

The Role of Adolescent Anxious Mood, Marijuana Use, and Locus of Control in the School to Prison Pipeline

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Abstract

Racial disparities are evident in both educational outcomes and incarceration rates when comparing African American and white youth. It is essential to understand the school-to-prison pipeline and the ways in which school discipline practices and other factors disproportionately affect African American students, limit educational attainment, and increase risk for future incarceration in order to improve students' educational and life outcomes. This study explores how marijuana, anxiety and locus of control interact with school disciplinary practices in pushing students out of schools and into the criminal justice system. Analyses utilizing data from the Woodlawn Study, a longitudinal study of African Americans followed from first grade through adolescence, young adulthood, and midlife ($n = 1,242$), reveal that suspension or expulsion, frequent marijuana use, and locus of control (males only) all predict criminal justice system involvement above and beyond not graduating from high school, but do not interact significantly. This study offers avenues for intervention to reduce disparities.

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Incarceration rates in the United States (US) have increased dramatically, with 2 million Americans currently in US prisons or jails indicating a 500% increase over the past 40 years (Sentencing Project, 2022). Much of this increase is a result of the US's "War on Drugs," which resulted in higher rates of arrest and long sentences that disproportionately impacted African Americans (Carson, 2021). African American men are six times as likely as white men to be incarcerated in adulthood, and despite representing only 12% of the US population, African Americans comprise 33% of the prison population (Carson, 2021). Also, during the last 40 years, school discipline practices have become harsher and rates of school suspension and expulsion among African American students have risen to 13.7%, more than four times the rate of suspension among white students (Fabelo et al., 2011; Losen et al., 2015; Morris & Perry, 2016). These parallel trends are not unrelated; there exist pathways whereby students are subject to harsh disciplinary practices in school that lower their academic achievement, erode their trust in authority figures and relationships with school, increase their risk of dropout (thus limiting their future employment opportunities) and initiate contact with the criminal justice system, which eventually leads to future criminal justice involvement, including incarceration (Brown, 2007; Christle et al., 2005; Fabelo et al., 2011; Hemez et al., 2020; Kunesh & Noltemeyer, 2019). This national trend of harsh school discipline practices setting students on a path to the juvenile or criminal justice system is referred to as the school-to-prison pipeline (Curtis, 2013; Dancy, 2014; Mallett, 2017). Educational and criminal justice outcomes for African Americans are inextricably linked, and in order to disrupt the school-to-prison pipeline, researchers must examine the ways in which psychological, social, systemic, and political factors interact to explain this trend.

Exclusionary school practices, such as suspension and expulsion, are often the catalyst for students to feel like they are not part of the school's culture and lead to reduced investment and motivation in school (Allen & White-Smith, 2014; Dancy, 2014). Citing these deleterious consequences of suspension and expulsion, the American Academy of Pediatrics recommended that these disciplinary consequences should only be applied to the most egregious behaviors; however, in many schools, this practice is not the case (American Academy of Pediatrics Committee on School Health, 2003; Wolf & Kupchik, 2017). Exclusionary practices have been used increasingly for even the most minor infractions and disproportionately impact students of color, students raised in low-income households, students receiving special education services, and students in urban school settings (Cramer et al., 2014; Fader et al.,

2015). This creates a system in which the students most in need of adult supervision or mental health services, which could be made available through wrap-around services at school, are instead forced out of the school setting.

High school graduation has many protective effects on life outcomes including increased employment opportunities and reduced risk of incarceration, substance use disorders, and other adverse health outcomes, including cardiovascular disease (Freudenberg & Ruglis, 2007). Despite national improvement in graduation rates, the disparity between African American and white students persists with only 78% of Black students graduating from high school compared to 89% of white students (Child Trends Databank, 2018). High school graduation has already been established as an important factor in the school-to-prison pipeline, but other, perhaps more malleable factors have not been studied as extensively.

