JOURNAL OF
Research on Adolescence

Society for Research on Adolescence
www.s-r-a.org

JOURNAL OF RESEARCH ON ADOLESCENCE, 31(2), 317–334

Exploring Disproportionate Minority Contact in the Juvenile Justice System Over the Year Following First Arrest

Namita Tanya Padgaonkar, Amanda E. Baker, Mirella Dapretto, and Adriana Galván
University of California Los Angeles
namitap@g.ucla.edu

Paul J. Frick
Louisiana State University and Australian Catholic University

Laurence Steinberg
Temple University

Elizabeth Cauffman
University of California Irvine

Minority youth are disproportionately represented in the juvenile justice system. Examining how racial disparities relate to biased entry into and continued involvement with the system, while accounting for past and current offending, can provide context about the mechanisms behind overrepresentation. 1,216 adolescents were examined after first arrest to explore associations between race and history of self-reported offending, likelihood of formal processing, and likelihood of rearrest. Black youth committed fewer offenses prior to arrest than White youth, Black and Latino youth were more likely to be formally processed, and Black youth were most likely to be rearrested (even controlling for postbaseline offending), highlighting that minority youth are overrepresented in the juvenile justice system despite similar or lower levels of criminal behavior.

Significance

Youth of color are overrepresented in the juvenile justice system. This study demonstrates that Black youth get arrested after committing fewer offenses than White youth, Black and Latino youth are more likely to have greater contact with the system by being formally processed, and Black youth are most likely to get rearrested after first arrest despite similar levels of reoffending.

INTRODUCTION

Disproportionate minority contact (DMC) is evident throughout the stages of juvenile justice system processing in the United States. More than 1.6 million U.S. youths are processed by the juvenile justice system annually, and youth of color—especially Black youth (Moore, 2007)—are more likely to have contact with this system than are their White counterparts (Dmitrieva, Monahan, Cauffman, & Steinberg, 2012). Indeed, while Black youth comprise 17% of the 10- to 17-year-old population, they make up more than double that percentage of arrests especially in communities with low Black populations, formal court proceedings, and incarcerations in the juvenile justice system (Andersen, 2015). Once arrested, Black youth typically receive more restrictive sentences and are more often formally charged than White peers regardless of offense or prior record, with referrals to juvenile court being three times more likely for Black than for White youth (Mitchell, 2005; Onifade, Barnes,

The Crossroads Study is supported by funding from the John D. and Catherine T. MacArthur Foundation, the Office of Juvenile Justice and Delinquency Prevention, the County of Orange, the Fudge Family Foundation, and the William T. Grant Foundation. This work was further supported by National Institute of Child Health and Human Development (award number 1T32HD091059 to NTP and AEB), the University of California Consortium on the Developmental Science of Adolescence Seed Grant (to NTP and AEB), and the National Science Foundation Graduate Research Fellowship (to NTP and AEB). All findings and conclusions in the present study are those of the authors and do not necessarily reflect the official position or policies of the funding agencies.

Namita Tanya Padgaonkar and Amanda E Baker should be considered joint first authors.

Requests for reprints should be sent to Namita Tanya Padgaonkar, Department of Psychiatry and Biobehavioral Sciences, University of California Los Angeles, Los Angeles, CA. E-mail: namitap@g.ucla.edu

DOI: 10.1111/jora.12599

Campbell, & Mandalari, 2019). Likelihood of referral to secure confinement is also highest for Black youth (Lowery, Burrow, & Kaminski, 2018). Black youth are also more likely to be transferred to criminal court to be tried as an adult (regardless of offense or age) (Bishop, 2016), confined for a longer period of time, and referred to adult prison than are White youth (Moore, 2007).

Multiple studies attempt to explain the etiology of DMC. From this vast body of literature, the prevailing hypothesis—the *differential selection and processing hypothesis*—asserts that minority youth are overrepresented in the justice system due to differences in the patrolling, profiling, and processing of minorities by law enforcement officials, courts, and correctional systems (Piquero, 2008). Moreover, youths' race predicts the level of scrutiny and stringency that law enforcement officials impose on those engaging in criminal activity (Onifade et al., 2019). For example, in a study utilizing data from the Project on Human Development in Chicago Neighborhoods, researchers found that Black youth report more trouble with police, even after controlling for other possible contributing variables such as criminal offending, impulsivity, mental health symptoms, and gang membership (Unnever, Owusu-Bempah, & Deryol, 2019).

The sources and consequences of DMC are especially important to examine within the juvenile justice system, as youth are especially sensitive to their environments compared to adults. Isolating youth from their typical socioemotional context following arrest and placing them in correctional institutions with greater deviant peer presence (Johnson, Simons, & Conger, 2004) increases emotional vulnerability and impedes psychosocial development (Dmitrieva et al., 2012); indeed, this incarceration can itself be a criminogenic factor (Lambie & Randell, 2013). In particular, younger youths and those from minority groups are often at a higher risk of victimization within the prison system (Kiessl & Würger, 2002). These factors may help explain the strong correlation between juvenile and adult offending, highlighting the importance of juvenile rehabilitation and the risk that accrues during justice system contact (Piquero, 2008; Rodriguez, 2010). About 70-80% of juveniles in correctional programs are subsequently rearrested within the next three years (Mendel, 2011), and research suggests that juvenile incarceration is often ineffective at reducing both recidivism and antisocial behavior (Aizer & Doyle, 2015; Black, 2016). Given the increased risk of law enforcement contact among minority youth, along with the detrimental effects and repercussions shown to accompany juvenile justice system involvement, it is crucial to identify the sources of DMC in order to diminish racial disparities in the juvenile justice system.

Significant reform efforts have attempted to address disparities in the juvenile justice system (for review, see Leiber & Fix, 2019). The 1988 federal Juvenile Justice and Delinquency Protection Act mandated that states address minority overrepresentation in order to receive federal funding, but this has been met with limited success. For example, Black youth in Iowa, a Congress-mandated "reference" state for DMC mandate implementation (Federal Register, 1991),were referred to formal processing more than White youth following the implementation (Leiber, Bishop, & Chamlin, 2011). Attempts to decrease the use of predispositional detention for youths such as the Juvenile Detention Alternatives Initiative (JDAI; Mendel, 2009) have yielded success for White youth, though in parallel increased the likelihood for detention for Black youth (Maggard, 2015) and resulted in overall greater system contact for minorities relative to White youth (Mendel, 2014). The state of race relations in the United States today as evidenced by numerous instances of violence against Black youth further underscores the rampant disparities in justice system involvement.

The present study utilizes official arrest, processing, and rearrest data as well as retrospective and prospective self-report data to generate a comprehensive depiction of offending behaviors over time. Reform attempts, extent of DMC, and history of racial tensions differ across the country (Zane, Mears, & Welsh, 2020); as such, this study leverages multisite data to investigate similarities and differences in justice system processing across the country. With these data, we examined 3 primary aims which seek to identify evidence for the differential selection hypothesis and examine the persistent relationship between justice system contact and race for minority youth. In Aim 1, we investigated the association between race and history of self-reported offending prior to an adolescent's first contact with the juvenile justice system. Finding that Black youth commit fewer offenses prior to arrest compared to White youth would contribute to the existing evidence for the differential selection hypothesis, demonstrating that minority youth are not necessarily committing more crimes than other youth groups, but may be differentially targeted in policing.

Aim 2 examined whether the severity of justice system processing related to race. Uniquely, this

study disposes with confounding effects of severity of crime by restricting study entry to only those involved in moderate-range crimes; furthermore, we controlled for the commission of violent offense. As all youth in the study were arrested for similarly moderate crimes, we were able to systematically address whether race related to justice system processing without the confounding effects of variability in crime severity on the association between race and processing decisions. Racial differences in likelihood of being formally processed would highlight the enduring effects of racism once youth enter the juvenile justice system.

In Aim 3, we investigated whether DMC persists after first contact with the justice system by examining how race relates to rearrest while controlling for self-reported offending and extralegal factors. After controlling for contextual factors, finding that Black youth are more likely to be rearrested than White youth would demonstrate the continued role of racism in police targeting of Black youth. Based on prior literature, we hypothesized that Black youth would be arrested after committing the fewest offenses, most likely to receive formal justice system processing, and most likely to be rearrested. This study adds to the previous literature examining DMC by assessing the role of race in entry into the juvenile justice system and stringency of processing following arrest, as well as tracking the longitudinal relationship between race and rearrest.

METHODS

Data for the following analyses were collected as part of the Crossroads Study, an ongoing multisite longitudinal assessment of 1,216 male adolescents ages 13–17 who were arrested for moderate offenses (i.e., misdemeanors) in either Jefferson Parish, Louisiana, Orange County, California, or Philadelphia, Pennsylvania. These study sites were selected to represent culturally and demographically distinct regions of the country (South, West, and East). Youth were enrolled in the study at the time of their first arrest for midrange, nonfelony crimes such as theft of goods, simple battery (e.g., offensive physical contact such as punching), and vandalism (e.g., graffiti); these are distinct from felony-level offenses (e.g., armed robbery, homicide). Detailed information regarding sampling procedures and data collection methodology can be found via the study website: https://sites.uci.edu/crossroadsinfo/about-the-study/study-design/ and in prior publication (Thornton et al., 2015). Briefly, youth with pending intake hearings were screened for eligibility (e.g., no prior arrests) by research associates and invited to participate in the study following informed consent and assent regarding study involvement. Youth were provided $50 for completion of the first interview; an additional $15 was provided at follow-up interviews as retention incentive.

