable to differences in endowments/levels, while approximately 52% is attributable to differences in coefficients/returns (and -16% is due to the interaction between endowments and coefficients).

There is a gender gap of eighteen percentage points in the likelihood of entering college, conditional on finishing high school or a GED (see table 5). Unlike with models predicting finishing a high school degree, early achievement endowment differences by gender are a salient and statistically significant predictor of the gender gap in college entrance. Achievement levels explain seventeen percentage of the overall 0.18 percentage-point difference. There is

Table 5. KOB decomposition of factors explaining gender differences in likelihood of entering college, conditional on finishing a high school degree or GED

Women's average:					0.69		
Men's average:					0.51		
Gender gap (women-men):					0.18		
PANEL A: TWO-FOLD DECOMPOSITION							
Contribution to gender gap due to differences in:	Explained			Unexplained			
Background	-0.00 (0.00)		-3%	-0.25 (0.18)	<-100%		
Achievement	0.02 (0.01)	***	13%	-0.00 (0.00)	-2%		
Exclusionary school discipline	0.01 (0.01)		4%	-0.00 (0.01)	-2%		
Criminal justice exposure	0.00 (0.00)		1%	0.04 (0.06)	21%		
Behaviors	-0.00 (0.00)		-1%	0.00 (0.00)	0%		
Substance use	0.01 (0.00)	*	4%	0.10 (0.07)	55%		
School experiences	0.02 (0.01)	**	11%	0.04 (0.05)	24%		
Constant				0.20 (0.16)	>100%		
Total explained	0.05 (0.01)	***	30%	0.13 (0.03)	***	70%	
PANEL B: THREE-FOLD DECOMPOSITION							
Contribution to gender gap due to differences in:	Endowments		Coefficients			Interaction	
Background	-0.01 (0.01)		-5%	-0.26 (0.18)	<-100%	0.01 (0.01)	5%
Achievement	0.03 (0.01)	***	17%	0.00 (0.00)	2%	-0.01 (0.01)	* -7%
Exclusionary school discipline	0.01 (0.01)		5%	-0.00 (0.00)	-1%	-0.01 (0.01)	-3%
Criminal justice exposure	-0.00 (0.00)		0%	0.04 (0.06)	20%	0.00 (0.01)	2%
Behaviors	-0.00 (0.00)		-1%	-0.00 (0.00)	0%	0.00 (0.00)	1%
Substance use	0.01 (0.00)		3%	0.10 (0.07)	53%	0.01 (0.01)	3%
School experiences	0.01 (0.01)		8%	0.04 (0.04)	20%	0.01 (0.01)	7%
Constant				0.20 (0.16)	>100%		
Total explained	0.05 (0.02)	**	26%	0.12 (0.03)	***	64%	0.02 (0.02)
Observations				1473			

Source: NLSY-C. **Note:** Standard errors in parentheses, clustered by birth cohort. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

also a negative statistically significant interaction, which suggests that there is an offsetting pattern when considering the simultaneous endowment and coefficient differences, although the coefficient contribution is not statistically significant. In all, gender differences in endowments explain 26% of the overall gap between men and women in entering college, a comparatively smaller portion of the gap explained when compared to the models predicting high school degree attainment. This leaves an additional 74% of the gap that is explained by both coefficients and interactions.

For college completion, there is an eight-percentage-point gap between women and men in earning either a two- or four-year degree (table 6), and a five-percentage-point gap in earning

Table 6. KOB Decomposition of Factors Explaining Gender Differences in Likelihood of Finishing Either a Two- or Four-Year Degree, Conditional on Entering College