Life Course Perspective and Labeling

Using a life course perspective, Doherty et al. (2016) examined the impact of arrest and incarceration on the transition into adulthood. The life course perspective recognizes that individuals' lives are shaped by long-term trajectories that can be altered by different short-term discrete events (Elder, 1985), such as police contact. Previous studies that have examined the effects of juvenile arrest and police contact on future outcomes have found that they are associated with subsequent crime, limited educational attainment, unemployment, and financial hardship (Bernburg & Krohn, 2003; Lopes et al., 2012). The labeling theory of crime posits that assigning a criminal label to someone who has committed an offense can create stigma and negative stereotypes that, in turn can increase the likelihood of future delinquent behaviors (Bernburg, 2019; Lemert, 1951). In concordance with previous studies, Doherty et al. (2016) concluded that arrest and incarceration do not have a deterrent effect on subsequent criminal justice involvement but rather a criminogenic effect. Doherty and Cwick (2016) expanded this investigation to include high school completion as a life event along with obtaining a steady job, marriage, and parenthood to see how the combination of different life events and the order of these events impact desistance from crime. They found that there was a wide variety of combinations of these four events and their order, but that the "on time" "in order" configuration was associated with one of the highest probabilities of desistance from crime.

This study aims to further understand antecedents to incarceration among African American youth in urban settings by examining suspension as a life event during adolescence that may impact a student's trajectory. African American students are more likely to be punished and labeled as "troublemakers" as compared to their white peers who, with the same behaviors, are more likely to be

diagnosed with attention-deficit/hyperactivity disorder (Moody, 2016). Previous research on labeling has shown that the effects extend beyond adolescence into adulthood, and studies have shifted focus from primarily juvenile arrests and police contact to include informal “criminal” labels measured by students’ perceived perception by their parents, being labeled a “troublemaker” at school, and school suspensions (Bernburg & Krohn, 2003; Bowditch, 1993; Lee et al., 2017; Mittleman, 2018). This study aims to further explore how suspension or expulsion functions as a life event that can impact future adult outcomes, specifically incarceration. This study also explores how school discipline interacts with individual-level factors such as anxiety, substance use, and locus of control.

Anxious Mood

Anxiety is one of the most prevalent psychiatric problems among adolescents, yet the role of anxiety in the school-to-prison pipeline is understudied among African American students in urban settings (Jones et al., 2019; Schnittker et al., 2012). Anxious students may represent a vulnerable subset of students at risk for exclusionary discipline, high school dropout, and future incarceration. Students with anxiety may struggle with reasoning and problem solving, and rather than being met with additional support, they are met with policies that increase their frustration or remove them from the school setting, which impacts their academic achievement (National Council on Disability, 2015). Labeling students as “troublemakers” can also exacerbate anxiety (Kunesh & Noltemeyer, 2019). Students who believe school authority figures may misinterpret their behavior may experience elevated feelings of anxiety, which in turn can affect their cognitive processing and behavior during tense teacher-student interactions, which can again result in disciplinary consequences (Kunesh & Noltemeyer, 2019). This sequence creates a stereotype threat cycle in which students may inadvertently act in ways that confirm teachers’ and administrators’ beliefs and thus continue to be targeted by these policies designed to fixate on minor misbehavior (Dancy, 2014; Steele et al., 2002). Students experiencing anxiety may also engage in substance use to cope with their symptoms (Stapinski et al., 2016; Turner et al., 2018), further exacerbating school problems.

Substance Use

Studies using Woodlawn and other data have shown that adolescents who use marijuana heavily have an increased risk of high school dropout (Green et al., 2010), as well as an increased risk of incarceration (Mowen & Brent, 2016; Pesta, 2018). One proposed mechanism linking substance use and crime over the long-term is that by increasing the risk of dropout and reducing

employment opportunities, adolescent marijuana use leads to engagement in drug and property crime in adulthood as a means of survival (Green et al., 2010). As racial disparities exist in drug arrests and anxiety and substance use can co-occur (McCauley Ohannessian, 2014), this study seeks to disentangle how adolescent marijuana use and anxiety combine to impact the school-to-prison pipeline (Langan, 1995; Stapinski et al., 2016; Turner et al., 2018).

