

# The University of New Hampshire Law Review

---

Volume 15  
Number 1 *University of New Hampshire Law  
Review*

Article 2

---

November 2016

## Unconventional Methods for a Traditional Setting: The Use of Virtual Reality to Reduce Implicit Racial Bias in the Courtroom

Natalie Salmanowitz

*Stanford Program in Neuroscience and Society at Stanford Law School*

Follow this and additional works at: [https://scholars.unh.edu/unh\\_lr](https://scholars.unh.edu/unh_lr)



Part of the [Civil Rights and Discrimination Commons](#), [Computer Engineering Commons](#), [Courts Commons](#), [Criminal Law Commons](#), [Criminal Procedure Commons](#), [Judges Commons](#), [Law and Race Commons](#), [Race and Ethnicity Commons](#), and the [Science and Technology Law Commons](#)

---

### Repository Citation

Natalie Salmanowitz, *Unconventional Methods for a Traditional Setting: The Use of Virtual Reality to Reduce Implicit Racial Bias in the Courtroom*, 15 U.N.H. L. Rev. 117 (2017), available at [http://scholars.unh.edu/unh\\_lr/vol15/iss1/2](http://scholars.unh.edu/unh_lr/vol15/iss1/2)

This Article is brought to you for free and open access by the University of New Hampshire – Franklin Pierce School of Law at University of New Hampshire Scholars' Repository. It has been accepted for inclusion in The University of New Hampshire Law Review by an authorized editor of University of New Hampshire Scholars' Repository. For more information, please contact [sue.zago@law.unh.edu](mailto:sue.zago@law.unh.edu).

# Unconventional Methods for a Traditional Setting: The Use of Virtual Reality to Reduce Implicit Racial Bias in the Courtroom

NATALIE SALMANOWITZ\*

## ABSTRACT

*The presumption of innocence and the right to a fair trial lie at the core of the United States justice system. While existing rules and practices serve to uphold these principles, the administration of justice is significantly compromised by a covert but influential factor: namely, implicit racial biases. These biases can lead to automatic associations between race and guilt, as well as impact the way in which judges and jurors interpret information throughout a trial. Despite the well-documented presence of implicit racial biases, few steps have been taken to ameliorate the problem in the courtroom setting. This Article discusses the potential of virtual reality to reduce these biases among judges and jurors. Through analyzing the various ethical and legal considerations, this Article contends that implementing virtual reality training with judges and jurors would be justifiable and advisable should effective means become available. Given that implicit racial biases can seriously undermine the fairness of the justice system, this Article ultimately asserts that unconventional debiasing methods warrant legitimate attention and consideration.*

## CONTENTS

INTRODUCTION.....	118
I. DEFINING THE PROBLEM: A PRIMER ON IMPLICIT RACIAL BIAS IN THE COURTROOM .....	121
A. <i>Fairness, Impartiality, and the Nature of Bias</i> .....	121
B. <i>Measuring Implicit Racial Bias</i> .....	123
C. <i>Implicit Racial Bias in the Courtroom</i> .....	126
D. <i>Exacerbating Factors</i> .....	128
II. PROPOSED STRATEGIES FOR MITIGATION .....	129
A. <i>Frequently Proposed Solutions</i> .....	129
B. <i>Criticisms of Proposed Solutions</i> .....	132

---

\* Stanford Program in Neuroscience and Society at Stanford Law School, 2015-2016 Fellow; Harvard Law School J.D. 2019; Duke University M.A. 2015 (Bioethics and Science Policy); Dartmouth College B.A. 2014.

III. VIRTUAL REALITY: A PROOF OF CONCEPT .....	137
A. <i>Visual Imagery and Outgroup Embodiment</i> .....	138
1. Digital Games .....	140
2. Immersive Virtual Environments.....	141
B. <i>The Need for Tailored Research Efforts</i> .....	143
IV. VIRTUAL REALITY IN CONTEXT: THE CASE OF JUDGES .....	145
A. <i>Virtual Reality Training: Painting the Picture</i> .....	146
B. <i>Benefits of the Policies</i> .....	147
C. <i>Potential Objections</i> .....	148
1. Freedom of Thought .....	148
2. Coercion.....	149
D. <i>The Case for a Pseudo-Compulsory System</i> .....	151
V. VIRTUAL REALITY AND JURIES .....	152
A. <i>Virtual Reality Training Policies</i> .....	152
B. <i>Benefits of the Policies</i> .....	153
C. <i>Potential Objections</i> .....	154
1. A Representative Jury .....	154
2. Coercion.....	156
D. <i>Civic Duties and the Demands of the Role</i> .....	159
CONCLUSION.....	159

## INTRODUCTION

In 2011, the *Proceedings of the National Academy of Sciences* published a study<sup>1</sup> that immediately made international headlines. An analysis of parole decisions among eight judges in Israel revealed a surprising factor that influenced these cases' outcomes. While one might have expected this factor to involve the gravity of the crime committed or the length of time served, it turned out to be something completely unrelated to the defendant or the crime: namely, the degree to which the judge was hungry or tired.<sup>2</sup> Decisions to grant parole were highly correlated with a judge's break schedule—judges were more likely to deny parole requests heard right before

---

<sup>1</sup> Shai Danziger et al., *Extraneous Factors in Judicial Decisions*, 108 PROC. NAT'L ACAD. SCI. U.S. 6889 (2011), <http://www.pnas.org/content/108/17/6889.full.pdf> [<https://perma.cc/RCR9-QVVT>].

<sup>2</sup> *Id.* at 6890. Some scholars debate the conclusions and explanatory power of this article. See Keren Weinsahl-Margel & John Shapard, *Overlooked Factors in the Analysis of Parole Decisions*, 108 PROC. NAT'L ACAD. SCI. U.S. E833 (2011), <http://www.pnas.org/content/108/42/E833.full.pdf> [<https://perma.cc/2MZL-DB59>]. However, for Danziger and colleagues' rebuttal, see Shai Danziger et al., *Reply to Weinsahl-Margel and Shapard: Extraneous Factors in Judicial Decisions Persist*, 108 PROC. NAT'L ACAD. SCI. U.S. E834 (2011), <http://www.pnas.org/content/108/42/E834.full.pdf> [<https://perma.cc/6393-FTC9>].

a break, whereas requests heard soon after a break were more likely to be granted.<sup>3</sup> The results of this study prompted significant uproar, as evidenced by headlines such as “When Lunch is Served, So is Justice”<sup>4</sup> and “Hungry Judges Dispense Rough Justice.”<sup>5</sup> The fact that a justice system could involve such patently extralegal factors seemed to threaten the court’s legitimacy and spark doubts as to whether justice was actually being delivered.

While this study is certainly interesting, its results are not nearly as groundbreaking or shocking as the media’s response might suggest. The impact of extralegal factors in the courtroom is a well-documented phenomenon that can influence both judges and jurors.<sup>6</sup> In fact, whereas hunger and fatigue are sensations of which individuals are consciously aware, opinions and decisions can also be affected by factors unbeknownst to judges or jurors themselves. For example, individuals’ attractiveness, demeanor, and clothing can all play a role in our perceptions of their credibility and innocence.<sup>7</sup> Moreover, implicit reactions, such as racial biases, are not only widespread, but also can shape the evaluation and interpretation of information presented during a trial.<sup>8</sup> Implicit racial biases are perhaps even more unsettling than factors such as attractiveness—while assessments of the latter can vary from one person to the next, and potentially balance out across judges and jurors, the majority of people have implicit racial biases that trend in a specific direction.<sup>9</sup> The problem of extralegal factors in the courtroom therefore extends much deeper and wider

---

<sup>3</sup> Danziger et al., *supra* note 1, at 6890.

<sup>4</sup> Meredith Melnick, *When Lunch Is Served, So Is Justice*, TIME (Apr. 14, 2011), <http://healthland.time.com/2011/04/14/when-lunch-is-served-so-is-justice> [<https://perma.cc/HQE4-2VUA>].

<sup>5</sup> Zoë Corbyn, *Hungry Judges Dispense Rough Justice*, NATURE NEWS (Apr. 11, 2011), <http://www.nature.com/news/2011/110411/full/news.2011.227.html> [<https://perma.cc/F6TU-3K3Q>].

<sup>6</sup> EDIE GREENE & KIRK HEILBRUN, *WRIGHTSMAN’S PSYCHOLOGY AND THE LEGAL SYSTEM* 298–303 (Wadsworth, 7th ed. 2011).

<sup>7</sup> Ray Bull, *Physical Appearance and Criminality*, 2 CURRENT PSYCHOL. REVIEWS 269, 274–75 (1982); Louise Ellison & Vanessa E. Munro, *Reacting to Rape: Exploring Mock Jurors’ Assessments of Complainant Credibility*, 49 BRIT. J. CRIMINOLOGY 202, 202-04, 210–13 (2009); see ADAM BENFORADO, *UNFAIR: THE NEW SCIENCE OF CRIMINAL INJUSTICE* 3–25 (2015).

<sup>8</sup> Jerry Kang et al., *Implicit Bias in the Courtroom*, 59 UCLA L. REV. 1124, 1126–68 (2012); Jeffrey J. Rachlinski et al., *Does Unconscious Racial Bias Affect Trial Judges?* 84 NOTRE DAME L. REV. 1195, 1221–26 (2009).

<sup>9</sup> Mahzarin R. Banaji et al., *How (Un)ethical Are You?* HARV. BUS. REV., Dec. 2003, at 56, 58–60; Chris Mooney, *Across America, Whites Are Biased and They Don’t Even Know It*, WASH. POST (Dec. 8, 2014), <https://www.washingtonpost.com/news/wonk/wp/2014/12/08/across-america-whites-are-biased-and-they-dont-even-know-it/> [<https://perma.cc/BP6W-MGNK>].

than hungry or tired judges.

Given the amount of existing literature on extralegal factors and implicit racial biases, what should warrant consternation is not the mere presence of such factors in the courtroom, but the relative lack of steps taken to mitigate them. While some countermeasures have been suggested,<sup>10</sup> none appear to be sufficiently promising solutions. This Article aims to propose and examine an unconventional method to reduce implicit racial biases in the courtroom, specifically the use of virtual reality. Although the actual materialization of such a prospect is still distant, researchers are beginning to discover various techniques that have the potential to ameliorate the impact of these biases.

Should such research come to fruition, this Article suggests that virtual reality training to reduce implicit racial biases in judges and jurors would be a justifiable and desirable endeavor. Part I provides a summary of the literature on implicit racial bias, with special attention to studies in the courtroom setting. Part II offers an overview and critique of commonly suggested countermeasures, while Part III proposes virtual reality as an alternative strategy. Part IV argues the case for virtual reality training with judges, addressing potential objections that might ensue. Lastly, Part V applies this framework to the jury context, articulating the main divergences from the case of judges.