The Institutional Review Board (IRB) at all three institutions approved the study procedures. Signed caregiver consent and youth assent were obtained from all participants prior to study interviews. Data were obtained via research interviews with youth, and official data came from the probation department. Interviews were conducted for all participating youth a maximum of six weeks following their first arrest, with each interview lasting two to three hours. Interviews were conducted on laptop computers within the community (including participants' homes), areas in their local community which were private, or at the universities conducting the research. To ensure comprehension of study questions, interviewers read questions aloud to participants. For any interview sections that covered sensitive information, youth completed their own data entry using computer software designed to allow anonymous keystrokes. Importantly, participants were assured that their identity and all of their study responses would be held in strict confidence pursuant a Privacy Certificate from the Department of Justice. As such, no information from the study could be released via subpoenas, court orders, or any other involuntary disclosures. Participants were informed prior to the start of the interview, as well as throughout the interview before disclosing any sensitive or potentially incriminating information.

The current study focuses on data from the baseline interview and from follow-up interviews conducted six months and one year later, collected from 2011 to 2014. The sample for Aims 1 and 2 consists of 1,186 adolescents (M_{age} = 15.7, SD_{age} = 1.31; Table 1). Multiple imputation was used to estimate parental education data which were missing for 49 youth. Adolescents in this sample self-reported their ethnicity as White (15.7%), Black (38.1%), or Latino (46.1%). Information regarding ethnicity was missing for 30 participants (e.g., was coded as "Other"), who were therefore excluded from all analyses. Multiple imputation was also used to estimate missing self-reported offending data from follow-up waves (n = 91) and for missing official arrest data from follow-up waves (n = 4).

TABLE 1
Participant Descriptive Statistics

	Sample
Black	*n* = 449, 37.9%
Latino	*n* = 557, 47.0%
White	*n* = 180, 15.1%
Age at Arrest *M (SD)*	15.7 (1.31)
History of Self-reported Offending (SRO) *M (SD)*	3.42 offenses (3.10)
Range	0–19 offenses
SRO in Year After First Arrest *M (SD)*	2.45 offenses (6.14)
Range	0–29.5 offenses
Institutional Time	0.09 months
Violent Index Offense	*n* = 217, 18.3%
Formal Processing	*n* = 535, 45.1%
Parental Education	
Has not Completed High School	*n* = 311, 26.2%
Completed High School	*n* = 427, 36.0%
More than a High School Diploma	*n* = 448, 37.8%
Neighborhood Quality	2.07 (0.68)
Data Collection Site	
California	*n* = 515, 43.4%
Pennsylvania	*n* = 524, 44.2%
Louisiana	*n* = 147, 12.4%

Measures

Demographic information. Youth reported demographic information including age and race/ethnicity. Also, youth provided self-reports of their parents' highest level of education, which was used as a proxy for socioeconomic status, and used as a continuous variable (Galobardes, Lynch, & Smith, 2007). Prior research supports the validity of child report of this variable in adolescent samples (Lien, 2001), and socioeconomic status relates strongly to juvenile offending and arrests (Thompson & Morris, 2016). Results remained consistent when parental education was dichotomized by whether or not parents graduated from high school (yes/no). Similarly, results were consistent when parental education was split into those who had not graduated high school, had graduated from high school, or had obtained more than a high school degree. Data collection site (Louisiana, California, or Pennsylvania) was also used as a control variable.

Neighborhood quality. Neighborhood quality was assessed as a continuous measure using a self-report questionnaire adapted for the Crossroads Study designed to assess observable signs of physical and social disorder in the adolescent's neighborhood (Sampson & Raudenbush, 1999). Youth reported on how frequently they observed both physical disorder (9 items; e.g., *graffiti or tags*, *boarded up windows on buildings*) and social disorder (12 items; e.g., *adults fighting or arguing loudly*) in their neighborhood using a 4-point Likert scale from "Never" to "Often." Average scores across both scales provide an index of overall neighborhood quality, where higher scores indicate worse neighborhood quality. The neighborhood quality scale demonstrated excellent internal consistency (Cronbach's $\alpha = .94$).

History of self-reported offending. At baseline, youth self-reported participating in criminal activities at any point prior to their arrest using the self-report of offending measure (SRO; Huizinga, Esbensen, & Weiher, 1991). Participants were informed that their responses would remain confidential, ensuring that law enforcement officials would not be notified of any previously undisclosed offending behavior. Participants reported if they had or had not participated in any of 24 criminal acts at any point prior to their arrest, with offenses ranging in severity from selling drugs to homicide. A summed variety score across all different types of criminal acts was generated to obtain an overall index of offending, where higher scores indicate greater offending. Variety scores are often used in criminological research to provide a self-report across a heterogeneous mix of criminal behaviors (Sweeten, 2012). For Aim 1, total self-reported offending prior to arrest (or SRO ever) served as the outcome variable of interest. Items indicating that youth engaged in violent behaviors (e.g., *assault, getting into fights, shot at someone*; 10 total violent act questions) were summed together to create a violent offending SRO category as done previously (Fine, Simmons, Cavanagh, Rowan, & Cauffman, 2020). Violent SRO items largely capture low-level aggression; getting into fights accounts for most of the variance in this measure.

Postbaseline self-reported offending. Youth completed the SRO at every follow-up interview, reporting on offenses committed in the prior 6 months. For Aim 3, analyses examined self-reported reoffending over the year following first arrest, calculated as a summed variety score. It is important to note that youth did not specify when in the previous 6-month period, they had committed offenses; therefore, precise details regarding the timing between self-reported offenses and rearrest cannot be determined.

Official rearrest record. Data from official records were obtained from the Department of

Probation from all sites to indicate the number of times youth were rearrested for either misdemeanor or felony charges during the year after first arrest. The outcome of interest was dichotomized into whether or not youth were rearrested.

Processing status. After the youth's first arrest, the youth in this study were either formally or informally processed within the justice system. Informal processing involves youth being diverted from juvenile court and could include a probationary ("wait and see") status or community service. Formal processing, on the other hand, involved being sanctioned through the juvenile court system, and subsequently being placed on probation or referred to a juvenile correctional institution. Youth who are formally processed are required to attend a series of court hearings, and if they are sanctioned with community probation, they are required to check in with both the judge and a probation officer. As such, formal processing constitutes a more intensive form of juvenile justice system treatment. Initial processing decisions following arrest for each youth were obtained from official records from the probation department.

Institutional time. Youth self-reported the number of days during the recall period they spent in a detox/drug-treatment program, psychiatric hospital, residential treatment program, or secure institution. As spending time in such facilities can limit the opportunity youth have to engage in antisocial acts (Piquero et al., 2001), we use institutional time as a control variable. Youth spent a small proportion of each study recall period in facilities (0.09 months across 1 year in 14.7% of the study population).

Plan of Analyses

Aim 1: Relationship between race and entry into the juvenile justice system. We first investigated whether race predicted the history of self-reported offending prior to the adolescents' first arrest, over and above the effects of parental education, neighborhood quality, age at arrest, and data collection site. To compare across all racial groups, we ran separate models with White youth as the reference group and Black youth as the reference group. As demographic variables such as parental education, neighborhood quality, and age have been linked to offending behaviors (Peeples & Loeber, 1994; Rekker et al., 2015) and may differentially affect racial groups, we controlled for these factors in our analysis to better isolate how race relates to entry into the justice system. Finally, as these data were collected across multiple states and race may differentially impact justice system involvement in different areas of the United States, we controlled for data collection site in addition to demographic factors. To compare across all data collection sites, we ran separate models with California as the reference group and Pennsylvania as the reference group. Self-reported offending, the outcome of interest and our dependent variable, is a count variable with a skewed distribution. Negative binomial regression is optimal for analyzing skewed dependent variables (which prevents the need to log-transform the dependent variable to address skew), overdispersed data (i.e., variance of the dependent variable exceeds its mean), and data where there are several "0" values for the dependent variable (i.e., no prior self-reported offending) (Long & Freese, 2001). Appendix A lists model fit indices across all multiply imputed datasets, demonstrating that the negative binomial hurdle model had the best model fit. Results from this analysis will help identify any differences in the amount of offenses committed prior to arrest across racial groups, providing crucial insight into potential racial discrimination behind biased entry into the juvenile justice system. Supplementary analyses were conducted to specifically examine whether race predicted the amount of self-reported violent offenses committed prior to arrest. Appendix B lists model fit indices across all multiply imputed datasets, demonstrating that the negative binomial hurdle model had the best model fit.

Some youth did not provide parental education data (n = 49). Maximum likelihood estimation (the default for linear regression) uses list-wise deletion to eliminate cases with missing data. Therefore, we imputed 20 datasets using a Markov chain Monte Carlo sequence in Mplus (Muthén & Muthén, 2017). Results did not differ when including these 49 youth in the analysis; therefore, these cases were included for completeness.

Aim 2: Relationship between race and processing decision for initial arrest. Once juveniles are arrested, they are either processed formally or informally. The dependent variable for this analysis is whether or not youth were formally processed; formality of processing was assessed via official records. The second analysis used a logistic regression to investigate whether race predicted whether youth were formally or informally processed, controlling for history of self-reported offending,

parental education, neighborhood quality, age at arrest, data collection site, and whether or not youth were arrested for a violent offense. To compare across all racial groups, we ran separate models with White youth as the reference group and Black youth as the reference group. Similarly, to compare across all data collection sites, we ran separate models with California as the reference group and Pennsylvania as the reference group. Results from this logistic regression will help identify whether race relates to formality of justice processing, over and above other relevant factors (e.g., type of offense).