Locus of Control

Locus of control orientation can impact adolescents' behaviors, academic achievement, and social adjustment outcomes (Howerton et al., 1993; Ollendick et al., 1980). Locus of control is described as a generalized expectancy about an individual's ability to control an outcome and how that predicts their decision to engage in particular behaviors (Lefcourt, 1982; Nowicki et al., 2018; Rotter, 1966). Youth with an internal locus of control expect that they have control over the outcomes associated with their actions, and a higher internal locus of control has been found as a predictor for abstention from violence even after controlling for other family and neighborhood factors that impact violent behaviors (Ahlin, 2014). Youth with an external locus of control are characterized by their belief that they do not control outcomes associated with their behavior and thus do not anticipate their behavior to influence outcomes (Ahlin, 2014). Previous studies have shown a higher external locus of control is associated with an increased risk of suicide, depression, less persistence in completing tasks, anxiety, rejection by peers, aggressive behaviors, and lower academic success (Bécares & Priest, 2015; Benassi et al., 1988; McLeod, 1985; Nanda et al., 2012; Nowicki et al., 2018; Ollendick & Grills, 2016; Rawson, 1992). Students with a higher external locus of control are more likely to attribute consequences to external forces as opposed to a direct result of their own behavior and thus may engage in more aggressive behaviors because they feel they have less control (Ahlin, 2014). Zero-tolerance policies and other school rules that criminalize even minor infractions can reinforce these beliefs and influence future behaviors with worse negative consequences. Locus of control orientation and the social and interpersonal factors in a student's life that affect their perceived control can also impact the development of anxiety (Chorpita et al., 2016).

Schools represent one institution impacted by systemic racism that creates conditions in which African American adolescents are disproportionately policed and become vulnerable to negative life outcomes. This study aims to explore the relationship between school discipline and future incarceration and understand the ways in which anxiety, substance use, and locus of control factors affect that relationship. Specifically, we test in a cohort of African Americans living in an urban setting (1) whether male and female youth who

are suspended or expelled by age 16, are highly anxious, use marijuana regularly, and have external loci of control are at increased risk of arrests and incarceration by age 42, (2) if adolescent anxiety and marijuana use interact to increase the risk of criminal justice system interactions for males and females, and (3) if anxiety, marijuana use, or locus of control moderate the association between suspensions/expulsions and criminal justice system interactions (i.e., arrests, incarceration) for males and females. We expect suspensions/expulsions, elevated anxiety, frequent marijuana use, and an external locus of control to increase the risk of arrests and incarceration for both males and females.

Methods

Participants

The Woodlawn Study is a longitudinal study of African Americans living in an urban setting ($N=1,242$) who were recruited in 1966 at age six from every public and parochial school in the Woodlawn community in Chicago. Only 13 families (1%) declined to participate in the study, minimizing selection bias. After the initial first grade interview with mothers and teachers at age six, mothers of the teenagers were interviewed ($n=939$), and teenagers were assessed at age 16 in a group-based assessment ($n=705$). In young adulthood in their early 30s ($n=952$) and in midlife in their early 40s ($n=833$), participants completed in-depth, primarily in-person interviews. The analytic sample included all individuals who were interviewed in at least one of the adult interviews and provided information on incarceration history ($n=1,053$) and were not missing on arrest records ($n=1,217$), resulting in a final sample size of 1,036.

Key Variables

Incarceration and arrests. Incarceration was measured using self-report data provided in young adulthood and midlife. Participants were asked during both adult interviews if they had been incarcerated and, if so, for how long the most recent period had lasted. Incarceration was coded as 0=never incarcerated and 1=ever incarcerated.

Arrest records were based on criminal records searches in 1993 and 2012, including FBI, Illinois State Police, Illinois Criminal Justice Information Authority, and Chicago Police Department records. These records included data from 17 years old, the age of majority in Illinois, to the age of 52. Arrests were coded as 0=no arrest record, 1=has an arrest record.