Since virtual reality paradigms have not been explicitly designed for use in the courtroom setting, this Article should be read primarily as a thought experiment. The main purpose of this Article is to demonstrate the advantage of incorporating virtual reality into the courtroom, not to delineate plans for its actual implementation. Through advocating for further research on virtual reality paradigms, and proposing potential policies for introducing the technology to the courts, this Article seeks, at the very least, to guide future discussion on novel and unconventional methods to reduce implicit racial bias in the courtroom.

---

<sup>10</sup> Kang et al., *supra* note 8, at 1169–86; Dale K. Larson, *A Fair and Implicitly Impartial Jury: An Argument for Administering the Implicit Association Test during Voir Dire*, 3 DEPAUL J. FOR SOC. JUST. 139, 158–69 (2010); Rachlinski et al., *supra* note 8, at 1226–31; Anna Roberts, *(Re)forming the Jury: Detection and Disinfection of Implicit Juror Bias*, 44 CONN. L. REV. 827, 857–75 (2012); Samuel R. Sommers & Phoebe C. Ellsworth, *White Juror Bias: An Investigation of Prejudice against Black Defendants in the American Courtroom*, 7 PSYCHOL. PUB. POL'Y & L. 201, 221–23 (2001).

## I. DEFINING THE PROBLEM: A PRIMER ON IMPLICIT RACIAL BIAS IN THE COURTROOM

### A. *Fairness, Impartiality, and the Nature of Bias*

The notion of a “fair and impartial trial” is one of the most championed aspects of the justice system.<sup>11</sup> Yet, despite this concept’s widespread acclaim, and its appearance throughout multiple legal standards,<sup>12</sup> an official explanation of the phrase is absent from legal doctrine. Although fairness is often associated with due process, equal treatment under the law, and the assurance that each defendant receives the protections he is guaranteed,<sup>13</sup> it is unclear how and to what extent fairness relates to impartiality. Namely, how impartial must a trial be in order to meet expectations of fairness, and at what point does the presence of partiality violate such standards? While this Article does not purport to definitively answer this question, it is necessary to define a baseline understanding of impartiality in order to frame the discussion of bias in the courtroom.

One way to analyze standards of impartiality is to reference existing doctrine to see what is, and is not, considered an acceptable level of bias. In the case of judges, simply conjecturing possible sources of bias is generally insufficient grounds for disqualification; instead, there needs to be a reasonable expectation that certain factors would interfere with a judge’s ability to “be impartial,” whether the bias constitutes an actual conflict of interest, or creates a legitimate appearance of partiality.<sup>14</sup> For jurors, standards of impartiality are somewhat lower.<sup>15</sup> During *voir dire*, individuals

---

<sup>11</sup> ANDREW G. FERGUSON, *WHY JURY DUTY MATTERS: A CITIZEN’S GUIDE TO CONSTITUTIONAL ACTION 4–6* (NYU Press, 2013) (discussing the importance of the Sixth Amendment and the role of jury trials).

<sup>12</sup> U.S. CONST. amend. VI; 28 U.S.C. § 144 (2014); 28 U.S.C. § 455 (2014).

<sup>13</sup> See, e.g., CONG. RESEARCH SERV., LIBRARY OF CONG., *THE CONSTITUTION OF THE UNITED STATES OF AMERICA: ANALYSIS AND INTERPRETATION*, S. DOC. NO. 112-9, 112th Cong., 2d Sess. 1611-16 (2014), [www.gpo.gov/constitutionannotated \[https://perma.cc/RW4C-62B4\]](https://perma.cc/RW4C-62B4) (discussing fairness, due process, and constitutional protections as they apply to juries and the Sixth Amendment).

<sup>14</sup> See 28 U.S.C. § 144 (indicating when parties suspect judicial bias, they can file an affidavit that “shall state the facts and the reasons for the belief that bias or prejudice exists . . .”); 28 U.S.C. § 455 (“Any justice, judge, or magistrate judge of the United States shall disqualify himself in any proceeding in which his impartiality might reasonably be questioned . . . He shall also disqualify himself . . . [w]here he has a personal bias or prejudice concerning a party, or personal knowledge of disputed evidentiary facts concerning the proceeding”); CHARLES G. GEYH, *FEDERAL JUDICIAL CENTER, JUDICIAL DISQUALIFICATION 17–22* (2d ed. 2010) (analyzing the details and interpretations of 28 U.S.C. § 144 and 28 U.S.C. § 455).

<sup>15</sup> See Scott W. Howe, *Juror Neutrality or an Impartiality Array: A Structural Theory of the Impartial Jury Mandate*, 70 NOTRE DAME L. REV. 1173, 1183–86

expressing potential bias may still be selected for jury service if they assert that their biases can be put aside to “impartially” hear the case.<sup>16</sup> At the same time, however, pretrial publicity can lead to a change in trial venue, on the basis that exposing jurors to prejudicial information before the trial might impede their ability to (a) hear the case with an open mind and (b) adhere to the presumption of innocence; explicit conflicts of interest can disqualify jurors for the same reasons.<sup>17</sup> Taken together, these facts suggest that impartiality does not necessarily entail complete neutrality or a lack of preexisting opinions on issues relevant to the trial; nevertheless, the law does seem to draw a line when preconceptions would foreseeably influence the decision-making process. This Article therefore defines impartiality as the absence of preconceived notions that would reasonably *impact* a judge or juror’s assessment of information presented throughout the case in a manner that *avored* or *disavored* a defendant.

The remainder of Part I argues that implicit racial biases render judges and jurors incapable of meeting this basic conceptualization of impartiality. Not only can these biases alter the way in which individuals interpret information, but they also tend to disproportionately disadvantage members of one race. The following section explains how general biases persist in the courtroom in the first place, and why implicit racial biases in particular pose such a threat to the fairness and impartiality of trials.

The justice system possesses mechanisms to screen for *clear* instances of bias in judges and jurors. In the case of judges, parties may request that the judge recuse herself if there is reason to suspect partiality.<sup>18</sup> With jurors, the *voir dire* process enables attorneys and judges to ask probing questions of potential jurors to uncover signs of bias.<sup>19</sup> Despite these protocols, partiality still plays a large role in the courtroom for three main reasons: (1) the bias blindspot, (2) the social desirability effect, and (3) the existence of implicit biases. According to the concept of bias blindspots, while people are aware that biases occur in the general population, they tend to overestimate their own degree of impartiality.<sup>20</sup> Next, the social desirability effect highlights individuals’ perceived need for others to view them in a socially respectable light, which often prevents people from disclosing biases that are regarded as taboo.<sup>21</sup> Lastly, motions for recusal and the *voir dire* process primarily target explicit biases, which are attitudes or prejudices that individuals *consciously*

---

(1995) (explaining how the standard of impartiality for jurors is ambiguous, and that in many cases jurors can still serve despite expressing some degree of bias).

<sup>16</sup> CONG. RESEARCH SERV., *supra* note 13, at 1619–20; NEIL VIDMAR & VALERIE P. HANS, AMERICAN JURIES: THE VERDICT 90–93 (2007).

<sup>17</sup> CONG. RESEARCH SERV., *supra* note 13, at 1620–21.

<sup>18</sup> 28 U.S.C. § 144.

<sup>19</sup> FED. R. CRIM. P. 24.

<sup>20</sup> Kang et al., *supra* note 8, at 1173–74.

<sup>21</sup> VIDMAR & HANS, *supra* note 16, at 92–93.

possess.<sup>22</sup> As a result, the justice system leaves untouched many implicit biases that judges and jurors are not aware of having, but that are believed to account for a disturbingly high percentage of behavior.<sup>23</sup>

Implicit biases, which often diverge from one's explicitly held beliefs,<sup>24</sup> are an inevitable byproduct of having efficient cognitive systems.<sup>25</sup> In order to quickly make sense of all the stimuli bombarding them, people make generalizations about various individuals, social groups, and situations in a way that enables prediction of subsequent interactions and outcomes.<sup>26</sup> While the ability to make generalizations is frequently harmless and even quite useful in terms of efficiency, such judgments can also lead to negative assessments of individuals, as well as stereotypical associations between specific attributes and identity groups.<sup>27</sup> The automatic and influential nature of these biases can be appreciated by neuroscientific research involving implicitly prejudiced or stereotyped evaluations. For example, studies have explored activation in brain regions such as the amygdala, the anterior insula, and the anterior temporal lobe, which are implicated in threat processing, disgust reactions, and social stereotyping, respectively.<sup>28</sup> Researchers have observed increased activation in these three areas when white participants view black faces, and this heightened reactivity positively correlates with the degree of implicit racial bias.<sup>29</sup> Accordingly, the fact that initial reactions of threat and disgust can arise when simply viewing a member of a racial outgroup presents serious problems in the trial context, where judges and jurors are expected to enter the courtroom with an open mind.

### B. *Measuring Implicit Racial Bias*

Before delving into studies examining implicit racial bias in the courtroom, it is helpful to first explain how researchers identify the presence and magnitude of these biases, as well as describe the patterns that typically emerge. The most commonly used method is the Implicit Association Test (IAT), which measures reaction times during a sorting task.<sup>30</sup> The race

---

<sup>22</sup> Larson, *supra* note 10, at 141; Casey Reynolds, *Implicit Bias and the Problem of Certainty in the Criminal Standard of Proof*, 37 LAW & PSYCHOL. REV. 229, 230–31 (2013); Roberts, *supra* note 10, at 835–42.

<sup>23</sup> Rachlinski et al., *supra* note 8, at 1201–02.

<sup>24</sup> Banaji et al., *supra* note 9, at 56–58.

<sup>25</sup> JAMIE WARD, THE STUDENT'S GUIDE TO SOCIAL NEUROSCIENCE 213–15 (2012).

<sup>26</sup> David M. Amodio, *The Neuroscience of Prejudice and Stereotyping*, 15 NATURE REVIEWS NEUROSCIENCE 670, 670 (2014).

<sup>27</sup> WARD, *supra* note 25, at 213.

<sup>28</sup> Amodio, *supra* note 26, at 671, 673, 676.

<sup>29</sup> *Id.* at 671–73, 676.

