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It’s Still About Race: Peremptory Challenge Use on Black Prospective Jurors

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Abstract

Objectives: The use of race as a motive for excluding individuals from serving on juries in American criminal trials is unconstitutional. Nevertheless, black individuals remain substantially more likely than others to be removed during jury selection through peremptory challenges. This study tests whether and to what extent there is a racial effect on peremptory challenge use by the prosecution or the defense.

Methods: Using data from 2,542 venire members in Mississippi, propensity score matching is used to examine racial differences in jury selection by comparing black venire members to similarly situated white venire member counterparts.

Results: Findings suggest that black venire members are 4.51 times as likely to be excluded from a jury due to peremptory challenges from the prosecution in comparison to white venire members. Conversely, white venire members are 4.21 times as likely to be excluded through peremptory challenges by the defense in comparison to black venire members.

Conclusions: After controlling for all observed variables, there remain significant differences between white and black venire members, suggesting racial discrimination by both the prosecution and the defense in peremptory challenge usage. Black individuals are more likely to be excluded from juries through these effects, resulting in less racially diverse juries.

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Introduction

The use of peremptory challenge to remove potential jurors to which a prosecutor or defense attorney objects, but lacks evidence to remove for cause, has been consistently permissible throughout America's judicial history (Beck, 1997). In 1986, the Supreme Court of the United States placed a limitation on that power through its decision that it is unconstitutional to use a peremptory challenge because of the individual's race (Batson v. Kentucky, 1986). However, despite this clear ruling on the matter, the efficacy in detecting and enforcing violations is in serious doubt, with scholars arguing that the *Batson* ruling failed to eliminate or reduce racial discrimination in jury selection (Bennett, 2010; Morehead, 1994). It remains difficult to prove racial discrimination in jury selection in any given case. As one scholar observed, using the *Batson* challenge "is an infinitely cumbersome procedural obstacle course... [and] only the most overtly discriminatory or impolitic lawyer can be caught in *Batson*'s toothless bite and, even then, the wound will be only superficial" (Cavise, 1999, p. 501).

One example of an overturned conviction due to the use of the *Batson* challenge is the Supreme Court ruling in *Miller-El v. Dretke* (2005). In this case, ten of eleven black members of the jury pool were excluded on the basis of peremptory challenges that could have been, but were purposefully not, applied to white prospective jurors for similar reasons, as evidenced by side-by-side comparisons of prospective jurors' responses to questions (Johnson 2014; Sommers & Norton, 2008). Likewise, the opinion of the court in *Flowers v. Mississippi* (2019) made direct comparisons between strikes being applied to black jurors when white jurors who provided similar answers did not receive a strike. Such side-by-side comparisons of "similarly situated" venire members of different races, however, are not possible in all trials. Justice Alito wrote, for example, in his concurring opinion that the *Flowers* case is "likely one of a kind" (p. 1) and that "[w]ere it not for the unique combinations of circumstances present here" (p. 2) he would have "no trouble" (p. 2) allowing the conviction to stand. Further complicating matters, prosecutors sometimes ask more questions to certain individuals in order to better establish an "objective" rationale to defend their actions in the event of a *Batson* challenge (Flowers v. Mississippi, 2019; Miller-El v. Dretke, 2005). The difficulty in raising a challenge in an individual case, thus, may result in a lack of enforcement that fails to encourage change from past practices.

Empirical evidence demonstrates that substantial racial differences in the application of the peremptory challenge remain (e.g., Baldus et. al, 2001; Grosso & O'Brien, 2012). Despite this evidence, courts generally do not recognize racial discrimination in jury selection except in extreme cases. In the 30 years since the *Batson* case, for example, none of the 114 *Batson*-challenge cases that were decided by North Carolina appellate courts found a substantive *Batson* violation by the prosecution (Pollitt & Warren, 2016), although the North Carolina appellate courts have twice found peremptory challenges by the defense against white venire members to be violations (State v. Cofield, 1998; State v. Hurd, 2016). With the courts' skeptical view of racial discrimination by the prosecution, additional empirical examinations of this issue are warranted to better establish the prevalence and extent of the problem.

The present study provides such examination of the intersection of race and jury selection using novel methodological applications to this topic in several ways. First, data from 2,542 venire members in 89 criminal trials from Mississippi's Fifth Circuit Court District between 1992 and 2012 are used. Although the team of journalists who collected these data also analyzed them (Craft, 2018), this is the first use of these data in a peer-reviewed research study. Second, although prior research on this subject has demonstrated a correlational effect between race and

peremptory challenges, guarding against potential spuriousness is difficult. Regression-style controls are insufficient to eliminate the influence of other factors, even when they are included in the regression models as control variables. Propensity score matching is used in this study to better address the problem of spuriousness, allowing counterfactual comparisons between individuals in different racial groups to more rigorously test the effect of race. Third, in addition to analyzing the full sample, separate analyses are also conducted to investigate whether effects differ when there is a black-black racial dyad between the prospective juror and the defendant. Through these analyses, this study examines an important question: Are black venire members more likely to receive a peremptory challenge than white venire members, even if their characteristics and voir dire answers are the same or substantially similar?

Race, Justice, and Peremptory Challenges

The issue of discrimination in voir dire is embedded in a larger historical record of racial disparities with respect to jury selection in the criminal justice system. There is a lengthy history of efforts to reduce (or prevent) black Americans from serving on juries. In the first two years of the post-Civil War Reconstruction era, state law codes, or Black Codes, were passed across the American South to exclude African Americans from voting and serving on juries, as well as from exercising many other basic civil rights. These laws had been mostly repealed by 1868, the year that the Fourteenth Amendment to the United States Constitution passed; however, it was the Civil Rights Act of 1875 that explicitly forbade states from preventing any citizen (now including African Americans) from jury service. During the more than 100 years following the passage of this act, there were a few cases brought before the Supreme Court addressing racially discriminatory practices of excluding African Americans from serving on juries, bookended by *Strauder v. West Virginia* (1880) that eliminated the exclusion of African American men from juries by law and *Rose v. Mitchell* (1979) that minimally addressed racial discrimination in selecting a grand-jury foreperson. In a particularly noteworthy case, *Swain v. Alabama* (1965), Swain (a black man) appealed his conviction by an all-white jury, which was the result of a prosecutor using peremptory strikes on all of the black venire members. The *Swain* decision acknowledged the Fourteenth Amendment's Equal Protection Clause, yet also made enforcement of this clause nearly impossible by requiring the defense to produce a collection of evidence for racial discrimination in a prosecutor's peremptory challenge use across a number of jury panels.

A seminal moment in the intersection of juries and race occurred through *Batson v. Kentucky* (1986), in which a black man was found guilty of burglary by an all-white jury. Through the jury selection process, the prosecution used peremptory challenges to remove all four black individuals from the jury pool, and it was on this ground that the defense appealed the verdict, arguing that the removal of peers of the same race as the defendant is unconstitutional. In the Supreme Court's 7-2 decision in *Batson*, the court ruled that removing a potential juror on the basis of race is a violation of the Fourteenth Amendment's Equal Protection Clause. The court tempered its ruling by noting that the defense does not have a constitutional right to a jury of any particular racial makeup (i.e., an all-white jury is permissible provided that there was not an intentional effort to exclude minorities). Importantly, however, the court also overturned part of their previous ruling from the *Swain v. Alabama* (1965) case by deciding in the *Batson* case that the burden of proof on the defense to contest such a practice is *prima facie*, stating, "once the defendant makes a prima facie showing, the burden shifts to the State to come forward with a neutral explanation for challenging black jurors" (Batson v. Kentucky, 1986, p. 97). Although

initially only applied to the prosecution, a later case (Georgia v. McCollum, 1992) extended the prohibition on racially-motivated peremptory challenges to the defense as well. The system for objecting to peremptory challenges on the basis of race (in which the defense objects to the prosecution's peremptory challenges, the prosecution defends their rationale, and the judge rules on the matter) has come to be known as the *Batson challenge*, and serves as the prescribed legal remedy for concerns of racial discrimination in jury selection. What is problematic with this stipulation is that prosecutors possess a facility for offering race-neutral justifications tied to socioeconomic indicators (e.g., occupation, education) – which are still intertwined with structural racism – that judges feel compelled to accept (Raphael & Ungvarsky, 1993). The Supreme Court has ruled in cases of successful *Batson* challenges that side-by-side comparisons of venire members by race can be used to generate evidence of racial discrimination (Flowers v. Mississippi, 2019; Miller-El v. Dretke, 2005) and that *Batson* challenges can be raised after the fact if new evidence emerges (Foster v. Chatman, 2016), yet it still remains quite rare for a *Batson* challenge to be successful despite these notable exceptions (Pollitt & Warren, 2016).