Aim 3: Relationship between race and rearrest. The third analysis used a logistic regression to investigate whether race predicted which youth were rearrested following their first arrest. The dependent variable for this analysis is whether or not youth were arrested within a year after first arrest; rearrest data were assessed via official records. This analysis also controlled for parental education, neighborhood quality, age at arrest, and data collection site; postbaseline self-reported offending was also included in the model. Importantly, postbaseline SRO measures the amount of offending youth self-report at their follow-up visits following their first arrest. As such, postbaseline SRO—offending after first arrest—is distinct from the history of SRO which was assessed in the first analysis. To compare across all racial groups, we ran separate models with White youth as the reference group and Black youth as the reference group. Similarly, to compare across all data collection sites, we ran separate models with California as the reference group and Pennsylvania as the reference group. Further, initial justice system processing decisions were also included in the model, as a host of evidence suggests that receiving formal justice system processing relates to greater future reoffending (Fine et al., 2017; Morris & Piquero, 2013) and that earlier justice system proceedings can have a cumulative impact on later judicial outcomes (Rodriguez, 2010). Finally, this analysis also controlled for institutional time, given that youth in facilities may have fewer opportunities to engage in criminal behavior compared to youth who are not incarcerated (Piquero et al., 2001). Supplementary analyses were conducted to specifically examine whether race predicted the amount of postbaseline self-reported offenses committed, and postbaseline self-reported violent offenses committed, to ensure that higher likelihood of rearrest would not be driven by higher or more severe SRO. Results from this logistic regression will help identify whether race predicts criminal targeting once youth have already entered the justice system, regardless of reoffending behaviors or other prior justice system-related factors.

Some youth did not provide self-reported offending data ($n = 91$) and/or were missing official arrest data ($n = 4$) at six months or one year after initial arrest. We imputed 20 datasets using a Markov chain Monte Carlo sequence in Mplus (Muthén & Muthén, 2017). Results did not differ when including these 95 youth in the rearrest analysis; therefore, these cases were included for completeness.

Variance inflation factors (VIF) were calculated to examine collinearity among predictor variables, where variables with a VIF greater than 10 indicate collinearity in the model (Miles, 2014). Predictor collinearity makes it difficult to assess the unique contribution of each predictor to the overall model prediction and decrease the stability of predictor coefficients. In our models, no variables had VIF values greater than 2.89, well below the recommended threshold.

RESULTS

Aim 1: Relationship between Race and Entry into the Juvenile Justice System

Negative binomial hurdle regression was used to investigate whether race relates to history of self-reported offending prior to arrest when accounting for parental education, neighborhood quality, age at arrest, and data collection site (Table 2). The probability of reporting no prior offending was predicted by neighborhood quality and data collection site, such that youth were more likely to self-report zero offenses ($n = 63$) if neighborhood quality was worse and less likely to self-report zero offenses if they lived in Pennsylvania. Among youth who did self-report prior offending, parental education, neighborhood quality, age, and data collection site were predictive of greater self-reported offending. Specifically, youth were arrested after the fewest offenses in Pennsylvania relative to both California and Louisiana. However, even after controlling for these variables, results indicate that race predicted the amount that youth offended prior to arrest (Figure 1). Relative to White youth, Black youth committed fewer offenses prior to arrest ($\beta = -0.30$, $SE = 0.10$, $p = .002$, 95% CI [−0.49, −0.11]). At a trend level, Latino youth committed more offenses relative to Black youth prior to arrest ($\beta = 0.17$, $SE = 0.09$, $p = .06$, 95% CI [−0.004, 0. 34]) There were no significant differences between White and Latino youth ($\beta = -0.13$, $SE = 0.09$, $p = .15$, 95% CI [−0.23, 0.04]).

A negative binomial hurdle regression was used to investigate whether race specifically related to violent offending committed prior to arrest to ensure that Black youth were not simply committing more severe offenses prior to arrest (offenses warranting more police intervention), albeit committing fewer of them. Results of the negative binomial hurdle regression controlling for the same demographics demonstrated that race no longer predicted self-reported offending when only considering violent offenses. Specifically, Black youth did not commit more self-reported violent offenses prior to arrest compared to White youth ($\beta = 0.12$, $SE = 0.18$, $p = .50$, 95% CI [−0.47, 0.23]). At a trend level, Black youth committed more violent offenses relative to Latino youth ($\beta = 0.27$, $SE = 0.16$, $p = .08$, 95% CI [−0.03, 0.58]). Overall, results from these analyses indicate that Black youth were arrested after committing fewer offenses and that this lower barrier to arrest was not driven by a higher degree of violent offending.

Aim 2: Relationship between Race and Processing Decision for Initial Arrest

The second set of analyses examined how processing decisions relate to youths' race (Table 3). These analyses controlled for history of self-reported offending prior to arrest, parental education, neighborhood quality, age at arrest, data collection site, and whether or not youth were arrested for a violent offense. Committing a violent index offense and a greater history of self-reported offending predicted formal processing. The likelihood of formal processing was lowest in Pennsylvania relative to both California and Louisiana. Over and above these associations, results of the logistic regression demonstrated that race predicts whether youth are formally or informally processed, such that both Black and Latino youth are more likely to be formally processed relative to White youth (Figure 2). The odds of being formally arrested were 66.6% higher for Black youth relative to White youth (IRR = 1.67, $\beta = 0.51$, $SE = 0.21$, $p = .02$, 95% CI [0.10, 0.92]) and 66.8% higher for Latino youth relative to White youth (IRR = 1.67, $\beta = 0.51$, $SE = 0.20$, $p = .01$, 95% CI [0.12, 0.90]). The odds of being formally arrested did not differ between Black and Latino youth ($\beta = 0.002$, $SE = 0.18$, $p = .99$, 95% CI [−0.36, 0.36]).

Aim 3: Relationship between Race and Rearrest

The third set of analyses sought to examine the association between race and rearrest in the year following youths' first arrest (Table 4). These analyses controlled for postbaseline self-reported offending, parental education, neighborhood quality, age at arrest, data collection site, whether or not youth were formally processed at their first arrest, whether or not youth were arrested for a violent offense at their first arrest, and institutional time. Spending more time within institutions and higher postbaseline self-reported offending predicted greater likelihood of rearrest; being formally processed at initial arrest was associated with greater likelihood of rearrest at a trend level. Higher parental education and data collection site predicted lower likelihood of rearrest. Specifically, likelihood of rearrest was lower for youth in Pennsylvania and Louisiana relative to California; there were no differences between rearrests in Pennsylvania and Louisiana. Over and above these associations, results of the logistic regression demonstrated that race was predictive of who would be rearrested (Figure 3). The odds of being rearrested were 71.1% higher for Black youth relative to White youth (IRR = 1.71,$\beta = 0.54$, $SE = 0.25$, $p = 0.04$, 95% CI [0.04, 1.04]) and 75.9% higher for Black youth relative to Latino youth (IRR = 0.57, $\beta = 0.57$, $SE = 0.22$, $p = .01$, 95% CI [−1.01, −0.13]. There were no significant differences between White and Latino youth (IRR = 0.97, $\beta = -0.03$, $SE = 0.24$, $p = .91$, 95% CI [−0.49, 0.44]. Importantly, the finding that Black youth were more likely to be rearrested relative to White or Latino youth was not driven by differences in postbaseline self-reported offending, or self-reported violent offending. Specifically, Black youth did not offend more than White (IRR = 0.42,$\beta = -0.87$, $SE = 0.55$, $p = 0.11$, 95% CI [−1.94, 0.20]) or Latino youth (IRR = 0.69, $\beta = -0.37$, $SE = 0.53$, $p = 0.48$, 95% CI [−1.41, 0.67]) in the year following first arrest. Black youth also did not commit more violent offenses relative to White (IRR = 1.12, $\beta = 0.11$, $SE = 0.14$, $p = .43$, CI [−0.16, 0.38]) or Latino youth (IRR = 1.19, $\beta = 0.17$, $SE = 0.14$, $p = .21$, CI [−0.10, 0.44]).

DISCUSSION

The goal of the present study was to examine the mechanisms underlying disproportionate minority contact (DMC) in the juvenile justice system. Prior efforts have highlighted that DMC can occur due to legal factors such as the severity and amount of criminal offending, in addition to extralegal factors such as race, socioeconomic status, neighborhood quality, and age at arrest (McCarter, 2009). In this study, we isolated the specific role of race among

TABLE 2
Negative Binomial Hurdle Regression Results for History of Self-reported Offending Prior to Arrest

	Coefficient (SE)	*95% CI*	*Incidence Risk Ratio*
Prior SRO			
Black[a]	-0.30** (0.10)	-0.49, −0.11	0.74
Latino[a]	-0.13 (0.09)	-0.004, 0.34	0.88
Latino[b]	0.17[†] (0.09)	-0.31, 0.05	1.19
Parental Education	0.06*** (0.02)	0.03, 0.09	1.07
Neighborhood Quality	0.63*** (0.05)	0.54, 0.73	1.88
Age at Arrest	0.14*** (0.02)	0.10, 0.19	1.16
Pennsylvania[c]	-0.51*** (0.09)	-0.68, −0.33	0.60
Louisiana[c]	0.08 (0.11)	-0.14, 0.29	1.08
Louisiana[d]	0.58*** (0.10)	0.38, 0.78	1.79
No prior SRO			
Black[a]	0.61 (0.43)	-0.23, 1.45	1.84
Latino[a]	0.07 (0.40)	-0.72, 0.86	1.07
Latino[b]	-0.54 (0.41)	-1.33, 0.26	0.58
Parental Education	0.10 (0.07)	-0.04, 0.24	1.10
Neighborhood Quality	1.39*** (0.28)	0.85, 1.94	4.02
Age at Arrest	0.07 (0.10)	-0.12, 0.27	1.07
Pennsylvania[c]	-0.79* (0.38)	-1.53, −0.05	0.45
Louisiana[c]	-0.08 (0.48)	-1.02, 0.87	0.93
Louisiana[d]	0.71 (0.45)	-0.17, 1.60	2.04

[a] Reference group is White.
[b] Reference group is Black.
[c] Reference group is California.
[d] Reference group is Pennsylvania.
[†] Denotes $p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Black, White, and Latino youth in the justice system by accounting for both legal and other extralegal factors. We investigated 3 specific aims: (a) whether racial disparities were related to biased entry into the justice system at the time of first arrest, (b) whether level of contact with the system (e.g., formality of processing) differed across racial groups, and (c) whether the likelihood of rearrest differed across racial groups. In line with the differential selection and processing hypothesis, Black youth in our sample were arrested after committing significantly fewer crimes compared to White youth, even after controlling for the effects of parental education, neighborhood quality, and age at arrest. Similarly, both Black and Latino youth were more likely to be processed formally (rather than informally) as compared to White youth, regardless of the severity of the offense (i.e., whether or not the offense for which they were arrested was violent) or amount of self-reported offending prior to first arrest. Finally, Black youth were significantly more likely to be rearrested compared to White and Latino youth, despite no differences in self-reported offenses, both violent and nonviolent, across racial groups. This paper presents a critical view of racial disparities present across several stages of the juvenile justice system, highlighting that minority youth are overrepresented in the system despite similar or lower levels of involvement in criminal behavior.