<sup>30</sup> See Brian A. Nosek et al., *Understanding and Using the Implicit Association*



version of the IAT shows participants two sets of paired terms, with one set on the upper left corner of a computer screen and the other on the upper right corner.<sup>31</sup> A participant will either see a “stereotype-congruent” arrangement of Black/Bad in one corner and White/Good in the other, or a “stereotype-incongruent” arrangement with pairings of Black/Good and White/Bad.<sup>32</sup> When presented with black and white faces, as well as positive and negative words, participants must match the particular stimulus with its appropriate label in one of the corners of the screen.<sup>33</sup> After a participant completes trials with both stereotype-congruent and incongruent pairings, the average reaction times for the two trials are compared.<sup>34</sup> A faster response for stereotype-congruent pairings suggests a preference for white faces, which can be further categorized according to a slight, moderate, or strong degree.<sup>35</sup> The IAT can be used for many stereotype-based associations other than race (such as gender, age, etc.), and has been taken by over 4.5 million people.<sup>36</sup> Interestingly, not only do 75% of all participants show a preference towards white faces,<sup>37</sup> but non-white participants tend to also exhibit a preference for white faces (while simultaneously displaying a greater preference than average for members of their own race).<sup>38</sup> Additionally, researchers have modified the Race IAT to test the association between race and guilt.<sup>39</sup> This version of the test has been coined the Guilt IAT, and has shown that individuals commonly associate black men with terminology related to criminal culpability.<sup>40</sup> These results might be especially concerning in light of confirmation biases, which hold that people are more likely to interpret evidence in a way that aligns with their presuppositions.<sup>41</sup>

Apart from the IAT, two other tests are frequently used to measure

---

*Test: II. Method Variables and Construct Validity*, 31 J. PERS. SOC. PSYCHOL. 166, 179 (2005) (addressing common criticisms of the IAT and providing evidence for construct validity); *About the IAT*, PROJECT IMPLICIT, <https://implicit.harvard.edu/implicit/iatdetails.html> [<https://perma.cc/M7Z7-5V2V>] (last visited Feb. 8, 2016) (explaining the basic attributes of the IAT).

<sup>31</sup> *About the IAT*, *supra* note 30.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Frequently Asked Questions*, PROJECT IMPLICIT, <https://implicit.harvard.edu/implicit/faqs.html> [<https://perma.cc/3RU3-RCPA>] (last visited Feb. 8, 2016).

<sup>36</sup> Brandon Keim, *Researchers Try to Cure Racism*, WIRED (Jan. 20, 2009, 5:25 PM), <http://www.wired.com/2009/01/racetraining/> [<https://perma.cc/W6AQ-CMSP>].

<sup>37</sup> Banaji et al., *supra* note 9, at 3.

<sup>38</sup> *Frequently Asked Questions*, *supra* note 35.

<sup>39</sup> Justin D. Levinson et al., *Guilty by Implicit Racial Bias: The Guilty/Not Guilty Implicit Association Test*, 8 OHIO ST. J. CRIM. L. 187, 189–90 (2010).

<sup>40</sup> *Id.*

<sup>41</sup> DANIEL KAHNEMAN, THINKING, FAST AND SLOW 80–81 (2011).

implicit racial bias in criminal contexts: the Weapons Identification Task and the Shoot No-Shoot Test. The Weapons Identification Task, also a measure of response time, displays a picture of either a gun or a tool on the computer screen and asks participants to identify the object presented.<sup>42</sup> Prior to seeing the object, a white or black face is quickly flashed on the screen.<sup>43</sup> Studies using this measure have revealed three particularly important findings. First, when white participants have to make these judgments in a constricted time frame, they are more likely to incorrectly identify a tool as a weapon when primed with a black face.<sup>44</sup> Second, when given unlimited time to complete the task, participants are more accurate in their judgments, but correctly identify a weapon faster after seeing a black face.<sup>45</sup> Lastly, this pattern of results persists even when participants are explicitly told to disregard the faces and to not let them skew subsequent judgments.<sup>46</sup>

A similar paradigm, the Shoot No-Shoot Test, involves a videogame in which white and black men appear on the screen, and either have a weapon or a neutral object in hand.<sup>47</sup> Designed to mimic a situation often experienced by police officers, participants are told to shoot those holding a weapon while their response times and accuracy levels are measured.<sup>48</sup> A study involving black and white participants found that both groups were faster to shoot armed men when the target was black<sup>49</sup> (and were also faster in deciding not to shoot an unarmed man when the target was white).<sup>50</sup> Importantly, this study also measured participants' knowledge and subjective evaluations of cultural stereotypes associating black men with violent crime.<sup>51</sup> While the degree to which participants *agreed* with this stereotype was unrelated to their performance on the task, knowledge of the stereotype was positively correlated with incorrect shooting responses.<sup>52</sup> Thus, simply

---

<sup>42</sup> B. Keith Payne, *Prejudice and Perception: The Role of Automatic and Controlled Processes in Misperceiving a Weapon*, 81 J. PERS. SOC. PSYCHOL. 181, 184 (2001).

<sup>43</sup> *Id.*

<sup>44</sup> *Id.* at 189.

<sup>45</sup> *Id.* at 185–87, 190; B. Keith Payne, *Weapon Bias: Split-Second Decisions and Unintended Stereotyping*, 15 CURRENT DIRECTIONS PSYCHOL. SCI. 287, 287 (2006).

<sup>46</sup> B. Keith Payne et al., *Best Laid Plans: Effects of Goals on Accessibility Bias and Cognitive Control in Race-Based Misperceptions of Weapons*, 38 J. EXPERIMENTAL SOC. PSYCHOL. 384, 388–95 (2002).

<sup>47</sup> Joshua Correll et al., *The Police Officer's Dilemma: Using Ethnicity to Disambiguate Potentially Threatening Individuals*, 83 J. PERS. SOC. PSYCHOL. 1314, 1317–26 (2002).

<sup>48</sup> *Id.* at 1315–17.

<sup>49</sup> *Id.* at 1324.

<sup>50</sup> *Id.*

<sup>51</sup> *Id.* at 1321.

<sup>52</sup> *Id.* at 1322–23.

being aware of the stereotype influenced decisions, regardless of one's explicit attitudes.

### C. *Implicit Racial Bias in the Courtroom*

Although the IAT, the Weapon Identification Task, and the Shoot-No Shoot Test are often used to examine implicit racial bias in the general population, a few studies have applied these measures specifically to the courtroom setting.<sup>53</sup> Given the difficulties of conducting real-time experiments during trials, most studies addressing judges and jurors involve evaluations of hypothetical scenarios or post-hoc analyses of trial outcomes. Nevertheless, these studies reveal that implicit racial biases in judges and jurors are likely to have potent impacts on criminal justice proceedings.<sup>54</sup>

To start, research has illuminated the effect of a defendant's race on judicial behavior in both hypothetical situations and actual sentencing patterns.<sup>55</sup> In a study exploring implicit racial bias in judges, Jeffrey Rachlinski and colleagues<sup>56</sup> administered the Race IAT to judges of varying races, genders, and jurisdictions. Overall, the white judges demonstrated a strong preference for white faces while the black judges did not display an overarching trend one way or the other.<sup>57</sup> The researchers then provided these judges with a hypothetical scenario in which either the defendant was black and the victim was white, or vice versa.<sup>58</sup> Interestingly, the authors observed significant correlations between IAT scores and conviction decisions only among the black judges.<sup>59</sup> When the defendant was white, black judges with an IAT preference for black faces were more likely to convict than were those with a white preference.<sup>60</sup> This pattern flipped when the defendant was black, meaning that black judges with a preference for

---

<sup>53</sup> See Irene V. Blair et al., *The Influence of Afrocentric Facial Features in Criminal Sentencing*, 15 PSYCHOL. SCI. 674, 676–78 (2004); Levinson et al., *supra* note 39, at 201–08; Justin D. Levinson & Danielle Young, *Different Shades of Bias: Skin Tone, Implicit Racial Bias, and Judgments of Ambiguous Evidence*, 112 W. VA. L. REV. 307, 331–39 (2010); Rachlinski et al., *supra* note 8, at 1204–11; Sommers & Ellsworth, *supra* note 10, at 216–21.

<sup>54</sup> Blair et al., *supra* note 53, at 678; Kang et al., *supra* note 8, at 1142–52; Larson, *supra* note 10, at 154–58; Levinson et al., *supra* note 39, at 207; Levinson & Young, *supra* note 53, at 344–45; Rachlinski et al., *supra* note 8, at 1225–26; Sommers & Ellsworth, *supra* note 10, at 220–21.

<sup>55</sup> See Blair et al., *supra* note 53, at 675–78; Rachlinski et al., *supra* note 8, at 1204–11.

<sup>56</sup> Rachlinski et al., *supra* note 8, at 1204–11.

<sup>57</sup> *Id.* at 1210.

<sup>58</sup> *Id.* at 1211–12.

<sup>59</sup> *Id.* at 1218–21.

<sup>60</sup> *Id.* at 1220–21.

black faces were now less likely to convict.<sup>61</sup> The researchers suggest that the lack of correlation between IAT scores and conviction decisions in white judges might stem from the fact that the majority of the judges were cognizant of the experiment's purpose.<sup>62</sup> Social desirability effects might therefore explain the behavior of the white judges, who might have anticipated that the researchers were expecting them to respond in a certain way.<sup>63</sup> Nonetheless, this study reveals that implicit racial biases are not only prevalent among judges, but that they also can occur in judges of differing races.

With respect to the impact of race on actual sentencing decisions, studies have found that on average, black defendants are given longer sentences than white defendants, and are also more likely to receive the death penalty.<sup>64</sup> In fact, a study exploring the correlation between race and sentence length in a Florida prison population found that within white and black subgroups, the more an inmate possessed Afrocentric physiognomic features, the longer his sentence.<sup>65</sup> These results have been explained by referencing the neuroscientific literature cited earlier;<sup>66</sup> since the amygdala responds to threat, and black individuals are often associated with violent crime, this stereotype of "black-crime" might induce amygdala-driven threat responses that subconsciously guide judicial sentencing decisions.<sup>67</sup>

Turning to jurors, a study using a mock jury examined the relationship between implicit racial bias and the interpretation of evidence.<sup>68</sup> The researchers manipulated one piece of evidence between the experimental and control group, namely whether the hand of a masked gunman in a picture was light or dark skinned.<sup>69</sup> At the end of the experiment, the majority of mock jurors were unable to report the skin tone of the person depicted in the image, yet on average, those who saw the dark skinned version deemed the defendant to be guiltier than those presented with the light skinned version.<sup>70</sup> In a similar study, researchers incorporated both the Race IAT as well as the Guilt IAT.<sup>71</sup> When presented with ambiguous evidence and asked to evaluate the degree to which it informed judgments of guilt or innocence, those with higher scores on both types of the IAT were more likely to rate

---

<sup>61</sup> *Id.*

<sup>62</sup> *Id.* at 1223–24.

<sup>63</sup> *Id.*

<sup>64</sup> *Id.* at 1196; Kang et al., *supra* note 8, at 1148.