The aforementioned century-long stretch of racial discrimination in jury selection – in combination with more than 30 years of inadequate enforcement of the 1986 *Batson v. Kentucky* Supreme Court decision, where black defendants have been convicted by disproportionately (or all-) white juries – raises a critical question. Why has this issue of racial discrimination through use of peremptory challenges – which Michelle Alexander (2010) argues has contributed to the crisis of mass incarceration – not received greater attention through social sciences research, media, and activism from the Civil Rights era to the present-day Black Lives Matter movement? Much of the attention it has received has been concentrated in law and psychology journals despite its obvious relevance to the intersecting fields of sociology, criminology, and critical race studies, among others. Ross (2014) contends that two primary contributing factors to its lack of activist interest and media treatment are that (1) jury service is viewed as an unpleasant duty, rather than as something instilling "civic pride" in the way that exercising your "visible" right to vote does, and (2) the jury selection process is not initially shared with the public in high-profile cases in order to mask the identities of the jury members during the trial, which makes it difficult to raise public protests and thus media interest over racial discrimination in this part of the process (p. 184). One could well argue that the following issues stir a more visceral sense of injustice and are more urgent in their need for redress: racial profiling/police brutality, the history of excessive sentences for drug offenses in African American communities, and the disenfranchisement and economic insecurity faced among released convicted felons. That said, the disproportionate impacts of peremptory strikes on black defendants is directly tied to these issues and deserves a place within the nexus of media and published social sciences research that study racial discrimination in the criminal justice system.

Although the focus of the present study is on the history of and more recent substantial statistical data identifying racial discrimination in peremptory challenges, it is necessary to briefly underscore that the more tangible effects of structural racism play a part in the lack of diverse jury pools. The legacy of segregationist and discriminatory racist policies and practices with regard to housing (e.g., redlining or refusal to rent), public schools, and hiring, to name only a few (Markus and Moya, 2010, pp. 64-70), is evident in persistent, disproportionate socioeconomic and educational racial inequalities. Many potential black venire members never make it to the selection process due to having prior criminal convictions (Kalt, 2003), living in locations where a jury summons is undeliverable, or an inability to afford the loss of wages incurred during jury service (Ellis & Diamond, 2003). Given the strong evidence in legal cases

and scholarship that argues for a positive relationship between jury racial diversity and less racially biased decisions arrived at through more careful deliberations (Peters v. Kiff, 1972; Sommers, 2006), this disparity becomes all the more troubling with respect to the prospect of eliminating racial discrimination from American courtrooms, where peremptory challenges add yet another potential impediment to equal treatment.

The degree to which racially discriminatory use of peremptory challenges in contemporary cases is shaped by attorneys' legal stereotypes about the leniency of black jurors toward black defendants as opposed to more deep-seated forms of negative racial assumptions about intelligence or reliability is difficult to determine (Sommers & Norton, 2008, p. 536). Prosecutors are generally most interested in securing a guilty verdict, and thus evaluate jurors, possibly drawing upon either their explicit (conscious) or implicit (unconscious) racial bias, by perceived receptivity toward that end. In the same vein, defense attorneys are aware of this strategy, and thus may strike white jurors in an attempt to produce a more sympathetic jury that counterbalances the challenges to black potential jurors. This tactic by the defense, however, does not undo the racial discrimination applied by the prosecution through peremptory challenges, given the disproportionately white jury pool (Eisenberg 2017; Craft 2018). Notably in his concurring opinion on *Miller-El v. Dretke* (2005), Justice Stephen Breyer points out the alarming presence of explicit racial bias given that prosecutors are frequently provided jury selection manuals that encourage them to evaluate jurors based on their race. These instructions are largely predicated upon the general assumption among prosecutors that black jurors are more likely to distrust the primary prosecutorial evidence of police accounts, especially in a case against a black defendant, and are thus less likely to convict (Bradley, 2005). Although it is difficult to study the decision-making process of a jury to determine which jurors influenced the final decision, empirical research has been conducted comparing the racial composition of juries and their verdicts. Indeed, research indicates, for example, that all-white juries are more likely to convict a black defendant than are mixed-race juries (Anwar, Bayer, & Hjalmarsson, 2012) and that the presence of more black jury members increases the likelihood of acquittal in general (Flanagan, 2018). These effects, therefore, may guide some prosecutors towards racially discriminatory use of peremptory challenges.

Empirical Evidence and Racial Discrimination

Although *Batson v. Kentucky* brought much attention to the connection between peremptory challenges and race, there have been only a few major research studies on the subject. One of the earlier post-*Batson* examples involved observing 13 criminal trials in a North Carolina county in an undisclosed year between *Batson* (1986) and the study's publication (Rose, 1999). In total, 348 venire members were observed during jury selection. The data indicated that the prosecution was more likely to use a peremptory challenge against a black venire member than a white venire member, with 60% of the prosecution's peremptory challenges used against black individuals even though they only made up 32% of the individuals questioned (Rose, 1999).

One of the foundational studies of peremptory challenge use and race comes from an analysis of 317 capital murder cases in Philadelphia over a sixteen year time span (Baldus et al., 2001). This period, 1981-1997, includes both pre- and post- *Batson* cases. The results indicate that prosecutors used peremptory challenges against 51% of black individuals, but only 26% of non-black individuals (Baldus et al., 2001). After controlling for other variables, the odds of a black individual receiving a challenge was about 4.5 times as high as the odds for everyone else.

Replicating the design of the Philadelphia study, a team of journalists for the *Dallas Morning News* collected data on 108 non-capital felony trials in Dallas County, Texas, in 2002 and also found racial differences in peremptory challenge use (McGonigle, Becka, Lafleur, & Wyatt, 2005).

In order to build on the foundation of the Philadelphia and Dallas studies, a team of researchers collected data from multiple counties in North Carolina using a census of death row inmates as of 2010 (Grosso & O'Brien, 2012). This included 173 trials and 7,421 strike-eligible venire members. In addition to data recorded about the proceedings for all cases, detailed data were also recorded on juror demographics, prior experiences with the legal system, and potentially relevant attitudes based on the questionnaires and transcripts from jury selection from 1,753 randomly selected venire members. In a general comparison, they found that 52.6% of strike-eligible black individuals received a peremptory challenge, compared to only 25.7% of strike-eligible non-black individuals (Grosso & O'Brien, 2012). When examining only cases with black defendants, the difference increased, with 60.0% of black individuals receiving a challenge compared to 23.1% for others. A logistic regression model that controlled for other available variables concluded that the odds of a black individual receiving a challenge was about 2.48 times as high as the odds for everyone else. A study that replicated Grosso and O'Brien's design in South Carolina similarly concluded that black venire members had significantly higher likelihood of receiving a peremptory challenge (Eisenberg, 2017), and analysis of all felony trials (as opposed to death penalty cases only) in North Carolina in 2011 also found substantially greater likelihood of being removed from the jury among black individuals (Wright, Chavis, & Parks, 2017). To be sure, some evidence has supported a finding of no racial differences (or even slight differences in favor of black individuals serving on juries) in jury strikes based on race (Anwar et al., 2012), but even the authors warn that generalization of that finding may not be possible given the low prevalence (3.9%) of black venire members in the sample. Indeed, a replication of the Anwar et al. (2012) design using a larger sample did find racial differences consistent with other studies (Flanagan, 2018).