Aim 1: Relationship between Race and Entry into the Juvenile Justice System

First, we aimed to identify whether self-reported offending prior to arrest differed by race. Results of this study indicate that Black youth were arrested after committing fewer and no more violent crimes than White youth, while a significant effect was not observed for Latino youth in line with prior findings (Andersen, 2015). Importantly, racial differences persisted over and above the effects of contextual variables including parental education, neighborhood quality, age at arrest, and data collection location. A recent longitudinal study demonstrated that the likelihood of arrest has increased over time for all levels of self-reported offending, suggesting that arrest rates are becoming increasingly decoupled from levels of criminality (Weaver, Papachristos, & Zanger-Tishler, 2019).

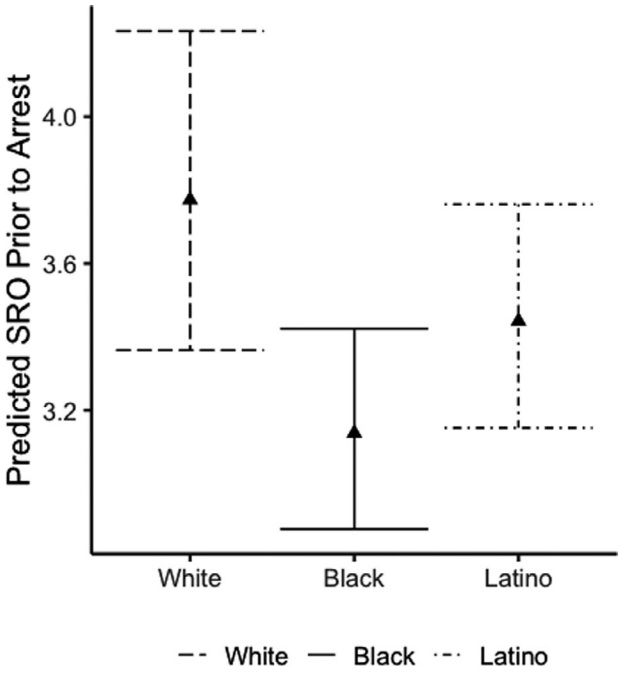

FIGURE 1 Estimated mean of self-reported offending (SRO) prior to first arrest, controlling for parental education, neighborhood quality, age at arrest, and data collection site. Estimated means are shown for White youth (dashed line), Black youth (solid line), and Latino youth (dot-dashed line). Results from the negative binomial hurdle regression demonstrate that race significantly predicts offending prior to arrest, such that Black youth commit fewer offenses prior to arrest compared to White youth. There were no significant differences between Black and Latino youth, or between White and Latino youth.

In particular, this divide between self-reported offending and arrests has become greatest for Black individuals (Weaver et al., 2019).

One potential reason that Black youth may be arrested despite lower levels of offending could stem from higher levels of police monitoring that tend to occur in Black (Hinton, 2015) and low-income neighborhoods (Brunson & Weitzer, 2009). While the stated purpose of such "hot spots policing" (Rinehart Kochel, 2011) is to improve neighborhood safety (Clarke & Cornish, 1985), proactive policing tactics result in disproportionately higher levels of police contact with minority youth (Fagan, 2017). Qualitative accounts of police-youth interactions describe negative experiences involving substantial surveillance and harassment (Brunson & Miller, 2006; Payne, Hitchens, & Chambers, 2017), both in schools and throughout their neighborhoods, presuming criminality in the absence of crime (Vera Sanchez & Adams, 2011). In contrast, White youth report receiving more "chances" compared to minority youth after being questioned by police for repeat offending (Feinstein, 2015), such that police are more likely to release White youth but arrest minority youth (Rinehart Kochel, Wilson, & Mastrofski, 2011). White youth in disadvantaged neighborhoods also report less frequent contact with police relative to Black youth in comparable neighborhoods (Brunson & Weitzer, 2009).

TABLE 3
Logistic Regression Results for Formal vs. Informal Processing

	Coefficient (SE)	*95% CI*	*Incidence Risk Ratio*
Black[a]	0.51* (0.21)	0.10, 0.93	1.67
Latino[a]	0.51* (0.20)	0.12, 0.90	1.67
Latino[b]	0.002 (0.18)	-0.36, 0.36	1.00
Violent Index Offense[c]	0.66*** (0.16)	0.35, 0.97	1.94
History of Self-reported Offending	0.08*** (0.02)	0.03, 0.12	1.08
Parental Education	-0.04 (0.03)	-0.10, 0.02	0.96
Neighborhood Quality	-0.04 (0.11)	-0.25, 0.17	0.96
Age at Arrest	0.01 (0.05)	-0.08, 0.10	1.01
Pennsylvania[d]	-0.42* (0.19)	-0.77, −0.05	0.66
Louisiana[d]	0.42 (0.23)	-0.03, 0.87	1.52
Louisiana[e]	0.83 (0.21)	0.42, 1.24	2.30

[a]Reference group is White.
[b]Reference group is Black.
[c]Reference group is "Nonviolent Index Offense."
[d]Reference group is California.
[e]Reference group is Pennsylvania.
*$p < .05$, **$p < .01$, ***$p < .001$.

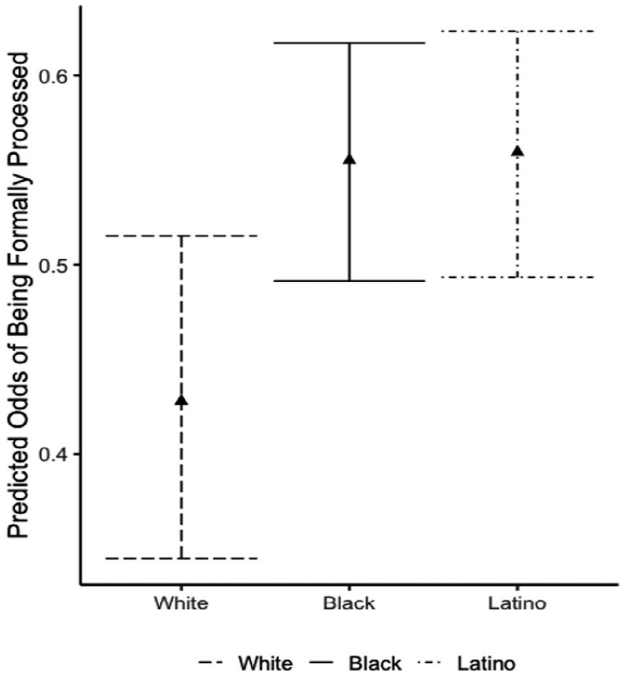

FIGURE 2 Estimated predicted odds of being formally versus informally processed, controlling for parental education, neighborhood quality, age at arrest, data collection site, history of self-reported offending, and whether the index offense was violent. Estimated odds are shown for White youth (dashed line), Black youth (solid line), and Latino youth (dot-dashed line). Results from the logistic regression demonstrate that race significantly predicts whether youth are formally processed, such that both Black and Latino youth are more likely to be formally processed relative to White youth.

It is unclear why a similar effect of lower offending prior to arrest was not observed for Latino youth in our sample, as Latino communities encounter "hot spots policing" as well (Solis, Portillos, & Brunson, 2009; Toro et al., 2019). However, this is in line with prior work showing that Latino youth are not more likely than White youth to be arrested after accounting for self-reported delinquency (Andersen, 2015). The findings that Black and Latino youth both experience DMC, albeit to varying degrees, have led some to argue for the presence of a "racial gradient" (Weitzer & Tuch, 2008). This "racial gradient" describes the phenomenon whereby Black youth tend to receive the harshest sanctions and be monitored to a higher extent than Latino youth, while Latino youth may likewise be treated differently than White youth (Fader, Kurlychek, & Morgan, 2014; Rodriguez, 2010). Black youth are often described and perceived as more threatening to authority figures compared to Latino youth, potentially leading to differential levels of scrutiny and arrest for Black youth (Feinstein, 2015; Hagan, Shedd, & Payne, 2005).