<sup>65</sup> Blair et al., *supra* note 53, at 676–78.

<sup>66</sup> Amodio, *supra* note 26, at 671, 673, 676.

<sup>67</sup> Kimberly Papillon, *The Court's Brain: Neuroscience and Judicial Decision Making in Criminal Sentencing*, 49 CT. REV. 48, 51, 54 (2013).

<sup>68</sup> Levinson & Young, *supra* note 53, at 331–39.

<sup>69</sup> *Id.* at 332.

<sup>70</sup> *Id.* at 337–38.

<sup>71</sup> Levinson et al., *supra* note 39, at 201–08.

such evidence as supporting a guilty verdict.<sup>72</sup> In other words, participants who possessed preferences for white faces and more frequently associated blacks with criminal guilt tended to view vague evidence as a testament to the defendant's culpability. Hence, even if implicit racial biases do not influence the ultimate decisions of mock jurors, at the very least they can impact how jurors weigh and interpret information provided during a trial.<sup>73</sup> Additionally, in some mock jury studies, researchers have observed "race salience" effects, whereby white jurors are more likely to convict black defendants in hypothetical scenarios when the subject of race is not explicitly called to their attention; however, these jurors are much less likely to convict when race plays a prominent role in the details of the case.<sup>74</sup> Similar to Rachlinski and colleagues,<sup>75</sup> researchers have explained these findings through the lens of social desirability effects, in which white participants might be making a purposeful effort to avoid displaying any signs of racism in situations where others might be expecting them to do so.<sup>76</sup>

In sum, although there is limited research regarding the impact of implicit racial biases on actual case outcomes, the studies we do have suggest that judges and jurors are susceptible to these biases in a way that can influence evaluations throughout the trial process.

#### D. Exacerbating Factors

In addition to documenting the prevalence of implicit racial bias, researchers have also discovered certain factors that can exacerbate these biases. First, as noted earlier, stereotypes enable us to process information quickly and make automatic judgments.<sup>77</sup> These fast-paced decisions, which can lead to the use of negative stereotypes,<sup>78</sup> occur more frequently in situations involving vague information or general uncertainty—two factors endemic to the trial environment.<sup>79</sup> Second, as seen with social desirability and race salience effects, individuals do have the capacity to monitor the influence of implicit or explicit biases under certain circumstances.<sup>80</sup> However, this ability requires vigilant self-regulation,<sup>81</sup> and tasks that involve a high degree of cognitive effort will subsume a significant portion

---

<sup>72</sup> *Id.* at 202–03, 208.

<sup>73</sup> *Id.* at 206.

<sup>74</sup> Sommers & Ellsworth, *supra* note 10, at 216–21.

<sup>75</sup> Rachlinski et al., *supra* note 8, at 1223–24.

<sup>76</sup> Sommers & Ellsworth, *supra* note 10, at 222–23.

<sup>77</sup> WARD, *supra* note 25, at 213.

<sup>78</sup> *Id.*

<sup>79</sup> Larson, *supra* note 10, at 148–49.

<sup>80</sup> Rachlinski et al., *supra* note 8, at 1202; Sommers & Ellsworth, *supra* note 10, at 220.

<sup>81</sup> Banaji et al., *supra* note 9, at 61–62.

of one's mental control capacities.<sup>82</sup> Thus, in situations (much like the courtroom setting) where individuals must pay close attention to specific facts and details, the ability to monitor biases will be substantially decreased.<sup>83</sup> Third, emotions can often compromise decision-making capacities and heighten the influence of implicit biases.<sup>84</sup> In fact, simply eliciting feelings of disgust prior to taking an IAT can make preferences against an outgroup more severe.<sup>85</sup> This finding could pose serious concerns in the courtroom setting if initial visceral reactions in response to the defendant's race or the nature of the crime exacerbate the influence of implicit biases. The amplifying impact of emotions on implicit biases could also occur if judges or jurors become stressed during trial; when making evaluations regarding the morality of a situation, stress has been shown to decrease an individual's ability to comprehensively take relevant details into account as well as increase one's reliance on automatic judgments.<sup>86</sup> Therefore, not only are implicit racial biases a prominent factor during trials, but the courtroom setting itself can also magnify their influence.

## II. PROPOSED STRATEGIES FOR MITIGATION

### A. Frequently Proposed Solutions

Given the prevalence of implicit racial biases in the courtroom, multiple legal scholars and psychologists have suggested strategies for mitigation. These proposed interventions include (1) raising awareness, (2) screening with the IAT prior to trial, (3) weakening stereotypical associations, and (4) increasing diversity among judges and jurors.

Arguments in favor of raising awareness draw support from literature on self-regulation and active monitoring.<sup>87</sup> In particular, proponents frequently cite the social desirability and race salience effects discussed above to show that focusing attention on race can help motivate heightened scrutiny of one's own decisions.<sup>88</sup> Similarly, scholars point to research suggesting a

---

<sup>82</sup> KAHNEMAN, *supra* note 41, at 41.

<sup>83</sup> *See id.* (explaining how self-control becomes significantly more difficult when cognitive resources are already being expended on other tasks); Papillon, *supra* note 67, at 52.

<sup>84</sup> Christoph Bublitz, *Moral Enhancement and Mental Freedom*, 33 J. APPLIED PHIL. 88, 96 (2015).

<sup>85</sup> Nilanjana Dasgupta et al., *Fanning the Flames of Prejudice: The Influence of Specific Incidental Emotions on Implicit Prejudice*, 9 EMOTION 585, 586–88 (2009).

<sup>86</sup> Lucius Caviola & Nadira S. Faber, *How Stress Influences Our Morality*, THE INQUISITIVE MIND MAG. (Oct. 15, 2014), <http://www.in-mind.org/article/how-stress-influences-our-morality> [<https://perma.cc/LK3Y-F6KL>].

<sup>87</sup> Rachlinski et al., *supra* note 8, at 1202–04; Roberts, *supra* note 10, at 873–74.

<sup>88</sup> Rachlinski et al., *supra* note 8, at 1202–04; Roberts, *supra* note 10, at 873–74.

connection between motivation and behavior,<sup>89</sup> claiming that if courts make judges and jurors more aware of implicit racial bias, they will be more inclined to regulate their own behavior, which will in turn help to reduce the influence of such biases.<sup>90</sup> In fact, Anna Roberts proposes educating jurors about implicit racial bias through juror orientation videos, as these materials are designed to encourage jurors' sense of civic duty and galvanize them to contribute their best efforts in the pursuit of justice.<sup>91</sup>

Turning to the second proposal, some scholars suggest implementing screening protocols into the jury selection process in order to eliminate those with strong implicit racial biases. For example, Dale Larson proposes administering the IAT to potential jurors during *voir dire*.<sup>92</sup> He contends that not only would such testing increase the motivation in all jurors to reduce their biases, but it would also flag individuals who possessed severe biases.<sup>93</sup> This might subsequently facilitate the decision process for attorneys making challenges for cause, effectively removing these individuals from the jury pool for that trial.<sup>94</sup> Such a screening strategy would similarly apply to judges, whereby IAT testing would take place before the assignment of a judge to a case.

Third, multiple scholars advocate interventions that target the stereotypes themselves.<sup>95</sup> By weakening the association between black men and violent crime, for example, the stereotype might become less hardwired and automatic.<sup>96</sup> Proposed mitigation methods involve presenting people with counter-stereotypical examples, whether through placing portraits of famous black historical figures on the wall,<sup>97</sup> or by having a black individual proctor an IAT.<sup>98</sup> Many proponents<sup>99</sup> also cite a 2001 study by Nilanjana Dasgupta and Anthony Greenwald, in which the presentation of both revered black

---

<sup>89</sup> Amodio, *supra* note 26, at 671; WARD, *supra* note 25, at 219–20.

<sup>90</sup> Kang et al., *supra* note 8, at 1174–77, 1181–84; Rachlinski et al., *supra* note 8, at 1228; Roberts, *supra* note 10, at 865–66.

<sup>91</sup> Roberts, *supra* note 10, at 865–66, 874.

<sup>92</sup> Larson, *supra* note 10, at 162–71.

<sup>93</sup> *Id.* at 167.

<sup>94</sup> *Id.*

<sup>95</sup> Kang et al., *supra* note 8, at 1169–72; Bernd Wittenbrick et al., *Spontaneous Prejudice in Context: Variability in Automatically Activated Attitudes*, 81 J. PERSONALITY & SOC. PSYCHOL. 815, 824 (2001).

<sup>96</sup> Kang et al., *supra* note 8, at 1169–72.

<sup>97</sup> *Id.* at 1171.

<sup>98</sup> Banaji et al., *supra* note 9, at 63.

<sup>99</sup> Kang et al., *supra* note 8, at 1171; Patricia G. Devine et al., *Long-Term Reduction in Implicit Race Bias: A Prejudice Habit-Breaking Intervention*, 48 J. EXPERIMENTAL SOC. PSYCHOL. 1267, 1268 (2012); *see also* Cheryl Staats, *State of the Science: Implicit Bias Review 2014*, KIRWIN INSTITUTE FOR THE STUDY OF RACE AND ETHNICITY (Sept. 22, 2016), <http://kirwaninstitute.osu.edu/wp-content/uploads/2014/03/2014-implicit-bias.pdf> [<https://perma.cc/8KUS-W8R7>].

leaders and disliked white historical figures reduced implicit racial bias scores.<sup>100</sup> In addition to displaying counter-stereotypical images, researchers have also explored the use of mental imagery exercises to weaken negative stereotypes.<sup>101</sup> In fact, mental imagery exercises, in which individuals visualize certain scenarios, have been shown to be very effective in helping people carry out goal-directed actions.<sup>102</sup> Researchers attribute these results to the dynamic nature of imagination and the involvement of the same sensory activation patterns as those needed in real-life situations.<sup>103</sup> In the context of implicit biases, studies asking individuals to visualize positive counter-stereotypes have found considerable success in reducing IAT scores.<sup>104</sup>

The fourth and final commonly proposed intervention<sup>105</sup> involves diversifying the pool of judges and jurors.<sup>106</sup> Since the mere presence of someone with an additional perspective can have positive effects on group decision-making,<sup>107</sup> scholars contend that the presence of judges with different viewpoints or identity-related characteristics might broaden the perspectives of their fellow colleagues.<sup>108</sup> With juries, not only do more

---

<sup>100</sup> Nilanjana Dasgupta & Anthony G. Greenwald, *On the Malleability of Automatic Attitudes: Combating Automatic Prejudice with Images of Admired and Disliked Individuals*, 81 J. PERSONALITY & SOC. PSYCHOL. 800, 802–08 (2001).