School discipline. Suspension or expulsion was measured during adolescence by mothers' responses to the question, "Has [your child] been suspended or expelled from school in the last three years?" Mothers' responses were coded as 0=No and 1=Yes, and they further described how many times this had occurred in the past 3 years ranging from once, twice, three or four times, and five times or more.

Anxious mood. Anxious mood was measured by the mean of seven anxiety items from the "How I Feel" scale, a 102-item instrument measuring psychopathology and self-esteem (Petersen & Kellam, 1977). Adolescents responded to questions about feeling "nervous," "under pressure," "tense," "tight inside," that their "hands sometimes shake," or that "new situations make [them] tense" on a scale from 1=not at all to 6=very, very much ($\alpha = .70$) over the past few weeks (Petersen & Kellam, 1977). To address the skewed data, this variable was dichotomized and recoded as 0=low anxiety and 1=high anxiety with the cutoff of 3.64, one standard deviation above the mean ($M = 2.67$, $SD = 0.97$).

Marijuana use. Marijuana use was measured during the adolescent interview by a self-reported frequency of lifetime marijuana use. Responses were coded as 1=never used, 2=1 to 2 times, 3=3 to 9 times, 4=10 to 19 times, 5=20 to 39 times, and 6=40+ times. Analyses compared those who used marijuana regularly (40+ times [=1]) to those who used it less or not at all [=0]). This addressed skewness in the distribution and aided in the ease of interpretation of interactions.

Locus of control. Locus of control factors were measured during the adolescent interview by students' responses to items from the Nowicki-Strickland Locus of Control Scale (Nowicki & Strickland, 1973). A factor analysis was conducted on the scale, and items from the three factors most relevant to school were included in the analysis. Factor 1, termed *problem avoidance*, included two items: Do you feel that one of the best ways to handle most problems is just not to think about them? Do you believe that most problems will solve themselves if you just don't fool with them? Factor 2, termed *effort* included three items: Do you feel that most of the time, it doesn't pay to try hard because things never turn out right anyway? Do you believe that when bad things are going to happen, they are just going to happen no matter what you try to do to stop them? Do you usually feel that it's almost useless to try in school because most other children are just plain smarter than you are? Factor 3, termed *blame* included three items: Are you often blamed for things that just aren't your fault? When you get punished, does it usually seem it is

for no good reason at all? Have you felt that when people are mean to you, it is usually for no reason at all? Endorsing any item in the factor was considered an external locus of control characterized by a perceived lack of control over outcomes associated with their individual actions (=1) and *No* responses to all items indicate an internal locus of control characterized by expectations of control over outcomes associated with their individual actions (=0).

Other variables. Sex (coded as 1=female and 2=male), mother's education (coded as years of school completed ranging from 3 to 15), high school dropout (coded as 1=did not complete high school and 0=completed high school or obtained GED based on self-reports and school records), and perceived racism (0=Never been denied a job, had a problem getting housing, had a problem walking the neighborhood, gotten into trouble with teachers, had a problem going anywhere for entertainment or been hassled by police based on race and 1=experienced any of these instances based on race as reported in the young adult interview) were accounted for in all regression analyses as controls or through stratified analysis. The study design also controls for age, race, and first grade neighborhood.

Statistical Analysis

Analyses were conducted using STATA version 16. First, unadjusted logistic regression models were run, and then followed by adjusted models. To account for differences in incarceration/arrest risk and potentially different predictors of future incarceration/arrest for males and females, logistic regression models were stratified by sex. Adjusted logistic regression analyses were conducted to estimate odds ratios while addressing confounding. In the logistic regression models, incarceration or arrests were regressed on suspension or expulsion, adolescent marijuana use, adolescent anxious mood, and locus of control factors, adjusting for mother's education, high school completion, and perceived racism. Then, interaction terms were added to the fully adjusted models (i.e., anxiety by marijuana, suspension by marijuana, suspension by anxiety, suspension by each local of control factor separately, suspension by school dropout) one at a time. Statistical significance was determined by *p* values <.05. Multiple imputation was used to account for any missingness on predictor variables. Forty datasets were imputed to maximize power (Graham et al., 2007).