Although much of the discussion and research regarding racial discrimination in peremptory challenges is directed at prosecutors' actions, there is also concern of racially-motivated peremptory challenge use by the defense. Specifically, the defense may be more likely to use peremptory challenges against white venire members than against black venire members. This may be an effort to "cancel out" discrimination introduced by the prosecutor (Diamond, Peery, Dolan, & Dolan, 2009; Flanagan, 2015). Regardless of whether that is a motivating factor, evidence suggests that it is not effective at fully reversing the racial discrimination from the prosecution, with white individuals still more likely to serve on a jury even after the defense's peremptory strikes are used (Eisenberg, 2017). Likewise, Flanagan found that despite the defense and prosecution having "opposing strategies" in applying peremptory challenges, the end result is an under-representation of black men on juries (2018, p. 191).

One of the most recent investigations has also provided one of the most comprehensive studies, which focused on all criminal trials (including misdemeanors) in one jurisdiction over a 25 year period. As part of their podcast's (*In The Dark*) season examining the trials of Curtis Flowers, a team of journalists from APM Reports gathered data on all criminal trials with juries in Mississippi's Fifth Circuit Court District that were overseen by the district attorney or one of his assistants between 1992 and 2017 (Craft, 2018). In an exhaustive records search, they identified 418 trials and 14,874 venire members. In general, the data indicated that the prosecution used peremptory challenges against white venire members 11.2% of the time,

compared to 49.8% of the time for black venire members. Although a variety of additional analyses were conducted, the most sophisticated were logistic regressions – based on those used in the North Carolina study (Grosso & O'Brien, 2012) – to determine whether the race of the venire member could predict receiving a peremptory challenge after controlling for other factors relating to the venire member, the trial, or the venire member's voir dire answers (Craft, 2018). Using data from the 89 trials that contained "both race information for the venire and a transcript of the trial" (Craft, 2018, p. 5) and with a backwards stepwise approach that removed non-significant variables from the model, seven significant predictors of the peremptory challenge being used by the prosecution were identified: the venire member being black, the venire member having been accused of a crime, the venire member having a family member or close friend who has been accused of a crime, the venire member having a family member or close friend who is in law enforcement, the venire member having familiarity with the defendant, the venire member expressing reservations about imposing the death penalty, and the venire member being the same race as the defendant. Specific to race, this model suggests that the odds of a black individual receiving a challenge was about 6.67 times higher than the odds for white individuals. The data also suggested that the defense was 3.15 times as likely to use a peremptory strike against a white venire member than against a black venire member.[1] Whereas black individuals comprised 35.3% of the jury pool prior to applying peremptory strikes, they comprised only 23.6% after prosecutorial peremptory strikes. After the defense's peremptory strikes, black individuals rebounded to 32.7% of the jury pool, suggesting a partial, but not complete, reversal of the disparity introduced by the prosecution's peremptory strikes.

The Present Study

Although the analysis of the Mississippi data (Craft, 2018) presented important information about racial differences in peremptory challenge practices, the use of logistic regression does not provide the most robust evidence possible with the data. Multivariate regressions "control" for other variables in the model, but the generalized approach for doing so results in correlated predictor variables effectively splitting their overlapping effects. In studying racial differences in peremptory challenge use, it would provide more robust evidence to err on the side of caution and attribute overlapping effects to the non-race variables. This is particularly important given that there may be variables that are correlated with race – such as socioeconomic factors – that are considered by the courts to be permissible to use in considering a potential juror (Raphael & Ungvarsky, 1993). Further, although segregation in America has by some measures declined (Glaeser & Vigdor, 2012), it still remains a reality for many areas (Silver, 2015). Combined with the fact that defendants are disproportionately black (e.g., Southern Poverty Law Center, 2018), this results in a black venire member being generally more likely to know the defendant. This possibility exists for many other potentially relevant, legal factors when evaluating whether to strike someone from the jury.

One method for addressing this statistical issue is to utilize a technique that – rather than splitting correlatory overlap between variables as regression does – reduces imbalance among predictor variables, such as propensity score matching (Apel & Sweeten, 2010). This technique (described in more detail in the Methods section) involves an analysis of available variables to identify counterfactuals: two individuals who are substantially similar or identical on predictor

1 The 3.15 ratio is from a bivariate analysis and therefore not directly comparable to the 6.67 ratio from the multivariate regression (no multivariate analyses of the defense strikes were included in the report). A comparable bivariate analysis of the prosecution indicated a 4.44 ratio of black to white peremptory strikes.

variables other than the one of interest (in this case, race). Comparing these counterparts, along with hundreds of other similarly matched pairs, allows for an estimation of whether and to what extent the variable of interest matters, which is helpful in better understanding the potential impact of race (Mackie, 1974; Paternoster & Brame, 2008; Winship & Morgan, 1999). This approach has been used for a variety of criminal justice related issues, such as the impact of race on death penalty outcomes (Paternoster & Brame, 2008), the effects of marriage on crime (King, Massoglia, & MacMillan, 2007), the impact of drug treatment programs on recidivism (Krebs, Strom, Koetse, & Lattimore, 2009), and the effects of incapacitation on youth offending (Sweeten & Apel, 2007) (for more examples, see Apel & Sweeten, 2010).

Using propensity score matching to isolate the effects of venire members' race, this study analyzes data from criminal trials in Mississippi (Craft, 2018) to estimate the racial impact on peremptory challenge use by the prosecution and the defense. Additionally, these analyses are also conducted separately on a black defendant-only subsample to determine whether the effect, if any, is more or less pronounced when there is a black-black racial dyad between the venire member and the defendant.

Methods

The data used in this study come from information collected by journalists and published under a Creative Commons license (CC BY 4.0) (Craft et al., 2018). The target population for data collection included criminal trials involving juries in Mississippi's Fifth Circuit Court District. The data used for the present study are the records of the 3,545 venire members from 89 criminal trials from 1992 to 2012 with voir dire data.[2] Observations were removed if the venire member was struck for cause (n=912), was excused/absent (n=53), was struck without notation (n=20), or has an unknown status (n=1). These filters are necessary because the present study examines whether the prosecution or the defense chose to use a peremptory strike or to allow a person to serve on the jury, which is a decision made after these other factors are applied (e.g., a prosecutor would not consider using a peremptory strike against someone when striking for cause is a viable option). Additionally, a few observations were removed in which the venire member's race could not be established (n=17),[3] resulting in a final sample of 2,542 venire members from 89 criminal trials. Descriptive information about the trials, including the years when the trials occurred and the primary offense involved, are presented in Table 1, and indicate that the trials include a wide range of offense severity and type.

Analytic Strategy

The primary statistical technique used is propensity score matching. This technique is designed to effectively create quasi-experimental data in situations where an experimental design is not possible or practical (Rosenbaum & Rubin, 1983). In the jury selection process, it is probable that race is correlated with other factors. Venire members, for example, might be more or less likely to know the defendant, or more or less likely to express hesitation in applying the death penalty, based on their race. Propensity score matching can help address this problem by

2 These 89 trials were selected from the original set of all 418 trials because they were the only trials that included "both race information for the venire and a transcript of the trial" (Craft, 2018, p. 5).

3 Other than these 17 individuals whose race could not be determined, all individuals remaining in the dataset after applying the previous non-race filters were white (n=1,743) or black (n=799). There were no Latino/a or Asian venire members in these data despite the journalists who collected these data coding for such categories.

Table 1: Trial Characteristics

Year	Freq.	Primary Charge	Freq.
1992	1	Drugs	19
1993	6	Assault	14
1994	3	Murder/Mansl.	13
1995	7	Robbery	12
1996	0	Capital Murder	10
1997	2	Burglary	5
1998	11	Sex Offense	4
1999	8	Conspiracy	2
2000	5	DUI	2
2001	7	Firearm	2
2002	3	Larceny/Theft	2
2003	6	Arson	1
2004	4	Contraband	1
2005	3	Escape	1
2006	3		
2007	2		
2008	6		
2009	7		
2010	3		
2011	1		
2012	1		

identifying venire members who answer these questions identically or substantially similarly, and then comparing venire members by race only between counterfactuals. This is achieved by first calculating propensity scores for each case using a logistic regression model to determine the effects each control variable has on the variable of interest (in this case, race) and saving the predicted probability for each individual (Austin & Mamdani, 2006). The observations are then sorted randomly and paired with their nearest neighbor of the other race within a specified caliper/tolerance in propensity using the SAS Greedy $5 \rightarrow 1$ Digit Match Macro (Parsons, 2001). For high precision, a maximum caliper of .01 is used for these analyses to limit propensity differences between counterparts in a pair to 1% or less.