<sup>101</sup> Irene V. Blair et al., *Imagining Stereotypes Away: The Moderation of Implicit Stereotypes through Mental Imagery*, 81 J. PERSONALITY & SOC. PSYCHOL. 828, 828–29 (2001); Rhiannon N. Turner & Richard J. Crisp, *Imagining Intergroup Contact Reduces Implicit Prejudice*, 49 BRIT. J. SOC. PSYCHOL. 129, 135–38 (2010). See generally Bärbel Knäuper et al., *Using Mental Imagery to Enhance the Effectiveness of Implementation Intentions*, 28 CURRENT PSYCHOL. 181, 182 (2009).

<sup>102</sup> Blair et al., *supra* note 101, at 828–29.

<sup>103</sup> Knäuper et al., *supra* note 100, at 182.

<sup>104</sup> Devine et al., *supra* note 99, at 1270–77; Turner & Crisp, *supra* note 101, at 135–38; cf. Blair et al., *supra* note 101, at 830–37 (using a gender-based IAT to successfully reduce implicit stereotypical associations between men and women).

<sup>105</sup> Although the four strategies listed in Part II.A are the most commonly suggested measures for the courtroom context, see Calvin K. Lai et al., *Reducing Implicit Racial Preferences: I. A Comparative Investigation of 17 Interventions*, 143 J. EXPERIMENTAL PSYCHOL.: GEN. 1765, 1767–82 (2014), for a more complete discussion of bias reduction strategies in other settings.

<sup>106</sup> See, e.g., Kang, *supra* note 8, at 1180–81; Rachlinski et al., *supra* note 8, at 1231 (mentioning impact of judges with different perspectives or identity-characteristics on decisions of other judges on a panel); Samuel R. Sommers, *On Racial Diversity and Group Decision Making: Identifying Multiple Effects of Racial Composition on Jury Deliberations*, 90 J. PERSONALITY & SOC. PSYCHOL. 597, 607 (2006) (studying the effect of diversity on jury deliberations).

<sup>107</sup> Sandra W. DeGrassi et al., *Ethical Decision-Making: Group Diversity Holds the Key*, 9 J. OF LEADERSHIP, ACCT. & ETHICS 51, 56–57 (2012).

<sup>108</sup> See Rachlinski et al., *supra* note 8, at 1231 (mentioning impact of judges with different perspectives or identity-related on decisions of other judges on a panel).



diverse mock juries display heightened scrutiny and engage in more carefully reasoned discussions,<sup>109</sup> but the anticipation of serving on a diverse mock jury can also reduce implicit racial biases.<sup>110</sup> In a study comparing a homogenous white mock jury to a diverse mock jury, those on the diverse jury were significantly less likely to consider a black defendant guilty prior to the group discussion.<sup>111</sup> The author, Samuel Sommers, hypothesizes that the element of race was made more salient for the white jurors on the diverse mock jury, who as a result made more concerted efforts to avoid exhibiting bias;<sup>112</sup> Sommers additionally claims that this diverse panel composition impacted the way in which jurors interpreted the evidence presented to them.<sup>113</sup> Furthermore, scholars suggest that enhancing the diversity of jurors would differentially increase the type or direction of implicit biases within the jury, which might serve to nullify at least some of these biases.<sup>114</sup>

### B. Criticisms of Proposed Solutions

Although these suggestions have their merits, all four methods have serious shortcomings in the courtroom setting. With respect to raising awareness, increasing motivation to facilitate a fair trial and promoting knowledge about implicit biases are both laudable goals for obvious reasons. However, in the context of race, three main concerns arise: (1) these interventions might not have an appreciable effect on many individuals, (2) the methods might actually have a counterproductive effect on some people, and (3) many of the factors known to exacerbate implicit racial biases are also those required for these interventions to succeed.

As previously mentioned, proponents of raising awareness frequently cite studies in which individuals demonstrate less biased behavior due to race salience and social desirability effects.<sup>115</sup> Yet, while these studies do exist, there is also a body of literature suggesting that simply being aware of bias does not significantly ameliorate its influence.<sup>116</sup> For example, recall the study on the weapon bias effect, where individuals were primed with black or white faces prior to seeing a tool or a gun, and were explicitly told to avoid letting the face impact their decisions.<sup>117</sup> Despite this warning, participants

---

<sup>109</sup> VIDMAR & HANS, *supra* note 16, at 75.

<sup>110</sup> Sommers, *supra* note 106, at 600–06.

<sup>111</sup> *Id.* at 603.

<sup>112</sup> *Id.* at 607.

<sup>113</sup> *Id.*

<sup>114</sup> VIDMAR & HANS, *supra* note 16, at 75; Kang et al., *supra* note 8, at 1180–81.

<sup>115</sup> Dasgupta & Greenwald, *supra* note 100, at 806–07; Rachlinski et al., *supra* note 8, at 1204; Sommers & Ellsworth, *supra* note 10, at 220–23.

<sup>116</sup> Amodio, *supra* note 26, at 679; Devine et al., *supra* note 99, at 13; Payne et al, *supra* note 46, at 389–95.

<sup>117</sup> Payne et al, *supra* note 46, at 388–89.

still tended to identify the object as a weapon when primed with a black face,<sup>118</sup> in other words, calling attention to the risk of implicit racial bias had a negligible effect on reducing its impact. Moreover, in a longitudinal study involving various self-regulation strategies, researchers found that participants in the control group, who simply took the IAT and were told their results, did not show reduced bias on subsequent IATs.<sup>119</sup> While the control group in this experiment was not explicitly educated about the influence and nature of implicit racial biases after taking the IAT,<sup>120</sup> these findings nevertheless question the assertion that basic awareness can result in a significant reduction of bias.

Solely raising awareness not only might be futile in many judges and jurors, but when awareness interventions take the form of emphasizing race salience or facilitating social desirability effects, the outcome might actually contribute to the impact of bias rather than mitigate it. This conclusion stems from a consideration of why implicit racial biases are concerning in the first place. To start, they might disproportionately increase the probability of a guilty verdict or a longer sentence for defendants of certain races. Second, they might play a role in judicial or juror decision-making despite being a patently extralegal factor. Accentuating race salience and social desirability effects (by leading white judges and jurors to consciously monitor their own behavior on the basis of potential racial bias) would likely ameliorate the first concern. However, the act of making race a central consideration would simultaneously intensify the second concern. Namely, by taking concerted efforts to not stereotype a black defendant, the race of the defendant inevitably becomes an explicit factor in a judge or juror's thought process. Furthermore, by amplifying social desirability effects, some individuals might overcorrect for bias and redress neither the first nor the second concern. A case that proponents of raising awareness often use to bolster their argument actually provides an excellent example of this potential counter-effect.<sup>121</sup> The study gave doctors a hypothetical scenario in which a patient exhibited specific symptoms, and subsequently asked the doctors to rate the degree to which they would recommend a certain treatment.<sup>122</sup> For some, this hypothetical involved a black patient, while for others the patient was white.<sup>123</sup> Doctors with stronger white preferences on the IAT who (a) saw the version with the black patient and (b) were cognizant of the purpose of the experiment were much more likely to support administering the

---

<sup>118</sup> *Id.* at 390.

<sup>119</sup> Devine et al., *supra* note 99, at 1270–71.

<sup>120</sup> *Id.* at 1270.

<sup>121</sup> Alexander R. Green et al., *Implicit Bias among Physicians and its Prediction of Thrombolysis Decisions for Black and White Patients*, 22 J. GEN. INTERNAL MED. 1231, 1232–37 (2007).

<sup>122</sup> *Id.* at 1233.

<sup>123</sup> *Id.* at 1233–34.

treatment than their cohorts given the white patient.<sup>124</sup> Importantly, these compensatory effects did not raise the level of recommendation to be equal to that given for white patients, but instead surpassed it.<sup>125</sup> Thus, social desirability or race salience effects might funnel the influence of bias in the opposite direction.

Even if raising awareness did promote less biased behavior, the impact of such an intervention would rely heavily on active self-regulation and effortful mental strategies. Yet, as previously mentioned, trials are inherently stressful and cognitively demanding,<sup>126</sup> so the remaining resources available to vigilantly monitor one's bias would be quite limited.<sup>127</sup> Without persistent self-regulation, significant reductions in implicit racial biases would be unlikely.<sup>128</sup> Additionally, successfully monitoring one's biases might come at the price of not fully focusing on the facts of the case.

The second proposition, screening with the IAT, is also an unsatisfactory solution. Although this method would likely reduce the net level of implicit racial bias, there are multiple objections to be made. First, scholars caution against using the IAT as a diagnostic tool since it was designed to produce reliable results on an average group level, not to make predictions for specific individuals.<sup>129</sup> Regardless, incorporating screening methods might limit the pool from which potential judges or jurors can be drawn. To see how this might be the case, consider that if such a policy were to be implemented, it would make sense to screen for those with moderate or strong preferences in order to substantially reduce the level of implicit racial bias in the courtroom, at least to a degree that would objectively make designing, introducing, and enforcing the policy worthwhile. However, data from an experiment surveying IAT scores across the United States suggests that the majority of people have more than just a slight bias, and that the average level of bias varies from state to state.<sup>130</sup> With judges, not only would screening narrow the pool of those eligible to hear a case, but this also might cause logistical issues since judges are already limited in number and have burdensome caseload pressures, particularly at the trial court level.<sup>131</sup>

---

<sup>124</sup> *Id.* at 1235.

<sup>125</sup> *Id.* at 1236–37.

<sup>126</sup> Larson, *supra* note 10, at 148–49.

<sup>127</sup> See KAHNEMAN, *supra* note 41, at 41–42 (discussing the diminishing impact that emotionally and cognitively demanding experiences can have on self-control capabilities).

<sup>128</sup> Amodio, *supra* note 26, at 679; Banaji et al., *supra* note 9, at 61–62.

<sup>129</sup> Kang et al., *supra* note 8, at 1179; Roberts, *supra* note 10, at 857; *Ethical Considerations*, PROJECT IMPLICIT, <https://implicit.harvard.edu/implicit/ethics.html> [<https://perma.cc/TZP6-SVUZ>] (last visited Feb. 8, 2016).

<sup>130</sup> Mooney, *supra* note 9.

<sup>131</sup> See Philip Habel & Kevin Scott, *New Measures of Judges' Caseload for the Federal District Courts, 1964-2012*, 2 J.L. & CTS. 153, 168–69 (2014) (noting heavy caseload pressures faced by trial judges).