Results

Of the total sample of 1,036 cohort members, 20.4% had been incarcerated by age 42 (32.7% of males, 9.1% of females), and 48.1% had been arrested

Table 1. Demographic Characteristics by Incarceration Status ($N = 1,036$), Percentages, and Means.

	Ever arrested (48.1%)	Never arrested (51.9%)	Ever incarcerated (20.4%)	Never incarcerated (79.6%)
Male (%)	68.5	32.3	77.1	43.4
Suspended or expelled (%)	42.0	21.5	52.5	26.5
Frequent marijuana use (40+ times) (%)	29.5	14.0	34.8	18.4
Elevated anxious mood (%)	17.0	15.6	19.5	15.5
High school dropout (%)	35.9	16.9	42.4	22.3
Mother's education (years)	10.5	10.9	10.7	10.7
Perceived racism	2.2	1.6	2.5	1.8
External locus of control				
Problem avoidance (%)	49.2	43.7	54.2	43.8
Effort (%)	67.8	62.5	74.6	62.8
Blame (%)	83.1	82.7	83.9	82.6

(67.5% of males, 30.3% of females). Table 1 displays the distribution of key variables that were examined to explore how they relate to arrests and incarceration.

Table 1 shows the vast majority of those who were arrested or incarcerated were male. Specifically, 68.5% of those arrested were male, and 77.1% of those incarcerated were male, despite the analytic sample being somewhat evenly split by sex (52% female, 48% male). Those who were arrested or incarcerated had higher rates of suspension or expulsion, frequent marijuana use, and high school dropout. Rates of elevated anxiety were similar among those who were arrested and those not arrested and those who were incarcerated and those not incarcerated. Experiences of racism were greater among the arrested and among the incarcerated.

As shown in Table 2, suspension or expulsion was a significant predictor of arrests and incarceration for both male and female students ($p < .001$). Frequent marijuana use during adolescence predicted arrest and incarceration history for males and arrests for females ($p < .01$). Elevated anxious mood was not a significant predictor of incarceration or arrest history for females or males. While an external locus of control orientation was not a significant predictor of arrests or incarceration for female students, male students who reported an external locus of control for problems were more likely to be arrested ($OR = 1.84, p = .013$) and incarcerated ($OR = 1.86, p = .009$) than their peers with an internal locus of control.

Table 2. Unadjusted Logistic Regression: Prediction of Arrests and Incarceration Stratified by Sex ($n = 1,036$).

	Arrested		Incarcerated	
	OR	95% CI	OR	95% CI
Males ($n = 495$)				
Suspended or expelled	2.64	1.59–4.37	2.42	1.57–3.73
Frequent marijuana use (40+ times)	2.27	1.31–3.94	2.69	1.60–4.53
Elevated anxious mood	1.73	0.75–4.02	1.76	0.84–3.67
External locus of control factors				
Problem avoidance	1.84	1.14–2.96	1.86	1.17–2.97
Effort	1.13	0.72–1.78	1.58	1.00–2.51
Blame	1.25	0.71–2.20	1.12	0.60–2.10
Controls				
High school dropout	2.40	1.45–3.98	2.47	1.61–3.77
Mother's education	0.90	0.83–0.99	0.96	0.89–1.04
Perceived racism	0.99	0.88–1.11	1.13	1.01–1.25
Females ($n = 541$)				
Suspended or expelled	2.77	1.70–4.52	3.72	1.93–7.17
Frequent marijuana use (40+ times)	3.24	1.66–6.35	2.40	0.94–6.09
Elevated anxious mood	1.09	0.65–1.83	1.58	0.74–3.39
External locus of control factors				
Problem avoidance	1.10	0.70–1.73	1.42	0.71–2.85
Effort	1.48	0.91–2.41	1.03	0.50–2.15
Blame	0.98	0.27–0.73	0.88	0.37–2.11
Controls				
High school dropout	2.70	1.74–4.21	2.19	1.15–4.16
Mother's education	0.94	0.87–1.02	0.98	0.86–1.11
Perceived racism	1.17	1.04–1.32	1.17	0.98–1.40

Note. Bolded results at $p < .05$ level.