The control variables used in calculating the propensity scores include all applicable variables from the Mississippi data in the juror, trial, and voir dire datasets. Variables that are about the defendant (other than race), the offense, or case outcome are not included. Variables are also excluded if they are constants or have extremely little variation with fewer than 10 observations providing the non-common response (this sample does not include venire members removed with cause, so many of the variables that would likely lead to a strike for cause are thus not applicable). Because the goal for propensity score generation is precision rather than parsimony, a larger number of variables included in the model is generally desirable. The 42 control variables used are listed in Appendices A-D, which also provide descriptive statistics (prevalence rates) for these variables. The variables for race, county, judge, and prosecutor are entered into the model as a series of dummy variables indicating whether the trial involved a white, black, or Asian defendant, occurred in a particular county, was overseen by a particular

judge, or involved a particular prosecutor. Withheld from the model are reference categories, including one for county (Grenada), one for race of defendant (white), and one for judge (most common judge). More than one prosecutor can be involved with a trial, so the prosecutor variables do not require a reference category. The gender of the venire member is unknown in 2.2% of observations and is handled using imputation,[4] but otherwise there are no missing data. Because the individuals who comprise this dataset (n=2,542) come from a collection of trials (n=89), multilevel modeling is appropriate to address the nested structure of these data with venire members nested within trials. As such, a generalized linear logit mixed model is estimated using SAS's GLIMMIX procedure.

Due to the importance of race – not just of the jury but also of the defendant – separate analyses are also performed on a subsample that includes only observations involving a black defendant. Balance diagnostics are also performed to investigate the effectiveness of the propensity score matching application, and sensitivity analyses are performed on the final results in order to estimate their sensitivity to hidden bias from unobserved variables (Loughran, Wilson, Nagin, & Piquero, 2015; Love, 2016; Rosenbaum, 2002).

Strike-Eligibility

For matching and subsequent analyses of matched observations, individuals are only included if they were strike-eligible for the decision being analyzed. That is, observations are excluded from analyses of prosecution strikes if the prosecution was unable to use a peremptory strike, such as if the prosecution already used all of their available peremptory strikes for the trial, and likewise excluded from analyses of the defense strikes if the defense was unable to use a peremptory strike, such as if the prosecution used a strike.

Each state has its own legal procedure for peremptory challenges, including the number allowed and the process for and any restrictions on using peremptory challenges. In Mississippi, the prosecution and the defense are each afforded 6 peremptory challenges in non-capital cases, and 12 peremptory challenges when the death penalty is sought (Miss. Code Ann. § 99-17-3). These numbers are specified by law; increasing or decreasing the number of peremptory challenges through judicial discretion is not permitted (Jones v. State, 2006). In all cases, the defense makes their peremptory challenges only after they have been presented with a full panel (Miss. Code Ann. § 99-17-3), meaning that the defense waits until all 12 members of the jury have been reviewed by the prosecution before applying their own peremptory challenges (Peters v. State, 1975). If the defense uses any peremptory challenges, a replacement is then selected using the same process to restore the jury to a full panel. In sum, venire members are typically first removed if they are absent or excused, then if challenged for cause (by either side), then through peremptory challenges from the prosecution (if the prosecution has not already exhausted their allotted strikes), and then through peremptory challenges from the defense (if the defense has not already exhausted their allotted strikes), though there may be some exceptions to this process when allowed or otherwise not prohibited by law.[5]

4 Using imputation (via SAS's MI procedure) allows for 56 observations with missing data on gender only to be included in the regression used for calculating the propensity scores. These imputed values are used only for this step and not subsequent analyses. Probability estimates between a model with imputation and a model without imputation are strongly correlated ($r = .998$, $p < .01$), suggesting that imputation does not affect the model/probability estimations.

5 For example, Mississippi law prohibits the prosecution from using peremptory challenges on jurors after they have been presented to the defense in non-capital cases (Miss. Code Ann. § 99-17-3), meaning that the prosecution has "accepted" the jurors before the defense uses their challenges. In death penalty cases, however,

Because of the complexity of the jury vetting process, each juror must be examined independently and within the context of what has occurred in the case previously to determine whether the prosecution or defense had the opportunity to use a peremptory challenge on that particular individual. That the prosecution or defense can reach their limit on such challenges is particularly problematic without reviewing the full transcript. When these data were coded, however, the transcripts were reviewed with this in mind and strike-eligibility was recorded for each individual. It is therefore possible to filter venire members based on whether they were strike-eligible for the prosecution and/or the defense. For the prosecution, this leaves only observations in which the venire member received a peremptory challenge from the prosecution (n=571) or did not receive a peremptory challenge from the prosecution despite the prosecution having had the ability to use a peremptory challenge against them (n=1,849). For the defense, this leaves only observations in which the venire member received a peremptory challenge from the defense (n=693) or did not receive a peremptory challenge from the defense despite the defense having had the ability to use a peremptory challenge against them (n=1,065).

Results

In calculating the propensity scores, the regressions identify a variety of variables that are significant predictors of race. Although predicting race is not a primary goal of this study, the correlates between race and judicial factors are relevant to understanding race's impact and thus the results from these regressions are provided. The results predicting race are presented in Table 2. Among the venire members-specific predictors the strongest effect comes from knowing the defendant, with individuals who say that they know the defendant significantly more likely to be black ($\beta = 19.075$, $p < .01$).[6] Conversely, those who served on a jury previously are significantly less likely to be black ($\beta = -16.753$, $p < .01$),[7] as are those who know an attorney involved in the case ($\beta = -14.273$, $p < .01$). Those with a family member accused of a crime are more likely to be black ($\beta = 13.518$, $p < .01$), whereas those with a family member in law enforcement are less likely to be black ($\beta = -12.913$, $p < .01$). Other predictors associated with a lower likelihood of being black include being familiar with the case ($\beta = -10.437$, $p < .01$) and being the victim of a crime ($\beta = -7.473$, $p < .01$). Other predictors associated with higher likelihood of being black include having been accused of a crime previously ($\beta = 10.330$, $p < .01$), being female ($\beta = 9.549$, $p < .01$),[8] having a medical condition that makes serving difficult ($\beta = 7.921$, $p < .01$), and having a hesitation in using the death penalty ($\beta = 6.304$, $p < .01$). A variety of indicators for county, prosecutor, and judge are also significant predictors of race ($p < .05$ or .01), and may be related to geographic segregation.

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that provision does not apply. The defense is still entitled to receive a full panel before acting, as is required in all cases. Nevertheless, the prosecution may still use peremptory challenges even after the full panel has been presented to the defense in capital cases (presumably because there is a greater number of peremptory challenges available to both sides).

6 β = standardized coefficient from the generalized linear logit mixed model.

7 This may, itself, be partially a product of using peremptory challenges more often against black venire members, as that would explain why white jurors were more likely to have jury experience. Unfortunately, the data do not indicate reasons for lack of prior jury service, so this is not a testable hypothesis within this study.

8 One possible explanation for the correlation between gender and race is that black males are particularly more likely to have a criminal record, and thus be less likely to be eligible to serve on a jury, or more likely to have received a strike for cause and be excluded from these data. Although this "legal" racial bias merits examination, exploring jury selection outside of peremptory challenges is beyond the scope of the present study.

