No evidence of racial discrimination in criminal justice processing: Results from the National Longitudinal Study of Adolescent Health

Kevin M. Beaver, Matt DeLisi, John Paul Wright, Brian B. Boutwell, J.C. Barnes, Michael G. Vaughn

1. Introduction

One of the most consistent findings in the criminological literature is that African American males are arrested, convicted, and incarcerated at rates that far exceed those of any other racial or ethnic group. This racial disparity is frequently interpreted as evidence that the criminal justice system is racist and biased against African American males. Much of the existing literature purportedly supporting this interpretation, however, fails to estimate properly specified statistical models that control for a range of individual-level factors. The current study was designed to address this shortcoming by analyzing a sample of African American and White males drawn from the National Longitudinal Study of Adolescent Health (Add Health). Analysis of these data revealed that African American males are significantly more likely to be arrested and incarcerated when compared to White males. This racial disparity, however, was completely accounted for after including covariates for self-reported lifetime violence and IQ. Implications of this study are discussed and avenues for future research are offered.

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from self-report data indicate that African American males are more likely to report being involved in acts of serious violence when compared against White males (Elliott, 1994), with a similar pattern of findings emerging from studies using victimization data (Rennison, 2010; Steffensmeier et al., 2011).

Second, African Americans score about 1 standard deviation below Whites on standardized IQ tests. This race difference has been detected in virtually every study on the subject and it has also been detected in samples collected in different societies and using different IQ tests (Jensen, 1998; Lynn, 2006; Lynn & Vanhanen, 2006). Differences in IQ scores have even emerged in studies that use tests of IQ which do not rely on words or cultural inferences, such as reaction-time tests and the Raven’s Progressive Matrices (Rushon & Skuy, 2000). While the causes of these race differences remain the source of debate, the 1 standard deviation difference between African Americans and Whites is not typically contested given how consistently it has been reported in the empirical literature.

Third, both offense severity/frequency and IQ correlate with criminal justice processing, with individuals committing more serious criminal acts (Blumstein, 1982, 1993; Blumstein, Cohen, Piquero, & Visher, 2010; Brame, Mazurello, & Piquero, 2010; Canela-Cacho, Blumstein, & Cohen, 1997; Delisi, 2010; Langan, 1985), and individuals with lower levels of overall intelligence (Diamond, Morris, & Barnes, 2012; Herrnstein & Murray, 1994; Koenen, Caspi, Moffitt, Rijndijk, & Taylor, 2006; Lynn & Moffitt, 1995; Lynam, Moffitt, & Southamer-Loebner, 1993; Wilson & Herrnstein, 1985) being more likely to be arrested and processed by the criminal justice system. Despite each of these three points, almost no study examining racial disparities in criminal justice processing has controlled for both offense severity/frequency and intelligence. What this necessarily means is that IQ and offense frequency/seriousness may explain the association between race and criminal justice processing, ruling out the “biased system” explanation.

2. Materials and methods

2.1. Participants

Data for this study came from the National Longitudinal Study of Adolescent Health (Add Health; Udry, 2003). The Add Health is a four-wave study of a nationally representative sample of American youth who were enrolled in middle or high school in 1994–1995. Data collection began by administering self-report questionnaires to all students who were attending each of the 132 schools that were selected for inclusion in the study. Approximately 90,000 students participated in this initial wave of data collection, known as the wave 1 in-school component of the study. A subsample of these respondents was then selected to be reinterviewed at their homes along with their primary caregiver (usually their mother). These interviews were designed to collect information on a broader range of topics, including some topics, such as their involvement in risky behaviors, which were sensitive in nature. In total, 20,745 adolescents and 17,700 of their primary caregivers participated in the wave 1 in-home component of the study (Harris et al., 2003).

About 1.5 years later, the second wave of interviews was completed with 14,738 youth. Since most respondents were still adolescents, most of the questions asked at wave 1 were asked again at wave 2. For example, youth were asked about their social relationships, their involvement in delinquency, and their family life. The third wave of data was collected in 2001–2002 when most of the respondents were young adults. The questionnaires were revamped to include more age-appropriate questions, including questions about their marital status and their employment history.

In total, 15,197 respondents participated in the third wave of data collection (Harris et al., 2003). Last, the fourth wave of data was collected in 2007–2008 when most of the respondents were 24–32 years of age. At this wave, respondents were asked about a broad range of topics germane to young adults, including their highest level of education earned and their lifetime contact with the criminal justice system. A total of 15,701 young adults participated in this last wave of data collection.