In the case of jurors, if citizens have a strong interest or a right to serve on a jury (a question that will be addressed in Part V), then a large number of people would be barred from accessing this opportunity, especially in a state with more severe biases on average. As the number of eligible jurors decreases, the ability of the jury pool to be representative of the community might also decline. Such a result would be problematic, as the jury pool is supposed to involve “a fair cross-section of the community.”<sup>132</sup> Although a pre-screened jury pool would be more impartial with respect to implicit racial biases, it might not be sufficiently representative or unbiased in other domains given its limited size. Additionally, requiring judges and jurors to take the IAT might raise concerns with privacy.<sup>133</sup> Even though judges and jurors are already asked to divulge personal information during motions for recusal or *voir dire*,<sup>134</sup> the fact that individuals are often not cognizant of their implicit biases might render IAT scores a further breach of privacy than is currently accepted. In other words, determining an individual’s level of implicit racial bias goes past what the individual could reveal on her own, and exposes subconscious thoughts that are socially undesirable.

The third proposition, weakening stereotypes, has its own set of problems as well. As noted earlier, proponents of this method often invoke Dasgupta and Greenwald’s study<sup>135</sup> involving portraits of famous historical figures.<sup>136</sup> However, when a different group of researchers tried to replicate these results, they found that the stereotypes were harder to break than previously suggested.<sup>137</sup> In order to determine whether examples of both positive black figures and negative white figures were necessary to achieve the effect, the researchers ran an experiment using solely counter-stereotypical exemplars of black individuals.<sup>138</sup> Not only did the authors not observe any significant reduction in implicit racial bias following the intervention,<sup>139</sup> but also when they added disliked white figures back into the experiment, the reduction occurred with a substantially smaller effect size

---

<sup>132</sup> Taylor v. Louisiana, 419 U.S. 522, 527 (1975).

<sup>133</sup> Roberts, *supra* note 10, at 856.

<sup>134</sup> See ADMINISTRATIVE OFFICE OF THE UNITED STATES COURTS, HANDBOOK FOR TRIAL JURORS SERVING IN THE UNITED STATES DISTRICT COURTS 4–6 (2012), <http://www.uscourts.gov/file/2802/download> [https://perma.cc/4QRJ-G4XG] (explaining to jurors what to expect from the *voir dire* process); GEYH, *supra* note 15, at 73–75 (discussing the process of investigation and disclosure for judicial disqualification under 28 U.S.C. § 455 (2012)).

<sup>135</sup> Dasgupta & Greenwald, *supra* note 100, at 802–05.

<sup>136</sup> Kang et al., *supra* note 8, at 1171; Staats, *supra* note 99, at 20; Devine et al., *supra* note 99, at 1268.

<sup>137</sup> Jennifer A. Joy-Gaba & Brian A. Nosek, *The Surprisingly Limited Malleability of Implicit Racial Evaluations*, 41 SOC. PSYCHOL. 137, 138–45 (2010).

<sup>138</sup> *Id.* at 138–40.

<sup>139</sup> *Id.* at 139.

than Dasgupta and Greenwald had reported.<sup>140</sup> Thus, using counter-stereotypical pictures to successfully reduce implicit racial biases against black individuals required encouraging negative stereotypes of white individuals (at least with this specific protocol). Implementing a strategy that degrades one group in order to counteract the degradation of another group seems both counterintuitive and unwarranted, especially if the effects of this strategy are not as potent as presumed. Granted, other methods exist besides Dasgupta and Greenwald's paradigm. For instance, researchers have also addressed stereotypes by improving white participants' ability to differentiate between various black individuals' faces.<sup>141</sup> By reducing the tendency to pigeonhole outgroup members into a unified stereotyped category, facial recognition training can decrease implicit racial bias scores.<sup>142</sup> Yet, not only does this method provoke race salience issues, but it can also take up to 10 hours<sup>143</sup> to complete, which is an impractical and infeasible timeframe for the courtroom setting.

Although mental imagery exercises entail a faster process, they are also unlikely to be productive in the courtroom. For one, these exercises rely extensively on the cooperative effort of individuals, and there might also be a large degree of variation in the content and vividness of these simulations from one person to the next (given idiosyncrasies inherent to imagination). To achieve a more standardized process, one might suggest simply showing judges or jurors a video. An experiment employing this approach found reduced IAT scores after participants watched video clips of black individuals in positive contexts, such as a family barbeque.<sup>144</sup> However, only showing one race, even if it avoids presenting negative images of another race, positions racial factors as an obviously salient issue. Additionally, despite capturing the dynamic aspect of mental imagery in a systematized manner, the interactive effects of imaginative exercises, which are considered one of the most important features for enhancing learning,<sup>145</sup> are lacking in video-based strategies.

Lastly, while the fourth proposition, diversification, seems the most promising in principle, this type of intervention by itself would likely still be

---

<sup>140</sup> *Id.* at 141.

<sup>141</sup> Sophie Lebrecht et al., *Perceptual Other-Race Training Reduces Implicit Racial Bias*, 4 PLOS ONE e4215, 2–6 (January 21, 2009), <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0004215> [<https://perma.cc/XXN2-4UZS>].

<sup>142</sup> *Id.*

<sup>143</sup> Keim, *supra* note 36, at 4–5.

<sup>144</sup> Wittenbrick et al., *supra* note 95, at 817–21.

<sup>145</sup> See Jennifer J. Vogel et al., *Computer Gaming and Interactive Simulations for Learning: A Meta-Analysis*, 34 J. EDUC. COMPUTING RES. 229, 233–35 (2006) (discussing crucial role of interaction for enhancing learning in the context of computer games).

insufficient to adequately reduce implicit racial biases across trials. To start, diversification efforts would mainly be isolated to jurors, since a single judge hears most cases. Unless we overhaul the current system to make all trial courts involve a panel of judges,<sup>146</sup> making the pool of judges more diverse would have negligible effects, as individual judges would still lack the opportunity to have their opinions or decisions checked by a colleague of a different perspective during the trial. Put differently, increasing the diversity among judges might be beneficial for broadening viewpoints or attitudes in general, but cannot adequately address implicit racial biases when only one judge manages a case. With juries, despite the fact that group dynamics are a central feature of their decision-making process, several considerations complicate diversification efforts. Looking for diverse jurors requires a definition of diversity, and might lead to quotas or arbitrary decisions about who is diverse enough to facilitate the desired effects. Moreover, while heterogeneous groups tend to arrive at more carefully reasoned decisions than homogenous groups,<sup>147</sup> having too many disparate or competing voices can hinder cooperation and thwart the original benefits of diversification.<sup>148</sup> Further, diversification interventions would be vulnerable to the issues discussed above regarding overcompensation from race salience and social desirability effects. If white jurors start making concerted efforts to not appear racially biased to jurors of other races, they might form their decisions in a manner that goes beyond neutrality and instead constitutes bias in the other direction.

### III. VIRTUAL REALITY: A PROOF OF CONCEPT

Implicit racial bias poses serious concerns for the justice system, but existing proposals for mitigation fall short. Yet, what if alternative methods could provide a more effective means to reduce implicit racial biases in both judges and jurors? While the science is still emerging, there is reason to believe that virtual reality paradigms could meet these criteria in the future, diminishing the influence of learned stereotypes without relying on self-regulation capabilities.

---

<sup>146</sup> Rachlinski et al., *supra* note 8, at 1231.

<sup>147</sup> Degraasi et al., *supra* note 107, at 54.

<sup>148</sup> See Astrid C. Homan & Daan van Knippenberg, *Faultlines in Diverse Teams*, in *TOWARDS INCLUSIVE ORGANIZATIONS: DETERMINANTS OF SUCCESSFUL DIVERSITY MANAGEMENT AT WORK* 132 (Sabine Otten et al. eds., 2014) (mentioning intergroup bias, in which ingroups and outgroups can form within diverse teams); Martha L. Maznevski, *Understanding Our Differences: Performance in Decision-Making Groups with Diverse Members*, 47 *HUM. REL.* 531, 536 (1994) (noting that in groups that are heterogeneous with respect to gender and culture, group dynamics can sometimes impede effective and efficient decision-making processes).

Before delving into potential mechanisms, a few disclaimers are in order. First, for the purposes of this Article, virtual reality is broadly defined as any technology in which the user experiences and interacts with a virtual environment, commonly (but not necessarily) through the perspective of an avatar. Second, because research on the intersection between virtual reality and the mitigation of implicit racial bias is in its infancy, some of the methods discussed below have only been tested in a handful of studies with limited populations and constrained contexts.<sup>149</sup> Third, while this Article suggests applying these mechanisms to the courtroom setting, none of the techniques have been explicitly designed, tested, or even envisioned for that particular purpose.<sup>150</sup> Fourth, some proposals posited below are mere speculation of ways that certain technologies could be employed in the courtroom context, and have not been empirically tested. Consequently, the subsequent section seeks to provide a proof of concept, and present an idea that has the potential to reduce implicit racial biases in the near future, without facing the same roadblocks as the proposals put forth in the existing literature.

#### A. Visual Imagery and Outgroup Embodiment

Two main assets underlie virtual reality's promise for the courtroom setting: standardized, dynamic imagery and outgroup embodiment.

---

<sup>149</sup> See, e.g., Elizabeth Behm-Morawitz et al., *The Effects of Virtual Racial Embodiment in a Gaming App on Reducing Prejudice*, 83 COMM. MONOGRAPHS 396, 398–402 (2016), <http://www.tandfonline.com/doi/pdf/10.1080/03637751.2015.1128556> [<https://perma.cc/JT6N-5LDG>]; Victoria Groom et al., *The Influence of Racial Embodiment on Racial Bias in Immersive Virtual Environments*, 4 SOC. INFLUENCE 231, 231–45 (2009); Belinda Gutierrez et al., *“Fair Play”: A Videogame Designed to Address Implicit Race Bias through Active Perspective Taking*, 3 GAMES FOR HEALTH J. 371, 372–76 (2015); Lara Maister et al., *Changing Bodies Changes Minds: Owning Another Body Affects Social Cognition*, 19 TRENDS IN COGNITIVE SCI. 6, 7–10 (2015); Tabitha C. Peck et al., *Putting Yourself in the Skin of a Black Avatar Reduces Implicit Racial Bias*, 22 CONSCIOUSNESS & COGNITION 779, 780–86 (2013); Grace S. Yang et al., *Effects of Avatar Race in Violent Video Games on Racial Attitudes and Aggression*, 5 SOC. PSYCHOL. & PERSONALITY SCI. J. 698, 699–702 (2014).