Table 2: Generalized linear mixed model (logit) results predicting venire member race (black)

	b	SE	OR	β	
Juror gender (female)	0.384	0.097	1.468	9.549	**
Juror expressed non-directional bias	-0.652	0.688	0.521	-2.756	
Juror medical problems	2.203	0.723	9.048	7.921	**
Juror has prior jury service	-0.995	0.166	0.370	-16.753	**
Juror victim of crime	-0.755	0.277	0.470	-7.473	**
Juror family victim	-0.340	0.241	0.712	-3.689	
Juror accused of crime	1.688	0.396	5.411	10.330	**
Juror family accused of crime	0.812	0.140	2.251	13.518	**
Juror in law enforcement	-0.151	0.349	0.860	-1.087	
Juror family in law enforcement	-0.639	0.128	0.528	-12.913	**
Juror knows defendant	1.586	0.196	4.884	19.075	**
Juror knows victim	-0.394	0.219	0.674	-5.262	
Juror knows witness	-0.103	0.195	0.902	-1.413	
Juror knows attorney	-1.037	0.212	0.354	-14.273	**
Juror knows case	-0.599	0.187	0.549	-10.437	**
Juror hesitation with death penalty	1.381	0.511	3.980	6.304	**
County: Attala	-0.279	0.216	0.756	-6.416	
County: Carroll	-1.020	0.488	0.361	-7.345	*
County: Choctaw	-0.944	0.281	0.389	-14.026	**
County: Montgomery	0.139	0.233	1.149	2.531	
County: Webster	-1.687	0.437	0.185	-19.405	**
County: Winston	-0.562	0.302	0.570	-9.078	
Defendant is Asian	-0.278	0.665	0.758	-1.325	
Defendant is black	-0.204	0.182	0.815	-4.285	
Defendant is unknown	-0.464	0.509	0.629	-3.803	
Judge B	0.303	0.155	1.354	7.572	
Judge C	-0.127	0.578	0.881	-0.871	
Prosecution Size	0.136	0.358	1.145	1.806	
Prosecutor A	-0.204	0.299	0.816	-2.554	
Prosecutor B	-0.279	0.377	0.757	-2.365	
Prosecutor C	-0.656	0.476	0.519	-5.706	
Prosecutor D	-0.585	0.251	0.557	-14.414	*
Prosecutor E	-0.064	0.192	0.938	-1.513	
Prosecutor F	-0.449	0.463	0.638	-3.758	
Prosecutor G	-0.209	0.454	0.811	-2.059	
Prosecutor H	-0.148	0.248	0.862	-2.792	
Prosecutor I	0.132	0.286	1.141	2.547	
Prosecutor J	-0.263	0.293	0.769	-4.381	
Prosecutor K	0.025	0.325	1.025	0.423	
Prosecutor L	-0.403	0.347	0.668	-4.802	
Prosecutor M	-0.627	0.412	0.534	-5.682	
Prosecutor N	-0.078	0.302	0.925	-1.340	

X^2 = 2565.84; χ^2/DF = 1.03; Log likelihood = -5890.14; Intercept = -0.215; n= 2,542; b = unstandardized coefficient; SE = standard error of b; OR = odds ratio; β = standardized coefficient; prosecution size: 0=three, 1=less than three; * p < .05; ** p < .01

Using the regression-generated propensities for each case, propensity score matching identifies 618 matched pairs (n=1,236) of prosecution strike-eligible observations, 452 matched pairs (n=904) of prosecution strike-eligible observations with black defendants, 340 matched pairs (n=680) of defense strike-eligible observations, and 246 matched pairs (n=492) of defense strike-eligible observations with black defendants, with each pair having identical or very similar propensities (<1% difference in propensity scores).[9] To assess the effectiveness of the propensity score matching, standardized difference scores are calculated for each of the covariates in order to measure the balance of the matched sample (Paternoster & Brame, 2008). These scores are presented in Appendices A-D. Because the variables used are all dichotomous, the standardized difference scores are calculated using prevalence rates/means (Austin, 2011). Different studies have recommended different values as acceptable thresholds, including .20 and above (Rosenbaum & Rubin, 1985), .15 and above (Paternoster & Brame, 2008), and .10 and above (Austin, 2011) as indicative of imbalance. Even under the most stringent of these standards, these results suggest that the excess imbalance among the covariates that exists in the unmatched data is not present in the matched sample for the prosecution, indicating that propensity score matching successfully controls for these covariates. For the matching of defense strike-eligible observations, only two excess imbalances among the 42 tested variables are identified in the matched sample and only at the most strict standard. For the defense sample with only black defendants, six imbalances are detected in the matched sample, although five of them are only at the most strict standard for detecting imbalances. Overall, this suggests that matching corrected for most, but not all, imbalances in the defense sample.

Using the matched pairs from each dataset, peremptory challenge use rates by the prosecution were calculated by race. The results are displayed in Table 3. For reference, these rates are also presented for the unmatched data as well. If the racial differences can be explained by other variables, the race gap would be expected to shrink when moving from the unmatched to the matched data. In the unmatched dataset, black venire members were 4.86 times as likely to receive a peremptory challenge from the prosecution when compared to white venire members. For the matched pairs, the gap shrinks by only 8.2%, with black venire members still 4.51 times as likely to receive a peremptory challenge. The subset of observations with only black defendants suggests similar results, with black venire members 5.82 more likely to receive a peremptory challenge in the unmatched data and 4.42 times as likely in the matched data, which is only a 24% decline following the matching.

9 These represent 618 of 769 (80%), 452 of 603 (75%), 340 of 353 (96%), and 246 of 260 (95%), respectively, of the pairs theoretically possible (which is determined by the number of black potential jurors in each subset). The potential pairs lost in this process are not statistical outliers, per se, but rather represent observations with no more closely matched counterparts after the other pairs were matched. Because a random sort is used as part of the matching procedure, there is no bias in preferencing one case over another in this selection process. Curiously, the defense strike-eligible observations have a higher success rate in matching than the prosecution strike-eligible observations. This is the result of having a larger pool of possible counterparts in the defense subset. Whereas the 769 black potential jurors in the prosecution strike-eligible subset have 1651 white potential counterparts (a 2.15 ratio), the 353 black potential jurors in the defense strike-eligible subset have 1405 white potential counterparts (a 3.98 ratio). Therefore, because the prosecution disproportionately strikes black potential jurors, those remaining are more likely to have identical or substantially similar white counterparts due to the relatively larger pool of white individuals remaining. Even with this difference, the proportion of observations being matched is still reasonably high in all four subsets, and therefore this does not substantially affect the validity of the findings within each subset.

Table 3: Racial differences (percentages) in likelihood of receiving peremptory challenge

	Unmatched			Matched		
	White	Black	ΔU	White	Black	ΔM
Prosecution All Defendants	10.6	51.5**	(4.86)	10.2	46.0**	(4.51)
Prosecution Black Defendants Only	9.3	54.1**	(5.82)	10.2	45.1**	(4.42)
Defense All Defendants	46.8	10.2**	(4.59)	42.1	10.0**	(4.21)
Defense Black Defendants Only	47.6	9.6**	(4.96)	45.1	9.3**	(4.85)

Chi-square test of racial difference: * $p < .05$; ** $p < .01$
ΔU = Ratio of difference between white and black in unmatched sample
ΔM = Ratio of difference between white and black in matched sample

The results for the defense largely show the reverse of the prosecution analysis, with white venire members significantly more likely to receive a peremptory challenge than black venire members. In the unmatched data, white venire members are 4.59 times as likely to receive a peremptory challenge from the defense when compared to black venire members. The matched data show a 9.3% decline to a 4.21 ratio. Likewise, when the defendant is black, the defense is 4.96 times as likely to strike a white venire members in the unmatched data, and 4.85 times as likely in the matched data, which is a 2.2% decline.

Sensitivity analyses (Rosenbaum, 2002), which measure the degree to which findings are vulnerable to unobserved effects, suggest that these results are insensitive to weak or moderate hidden biases. Specifically, unobserved legal variables would need to more than quadruple the odds of striking black venire members in order to reduce the observed effect of race to insignificant levels for the prosecution (Γ threshold =4.109), and the same is found for the results of the sample of observations with only black defendants (Γ threshold = 4.014). The analyses of defense peremptory strikes are insensitive to weak hidden biases for both the full sample (Γ threshold = 1.766) and the sample with black defendants only (Γ threshold = 1.613), but are not as insensitive to hidden bias as are the results for the prosecution.