Women's average:			0.55			
Men's average:			0.47			
Gender gap (women-men):			0.08			
PANEL A: TWO-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Explained		Unexplained			
Background	-0.01 (0.01)	-12%	-0.20 (0.43)	<-100%		
Achievement	-0.00 (0.00)	-2%	0.01 (0.02)	12%		
Exclusionary school discipline	0.00 (0.01)	4%	-0.01 (0.02)	-9%		
Criminal justice exposure	0.01 (0.01)	17%	-0.06 (0.08)	-67%		
Behaviors	0.00 (0.00)	2%	0.00 (0.01)	5%		
Substance use	0.02 (0.01)	* 26%	-0.08 (0.13)	-95%		
School experiences	0.00 (0.01)	5%	0.02 (0.06)	23%		
Constant			0.36 (0.48)	>100%		
Total explained	0.03 (0.02)	40%	0.05 (0.04)	60%		
PANEL B: THREE-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Endowments		Coefficients		Interaction	
Background	-0.01 (0.01)	-17%	-0.21 (0.43)	<-100%	0.01 (0.01)	11%
Achievement	-0.00 (0.00)	-2%	0.01 (0.02)	12%	-0.00 (0.00)	-1%
Exclusionary school discipline	0.01 (0.02)	7%	-0.00 (0.01)	-5%	-0.01 (0.02)	-7%
Criminal justice exposure	0.02 (0.01)	23%	-0.05 (0.08)	-57%	-0.01 (0.01)	-15%
Behaviors	-0.00 (0.00)	0%	0.00 (0.01)	3%	0.00 (0.01)	4%
Substance use	0.02 (0.01)	22%	-0.08 (0.13)	-97%	0.01 (0.01)	6%
School experiences	0.00 (0.01)	4%	0.02 (0.06)	20%	0.00 (0.01)	3%
Constant			0.36 (0.48)	>100%		
Total explained	0.03 (0.02)	36%	0.05 (0.05)	63%	0.00 (0.03)	1%
Observations			890			

Source: NLSY-C. **Note:** Standard errors in parentheses, clustered by birth cohort. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

a four-year college degree (table 7), both conditional on entering college. Once accounting for differences in likelihoods of entering college, none of the included measures explain the gender gap in earning any type of college degree in the three-fold model. The two-fold model, however, suggests that gender differences in levels of substance use explain about a quarter of the gender gap.

In contrast, several included measures predict gender differences in likelihood of earning a four-year college degree. Gender differences in criminal justice contact explain 49% (0.02) years of the four-year degree attainment gender gap. There is also suggestive evidence of gender-specific returns to criminal justice contact, which is negative and overpredicts the gap, though these

Table 7. KOB decomposition of factors explaining gender differences in likelihood of finishing a four-year degree, conditional on entering college

Women's average:					0.33	
Men's average:					0.28	
Gender gap (women-men):					0.05	
PANEL A: TWO-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Explained		Unexplained			
Background	-0.02 (0.01)	* -49%	0.40 (0.33)	>100%		
Achievement	-0.00 (0.01)	-5%	0.01 (0.02)	19%		
Exclusionary school discipline	0.01 (0.01)	22%	0.00 (0.02)	3%		
Criminal justice exposure	0.01 (0.01)	19%	-0.14 (0.05)	* <-100%		
Behaviors	0.00 (0.00)	6%	0.01 (0.01)	24%		
Substance use	0.03 (0.01)	** 68%	0.07 (0.08)	>100%		
School experiences	0.00 (0.01)	6%	-0.01 (0.05)	-25%		
Constant			-0.33 (0.36)	<-100%		
Total explained	0.03 (0.02)	66%	0.02 (0.04)	34%		
PANEL B: THREE-FOLD DECOMPOSITION						
Contribution to gender gap due to differences in:	Endowments		Coefficients		Interaction	
Background	-0.02 (0.01)	-38%	0.40 (0.33)	>100%	-0.01 (0.01)	-15%
Achievement	-0.00 (0.01)	-5%	0.01 (0.02)	20%	-0.00 (0.00)	-1%
Exclusionary school discipline	0.01 (0.01)	16%	0.00 (0.01)	3%	0.00 (0.02)	5%
Criminal justice exposure	0.02 (0.01)	** 49%	-0.12 (0.05)	* <-100%	-0.04 (0.01)	** -77%
Behaviors	-0.00 (0.00)	-4%	0.01 (0.01)	15%	0.01 (0.01)	19%
Substance use	0.03 (0.01)	* 59%	0.07 (0.08)	>100%	0.00 (0.01)	10%
School experiences	0.00 (0.01)	6%	-0.01 (0.04)	-26%	0.00 (0.01)	0%
Constant			-0.33 (0.36)	<-100%		
Total explained	0.04 (0.02)	84%	0.03 (0.04)	74%	-0.03 (0.02)	-59%
Observations						890

Source: NLSY-C. **Note:** Standard errors in parentheses, clustered by birth cohort. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

estimates should be interpreted with caution.⁴ In addition, substance use differences by gender explain 0.03 percentage points of the gap (59%).