Indeed, we find in our sample that while Latino youth do not offend significantly less than White youth prior to first arrest, they do (at a trend level) offend more than Black youth, falling along a "racial gradient." It is also important to note that, as with any self-report measure, there is the

TABLE 4
Logistic Regression Results for Probability of Rearrest

	Coefficient (SE)	*95% CI*	*Incidence Risk Ratio*
Black[a]	0.54* (0.25)	0.04, 1.04	1.71
Latino[a]	-0.03 (0.24)	-0.49, 0.44	0.97
Latino[b]	-0.57* (0.22)	-1.01, −0.13	0.57
Violent Offense[c]	-0.04 (0.18)	-0.40, 0.31	0.96
Formal Processing[d]	0.26[†] (0.14)	-0.02, 0.54	1.30
Institutional Time	1.87*** (0.28)	1.33, 2.41	6.48
Postbaseline Self-reported Offending	0.09*** (0.02)	0.06, 0.13	1.10
Parental Education	-0.08* (0.04)	-0.15, −0.01	0.92
Neighborhood Quality	0.10 (0.12)	-0.12, 0.33	1.11
Age at Arrest	0.002 (0.06)	-0.10, 0.11	1.00
Pennsylvania[e]	-0.67** (0.22)	-1.11, −0.23	0.51
Louisiana[e]	-0.58* (0.28)	-1.12, −0.04	0.56
Louisiana[f]	0.09 (0.25)	-0.40, 0.57	1.09

[a] Reference group is White.
[b] Reference group is Black.
[c] Reference group is "Nonviolent Index Offense."
[d] Reference group is "Informal Processing."
[e] Reference group is California.
[f] Reference group is Pennsylvania.
[†] denotes $p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

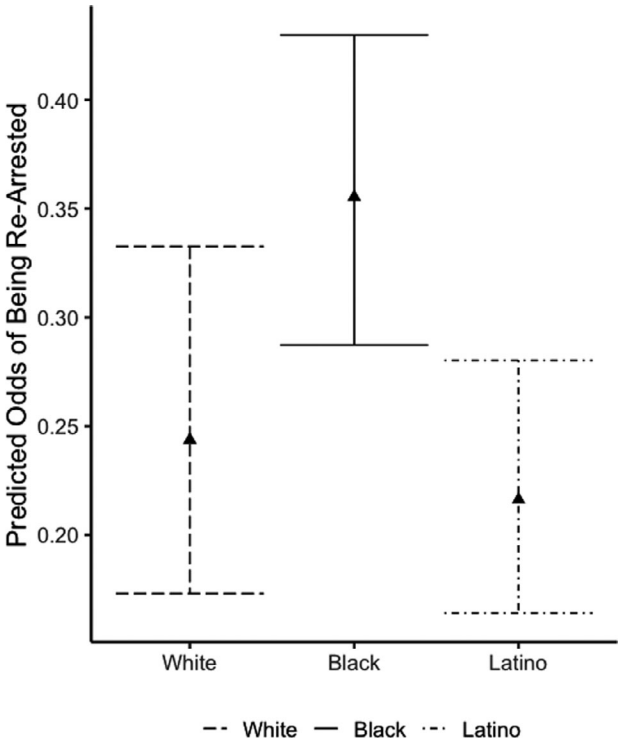

FIGURE 3 Estimated predicted odds of being rearrested, controlling for parental education, neighborhood quality, age at arrest, data collection site, whether youth were formally processed, whether the index offense was violent, and time spent in facilities. Estimated odds are shown for White youth (dashed line), Black youth (solid line), and Latino youth (dot-dashed line). Results from the logistic regression demonstrate that race significantly predicts whether youth are rearrested, such that Black youth are more likely to be rearrested than either White or Latino youth.

possibility that youth did not provide a full account of their offending behaviors for fear of retribution. Racial differences in self-reports of offending may limit our conclusions; however, discrepant results from prior studies temper the conclusion that there are definitive differences in the validity of self-reported offending data by race (Thornberry & Krohn, 2000). Furthermore, only 63 (out of 1,216) youths in this sample reported no prior offenses at baseline, and race did not predict whether youth reported no prior offenses, suggesting that most youths were comfortable disclosing at least some of their offenses. Regardless, while youth were ensured that their responses would be anonymized and kept in strict confidence, it is still possible that youth—in particular Black youth—were hesitant to provide full accounts of their offending behavior, which might also help explain discrepancies between Black and Latino youth.

Altogether, our finding that Black youth commit fewer (and not more violent) crimes than White youth prior to arrest suggests that Black youth are disproportionately targeted by policing, thereby facing a lower barrier to entry into the juvenile justice system than their peers. While in this sample we do not find that Latino youth face a similarly lower barrier to entry into the system, this should not be taken to demonstrate that Latino communities do not experience disproportionate policing as well. While we do not have data regarding community policing in our sample of youth, these results suggest that heightened police presence in minority communities needs to be addressed. Subjecting disadvantaged communities to heightened police contact can have long-lasting effects. Hot spots policing may promote negative perceptions of police, and of the justice system more broadly (Wiley & Esbensen, 2016), thus relating to greater delinquent behavior and the formation of a deviant identity over time (Lemert, 1951). Moreover, selective police contact of predominantly disadvantaged youths can propagate infrequent offending into systematic patterns of delinquency, spurred on by self-perceptions of deviance (Becker, 1963; Tannenbaum, 1957). Perceptions of racial biases during initial arrest and sentencing may influence later criminal activity and negative attitudes regarding the justice system (Bishop, Leiber, & Johnson, 2010; Hawkins, Kempf-Leonard, & Bishop, 2013). Future work should investigate whether adaptations to hot spots policing, such as reforms aimed at increasing citizen perception of police legitimacy (Weisburd, 2016), may address DMC in entry into the juvenile justice system. In addition, the juvenile justice system needs to address and decrease implicit biases involved in police interactions with youth (Peck, 2018).

Aim 2: Relationship between Race and Processing Decision for Initial Arrest

Second, we aimed to identify whether formality of processing after initial arrest differed by race. Here, we demonstrate that Latino and Black youth experience higher stringency in juvenile processing once arrested. Once youth are arrested, law enforcement officials such as police and probation officers often have the authority to determine whether cases will be formally or informally processed (Snyder, 1996), a determination which we find relates to recidivism in the present study, as have others (Fine et al., 2017; Petitclerc, Gatti, Vitaro, & Tremblay, 2013). Formal processing also relates to more negative attitudes about the juvenile justice system (Liberman, 2008). In the present study, all participants

were included on the basis of committing mid-range level crimes of similar severity. That is, they were all arrested for an offense that had a 0.35-0.65 probability of being formally versus informally processed. This ensured that any observed differences in relation to processing type were not likely to be driven by severity of arrestable offense. We demonstrate that both Black and Latino youth are at a greater risk of receiving formal processing, even when controlling for whether or not the arrestable offense was violent and for the amount of self-reported offending prior to arrest. These findings are in line with prior evidence demonstrating that Latino youth are 20% more likely than White youth to be referred to juvenile court (Hockenberry & Puzzanchera, 2016), and Black youth are similarly more likely than White youth to be referred to juvenile court (Schlesinger, 2018).

While some structured guidelines exist for making case determinations (e.g., Borum, Lodewijks, Bartel, & Forth, 2011; Howell & Lipsey, 2004), probation officers in several jurisdictions report often disregarding these recommendations in favor of their own judgments (Shook & Sarri, 2007), sometimes retroactively referring to recommendations to justify processing decisions (Sarri & Hasenfeld, 1976). The subjective nature of determining whether or not a case should be formally processed relies on a number of factors, including perceptions of a youth's risk to public safety and of recidivism (Shook & Sarri, 2007), two variables often conflated with a child's race (Bishop & Frazier, 1995). For instance, probation officers report relying on youth's disposition or level of remorse toward a crime, but White youth are often perceived as more remorseful or as a victim of their circumstances, whereas minority youth are often seen as not remorseful (and thus likely to reoffend) (Bridges & Steen, 1998). Subjectivity in case assignment can thus unintentionally be influenced by implicit racial biases among police and probation officers. One study suggests that cultural differences in displays of respect or contrition, such as avoiding direct eye contact in many Latin cultures, might be regarded by authority figures as disrespectful (Villarruel et al., 2002). Such intercultural miscommunications may result in Latino youth receiving stricter sentencing, as authority figures rely in part on interactions with youth to determine whether they seem remorseful enough to not engage in future delinquent behaviors (Bridges & Steen, 1998; Hanan, 2018).

Given that we find minority youth at a greater risk of having cases undergo formal processing regardless of crime severity, subjective case assignment practices potentially hinging on racial biases put minority youth at greater risk of negative life outcomes. Youth with formally processed cases display worse outcomes, such that they are more likely to reoffend (Petrosino, Turpin-Petrosino, & Guckenburg, 2010), reoffend more violently (Beardslee et al., 2019), have difficulty in school (Hjalmarsson, 2008; Sweeten, 2006), and face a greater barrier to employment later in life (Apel & Sweeten, 2010). Formal processing relates to increased self-reported offending and higher rearrest rates even after accounting for a child's environment, suggesting a criminogenic effect of formal processing (Robertson, 2018).

These results strongly suggest the need for evidence-based and standardized risk assessment tools for determining whether cases should be formally processed (Piquero, 2008), practices that are not adopted in all courts (Mulvey & Iselin, 2008). Minority youth are at a disadvantage during prosecutorial charging when comparing across comparable cases (Bishop et al., 2010), and this is especially true for mid-adolescent youth (ages 14–15) with minor charges (Evangelist, Ryan, Victor, Moore, & Perron, 2017). Minority youth are particularly impacted, as assumptions about a youth's family can influence diversion recommendations despite evidence suggesting that living arrangements do not relate to completion of diversion programs (Love & Morris, 2019). However, even the use of standardized measurements for diversion decisions does not remove minority overrepresentation in secure placement (Mallett & Stoddard-Dare, 2010). These tools need further modification to accurately convey risk factors across diverse populations, as predictions are inconsistent with offending and rearrest records for minority youth in particular (Schwalbe, Fraser, Day, & Cooley, 2006; Vincent, Chapman, & Cook, 2011). Thus, future work is needed to generate culturally competent assessment tools to help mitigate the issue of minority youth being disproportionately formally processed.

Aim 3: Relationship between Race and Rearrest

Third, we aimed to identify whether likelihood of rearrest would differ by race. We found that Black youth are at an even greater likelihood of being rearrested than White or Latino youth, mirroring prior work (McGovern, Demuth, & Jacoby, 2009), even after controlling for the effects of being formally processed, as well as other legal factors that might relate to rearrest (e.g., self-reported

offending after first arrest) and extralegal factors (e.g., neighborhood quality and parental education). Rearrest results here closely parallel our earlier findings; we find that Black youth are more likely to be rearrested despite similar levels of post-baseline self-reported offenses as their peers, demonstrating that there is little connection between offending and arrests after accounting for relevant environmental influences.