High school dropout predicted both arrests and incarceration for both male ($p < .01$) and female ($p < .05$) participants. Mother's education was inversely related to arrests and incarceration for male and female students, but none of these associations were statistically significant. Males who reported experiencing racism were more likely to be incarcerated ($OR = 1.13$, $p = .033$) than males who did not report those experiences, whereas perceived racism was a significant predictor of arrests for females ($OR = 1.17$, $p = .012$).

Table 3. Adjusted Logistic Regression: Prediction of Incarceration Stratified by Sex ($n = 1,036$).

	Arrested		Incarcerated	
	aOR	95% CI	aOR	95% CI
Males ($n = 495$)				
Suspended or expelled	2.24	1.33–3.79	2.00	1.24–3.23
Frequent marijuana use (40+ times)	2.17	1.21–3.90	2.73	1.56–4.77
Elevated anxious mood	1.64	0.66–4.05	1.69	0.76–3.75
External locus of control factors				
Problem avoidance	1.80	1.10–2.97	1.99	1.17–3.37
Effort	0.90	0.54–1.50	1.41	0.84–2.35
Blame	1.13	0.62–2.06	0.90	0.45–1.78
Controls				
High school dropout	1.69	0.97–2.93	1.84	1.14–2.98
Mother's education	0.92	0.84–1.01	0.97	0.89–1.07
Perceived racism	1.01	0.89–1.15	1.17	1.03–1.32
Females ($n = 541$)				
Suspended or expelled	2.16	1.27–3.67	3.01	1.47–6.16
Frequent marijuana use (40+ times)	2.50	1.25–5.00	1.93	0.71–5.22
Elevated anxious mood	0.98	0.57–1.69	1.59	0.71–3.56
External locus of control factors				
Problem avoidance	0.89	0.54–1.45	1.27	0.59–2.73
Effort	1.32	0.78–2.21	0.80	0.34–1.86
Blame	0.88	0.47–1.62	0.84	0.33–2.18
Controls				
High school dropout	2.18	1.32–3.60	1.57	0.75–3.29
Mother's education	0.96	0.88–1.05	1.00	0.87–1.16
Perceived racism	1.14	1.00–1.30	1.12	0.92–1.36

Note. Bolded results at $p < .05$ level.

To assess the simultaneous impact of suspension or expulsion, marijuana use, elevated anxious mood, and locus of control, we next present a regression analysis stratified by sex and controlling for high school completion, mother's education, and perceived racism. Table 3 shows these results. Specifically, male students who were suspended or expelled were 2.24 times as likely to be arrested ($p = .003$) and twice as likely to be incarcerated ($p = .004$) than males who had never been suspended or expelled by age 16

after adjusting for other risk factors including high school graduation, mother's education, and perceived racism. Similarly, female students who were suspended or expelled were 2.16 times as likely to be arrested ($p = .005$) and three times as likely to be incarcerated ($p = .003$) as females who had never been suspended or expelled by age 16. Male adolescents who used marijuana frequently were 2.17 times as likely as those who did not use marijuana frequently to be arrested ($p = .009$) and 2.73 times as likely to be incarcerated ($p < .001$). Female adolescents who used marijuana frequently were 2.5 times as likely as those who did not use marijuana frequently to be arrested ($p = .010$) but did not have a statistically significant increased risk of incarceration ($p = .194$). Elevated anxiety continued not to be predictive of arrests or incarceration for males or females.