Discussion

In this article, I have conducted a comprehensive examination of the sources of the Black gender gap in educational attainment. This disparity is both persistent and consequential. Using decomposition analyses and a longitudinal data source, I examine how differences in exposure

to exclusionary school discipline and the criminal justice system by gender are associated with the Black gender gap in educational attainment. Though prior studies rest conclusions heavily on gender differences in behavioral problems, I find that joint contribution of exclusionary school discipline and contact with the criminal justice system—net differences in behavior—is a major contributor to these patterns that in general is larger in magnitude than the contribution of early externalizing behavioral differences. Indeed, models summarizing the minimum and maximum contributions of each set of measures to the overall gender gap suggest that, regardless of the assumed temporal ordering of these measures, disparate experiences with school discipline and criminal justice likely play a larger role than early behavioral differences in structuring gender inequality in education for Black individuals. Of course, that is not to say that early achievement and behavioral differences are not also key factors that shape differences in educational opportunity, but rather that our understanding of this process is incomplete without taking institutional punishments into account and centering the experiences of Black students specifically.

The explanatory impact of measures associated with institutional punishment varies by educational transition point, with school discipline and criminal justice exposure playing different roles in adolescence compared to early adulthood. When considering the completion of high school, inequality in experiences with both suspensions/expulsions and the criminal justice system is strongly associated with the gender gap. In later stages of students' educational careers, suspensions are no longer predictive of inequality in educational attainment, but disproportionate exposure to the criminal justice system predicts a larger fraction of the gap. While this is perhaps not surprising given that suspensions only apply to students in elementary and secondary school and contact with the criminal justice system is comparatively rarer among juveniles, it is notable that there is continuity in the relationship between punishment and achievement over the life course.

Taken together, these findings illustrate the importance of inequality in punishments in predicting the gender gap in educational attainment for Black students. I find evidence of the negative explanatory impacts of punishment on the educational trajectories of Black boys, even when controlling for behavioral and academic differences by gender. In addition, I find that marijuana use in adolescence and early adulthood is associated with gender gaps between Black men and women. Although some may argue that this is evidence of different behaviors by gender, the later timing of measured drug use makes it unclear the extent to which it preceded any observed punishments or achievement differences. Because prior studies have shown that school suspensions can lead to a series of negative outcomes for students, including substance use (Mittleman 2018; Dong and Krohn 2020; Evans-Whipp et al. 2015), I consider these measures to be theoretically distinct from other early measures of externalizing behaviors. Moreover, I do not find evidence that use of other non-marijuana illicit drugs is associated with the gender gap.

There are multiple sociological implications of this study. First, given that early disparities in exposure to institutional punishments have long-lasting implications for educational attainment in later in adulthood, closing gender gaps between men and women must start early in their educational pathways. This aligns closely with prior literature on the impacts of early childhood experiences and disparities on educational outcomes measured years later (Owens 2016; Jacob 2002; DiPrete and Jennings 2012). In addition, this study provides an important first step in disentangling the impacts of gender differences in *behaviors* from that of *punishments*, which is critical given prior research on the disproportionate punishment of Black boys in and outside of school (Jacobsen, Pace, and Ramirez 2019; Ferguson 2000; Owens and McLanahan 2020; Owens 2022). Findings align with prior research on the many ways in which punishment—administered both in school and through the criminal justice system—is tied to a larger system of social control (Garland 1990; Pery and Morris 2014; Engen, Steen, and Bridges 2002). However, these punitive practices carry high social costs, particularly for Black individuals, which necessitates further studies investigating mechanisms at the intersection of gender and race.

This study adds to a growing body of literature supporting theoretical explanations of differential treatment as a key mechanism underlying gender disparities in educational attainment.

Although the reasons behind these disproportionalities are beyond the scope of this study and my estimates do not provide causal evidence of discrimination, the consequence of boys' higher exposures to punishment is clear. These results suggest that mitigating these gender disparities might be expected to substantially close observed educational gender gaps between Black men and women. In addition, given that gender differences in levels of behavioral problems account for a smaller fraction of observed gaps than disproportionate punishments, policy solutions aimed at managing boys' behaviors may not have much of an impact on closing the gender gap in later educational outcomes. In contrast, interventions aimed at changing punitive measures both within and outside of schools may be expected to have more influence in closing the gender gap and improving outcomes for boys in particular. However, more research is needed to fully understand potential policy changes stemming from this work and from related studies.