<sup>150</sup> While virtual reality has not previously been suggested for bias reduction in the courtroom, some scholars and researchers have advocated for its use in other domains of criminal justice proceedings, such as for digital reconstructions of crime scenes and lineups for eyewitness identification. Jeremy N. Bailenson et al., *Courtroom Applications of Virtual Environments, Immersive Virtual Environments, and Collaborative Virtual Environments*, 28 LAW & POL'Y 249, 254–62 (2006); Lars C. Ebert et al., *The Forensic Holodeck: An Immersive Display for Forensic Crime Scene Reconstructions*, 10 FORENSIC SCI. MED. & PATHOLOGY 623, 624–26 (2014).

Returning to one of the suggestions from Part II, mental imagery exercises actively engage participants in the simulation of counter-stereotypes,<sup>151</sup> but individual differences in imagination strategies might prevent these exercises from producing consistent results.<sup>152</sup> Meanwhile, although videos can ensure that individuals all visualize the same material, they lack the interactive component that is pivotal for learning.<sup>153</sup> Virtual reality could simultaneously harness the benefits of mental imagery techniques and videos while circumventing their shortcomings. By designing predetermined scenarios and allowing individuals to explore virtual worlds via avatars, virtual reality maintains the interactive and dynamic nature<sup>154</sup> of mental imagery exercises while creating a standardized visual environment. Additionally, virtual reality enables participants to actively engage with the simulated environment, facilitating better, and more efficient, learning<sup>155</sup> without diminishing cognitive resources.<sup>156</sup>

In addition to interactive visualization, virtual reality allows individuals to temporarily experience the world from a different perspective. Specifically, participants can embody a member of a racial outgroup, which can reduce the degree to which individuals differentiate outgroup members from themselves.<sup>157</sup> Given that implicit biases often stem from automatic reactions to potential threats,<sup>158</sup> decreasing the “otherness” factor of outgroup individuals could weaken the implicit stereotypes.<sup>159</sup> Moreover, reducing

---

<sup>151</sup> Blair et al., *supra* note 101, at 828–29; Turner & Crisp, *supra* note 101, at 135–38.

<sup>152</sup> Turner & Crisp, *supra* note 101, at 139 (noting individuals’ previous experiences can influence the nature and ease with which they imagine intergroup contact).

<sup>153</sup> Vogel et al., *supra* note 145, at 233–35.

<sup>154</sup> Maria V. Sanchez-Vives & Mel Slater, *From Presence to Consciousness through Virtual Reality*, 6 NATURE REVS NEUROSCIENCE 332, 332–34 (2005).

<sup>155</sup> Elinda Ai-Lim Lee & Kok Wai Wong, *Learning with Desktop Virtual Reality: Low Spatial Ability Learners Are More Positively Affected*, 79 COMPUTERS & EDUC. 49, 51, 55 (2014); Barney Dalgarno et al., *The Contribution of 3D Environments to Conceptual Understanding*, in WINDS OF CHANGE IN THE SEA OF LEARNING 149, 151 (O.J. McKerrow ed., 2002).

<sup>156</sup> Dalgarno et al., *supra* note 155, at 152; Lee & Wong, *supra* note 155, at 49, 51.

<sup>157</sup> Behm-Morawitz et al., *supra* note 149, at 398–400.

<sup>158</sup> Amodio, *supra* note 26, at 671.

<sup>159</sup> See Sylvia Terbeck et al., *β-Adrenoceptor Blockade Modulates Fusiform Gyrus Activity to Black versus White Faces*, 232 PSYCHOPHARMACOLOGY 2951, 2956 (2015) (discussing neural reaction times to ingroup versus outgroup faces, and suggesting that speeding up the reaction time for processing outgroup faces might serve to reduce implicit racial biases); Andrew R. Todd et al., *Perspective Taking Combats Automatic Expressions of Racial Bias*, 100 J. PERSONALITY & SOC. PSYCHOL. 1027, 1027–39 (2011).



self-other distinctions through outgroup embodiment has been shown to increase empathy and positive feelings towards members of the outgroup in question.<sup>160</sup> Importantly, taking the perspective of just one member of an outgroup can produce results that transfer to the outgroup as a whole, allowing virtual embodiment exercises to render large-scale effects using small-scale paradigms.<sup>161</sup>

In the courtroom context, visual imagery and outgroup embodiment could be implemented in at least two forms: digital games and immersive virtual environments.

### 1. Digital Games

Digital games (such as computer and video games) offer a relatively low-tech method to achieve these benefits.<sup>162</sup> While games have not yet been developed for implicit bias reduction in the justice system,<sup>163</sup> future efforts could build on the design of Bernd Wittenbrick and colleagues' video-based study<sup>164</sup> to more subtly present counter-stereotypical situations. For instance, an avatar could walk through a park, where families of *multiple* races are enjoying barbeques, reading on a bench, playing fetch with a dog, and so forth. The avatar could interact and engage with the other people in the park by joining and participating in their activities. An alternative setup could involve a goal-oriented game, in which players must perform predetermined

---

<sup>160</sup> Behm-Morawitz et al., *supra* note 149, at 399–400.

<sup>161</sup> Nick Yee & Jeremy Bailenson, Walk a Mile in Digital Shoes: The Impact of Embodied Perspective-Taking on The Reduction of Negative Stereotyping in Immersive Virtual Environments, refereed presentation at the Cleveland State University Proceedings of PRESENCE: The 9th Annual International Workshop on Presence 147, 148, 154 (Aug. 24-26, 2006), <http://astro.temple.edu/~lombard/ISPR/Proceedings/2006/P2006proceedings.pdf> [<https://perma.cc/U8NB-E8CY>].

<sup>162</sup> See Gutierrez et al., *supra* note 149 at 372.

<sup>163</sup> A few studies have explored the impact of digital games on implicit bias in general. Unfortunately, these designs involve highly race-salient scenarios, and thus are not applicable to the current context. See Gutierrez et al., *supra* note 149 at 372–76, for a discussion that found implicit racial biases were lower for participants with high empathy, and Grace S. Yang et al., *supra* note 149, at 699–702, for a discussion on heightened implicit racial biases resulting from reinforcement of the “black men-violent crime” stereotype. Additionally, one research team recently conducted a study in which white participants created an avatar (in a way that minimized race salience issues) and explored a basic virtual setting in an online game. Although the study did not examine implicit biases, the authors found an increase in positive explicit attitudes towards black individuals among participants who played with black avatars compared to those who played with white avatars. Behm-Morawitz et al., *supra* note 149, at 411.

<sup>164</sup> Wittenbrick et al., *supra* note 95, at 817–18.

actions to earn points. In either game design, black individuals would subtly be presented in positive, counter-stereotypical contexts while participants engaged in normal, mundane activities via an outgroup avatar. Importantly, the outgroup identity of the avatar would need to involve multiple characteristics to avoid race salience effects. For example, the outgroup identity could entail someone of a different race, age, gender, and socioeconomic status,<sup>165</sup> which could encourage open attitudes towards outgroups in general as opposed to a specified race. In addition, these games could contain mandatory steps that the player must take in order to ensure engaged compliance with the digital exercise.

## 2. Immersive Virtual Environments

Whereas digital games could reduce bias using outgroup avatars in counter-stereotypical scenarios, immersive virtual environments could take this design one step further. In immersive virtual environments, participants wear a head-mounted display that replaces all visual input from their actual surroundings with pre-designed simulations.<sup>166</sup> By tracking users' head and body movements, the technology allows participants to interact with the setting in a way that strongly mimics real life.<sup>167</sup>

Instead of simply personifying an animated character in a digital game, immersive virtual environments can induce body ownership illusions, in which individuals temporarily feel as though another person's body part is in fact their own.<sup>168</sup> Unsurprisingly, these illusions are particularly effective in reducing self-other distinctions.<sup>169</sup> In an experiment employing this concept, Tabitha Peck and colleagues<sup>170</sup> had participants enter a virtual environment where a mirror reflected back an image of their avatar. When the participant moved his own limbs in front of the mirror, the reflection moved in an identically synchronous way.<sup>171</sup> Light-skinned participants who were given a darker skinned avatar in the virtual setting demonstrated reduced implicit racial biases following the experiment.<sup>172</sup> A similar technique could be

---

<sup>165</sup> Socioeconomic status could be portrayed via work uniforms. See Jonathan B. Freeman et al., *Looking the Part: Social Status Cues Shape Race Perception*, 6 PLOS ONE e25107, 2 (Sept. 26, 2011), <http://dx.doi.org/10.1371/journal.pone.0025107> [<https://perma.cc/L2LH-Q6NV>] (using work uniforms, such as business suits and janitor outfits, to depict social status in a computer-based perception study).

<sup>166</sup> Sanchez-Vives & Slater, *supra* note 154, at 332–33.

<sup>167</sup> *Id.* at 333–34.

<sup>168</sup> Lara Maister et al., *supra* note 149, 7–10.

<sup>169</sup> *Id.*

<sup>170</sup> Peck et al., *supra* note 149, at 780–86.

<sup>171</sup> *Id.* at 780–82.

<sup>172</sup> *Id.* at 782–86. The findings from this study contradict the only other existing study on immersive virtual environments and implicit racial biases. Groom et al.,

especially potent in the courtroom setting. Judges and jurors could enter an immersive virtual environment via the perspective of an outgroup member, and examine their “new” bodies in front of a mirror. As mentioned in the discussion of digital games,<sup>173</sup> the identity of the avatar should be multifaceted to reduce issues with race salience.

With respect to practical questions regarding time and cost restraints, immersive virtual environments would not pose excessive burdens. Basic setups involve a head-mounted display, headphones for sound perception, and motion tracking sensors;<sup>174</sup> however some setups, such as Google Cardboard, simply require a smartphone and a headset.<sup>175</sup> Multiple individuals could use the equipment, and head-mounted displays are now being sold as consumer products, with prices ranging from approximately \$20 (e.g., Google Cardboard)<sup>176</sup> to \$150 (e.g., VisusVR).<sup>177</sup> Additionally, even though immersive virtual environments require extra time to set up the head-mounted display and orient the individual, studies involving this technique often last for only a few minutes once the participant enters the virtual environment.<sup>178</sup>

In sum, virtual reality tasks, whether through digital games or immersive virtual environments, could dampen automatic reactions to members of other races in a manner that is standardized, interactive, engaging, and feasible. Crucially, these methods could achieve such results without confronting the

*supra* note 149, 231–45. Groom and colleagues’ study found increased implicit racial bias scores after individuals participated in the virtual reality paradigm. *Id.* However, as Peck et al. note, Groom and colleagues’ study involved crucial differences that might explain the divergence in results. *Id.* For instance, the virtual world was more complex, body ownership was not included as an explicit factor, and the paradigm involved a job interview, in which race discrimination is a common occurrence. Peck et al., *supra* note 149, at 785.

<sup>173</sup> See *infra* Part III.A.1.