Discussion

Racial discrimination in the American court system has an extensive history, and empirical research has shown that such discrimination extends to the jury selection process itself. Although *Batson v. Kentucky* (1986) established case law prohibiting the use of race as a motivating factor for using peremptory challenges against venire members, there is much evidence that a statistical relationship between race and peremptory challenges continues, with black individuals far more likely to be struck from the jury (McGonigle et al., 2005; Rose, 1999). This effect remains even after using multiple regression models to control for other factors (Baldus et al., 2001; Craft, 2018; Grosso & O'Brien, 2012). Such regression models, however, are limited in their ability to reduce potential spuriousness. To assess the evidence, this study used propensity score matching

to identify counterfactuals of different races for comparisons in their likelihood of receiving a peremptory challenge from a prosecutor.

The results of this study are consistent with findings of previous research (Baldus et al., 2001; Craft, 2018; Grosso & O'Brien, 2012; Rose, 1999; Wright et al., 2018) and bolster the evidence of racial discrimination in prosecutorial use of the peremptory challenge. After matching observations to create quasi-experimental data with racially different counterfactuals, the results suggest that – after controlling for measured variables – 10.2% of white venire members received a prosecutorial peremptory challenge, compared to 46.0% of similarly situated black venire members, making black individuals 4.51 times as likely to receive a peremptory challenge from the prosecution.

The analyses also identified racial differences in peremptory strike use by the defense. In the matched data, white venire members were 4.21 times as likely as black venire members to receive a peremptory challenge from the defense. Because the defense applies their peremptory challenges after the prosecution (Miss. Code Ann. § 99-17-3), this behavior may be a defense mechanism to "cancel out" the racially unbalanced use of peremptory challenges by the prosecution (Eisenberg, 2017). Determining the motives for racial differences, however, is beyond the scope of this study. Nevertheless, previous analyses of these data have already shown that the defense's strikes do not completely reverse the effects of the prosecution's peremptory challenges, ultimately reducing the number of black jurors from 35.3% in the jury pool to 32.7% in the actual juries (Craft, 2018).

Although the ratio between peremptory challenge usage by the prosecution was noticeably larger when there was a black defendant (5.82) in comparison to all defendants (4.86) in the unmatched sample, the difference was minimal and reversed following matching (4.42 and 4.51, respectively), suggesting that the effect of the venire member's race is largely equivalent regardless of the race of the defendant after controlling for other factors. This contradicts previous suggestions that racial effects in peremptory challenge usage may be particularly pronounced when the defendant is black (Bradley, 2005). For the defense, however, the racial difference ratio remained more pronounced with black defendants (4.85) than with all defendants (4.21) in the matched sample, suggesting that defense attorneys are slightly more likely to remove a white individual when the defendant is black than when the defendant is white. To be clear, however, the effects for both the prosecution and defense are significant and substantial regardless of the race of the defendant, despite these observed fluctuations.

An important consideration in the present study is the cross-trial design of the analyses. Whereas post-*Batson* cases, when appealed, are generally examined on a legal basis by comparing venire members within the specific trial, this study employed a cross-trial design to identify counterfactuals regardless of whether they came from the same or a different trial. The advantage to this is that the data from many cases are used collectively to allow for the statistical power to provide a rigorous methodological approach. Identifying counterfactuals within trials (qualitatively or quantitatively) can be done, but with a more limited pool of individuals the matches are less likely to be close matches and would not yield enough data to form conclusions about systemic discrimination rather than discrimination in an individual case. The limitation of a cross-trial design, however, is that it is less accurate in generating conclusions about any particular individual case. The use of controls for regions, judges, and prosecutors in the analyses, in conjunction with the random sort used for matching, however, reduces risks of biases being introduced when comparing across trials en masse. Said differently, comparing a single pair of prospective jurors across cases would be problematic due to unmeasured difference

between the cases, but the collective bias introduced when examining many pairs together should approach zero due to the random assignment (within calipers) introduced during the random sort. Thus, intra-trial analyses may be especially useful in determining whether bias affected a specific trial, but cross-trial analyses, such as those performed here, are preferable for estimating whether systemic discrimination exists. And, indeed, the Supreme Court has approved using cross-trial information. In *Swain v. Alabama*, the opinion of the court stated that "when the prosecutor in a county, in case after case, whatever the circumstances... is responsible for the removal of Negroes who have been selected as qualified jurors... with the result that no Negroes ever serve on petit juries, the Fourteenth Amendment claim takes on added significance" (1965, p. 224). More recently, the Supreme Court has explicitly listed "relevant history of the State's peremptory strikes in past cases" and "other relevant circumstances that bear upon the issue of racial discrimination" as being among the evidence that may be used in evaluating a *Batson* challenge (Flowers v. Mississippi, 2019, p. 16-17), and also noted that "*Batson* did not preclude defendants from still using the same kinds of historical evidence that *Swain* had allowed" (p. 19). Cross-trial studies such as this one show systemic racial discrimination in the application of peremptory challenges such that it artificially reduces the proportion of jury members who are black.

These results provide more support for the existence and impact of racial discrimination in peremptory challenge use, though they do not eliminate spurious explanations for this relationship. The ability to attribute racial differences to a racial bias is limited by the extent of legal variables' availability in the dataset used. The fairly comprehensive list of variables used for this purpose provides a strong defense against this limitation, but because it is coded based on transcripts it lacks visual and auditory components that may play a role. It has been decided by the courts that "gum chewing; wearing a pink hat, snakeskin belt or sunglasses; or having unkempt hair, mustaches or beards" are all legal justifications for using a peremptory challenge (McGonigle et al., 2005, A1). If these (or other) factors are correlated with race, then they may explain part of the remaining race-gap in peremptory challenge use. Whether we should reconsider the legality of such justifications if they are racially correlated is a question beyond the scope of this study. It has also been noted that prosecutors may ask more questions to black jurors to increase the likelihood of finding some objective rationale for removing them from the jury (Flowers v. Mississippi, 2019; Miller-El v. Dretke, 2005). As a consequence, it is possible that the data used here may already be biased towards an increased likelihood of black venire members indicating something objectionable to the prosecution. However, this would not undermine the findings of this study, as the consequence of such a bias would be to obscure greater racial discrimination rather than to create the appearance of discrimination. Therefore, any such bias in how many questions are asked of particular venire members would not detract from the disparities identified, but rather would add to them. Nevertheless, although propensity score matching provides estimates that are more robust against spuriousness than other methods, this technique is unable to establish causality as a true experiment can. The sensitivity analyses, however, indicate that these results are largely insensitive to hidden bias, suggesting that the racial gap is too large for unobserved factors to plausibly explain the racial disparity in peremptory challenges.

Future research should expand on these findings in several ways. First, although multiple studies have previously explored the connection between race and peremptory challenges (e.g., Baldus et. al, 2001; Eisenberg, 2017; Grosso & O'Brien, 2012), this was the first to apply propensity score matching. Replications of this analytic design would be a sensible next step in further validating the conclusions. Additionally, much of the research heretofore has focused on

states in the American south (e.g., Mississippi, North Carolina, South Carolina, Texas), though there have been exceptions (e.g., the city of Philadelphia in Baldus et al., 2001). It is understandable that primary focus has been directed at southern states given the historical differences in racial discrimination by region, yet contemporary research examining whether the problem is exclusive to the south, more pronounced in the south, or not affected by geographic region would be a valuable contribution to our understanding of this phenomenon. Finally, additional research – quantitative or qualitative – investigating the causes of these racial disparities in peremptory challenge usage would be informative in better identifying actions that could be taken to reduce this manifestation of racial discrimination.