It is also important to acknowledge the complex and interrelated nature of these measures. For example, recent research from [Jacobsen et al. \(2019\)](#) illustrates that, though early behavioral differences do not explain racial differences in elementary school suspensions, children who are suspended are then more likely to exhibit increasingly aggressive behavioral problems later in elementary school. Similarly, suspension may lead to decreasing academic performance ([Lacoe and Steinberg 2019](#)), which may relegate students to lower-level academic tracks and thereby increase the likelihood that they may be stereotyped as "rule-breakers" ([Musto 2019](#); [Ferguson 2000](#)) and experience further suspension. Given the interconnected nature of these measures, more research is needed to fully disentangle how these patterns emerge and how they influence later educational attainment for both Black men and women. Finally, though this study focuses on the Black gender gap and therefore frames Black women's comparatively higher levels of educational attainment as an advantage (relative to Black men), it is important to also recognize the persistent educational inequality and structural racism facing Black students across educational and life-course milestones, regardless of gender ([Reardon, Kalogrides, and Shores 2019](#); [Eller and DiPrete 2018](#); [Orfield and Lee 2005](#); [Young 2004](#); [MacLeod 1995](#)).

Finally, the dataset used for this study has both advantages and limitations for examining disparities in educational outcomes by race and gender. The longitudinal nature of the NLSY-C survey allows for a detailed investigation of several factors from throughout childhood in explaining observed gaps. However, this dataset is less suited to understanding the complexities of neighborhood characteristics, parenting structure, and the influence of gendered stereotypes, which may also be related to the findings described here. In addition, the sample of Black respondents in NLSY-C may not be representative of all Black children born in the years of interest. Although the panel data from NLSY-C are useful in allowing for an investigation of a large population of individuals at once, additional qualitative inquiry may shed light on how individuals themselves frame their own educational aspirations and trajectories and how this contributes to later observed educational disparities.

In summary, early observed differences between Black boys and girls have long-lasting implications for their educational pursuits. I find evidence that, across several key moments in students' educational trajectories, Black boys and men experience a disadvantage relative to Black girls and women due to comparatively higher levels of experience with exclusionary school discipline and contact with the criminal justice system. Closing gender gaps across these measures would be expected to substantially shrink the magnitude of the Black gender disparity in educational attainment.

Endnotes

1. Notably, NLSY-C includes a more comprehensive set of behavioral measures than other comparable data sources, such as the NLSY 1997 cohort (NLSY-97).
2. Entering college is defined as those who indicate having completed at least "some college" or more years of education; unfortunately, it is not possible to disentangle who began a two-year program rather than a four-year program.

3. When the fraction of the gap that is accounted for exceeds 100%, this suggests that the size of the gap would be expected to be larger than the size of the current gap if (1) the factor to be set equal by gender (in a two-fold context) or (2) if men had the same levels or coefficients of the factor as women (in a three-fold context).
4. A negative coefficient that that overpredicts the gap suggests two things: first, if men had the same coefficients associated with criminal justice contact as women, the gap in college completion might be expected to increase rather than close (as indicated by the negative estimate). Second, the increased gap would be larger than the magnitude of the current gap (as indicated by the fact that the estimate exceeds 100%). This is a somewhat puzzling result, as it suggests that the gender gap would be higher if men had the same responses/coefficients associated with criminal justice contact as women. From this perspective, results suggest that penalties for women with criminal justice contact—in terms of likelihood of graduating from a 4-year college program—are more severe than the same penalties for men. However, these are offset by their comparatively lower levels of contact with these systems (as indicated by the statistically significant negative interaction term).

About the Author

Marissa E. Thompson is an assistant professor of sociology at Columbia University. Her research investigates on the causes and consequences of racial and socioeconomic inequality, with an emphasis on understanding the role of education in shaping disparate outcomes over the life course.

Supplementary Material

Supplementary material is available at *Social Forces* online.

Data Availability

The Children of the National Longitudinal Survey of Youth 1979 cohort (NLSY-C) is a publicly available dataset.

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