In testing the effect of locus of control orientation, external locus of control factors were included in the regression analyses stratified by sex displayed in Table 3. For males, one external locus of control orientation factor was a significant predictor of arrests and incarceration. Male students who handled problems by avoiding them were 1.8 times as likely as their male peers who do not handle problems that way to be arrested ($p = .020$) and twice as likely to be incarcerated ($p = .011$). None of the locus of control factors predicted arrest or incarceration for females.

We found no evidence of a multiplicative effect between marijuana use and anxiety as this interaction term was not significant in any of the four adjusted logistic regression models (male arrests [$p = .932$], male incarceration [$p = .284$], female arrests [$p = .239$], female incarceration [$p = .542$]). We also found no interactive effect between any locus of control factors and suspension or expulsion ($p > .100$), nor between marijuana use and suspension or expulsion ($p > .400$), nor between elevated anxiety and suspension or expulsion ($p < .200$). Finally, high school graduation did not significantly reduce the impact of suspensions or expulsion on the risk of arrests or incarceration ($p > .169$).

Discussion

The goal of this study was to examine the relationship between school discipline, adolescent marijuana use, anxiety, and locus of control, along with their potential impact on future arrests and incarceration, to identify modifiable risk and protective factors that may reduce future criminal justice system interactions for African Americans. This study finds that (1) suspension or expulsion, marijuana use during adolescence, and external locus of control related to problem avoidance increase the likelihood of future arrests and incarceration for males, and (2) for females, suspension or expulsion increases

the risk of future arrests and incarceration while marijuana use during adolescence increases the risk of arrests only. These findings suggest that efforts to reduce the school-to-prison pipeline should concentrate on factors beyond high school graduation, including the modifiable risk factors of school disciplinary practices and marijuana use, and that prevention approaches should be different for males and females. Internal locus of control orientation is a modifiable factor that can be protective against future arrests and incarceration for males.

Suspension/Expulsion as a Life Event and Labeling

After controlling for mother's education, high school dropout, and perceived racism, suspension or expulsion was associated with an increased likelihood of future arrests and incarceration for both male and female students. Students who had been suspended or expelled were more than twice as likely as their peers who had not been suspended or expelled to be arrested or incarcerated in adulthood, which is consistent with previous studies on the association between school discipline and future criminal justice outcomes (Barnes & Motz, 2018). By controlling for high school graduation, these findings show that even students able to complete high school after they have been suspended or expelled remain at increased risk for arrests and incarceration. This finding suggests that suspension or expulsion can function as a life event separate from high school graduation that impacts future criminal justice system interaction. Therefore, zero-tolerance policies and school discipline procedures that punish minor offenses as harshly as severe offenses can negatively impact students' future outcomes and increase risk as opposed to serving as a deterrent of negative behaviors. This supports findings from previous studies on the impact of exclusionary policies on future arrest and adulthood incarceration (Monahan et al., 2014; Welsh & Little, 2018). Further exploration of trajectories into adulthood post-suspension or expulsion is warranted.

Findings for Male Students Compared to Female Students

While it is clear that there are sex differences in arrests and incarceration rates for African American men and women, analysis suggests that there may be differences in the school-to-prison pipeline for male and female students. While suspension or expulsion are powerful factors above and beyond high school completion for both males and females, marijuana use in adolescence was only related to arrests, not incarceration for females but increased the risk of both arrests and incarceration for males. During this period, Black men and women were more likely to be arrested, face mandatory minimum

charges, and be incarcerated for marijuana offenses as compared to their white counterparts with similar rates of marijuana use (Bender, 2016; Vitiello, 2019). Additionally, previous work shows another pathway to arrest for women of color based on their proximity to men involved with illegal drug use, which at the time included marijuana (Harrell, 2019). Previous studies with the Woodlawn study have shown marijuana use to impact criminal arrests in part through high school graduation (Green et al., 2010). However, this study did not consider incarceration or sex differences, and thus future work should consider sex-specific pathways to prison and ways to interrupt these pathways.