These results provide further evidence suggesting increased police monitoring among minority youth. Black youth were more likely to be rearrested relative to White youth, despite no differences in self-reported offenses prior to rearrest. Experiences with the juvenile justice system, especially at the time of first contact (Fine et al., 2017), relate to increased risk for future offending as well as increased likelihood of rearrest (Beardslee et al., 2019). A longitudinal study investigating the impact of juvenile justice system contact among low-income youth demonstrated that more interactions with law enforcement related to a seven times greater likelihood of committing crimes as an adult (Gatti, Tremblay, & Vitaro, 2009). Youth may be monitored more closely following initial justice system contact (Fine et al., 2017); in particular, minority youth may experience even greater monitoring (Rios, 2007), which may explain how Black youth are more likely to be rearrested. In line with the recommendations from Aim 1, policy changes should be explored to reduce the burden of proactive policing on communities of color.

Implications of Data Collection Site

Results from this study also demonstrate that geographic location relates to youths' interactions with the juvenile justice system. This may result from unclear specifications regarding how to appropriately address DMC across states and jurisdictions (Jones, 2012). Here, we find that youth in Philadelphia were arrested after committing the fewest offenses but were the least likely to be formally processed or rearrested. Pennsylvania courts have demonstrated lower levels of both Black and Hispanic youths throughout multiple stages of the juvenile justice system following implementation of the DMC mandate (Donnelly, 2017). That youth were at greater risk of arrest relative to their self-reported offending suggests that DMC reforms in Philadelphia have not effectively addressed police–youth interactions (Peck, 2018). However, it remains unclear why biases would be present at the initial arrest stage and not at rearrest. Among police officers, interview data suggest that while they acknowledge higher rates of arrest in minority youth, these heightened arrest rates reflect the perception of greater crimes committed by minority youth (Dawson-Edwards, Tewksbury, & Nelson, 2020). Altogether, our results in conjunction with prior work suggest that diminishing minority overrepresentation at the earliest stage of juvenile system processing in Philadelphia will require working with police officers to reduce biases.

The likelihood of rearrest was highest in Orange County. Again, inconsistencies in addressing DMC nationwide (Jones, 2012) may explain these results. Prior work investigating rearrest risk among serious juvenile offenders in California notes that behavior such as gang involvement and violence while incarcerated strongly predicts rearrest (Lattimore, MacDonald, Piquero, Linster, & Visher, 2004). As such characteristics may influence perceived risk of recidivism, these youth may be more likely to be monitored after initial arrest. Similarly to how greater police presence may increase risk for initial arrest, greater monitoring may yield similar results for risk for rearrest.

In our diverse sample of adolescents living across multiple states, Black youth report committing the fewest crimes before their initial arrest, report no differences in offending after initial arrest, and commit no more violent crimes than those committed by other youth, yet are nevertheless more likely to be rearrested. While it is not possible to definitively state that these results are driven by racial bias among those in power in the juvenile justice system, the evidence strongly suggests that DMC across all stages of the juvenile justice system may be reinforced by either implicit or explicit racial biases. Indeed, it is important to note that using race as a predictor is not the same as looking at the effects of racism itself *per se* (Jee-Lyn García & Sharif, 2015). Based on arrest records alone, the fact that Black youth are rearrested at a higher rate than any other group may result in perceptions of Black youth as criminals. However, this study highlights the importance of considering the relationship between youths' self-reports of their offending versus official arrest records. Institutionalized and structural racism inherent in children's neighborhoods and communities contribute to biased police strategies that can reinforce racial differences in arrest and incarceration rates. Thus, it is crucial that future research strongly considers children's socioeconomic status and neighborhood quality as we have done here, as well as numerous other contextual factors such as the proportion of

single-parent households, to help disentangle the forces of structural racism in the broader community from racial biases in the justice system. Future research should be careful to consider both the perceptions and potential biases of those in the justice system, as well as the lived experience of youths themselves.

In addition to shedding light on the factors influencing contact with the juvenile justice system, this line of work also has practical implications for providers who work in or tangentially with the juvenile justice system. Here, we demonstrate that minority youth may be experiencing differential treatment within, and crucially before entry into, the juvenile justice system as a function of racial biases. Future research identifying the mechanisms by which bias is transmitted throughout the justice system will be imperative to successfully combat DMC, benefit minority communities, and promote more favorable perceptions of police and justice system legitimacy.

REFERENCES

Aizer, A., & Doyle, J.J. (2015). Juvenile incarceration, human capital, and future crime: Evidence from randomly assigned judges. *The Quarterly Journal of Economics*, *130*(2), 759–803. https://doi.org/10.1093/qje/qjv003

Andersen, T.S. (2015). Race, ethnicity, and structural variations in youth risk of arrest: Evidence from a national longitudinal sample. *Criminal Justice and Behavior*, *42*(9), 900–916. https://doi.org/10.1177/0093854815570963

Apel, R., & Sweeten, G. (2010). The impact of incarceration on employment during the transition to adulthood. *Social Problems*, *57*(3), 448–479. https://doi.org/10.1525/sp.2010.57.3.448

Beardslee, J., Miltimore, S., Fine, A., Frick, P.J., Steinberg, L., & Cauffman, E. (2019). Under the radar or under arrest: How is adolescent boys' first contact with the juvenile justice system related to future offending and arrests? *Law and Human Behavior*, *43*(4), 342–357. https://doi.org/10.1037/lhb0000340

Becker, H.S. (1963). *Outsiders*. New York: New York Free Free.

Bishop, D.M. (2016). Juvenile offenders in the adult criminal justice system. *Crime and Justice*, *27*, 81–167. https://doi.org/10.1086/652199.

Bishop, D.M., & Frazier, C.E. (1995). Race effects in juvenile justice decision-making: Findings of a Statewide analysis. *Journal of Criminal Law and Criminology*, *86*(2), 393–414. Retrieved from https://heinonline.org/HOL/Page?handle=hein.journals/jclc86&id=404&div=29&collection=journals.

Bishop, D.M., Leiber, M., & Johnson, J. (2010). Contexts of decision making in the juvenile justice system: An organizational approach to understanding minority overrepresentation. *Youth Violence and Juvenile Justice*, *8*(3), 213–233. https://doi.org/10.1177/1541204009361177

Black, J.A. (2016). Understanding the effectiveness of incarceration on juvenile offending through a systematic review and meta-analysis: do the get tough policies work? Nova Southeastern University. Retrieved from: https://nsuworks.nova.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1001&context=cahss_jhs_etd/

Borum, R., Lodewijks, H., Bartel, P.A., & Forth, A.E. (2011). Structured assessment of violence risk in youth (SAVRY). In R.K. Otto, & K.S. Douglas (Eds.), *Handbook of violence risk assessment* (pp. 73–90). Routledge.

Bridges, G.S., & Steen, S. (1998). Racial disparities in official assessments of juvenile offenders: attributional stereotypes as mediating mechanisms. Source: *American Sociological Review*, *63*. Retrieved from: https://www.jstor.org/stable/pdf/2657267.pdf?refreqid=excelsior%3Aed2de1ff2d2cbbb22be5a26503c2171c

Brunson, R.K., & Miller, J. (2006). Young black men and urban policing in the United States. *The British Journal of Criminology*, *46*(4), 613–640. https://doi.org/10.1093/bjc/azi093

Brunson, R.K., & Weitzer, R. (2009). Police relations with black and white youths in different urban neighborhoods. *Urban Affairs Review*, *44*(6), 858–885. https://doi.org/10.1177/1078087408326973

Clarke, R.V., & Cornish, D.B. (1985). Modeling offenders' decisions: A framework for research and policy. *Crime and Justice: An Annual Review of Research*, *6*, 147–185. Retrieved from: https://heinonline.org/HOL/Page?handle=hein.journals/cjrr6&div=8&g_sent=1&casa_token=&collection=journals.

Dawson-Edwards, C., Tewksbury, R., & Nelson, N.T. (2020). The causes and pervasiveness of DMC: Stakeholder perceptions of disproportionate minority contact in the juvenile justice system. *Race and Justice*, *10*(2), 223–242. https://doi.org/10.1177/2153368717735365

Dmitrieva, J., Monahan, K.C., Cauffman, E., & Steinberg, L. (2012). Arrested development: The effects of incarceration on the development of psychosocial maturity. *Development and Psychopathology*, *24*(3), 1073–1090. https://doi.org/10.1017/S0954579412000545

Donnelly, E.A. (2017). The disproportionate minority contact mandate: An examination of its impacts on juvenile justice processing outcomes (1997–2011). *Criminal Justice Policy Review*, *28*(4), 347–369. https://doi.org/10.1177/0887403415585139

Evangelist, M., Ryan, J.P., Victor, B.G., Moore, A., & Perron, B.E. (2017). Disparities at adjudication in the juvenile justice system: An examination of race, gender, and age. *Social Work Research*, *41*(4), 199–212. https://doi.org/10.1093/swr/svx017

Fader, J.J., Kurlychek, M.C., & Morgan, K.A. (2014). The color of juvenile justice: Racial disparities in dispositional decisions. *Social Science Research*, *44*, 126–140. https://doi.org/10.1016/j.ssresearch.2013.11.006

Fagan, J. (2017). Response to ridgeway: Allocating police. *Journal of Policy Analysis and Management*, *36*(3), 703–707. https://doi.org/10.1002/pam.21998

Feinstein, R. (2015). A qualitative analysis of police interactions and disproportionate minority contact. *Journal of Ethnicity in Criminal Justice*, *13*(2), 159–178. https://doi.org/10.1080/15377938.2014.936645

Fine, A., Donley, S., Cavanagh, C., Miltimore, S., Steinberg, L., Frick, P.J., & Cauffman, E. (2017). And justice for all: determinants and effects of probation officers' processing decisions regarding first-time juvenile offenders. *Psychology, Public Policy, and Law*, *23*(1), 105–117. https://doi.org/10.1037/law0000113

Fine, A., Simmons, C., Cavanagh, C., Rowan, Z., & Cauffman, E. (2020). Implications of youths' perceptions of police bias and the code of the street for violent offending. *Psychology of Violence*. https://doi.org/10.1037/vio0000286.supp.