The final analytical sample consisted only of male respondents who indicated that they were White or African American; all other racial/ethnic groups were removed from the sample. Race was determined via interviewer ratings of the respondent; however, sensitivity analyses were calculated to determine that the effects reported here did not vary when race was determined by self-reports. The substantive results were identical and thus the method of determining race does not appear to bias the findings. Overall, the final analytic sample size ranged between N = 1308 and 3506 and varied as a function of missing data and the unique restrictions placed on the data for some of the statistical models (more detail about the modeling strategy provided below).

2.2. Measures

Three criminal justice outcome measures were included in the current analysis, all of which were drawn from the fourth wave of data collection. Specifically, respondents were asked to indicate whether they had ever been arrested (0 = no, 1 = yes) and whether they had ever been incarcerated (0 = no, 1 = yes). In addition, respondents who indicated that they had been arrested were asked to report the length of their sentence. This variable was measured in total months of the criminal sentence. Previous research analyzing the Add Health data has used similar measures to examine the factors that are associated with being processed through the criminal justice system (Beaver, 2011; Beaver et al., 2013).

To assess frequency of antisocial behavior, a self-reported lifetime violent behavior scale was created. For each wave, items were identified that measured involvement in acts of serious physical violence and then summed to develop a lifetime violence scale that consisted of twenty-two items across all four waves of data (r = .81). Higher scores on the lifetime violence scale represent a greater involvement in violent behaviors over the entire life course. Across all four waves of data collection, CAPI techniques were utilized to administer the questions about involvement in violence.

In order to assess variation in IQ, respondents completed an abbreviated version of the Peabody Picture Vocabulary Test-Revised (PPVT-R), known as the Picture Vocabulary Test (PVT) during waves 1 and 3 of data collection. The PVT measures verbal abilities and has been used extensively as a measure of IQ among researchers using the Add Health data (Guo, Roettger, & Cai, 2008; Rowe, 2002; Rowe, Jacobsen, & van den Oord, 1999). In the current study, the PVT scores at waves 1 and 3 were each z-scored (for White and African American males only) and then summed together, averaged, and z-transformed. The resulting value provided a composite IQ score that was simply the average of the wave 1 and wave 3 PVT scores.

3. Results

The analysis first began by examining potential White–African American differences in the criminal justice outcome measures, the lifetime violence scale, and the composite IQ measure. To
begin, Table 1 demonstrates that, as expected, African-American males are more likely to be arrested, incarcerated, and receive longer criminal sentences than White males. Importantly, however, the results of the t-tests in Table 1 also reveal significant racial differences with African Americans self-reporting more violent behavior over their life course and Whites scoring significantly higher on the composite IQ measure.

The analysis next estimates the association between race and the probability of being arrested. As can be seen in the baseline model of Table 2, race was significantly associated with the probability of being arrested, with African American males being 43% more likely to be arrested than Whites. After controlling for lifetime violence and verbal IQ, however, the effect of race on the probability of being arrested dropped from statistical significance. Fig. 1 further illustrates the finding in that the predicted probability of being arrested in the baseline model for Whites was 0.41 and for African Americans was 0.49. After controlling for self-reported lifetime violence and verbal IQ, however, the difference was not statistically significant with the White predicted probability being 0.41 and the African American predicted probability being 0.44.

The next set of logistic regression models are duplicates to the previous ones but the incarceration variable is used in place of the arrest variable. The results are presented in Table 3. As before, in the multivariate model the association between race and the odds of being incarcerated was no longer statistically significant after controlling for the effects of self-reported lifetime violence and verbal IQ. Fig. 2 presents the predicted probabilities of being incarcerated for Whites and African Americans. As can be seen, in the baseline model the predicted probability of being incarcerated for Whites was 0.22 and for African Americans was 0.30. After controlling for the effects of lifetime violence and IQ, the association between race and being incarcerated was no longer statistically significant with the predicted probability of being incarcerated for Whites being 0.22 and for African Americans being 0.24.

The association between race and the odds of being incarcerated was estimated in another logistic regression model, but this time the analyses were restricted to respondents who had been arrested. Table 4 contains the results of these models. As can be seen, race was significantly related (marginally, \( p = .051 \)) to the odds of being incarcerated (if arrested), with African American males being 50% more likely to be incarcerated (if arrested) than White males. After controls for lifetime violence and IQ were introduced into the equation, the effect of race on the odds of being incarcerated (if arrested) dropped from statistical significance. The predicted probabilities associated with the results of these logistic regression models were then plotted in Fig. 3. In the baseline model, the predicted probability of being incarcerated (if arrested) for Whites was 0.54 and for African Americans was 0.64. After the lifetime violence scale and the IQ measure were entered into the equation, the predicted probability for Whites was 0.55 and for African Americans was 0.60—a difference that was not statistically significant.