Conclusion

Decades after *Batson*, the courts still struggle to identify racial discrimination in peremptory challenge use when it occurs (Bennett, 2010; Cavise, 1999; Morehead, 1994). The empirical evidence at the aggregate level, however, clearly indicates that such discrimination remains. This study adds to the evidence that racial discrimination in peremptory challenge use by prosecutors transcends answers given by venire members during voir dire, and other relevant factors that may influence peremptory challenge use. These findings support the need for additional consideration by the courts and other government bodies regarding how to better address racial discrimination in jury selection and whether peremptory challenges serve a useful function that outweighs the racial disparities that they introduce.

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Appendix A: Balance Diagnostics for State Strike-Eligible Observations

	Unmatched Sample			Matched Sample		
	White	Black	SD	White	Black	SD
Juror gender (female)	0.558	0.634	0.127 *	0.619	0.624	0.007
Juror expressed non-directional bias	0.008	0.005	-0.034	0.003	0.005	0.020
Juror medical problems	0.002	0.013	0.095	0.002	0.006	0.057
Juror has prior jury service	0.154	0.073	-0.224 ***	0.078	0.084	0.019
Juror victim of crime	0.048	0.026	-0.100	0.032	0.028	-0.024
Juror family victim	0.053	0.035	-0.075	0.034	0.034	0.000
Juror accused of crime	0.007	0.034	0.143 *	0.016	0.013	-0.022
Juror family accused of crime	0.100	0.176	0.174 **	0.117	0.129	0.032
Juror in law enforcement	0.022	0.016	-0.042	0.013	0.016	0.022
Juror family in law enforcement	0.228	0.144	-0.181 **	0.155	0.155	0.000
Juror knows defendant	0.038	0.114	0.220 ***	0.063	0.047	-0.059
Juror knows victim	0.084	0.060	-0.079	0.045	0.060	0.052
Juror knows witness	0.087	0.073	-0.042	0.074	0.058	-0.054
Juror knows attorney	0.097	0.043	-0.185 **	0.053	0.052	-0.006
Juror knows case	0.155	0.107	-0.121 *	0.102	0.091	-0.032
Juror hesitation with death penalty	0.005	0.017	0.087	0.011	0.005	-0.063
County: Attala	0.294	0.306	0.021	0.327	0.322	-0.008
County: Carroll	0.023	0.016	-0.045	0.011	0.013	0.012
County: Choctaw	0.114	0.064	-0.151 **	0.070	0.073	0.010
County: Montgomery	0.139	0.186	0.103 *	0.181	0.163	-0.039
County: Webster	0.071	0.026	-0.186 **	0.040	0.032	-0.036
County: Winston	0.113	0.117	0.010	0.112	0.118	0.017
Defendant is Asian	0.008	0.008	-0.006	0.011	0.010	-0.013
Defendant is black	0.772	0.784	0.023	0.743	0.754	0.021
Defendant is unknown	0.032	0.017	-0.085	0.018	0.019	0.010
Judge B	0.414	0.450	0.059	0.427	0.413	-0.024
Judge C	0.024	0.009	-0.105 *	0.008	0.011	0.026
Prosecution Size	0.918	0.931	0.040	0.934	0.939	0.016
Prosecutor A	0.073	0.056	-0.057	0.060	0.065	0.016
Prosecutor B	0.031	0.029	-0.014	0.032	0.032	0.000
Prosecutor C	0.033	0.030	-0.013	0.039	0.031	-0.037
Prosecutor D	0.402	0.373	-0.048	0.346	0.356	0.017
Prosecutor E	0.339	0.295	-0.078	0.285	0.286	0.003
Prosecutor F	0.030	0.027	-0.015	0.034	0.032	-0.007
Prosecutor G	0.044	0.038	-0.025	0.044	0.042	-0.007
Prosecutor H	0.162	0.170	0.018	0.175	0.180	0.010
Prosecutor I	0.178	0.185	0.014	0.188	0.193	0.010
Prosecutor J	0.130	0.118	-0.028	0.126	0.115	-0.029
Prosecutor K	0.122	0.139	0.042	0.144	0.133	-0.027
Prosecutor L	0.050	0.075	0.082	0.076	0.078	0.005
Prosecutor M	0.034	0.034	0.000	0.026	0.036	0.045
Prosecutor N	0.122	0.152	0.070	0.152	0.144	-0.019

SD = standardized difference; prosecution size: 0=three, 1=less than three; * = |sd|>.10, ** = |sd|>.15, *** = |sd| >.20, n=1651 (n=1617 for gender) unmatched white, n=769 (n=748 for gender) unmatched black, n=618 matched white, n=618 matched black.

Appendix B: Balance Diagnostics for State Strike-Eligible Observations with Black Defendant

	Unmatched Sample			Matched Sample		
	White	Black	SD	White	Black	SD
Juror gender (female)	0.559	0.626	0.111 *	0.607	0.616	0.015
Juror expressed non-directional bias	0.009	0.005	-0.045	0.004	0.002	-0.032
Juror medical problems	0.002	0.017	0.115 *	0.004	0.007	0.032
Juror has prior jury service	0.142	0.073	-0.192 **	0.082	0.084	0.006
Juror victim of crime	0.053	0.032	-0.089	0.031	0.035	0.018
Juror family victim	0.056	0.033	-0.096	0.038	0.029	-0.042
Juror accused of crime	0.007	0.038	0.155 **	0.018	0.013	-0.034
Juror family accused of crime	0.103	0.202	0.219 ***	0.137	0.137	0.000
Juror in law enforcement	0.021	0.018	-0.017	0.020	0.020	0.000
Juror family in law enforcement	0.234	0.149	-0.182 **	0.150	0.168	0.040
Juror knows defendant	0.034	0.139	0.286 ***	0.064	0.046	-0.066
Juror knows victim	0.085	0.071	-0.044	0.046	0.073	0.090
Juror knows witness	0.086	0.086	0.000	0.062	0.066	0.013
Juror knows attorney	0.115	0.035	-0.274 ***	0.062	0.044	-0.067
Juror knows case	0.167	0.126	-0.097	0.122	0.108	-0.036
Juror hesitation with death penalty	0.005	0.022	0.104 *	0.007	0.004	-0.035
County: Attala	0.264	0.259	-0.009	0.296	0.279	-0.031
County: Carroll	0.030	0.020	-0.054	0.015	0.020	0.030
County: Choctaw	0.107	0.048	-0.194 **	0.060	0.053	-0.025
County: Montgomery	0.157	0.197	0.085	0.192	0.175	-0.036
County: Webster	0.042	0.010	-0.187 **	0.015	0.013	-0.014
County: Winston	0.108	0.131	0.057	0.126	0.137	0.026
Judge B	0.512	0.534	0.036	0.535	0.509	-0.042
Judge C	0.031	0.012	-0.121 *	0.011	0.015	0.028
Prosecution Size	0.894	0.912	0.050	0.916	0.918	0.006
Prosecutor A	0.055	0.055	-0.001	0.046	0.066	0.069
Prosecutor B	0.028	0.025	-0.017	0.029	0.024	-0.026
Prosecutor C	0.042	0.038	-0.018	0.058	0.040	-0.070
Prosecutor D	0.482	0.426	-0.091	0.416	0.412	-0.007
Prosecutor E	0.361	0.284	-0.137 *	0.285	0.270	-0.027
Prosecutor F	0.029	0.020	-0.050	0.027	0.022	-0.027
Prosecutor G	0.046	0.033	-0.056	0.042	0.038	-0.017
Prosecutor H	0.118	0.124	0.017	0.142	0.131	-0.026
Prosecutor I	0.150	0.176	0.057	0.159	0.184	0.054
Prosecutor J	0.136	0.129	-0.017	0.135	0.128	-0.017
Prosecutor K	0.146	0.169	0.052	0.177	0.166	-0.024
Prosecutor L	0.048	0.078	0.098	0.073	0.080	0.021
Prosecutor M	0.044	0.043	-0.003	0.035	0.049	0.056
Prosecutor N	0.094	0.118	0.062	0.100	0.100	0.000

SD = standardized difference; prosecution size: 0=three, 1=less than three; * = |sd|>.10, ** = |sd|>.15, *** = |sd| >.20, n=1275 (n=1248 for gender) unmatched white, n=603 (n=596 for gender) unmatched black, n=452 matched white, n=452 matched black.