Galobardes, B., Lynch, J., & Smith, G.D. (2007). Measuring socioeconomic position in health research. *British Medical Bulletin*, *81–82*(1), 21–37. https://doi.org/10.1093/bmb/ldm001

Gatti, U., Tremblay, R.E., & Vitaro, F. (2009). Iatrogenic effect of juvenile justice. *Journal of Child Psychology and Psychiatry*, *50*, 991–998. https://doi.org/10.1111/j.1469-7610.2008.02057.x

Hagan, J., Shedd, C., & Payne, M.R. (2005). Race, ethnicity, and youth perceptions of criminal injustice. *American Sociological Review*, *70*(3), 381–407. https://doi.org/10.1177/000312240507000302

Hanan, M.E. (2018). Remorse bias. *Missouri Law Review*, *83*. Retrieved from: https://heinonline.org/HOL/Page?handle=hein.journals/molr83&id=317&div=17&collection=journals

Hawkins, D.F., Kempf-Leonard, K., & Bishop, D.M. (2013). The role of race and ethnicity in juvenile justice processing. *Our Children, Their Children*. https://doi.org/10.7208/chicago/9780226319919.003.0002

Hinton, E. (2015). Creating crime. *Journal of Urban History*, *41*(5), 808–824. https://doi.org/10.1177/0096144215589946

Hjalmarsson, R. (2008). Criminal justice involvement and high school completion. *Journal of Urban Economics*, *63*(2), 613–630. https://doi.org/10.1016/J.JUE.2007.04.003

Hockenberry, S., & Puzzanchera, C. (2016). Delinquency cases involving hispanic youth. Retrieved October 24, 2019, from http://www.ncjj.org/Publication/Delinquency-Cases-Involving-Hispanic-Youth-2013.aspx.

Howell, J.C., & Lipsey, M.W. (2004). A practical approach to linking graduated sanctions with a continuum of effective programs.

Huizinga, D., Esbensen, F.-A., & Weiher, A.W. (1991). Are there multiple paths to delinquency. *Journal of Criminal Law and Criminology*, *82*. Retrieved from: https://heinonline.org/HOL/Page?handle=hein.journals/jclc82&id=95&div=13&collection=journals

Jee-Lyn García, J., & Sharif, M.Z. (2015). Black lives matter: A commentary on racism and public health. *American Journal of Public Health*, *105*(8), e27–e30. https://doi.org/10.2105/AJPH.2015.302706

Johnson, L.M., Simons, R.L., & Conger, R.D. (2004). Criminal justice system involvement and continuity of youth crime. *Youth & Society*, *36*(1), 3–29. https://doi.org/10.1177/0044118X03260323

Jones, E.N. (2012). Disproportionate representation of minority youth in the juvenile justice system: a lack of clarity and too much disparity among states "addressing" the issue. UC Davis. J. Juv. L. & Pol'y,*16*, 155–202. Retrieved from: http://www.ojjdp.gov/ojstatbb/ezacjrp/asp/Offense_Race.asp

Kiessl, H., & Würger, M. (2002). Victimization of incarcerated children and juveniles in South Africa. *International Review of Victimology*, https://doi.org/10.1177/026975800200900305

Lambie, I., & Randell, I. (2013). The impact of incarceration on juvenile offenders. *Clinical Psychology Review*, *33*(3), 448–459. https://doi.org/10.1016/j.cpr.2013.01.007

Lattimore, P.K., MacDonald, J.M., Piquero, A.R., Linster, R.L., & Visher, C.A. (2004). Studying the characteristics of arrest frequency among paroled youthful offenders. *Journal of Research in Crime and Delinquency*, *41*(1), 37–57. https://doi.org/10.1177/0022427803256094

Leiber, M.J., Bishop, D., & Chamlin, M.B. (2011). Juvenile justice decision-making before and after the implementation of the disproportionate minority contact (DMC) mandate. *Justice Quarterly*, *28*(3), 460–492. https://doi.org/10.1080/07418825.2010.516005

Leiber, M.J., & Fix, R. (2019). Reflections on the impact of race and ethnicity on juvenile court outcomes and efforts to enact change. *American Journal of Criminal Justice*, *44*(4), 581–608. https://doi.org/10.1007/s12103-019-09479-3

Lemert, E.M. (1951). Social pathology; A systematic approach to the theory of sociopathic behavior. - PsycNET. Retrieved July 17, 2019, from https://psycnet.apa.org/record/1951-08006-000.

Liberman, A.M. (Ed.) (2008). *The long view of crime: A synthesis of longitudinal research*. Washington, DC: Springer.

Lien, N. (2001). Adolescents' proxy reports of parents' socioeconomic status: How valid are they? *Journal of Epidemiology & Community Health*, *55*(10), 731–737. https://doi.org/10.1136/jech.55.10.731

Long, J.S., & Freese, J. (2001). Predicted probabilities for count models. *The Stata Journal*, *1*. https://doi.org/10.1177/1536867X0100100103

Love, T.P., & Morris, E.W. (2019). Opportunities diverted: intake diversion and institutionalized racial disadvantage in the juvenile justice system. *Race and Social Problems*, *11*(1), 33–44. https://doi.org/10.1007/s12552-018-9248-y

Lowery, P.G., Burrow, J.D., & Kaminski, R.J. (2018). A Multilevel test of the racial threat hypothesis in one state's juvenile court. *Crime & Delinquency*, *64*(1), 53–87. https://doi.org/10.1177/0011128716678192

Maggard, S.R. (2015). Assessing the Impact of the Juvenile Detention Alternatives Initiative (JDAI): Predictors of secure detention and length of stay before and after JDAI. *Justice Quarterly*, *32*(4), 571–597. https://doi.org/10.1080/07418825.2013.783610

Mallett, C.A., & Stoddard-Dare, P. (2010). Predicting secure detention placement for African-American juvenile offenders: Addressing the disproportionate minority confinement problem. *Journal of Ethnicity in Criminal Justice*, *8*(2), 91–103. https://doi.org/10.1080/15377931003761011

McCarter, S. A. (2009). Legal and extralegal factors affecting minority overrepresentation in Virginia's juvenile justice system: A mixed- method study. *Child & Adolescent Social Work Journal*, *26*, 533–544. https://doi.org/10.1007/s10560-009-0185-x

McGovern, V., Demuth, S., & Jacoby, J.E. (2009). Racial and ethnic recidivism risks. *The Prison Journal*, *89*(3), 309–327. https://doi.org/10.1177/0032885509339507

Mendel, R.A. (2009). *Two decades of JDAI: from demonstration project to national standard*. Baltimore, MD: The Annie E. Casey Foundation.

Mendel, R.A. (2011). *No place for kids: The case for reducing juvenile incarceration*. Annie E: Casey Foundation. https://doi.org/10.1021/jp109041y.

Mendel, R.A. (2014). Juvenile Detention Alternatives Initiative Progress Report. Retrieved from http://www.aecf.org/work/juvenile-justice/jdai/

Miles, J. (2014). Tolerance and Variance Inflation Factor. In Wiley StatsRef: Statistics Reference Online. Chichester, UK: John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118445112.stat06593

Mitchell, O. (2005). A meta-analysis of race and sentencing research: Explaining the inconsistencies. *Journal of Quantitative Criminology*, *21*, 439–466. https://doi.org/10.1007/s10940-005-7362-7

Moore, J. (2007). And justice for some - differential treatment of youth of color in the justice system. *Youth Today*. https://doi.org/10.1108/17506200710779521

Morris, R.G., & Piquero, A.R. (2013). For whom do sanctions deter and label? *Justice Quarterly*, *30*(5), 837–868. https://doi.org/10.1080/07418825.2011.633543

Mulvey, E.P., & Iselin, A.-M.-R. (2008). Improving Professional judgments of risk and amenability in juvenile justice. *The Future of Children*, *18*(2), 35–57. https://doi.org/10.1353/foc.0.0012

Muthén, L.K., & Muthén, B.O. (2017). *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén.

Onifade, E., Barnes, A., Campbell, C., & Mandalari, A. (2019). Risk assessment as a mechanism for reducing differential treatment of minorities by a juvenile justice system. *Journal of Ethnicity in Criminal Justice*, *17*(3), 203–227. https://doi.org/10.1080/15377938.2019.1619647

Payne, Y.A., Hitchens, B.K., & Chambers, D.L. (2017). "Why i can't stand out in front of my house?": Street-identified black youth and young adult's negative encounters with police. *Sociological Forum*, *32*(4), 874–895. https://doi.org/10.1111/socf.12380

Peck, J.H. (2018). The importance of evaluation and monitoring within the disproportionate minority contact (DMC) mandate. *Race and Justice*, *8*(4), 305–329. https://doi.org/10.1177/2153368716675923

Peeples, F., & Loeber, R. (1994). Do individual factors and neighborhood context explain ethnic differences in juvenile delinquency? *Journal of Quantitative Criminology*, https://doi.org/10.1007/BF02221156.

Petitclerc, A., Gatti, U., Vitaro, F., & Tremblay, R.E. (2013). Effects of juvenile court exposure on crime in young adulthood. *Journal of Child Psychology and Psychiatry*, *54*(3), 291–297. https://doi.org/10.1111/j.1469-7610.2012.02616.x

Petrosino, A., Turpin-Petrosino, C., & Guckenburg, S. (2010). Formal system processing of juveniles: Effects on delinquency. *Campbell systematic reviews* (Vol. 6). John Wiley & Sons, Ltd. https://doi.org/10.4073/csr.2010.1

Piquero, A.R. (2008). Disproportionate minority contact. *Future of Children*, https://doi.org/10.1353/foc.0.0013

Piquero, A.R., Blumstein, A., Brame, R., Haapanen, R., Mulvey, E.P., & Nagin, D.S. (2001). Assessing the impact of exposure time and incapacitation on longitudinal trajectories of criminal offending. *Journal of Adolescent Research*, https://doi.org/10.1177/0743558401161005

Register, F. (1991). *Notice of FY 1991 competitive discretionary grant programs and availability of the Office of Juvenile Justice and Delinquency Prevention Program announcement application kit*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.