The last set of statistical equations estimated the association between race and sentence length for respondents who had been arrested. Given that sentence length was measured as a count variable and was skewed (i.e., over-dispersed), these models were estimated by calculating negative binomial regression equations. Table 5 presents the results of the models and reveals that race was not significantly associated with sentence length in the baseline model. After controlling for the effects of self-reported lifetime violence and verbal IQ, the effect of race on sentence length remained non-significant. Since race was unrelated to sentence length, the predicted rates of change for the negative binomial regression models were not plotted.

### 3.1. Sensitivity analyses

Given that previous research has discussed the interconnections among IQ, antisocial behavior, race, and socioeconomic status (SES) (Herrnstein & Murray, 1994; Levin, 1997), we conducted sensitivity analyses to ensure that the models were not misspecified. Specifically, we recalculated the statistical models by controlling for a measure of SES that was drawn from wave 1 interviews with the primary caregiver. This single-item question asked the primary caregiver whether they were currently receiving public assistance, such as welfare (0 = no, 1 = yes). The results of these sensitivity analyses revealed that SES was significantly associated with the odds of being arrested and sentence length; however, SES was unrelated to the odds of being incarcerated in the full sample or the sample of arrestees. Importantly, the inclusion of the SES variable did not change the substantive results of any of the models as the lifetime violence scale remained statistically significant in all of the models. Moreover, the effect size for the lifetime violence scale was not significantly altered by the inclusion of the SES variable which should not be surprising given the relatively small association between SES and the lifetime violence scale (correlation coefficient = .11, \( p < .05 \)).

### 4. Discussion

The goal of the current study was to answer a single question: Whether the criminal justice system acts in a way that is biased against African American males. Without including control variables for potential alternative explanations, the results were consistent with previous research indicating that African American males are more likely to be arrested and incarcerated compared to their White counterparts. After introducing control variables for self-reported lifetime violence and verbal IQ (to rule out alternative explanations), the association between race and being processed through the criminal justice system was reduced to non-significance. Taken together, analysis of data from the Add Health strongly suggest that research examining racial disparities in the criminal justice system must include covariates for self-reported criminal involvement and perhaps even for verbal IQ or they are likely misspecified. The most likely result of this misspecification is an upwardly biased race effect that purportedly indicates that
African American males are treated more harshly than White males due to a biased criminal justice system. These findings should be viewed with caution given that there are a number of limitations that need to be addressed in future research. To begin with, there is likely to be concern over whether self-reports of serious criminal involvement are an appropriate way to gauge the extent of criminal behavior. While there are certainly some issues with self-reports, the available evidence tends to suggest that they are a useful way to assess criminal involvement (Roberts & Wells, 2010). Moreover, there is some evidence of racial differences in self-report surveys, but the existing

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* Significant at the .05 level, two-tailed test.

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* Significant at the .05 level, two-tailed test.

Fig. 1. Predicted probability of arrest between Whites and African Americans in the baseline model and the multivariate model (N = 3,029). *Significant at the .05-level, two-tailed test.

Fig. 2. Predicted probability of incarceration between Whites and African Americans in the baseline model and the multivariate model (N = 3050). *Significant at the .05-level, two-tailed test.
literature tends to suggest that African Americans are likely to underreport their involvement in acts of crime and delinquency (Hindelang, Hirschi, & Weis, 1979; Kirk, 2006; Kleck, 1982). If this were the case, our analysis would have been less likely to show any effect of race on crime. In other words, the baseline model would have failed to identify an effect of race on arrest or on incarceration. Moreover, the multivariate models would have been less sensitive to the inclusion of the lifetime violence variable because it would not have correlated with race (i.e., there would have been no racial differences in reports of lifetime violence).

In addition, the Add Health data did not contain any official measures of crime, but rather relied on self-reports to determine whether the respondent was arrested and incarcerated. As noted earlier, these questions were administered to each respondent using CAPI techniques, thereby limiting the influence of social desirability bias. With that said, the pattern of results tends to mirror those found in other studies that used official crime data (Farrington, Loeber, Stouthamer-Loeber, Van Kammen, & Schmidt, 1996; Krohn, Thornberry, Gibson, & Baldwin, 2010). Furthermore, the data are not necessarily used prospectively as the lifetime violence measure and composite IQ measures used data collected across all four waves while the criminal justice outcome measures asked about arrests and incarceration that occurred throughout the subject’s lifetime. As a result, the temporal ordering is not firmly established in this study. Last, although the Add Health data were originally collected to be nationally representative, we used only a subset of participants—that is African American and white males who had complete data available across all four waves of data—which might limit the generalizability of the findings. Future research is needed to address these concerns to determine whether the findings are robust.

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**References**