We did not find a significant association between anxiety and arrests or incarceration, nor between anxiety and suspension or expulsion for males or females. Anxiety may lead to risk aversion in some students and risky behavior in others, netting no significant effect on school discipline or criminal justice system involvement. Additional sex-specific research is needed to untangle the potential influence of anxiety.

Locus of Control Orientation

Locus of control orientation emerged as a potentially modifiable risk factor for males that may help reduce their risk of future arrests and incarceration. Male students with an internal locus of control orientation, meaning that they perceive higher responsibility for their own outcomes and believe that their behavior can have a substantial effect on the things that happen to them, were less likely to be incarcerated in adulthood. Male students who handled problems by not thinking about them were almost twice as likely to be arrested or to be incarcerated as their dissimilar peers. Locus of control orientation is malleable, and student mindsets can change as they are taught to reframe their thinking and use positive coping strategies for handling problems. However, it is essential to note that locus of control orientation is impacted by a myriad of socioecological factors, and students may have experiences and valid rationale for feeling a lack of control. Previous studies have shown that locus of control orientation can impact academic achievement, especially for students who have experienced trauma (Di Pentima et al., 2019). Students experiencing the harsh realities of poverty or living in an urban setting may have many examples of negative outcomes caused by systemic issues and not an individual, family, or community's specific actions. Also, students receiving what they perceive to be harsh punishments for small mistakes in the school setting may also struggle to understand how their behavior and choices impact outcomes. While intervention efforts that aim to address locus of control through efficacy curricula and strengths-based rehabilitation models

have been developed (Anderson et al., 2016; Tyler et al., 2020), locus of control orientation interventions must continue to be adapted specifically for African American students living in urban settings so that these realities can be addressed and discussed transparently with students. Students must simultaneously understand the impact their behavior can have on future outcomes and be empowered to identify and help dismantle systems of oppression that negatively impact life outcomes.

Strengths and Limitations

This dataset's greatest strength is that it consists of longitudinal data from age 6 to 52, and all adolescent data were collected prior to data regarding arrests and incarceration, establishing temporal ordering between predictors and outcomes. However, this cohort experienced adolescence and schooling during the 1970s, and their adulthood incarceration happened primarily during the 80s and 90s as mass incarceration of African Americans began rapidly increasing in the United States (arrest records span 1977–2012). While this occurrence certainly raises concerns about generalizability to contemporary student populations with different school policies and a more established school-to-prison pipeline, theoretically, we would expect the impact of suspension or expulsion on future incarceration to be the same if not underrepresented in this sample and racial oppression persists in the United States. Additional limitations include attrition (85% of the original cohort was interviewed in adulthood, but only 76% of mothers provided information on expulsion/suspension in adolescence). Moreover, we mostly relied on self-reported data, which is subject to bias. While multiple imputation methods were used to address missing data and previous tests of validity with the Woodlawn data have indicated that there seems to not be a significant amount of bias in self-reported responses (Ensminger et al., 2007), some bias may remain.

Conclusions and Future Considerations

Understanding the role of modifiable risk and protective factors such as marijuana use and locus of control in the school-to-prison pipeline will improve interventions aimed at helping African American students transition successfully into adulthood. Locus of control may be a particularly promising intervention target for males. Male adolescents who attribute their problems to forces they have control over are less likely to be arrested and incarcerated, and this finding provides new research avenues for helping African American male youth successfully manage their school challenges and build resiliency

to graduate from high school and overall reduce risk of criminal justice system involvement. School-based and family-based interventions that develop students' internal locus of control orientation may be particularly impactful. Simultaneously, systematic school interventions that target school climate through teacher training and examining discipline policies can also create positive learning environments that reduce negative labeling of students and provide support for students who need guidance to successfully cope with challenging life experiences, manage behaviors, and minimize the risk of future incarceration. Findings also improve our overall understanding of the impact of marijuana use on the school-to-prison pipeline and provide direction for future research, including pathway analysis, that could further examine the mechanisms from suspension/expulsion to incarceration and determine more intervention targets to help African American students succeed after high school.

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