Appendix C: Balance Diagnostics for Defense Strike-Eligible Observations

	Unmatched Sample			Matched Sample		
	White	Black	SD	White	Black	SD
Juror gender (female)	0.556	0.640	0.142 *	0.627	0.632	0.008
Juror expressed non-directional bias	0.007	0.000	-0.120 *	0.009	0.000	-0.135 *
Juror medical problems	0.001	0.000	-0.038	0.000	0.000	0.000
Juror has prior jury service	0.164	0.079	-0.226 ***	0.059	0.082	0.072
Juror victim of crime	0.049	0.020	-0.142 *	0.018	0.021	0.017
Juror family victim	0.050	0.031	-0.080	0.029	0.032	0.014
Juror accused of crime	0.004	0.008	0.049	0.009	0.003	-0.070
Juror family accused of crime	0.078	0.059	-0.060	0.071	0.047	-0.086
Juror in law enforcement	0.022	0.023	0.003	0.012	0.021	0.055
Juror family in law enforcement	0.236	0.161	-0.158 **	0.165	0.165	0.000
Juror knows defendant	0.033	0.045	0.052	0.044	0.038	-0.025
Juror knows victim	0.082	0.031	-0.195 **	0.038	0.032	-0.027
Juror knows witness	0.083	0.054	-0.099	0.079	0.053	-0.088
Juror knows attorney	0.095	0.034	-0.223 ***	0.032	0.035	0.014
Juror knows case	0.161	0.071	-0.247 ***	0.082	0.074	-0.025
Juror hesitation with death penalty	0.004	0.000	-0.093	0.009	0.000	-0.135 *
County: Attala	0.281	0.326	0.079	0.332	0.326	-0.010
County: Carroll	0.023	0.006	-0.136 *	0.006	0.006	0.000
County: Choctaw	0.103	0.068	-0.106 *	0.062	0.071	0.029
County: Montgomery	0.154	0.198	0.094	0.212	0.194	-0.037
County: Webster	0.075	0.028	-0.186 **	0.050	0.029	-0.092
County: Winston	0.121	0.136	0.036	0.094	0.129	0.089
Defendant is Asian	0.008	0.011	0.029	0.012	0.012	0.000
Defendant is black	0.779	0.737	-0.081	0.729	0.735	0.011
Defendant is unknown	0.033	0.023	-0.052	0.015	0.021	0.036
Judge B	0.430	0.397	-0.055	0.415	0.385	-0.050
Judge C	0.023	0.008	-0.102 *	0.006	0.009	0.027
Prosecution Size	0.928	0.960	0.121 *	0.947	0.959	0.047
Prosecutor A	0.073	0.062	-0.034	0.068	0.065	-0.010
Prosecutor B	0.033	0.034	0.002	0.047	0.035	-0.051
Prosecutor C	0.034	0.042	0.035	0.044	0.041	-0.012
Prosecutor D	0.393	0.280	-0.198 **	0.326	0.285	-0.073
Prosecutor E	0.337	0.241	-0.178 **	0.241	0.244	0.006
Prosecutor F	0.028	0.031	0.013	0.024	0.032	0.039
Prosecutor G	0.043	0.034	-0.038	0.032	0.032	0.000
Prosecutor H	0.163	0.161	-0.003	0.138	0.162	0.054
Prosecutor I	0.179	0.207	0.058	0.174	0.212	0.078
Prosecutor J	0.123	0.125	0.004	0.132	0.118	-0.035
Prosecutor K	0.125	0.167	0.095	0.176	0.165	-0.024
Prosecutor L	0.051	0.093	0.130 *	0.097	0.094	-0.008
Prosecutor M	0.028	0.034	0.029	0.026	0.032	0.029
Prosecutor N	0.127	0.150	0.055	0.168	0.153	-0.034

SD = standardized difference; prosecution size: 0=three, 1=less than three; * = |sd|>.10, ** = |sd|>.15, *** = |sd| >.20, n=1405 (n=1380 for gender) unmatched white, n=353 (n=339 for gender) unmatched black, n=340 matched white, n=340 matched black.

Appen. D: Balance Diagnostics for Defense Strike-Eligible Observations with Black Defendant

	Unmatched Sample			Matched Sample		
	White	Black	SD	White	Black	SD
Juror gender (female)	0.554	0.621	0.112 *	0.599	0.618	0.031
Juror expressed non-directional bias	0.009	0.000	-0.136 *	0.012	0.000	-0.157 **
Juror medical problems	0.001	0.000	-0.043	0.000	0.000	0.000
Juror has prior jury service	0.149	0.088	-0.159 **	0.061	0.093	0.097
Juror victim of crime	0.052	0.023	-0.133 *	0.008	0.024	0.097
Juror family victim	0.051	0.027	-0.108 *	0.028	0.028	0.000
Juror accused of crime	0.003	0.008	0.052	0.008	0.004	-0.045
Juror family accused of crime	0.080	0.073	-0.023	0.077	0.061	-0.053
Juror in law enforcement	0.019	0.027	0.041	0.012	0.024	0.071
Juror family in law enforcement	0.241	0.169	-0.149 *	0.171	0.171	0.000
Juror knows defendant	0.030	0.054	0.093	0.049	0.041	-0.033
Juror knows victim	0.083	0.038	-0.163 **	0.037	0.041	0.017
Juror knows witness	0.079	0.065	-0.042	0.053	0.061	0.028
Juror knows attorney	0.111	0.027	-0.304 ***	0.037	0.028	-0.038
Juror knows case	0.174	0.088	-0.218 ***	0.093	0.093	0.000
Juror hesitation with death penalty	0.005	0.000	-0.105 *	0.008	0.000	-0.128 *
County: Attala	0.255	0.265	0.020	0.317	0.264	-0.096
County: Carroll	0.030	0.008	-0.150 *	0.004	0.004	0.000
County: Choctaw	0.096	0.042	-0.185 **	0.045	0.045	0.000
County: Montgomery	0.172	0.223	0.104 *	0.228	0.215	-0.024
County: Webster	0.046	0.004	-0.261 ***	0.016	0.004	-0.111 *
County: Winston	0.120	0.165	0.105 *	0.106	0.167	0.141 *
Judge B	0.523	0.500	-0.038	0.516	0.484	-0.053
Judge C	0.029	0.012	-0.111 *	0.008	0.012	0.032
Prosecution Size	0.908	0.946	0.126 *	0.943	0.943	0.000
Prosecutor A	0.053	0.058	0.017	0.041	0.061	0.073
Prosecutor B	0.031	0.027	-0.020	0.041	0.028	-0.056
Prosecutor C	0.044	0.058	0.050	0.061	0.053	-0.029
Prosecutor D	0.468	0.315	-0.261 ***	0.382	0.321	-0.105 *
Prosecutor E	0.358	0.208	-0.284 ***	0.203	0.215	0.024
Prosecutor F	0.026	0.023	-0.018	0.024	0.024	0.000
Prosecutor G	0.045	0.027	-0.082	0.033	0.024	-0.041
Prosecutor H	0.121	0.119	-0.003	0.118	0.122	0.010
Prosecutor I	0.152	0.188	0.079	0.134	0.195	0.131 *
Prosecutor J	0.132	0.150	0.041	0.150	0.146	-0.009
Prosecutor K	0.148	0.212	0.133 *	0.211	0.203	-0.016
Prosecutor L	0.051	0.096	0.135 *	0.102	0.098	-0.011
Prosecutor M	0.036	0.046	0.043	0.033	0.045	0.050
Prosecutor N	0.096	0.115	0.051	0.126	0.114	-0.031

SD = standardized difference; prosecution size: 0=three, 1=less than three; * = |sd|>.10, ** = |sd|>.15, *** = |sd| >.20, n=1095 (n=1076 for gender) unmatched white, n=260 (n=256 for gender) unmatched black, n=246 matched white, n=246 matched black.

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