Rekker, R., Pardini, D., Keijsers, L., Branje, S., Loeber, R., & Meeus, W. (2015). Moving in and out of poverty: The within-individual association between socioeconomic status and juvenile delinquency. *PLoS One*, https://doi.org/10.1371/journal.pone.0136461.

Rinehart Kochel, T. (2011). Constructing hot spots policing: unexamined consequences for disadvantaged populations and for police legitimacy. *Criminal Justice Policy Review*, *22*(3), 350–374. https://doi.org/10.1177/0887403410376233

Rinehart Kochel, T., Wilson, D.B., & Mastrofski, S.D. (2011). Effect of suspect race on officers' arrest decisions. *Criminology*, *49*(2), 473–512. https://doi.org/10.1111/j.1745-9125.2011.00230.x

Rios, V.M. (2007). The Hypercriminalization of Black and Latino Male Youth in the Era of Mass Incarceration. In *Racializing justice, disenfranchising lives* (pp. 17–33). New York: Palgrave Macmillan US. https://doi.org/10.1057/9780230607347_2

Robertson, E. (2018). *The potential iatrogenic effects of formal vs. informal juvenile justice system processing: The moderating influence of callous-unemotional traits*. LSU Master's Theses. Retrieved from https://digitalcommons.lsu.edu/gradschool_theses/4747

Rodriguez, N. (2010). The cumulative effect of race and ethnicity in juvenile court outcomes and why preadjudication detention matters. *Journal of Research in Crime*

and Delinquency, *47*(3), 391–413. https://doi.org/10.1177/0022427810365905

Sampson, R. J., & Raudenbush, S. W. (1999). Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *American journal of sociology*, *105*(3), 603–651. https://doi.org/10.1086/210356

Sarri, R.C., & Hasenfeld, Y. (1976). Brought to justice?: Juveniles, the courts, and the law. National Assessment of Juvenile Corrections, University of Michigan.

Schlesinger, T. (2018). Decriminalizing racialized youth through juvenile diversion. *The Future of Children*, *28*(1), 59–82.

Schwalbe, C.S., Fraser, M.W., Day, S.H., & Cooley, V. (2006). Classifying juvenile offenders according to risk of recidivism. *Criminal Justice and Behavior*, *33*(3), 305–324. https://doi.org/10.1177/0093854806286451

Shook, J.J., & Sarri, R.C. (2007). Structured decision making in juvenile justice: Judges' and probation officers' perceptions and use. *Children and Youth Services Review*, *29*(10), 1335–1351. https://doi.org/10.1016/J.CHILDYOUTH.2007.05.008

Snyder, H.N. (1996). The Juvenile Court and Delinquency Cases. *The Juvenile Court*, *6*(3), 53–63. Retrieved from http://www.ncjj.org/PDF/Howardpubs/Snyder_Future_of_Children_1996_vol6no3ART4.pdf

Solis, C., Portillos, E.L., & Brunson, R.K. (2009). Latino Youths' experiences with and perceptions of involuntary police encounters. *Annals of the American Academy of Political and Social Science*, *623*(1), 39–51. https://doi.org/10.1177/0002716208330487

Sweeten, G. (2006). Who will graduate? Disruption of high school education by arrest and court involvement. *Justice Quarterly*, *23*(4), 462–480. https://doi.org/10.1080/07418820600985313

Sweeten, G. (2012). Scaling criminal offending. *Journal of Quantitative Criminology*, *28*(3), 533–557. https://doi.org/10.1007/s10940-011-9160-8

Tannenbaum, F. (1957). *Crime and the Community*. Columbia University Press.

Thompson, K.C., & Morris, R.J. (2016). Characteristics of juvenile delinquents. In *Juvenile delinquency and disability. Advancing responsible adolescent development* (pp. 9–30). Cham: Springer. https://doi.org/10.1007/978-3-319-29343-1_2

Thornberry, T., & Krohn, M. (2000). The self-report method for measuring delinquency and crime. In D. Duffee (Ed.), *Measurement and analysis of crime and justice: Criminal justice* (Vol. *4*). U.S. Department of Justice, Office of Justice Programs, National Institute of Justice.

Thornton, L.C., Frick, P.J., Shulman, E.P., Ray, J.V., Steinberg, L., & Cauffman, E. (2015). Callous-unemotional traits and adolescents' role in group crime. *Law and Human Behavior*, *39*(4), 368–377. https://doi.org/10.1037/lhb0000124

Toro, J.D., Lloyd, T., Buchanan, K.S., Robins, S.J., Zhang Bencharit, L., Gamson Smiedt, M., … Goff, P.A. (2019). The criminogenic and psychological effects of police stops on adolescent black and Latino boys. *PNAS*, *116*(17), 8261–8268. https://doi.org/10.1073/pnas.1808976116

Unnever, J., Owusu-Bempah, A., & Deryol, R. (2019). A Test of the Differential Involvement Hypothesis. *Race and Justice*, *9*(2), 197–224. https://doi.org/10.1177/2153368717697104

Vera Sanchez, C.G., & Adams, E.B. (2011). Sacrificed on the altar of public safety: the policing of Latino and african american youth. *Journal of Contemporary Criminal Justice*, *27*(3), 322–341. https://doi.org/10.1177/1043986211412565

Villarruel, F.A., Walker, N.E., Minifee, P., Rivera-Vázquez, O., Peterson, S., & Perry, K. (2002). "Dónde está la justicia?" A Call to Action on Behalf of Latino and Latina Youth in the U.S. Justice System. Retrieved from http://www.buildingblocksforyouth.org

Vincent, G.M., Chapman, J., & Cook, N.E. (2011). Risk-Needs Assessment in Juvenile Justice. *Criminal Justice and Behavior*, *38*(1), 42–62. https://doi.org/10.1177/0093854810386000

Weaver, V.M., Papachristos, A. & Zanger-Tishler, M. (2019). The great decoupling: the disconnection between criminal offending and experience of arrest across two cohorts. *RSF: the Russell Sage Foundation Journal of the Social Sciences*, *5*(1), 89. https://doi.org/10.7758/rsf.2019.5.1.05

Weisburd, D. (2016). Does hot spots policing inevitably lead to unfair and abusive police practices, or can we maximize both fairness and effectiveness in the new proactive policing. University of Chicago Legal Forum, 661. Retrieved from https://heinonline.org/HOL/Page?handle=hein.journals/uchclf2016&id=667&div=19&collection=journals

Weitzer, R., & Tuch, S.A. (2008). Race and policing in America: Conflict and Reform - Ronald Weitzer, Steven A. Tuch - Google Books. *American Journal of Sociology*, *114*(1), 254–256. Retrieved from https://books.google.com/books?hl=en&lr=&id=xM-YAZsBuqkC&oi=fnd&pg=PR7&dq=Race+and+policing+in+America:+conflict+and+reform&ots=Iq_L5zDFQw&sig=m7S17i07q4Q0765WxcwwLNgySRI#v=onepage&q=RaceandpolicinginAmerica%3Aconflictandreform&f=false.

Wiley, S.A., & Esbensen, F.-A. (2016). The effect of police contact. *Crime & Delinquency*, *62*(3), 283–307. https://doi.org/10.1177/0011128713492496

Zane, S.N., Mears, D.P., & Welsh, B.C. (2020). How Universal is disproportionate minority contact? An examination of racial and ethnic disparities in juvenile justice processing across four states. *Justice Quarterly*, *37*(5), 817–841. https://doi.org/10.1080/07418825.2020.1766544

APPENDIX

MODEL FIT INDICES FOR AIM 1: HISTORY OF SELF-REPORTED OFFENDING

Note

	AIC	*BIC*	*RMSE*
Negative Binomial[a]	5,131.71	5,177.41	0.9958
Poisson[b]	5,480.38	5,521.00	1.3647
Hurdle	5,468.05	5,549.29	1.4479
Negative Binomial Hurdle	5,033.19	5,119.50	1.0434
Poisson Hurdle	5,468.05	5,549.29	1.4479
OLS	5,582.30	5,627.62	2.7954

Model fit indices were averaged across 20 imputed datasets to include missing data. Results indicate that the negative binomial hurdle model had the best model fit.

[a]Ordinary count negative binomial model had significantly better fit than the zero-inflated negative binomial model (Vuong test $p = .12$).

[b]Ordinary count poisson model had significantly better fit than the zero-inflated poisson model (Vuong test $p = .20$).

APPENDIX

MODEL FIT INDICES FOR AIM 1: SELF-REPORTED VIOLENT OFFENDING

Note

	AIC	*BIC*	*RMSE*
Negative Binomial[a]	3,345.09	3,390.79	0.8889
Poisson[b]	3,343.08	3,383.70	0.8889
Hurdle	3,102.72	3,183.96	1.2118
Negative Binomial Hurdle	2,987.75	3,074.07	0.9855
Poisson Hurdle	3,103.17	3,184.41	1.2121
OLS	3,588.78	3,634.48	1.0917

Model fit indices were averaged across 20 imputed datasets to include missing data. Results indicate that the negative binomial hurdle model had the best model fit.

[a]Ordinary count negative binomial model had significantly better fit than the zero-inflated negative binomial model (Vuong test $p = .25$).

[b]Ordinary count poisson model had significantly better fit than the zero-inflated poisson model (Vuong test $p = .25$).