<sup>174</sup> See Soo Youn Oh et al., Immersion at Scale: Researcher’s Guide to Ecologically Valid Mobile Experiments, presentation at the Clemson University School of Computing conference for IEEE Virtual Reality (Mar. 22, 2016), <https://vhil.stanford.edu/mm/2016/01/oh-vr-immersion-at-scale.pdf> [<https://perma.cc/GLD3-VTPE>] (using and describing a basic setup for mobile virtual reality experiments with fewer and cheaper pieces of equipment than in a traditional virtual reality laboratory setting).

<sup>175</sup> *Get Your Cardboard*, CARDBOARD, <https://vr.google.com/cardboard/get-cardboard/> [<https://perma.cc/NJ8D-26UG>] (last visited Sept. 23, 2016).

<sup>176</sup> *Cardboard V2.0*, I AM CARDBOARD, <http://www.imcardboard.com/cardboard-v2-0.html> [<https://perma.cc/TB22-M4Q8>] (last visited Feb. 10, 2016).

<sup>177</sup> *VisusVR* *Visus*, VISUSVR, <http://www.visusvr.com/products/visusvr-visus> [<https://perma.cc/6CRF-KDPN>] (last visited Feb. 10, 2016).

<sup>178</sup> See, e.g., Peck et al., *supra* note 149, at 785 (placing participants in virtual world for approximately 12 minutes).

same pitfalls as the previously suggested measures.<sup>179</sup> As opposed to strategies aimed at raising awareness, virtual reality exercises do not rely heavily on self-regulation throughout the trial. They do not weaken stereotypes by pitting one race against another, nor do they take multiple hours to complete. Unlike diversification proposals, virtual reality applies to both jurors and judges, and whereas screening methods automatically exclude many members of the population from serving as a judge or juror, virtual reality exercises could train anyone who is currently eligible to serve. Lastly, virtual reality paradigms can involve nuanced and intricate design features, allowing race to be subtly presented without making it an unduly salient factor.

### *B. The Need for Tailored Research Efforts*

Although digital games and immersive virtual environments could become effective tools in the future, tailored research efforts are necessary to move these techniques from theoretical possibilities into viable solutions. Specifically, future experiments will need to address (1) the strength, scope, and duration of effects, and (2) the degree to which individual differences produce variable results.

To start, researchers should not only explore the extent of bias reduction on measures like the IAT, but also on assessments of evidence and presumptions of innocence. Importantly, virtual reality exercises would need to achieve these results without creating collateral impacts, such as altering other cognitive processes or influencing the decision-making process in unforeseen ways. Otherwise, unintended consequences could nullify the exercises' benefits by producing counterproductive results. In addition to scope and strength, future research must determine the longevity of the effects, and determine whether acceptable standards for durability might differ between judges and jurors. For instance, judges are consistently in the courtroom setting and would have a continuous need for bias reduction. In contrast, since jurors' responsibilities terminate at the end of the trial, the exercises' effects should be proportional to the length of their courtroom duties. Compared to digital games, immersive virtual environments would likely generate stronger, longer-lasting effects due to their more vicarious and life-like nature.<sup>180</sup> Until further research measures are taken, it is difficult to predict the precise duration of effects; yet, existing research

---

<sup>179</sup> See, e.g., *infra* Part III.A.1.

<sup>180</sup> Cf. Sun Joo Ahn et al., *Short- and Long-Term Effects of Embodied Experiences in Immersive Virtual Environments on Environmental Locus of Control and Behavior*, 39 *COMPUTERS IN HUM. BEHAV.* 235, 239–40 (2014) (comparing the strength of effects between video-based methods and immersive virtual environments, and discussing the important roles of interaction and realism for delivering stronger results in immersive virtual environments).

suggests that effects of immersive virtual environments could reasonably endure for at least one week.<sup>181</sup> Research also indicates that closer tracking of head and body movements can lead to more potent results.<sup>182</sup> Consequently, the design of the immersive virtual environment paradigm could be more highly advanced in the case of judges to produce longer-lasting effects. However, these statements are merely speculative; accordingly, future research should identify which technique (between digital games or immersive virtual environments) is more efficacious, simple, and cost-sensitive to implement.

Not only are questions of strength, scope, and duration essential to resolve, but in order for virtual reality to be useful, it must also reliably produce the intended effects in the majority of individuals. If the techniques were only successful in a small portion of the population, the overall reduction in implicit racial bias might be too subtle to make the costs of implementation worthwhile. Thus, systematic research would need to specifically examine the extent to which individual differences might modulate results.

As a starting point, researchers should replicate the studies mentioned in Part I using mock trial scenarios,<sup>183</sup> and explore whether and to what degree virtual reality training reduces implicit racial biases (compared to a control group). Such a study could be expanded to involve multiple versions of the techniques, which could range in levels of complexity, and include individuals of different ages, races, and backgrounds. These studies should also entail follow-up tests to provide longitudinal data on the exercises' effects.

Although virtual reality is not ready for implementation in the courtroom, it is important to note that some crucial groundwork has already been laid. To start, digital games and immersive virtual environments are becoming increasingly mainstream,<sup>184</sup> and continue to be extrapolated to novel domains.<sup>185</sup> By the time sufficient research has been conducted for its

---

<sup>181</sup> *Id.* at 237–42.

<sup>182</sup> James J. Cummings & Jeremy N. Bailenson, *How Immersive is Enough? A Meta-Analysis of the Effect of Immersive Technology on User Presence*, 19 MEDIA PSYCHOL. 1, 26–27 (2015).

<sup>183</sup> Levinson et al., *supra* note 39, at 201–08; Levinson & Young, *supra* note 53, at 331–39.

<sup>184</sup> Adi Robertson, *The New York Times Is Shipping Google Cardboard to its Print Subscribers*, THE VERGE (Oct. 20, 2015, 8:47 AM), <http://www.theverge.com/2015/10/20/9573165/nyt-vr-new-york-times-cardboard-app> [<https://perma.cc/F7S5-DBH4>].

<sup>185</sup> Knavul Sheikh, *Beyond Gaming: 10 Other Fascinating Uses for Virtual-Reality Tech*, LIVE SCIENCE (Jan. 19, 2016, 10:03 AM), <http://www.livescience.com/53392-virtual-reality-tech-uses-beyond-gaming.html> [<https://perma.cc/MM35-ACZ5>]; Scott Steinberg, *The Benefits of Video Games*, ABC NEWS (Dec. 26, 2011), <http://abcnews.go.com/blogs/technology/2011/12/the->

use in the courtroom setting, virtual reality will likely no longer be regarded as a futuristic or novel phenomenon. As a result, people might express less initial aversion to virtual reality if they feel more comfortable with the technology in the first place. Second, the presence and influence of implicit racial biases are becoming a more discussed issue not only among scholars, but also among the general public.<sup>186</sup> Within the past year, there has been a surge of newspaper articles, blog posts, and other media forums calling attention to the problem and expressing a need for change.<sup>187</sup> Third, technological measures are already being used to enact systemic reform in the justice system.<sup>188</sup> For instance, discrepancies in the setting of bail across similar cases have revealed problems with implicit racial bias, the limitations of judicial discretion, and a failure of common practice to meet its intended purpose.<sup>189</sup> In response, multiple jurisdictions have implemented an algorithmic method, which is designed to more objectively assess potential risk and facilitate judges in setting bail.<sup>190</sup> While initial acceptance of the measure was met with resistance, those jurisdictions that have integrated it into the decision-making process have become more confident in the fairness and legitimacy of the justice system.<sup>191</sup> Together, these recent developments suggest that virtual reality training is not a purely hypothetical proposal: the technology is becoming more widespread, the general public is aware and concerned about the issue of implicit racial bias, and steps towards systemic change in the courtroom have already been set in motion.

#### IV. VIRTUAL REALITY IN CONTEXT: THE CASE OF JUDGES

To concretize the idea of virtual reality in the courtroom, this Part examines how such methods could be applied to judges presiding over criminal cases.<sup>192</sup> Judges hold a unique position in the legal realm, as they

---

benefits-of-video-games/ [https://perma.cc/L2HK-C4D3].

<sup>186</sup> E.g., Eva Paterson, *Unintentional Discrimination Is as Harmful as Real Bias*, N.Y. TIMES (Apr. 27, 2015, 6:45 AM), <http://www.nytimes.com/roomfordebate/2015/04/27/can-discrimination-exist-without-clear-intent/unintentional-discrimination-is-as-harmful-as-real-bias> [https://perma.cc/J9LY-TWTF]; Maanvi Singh, *So You Flunked a Racism Test. Now What?*, NPR (Aug. 4, 2015, 8:03 AM), <http://www.npr.org/sections/codeswitch/2015/08/04/416827667/so-you-flunked-a-racism-test-now-what> [https://perma.cc/6CFG-5TFV] (highlighting the increased prevalence of implicit bias discussions in mainstream news and media sources).

<sup>187</sup> *Id.*

<sup>188</sup> Shaila Dewan, *Judges Replacing Conjecture with Formula for Bail*, N.Y. TIMES, June 28, 2015, at A18.

<sup>189</sup> *Id.*

<sup>190</sup> *Id.*

<sup>191</sup> *Id.*

<sup>192</sup> While this Article's scope is confined to criminal trials, it is important to note

not only choose to enter into their professional role, but also serve as the tangible face of the justice system. Additionally, judges play a prominent part in influencing trial outcomes through managing the trial, determining the admissibility of evidence and appropriateness of certain statements, and ultimately rendering the sentencing decision.<sup>193</sup> Given judges' direct involvement in each case they hear, problems stemming from biased judgments are particularly concerning. Moreover, the strength of stereotypical associations between criminality and race might be even more potent in judges than in the general public; since black individuals comprise a disproportionately high percentage of the defendant population, judges might possess skewed perceptions of criminal trends.<sup>194</sup>

The subsequent section outlines two policies for implementing virtual reality training among judges, highlighting associated benefits for multiple players in the courtroom system. After addressing possible objections to these policies, this section contends that judges should be expected to participate in virtual reality training exercises. In order to simplify the following discussion, assume that in the near future, virtual reality methods will be effective, targeted in scope, and ready to implement in the courtroom setting.

#### A. *Virtual Reality Training: Painting the Picture*

Implementing virtual reality training could potentially take one of two forms: a voluntary policy or a mandatory policy. In a voluntary policy, judges would be informed about implicit biases in the courtroom and provided with information about the virtual reality exercises (including facts about the strength, scope, and duration of the training's effects).<sup>195</sup> Judges would then have the option to participate in the exercises prior to trials. Depending on how long the effects last, judges could perform the exercises before opening statements, or potentially during continuing judicial education seminars (should the effects be sufficiently durable). In contrast to a voluntary policy, a mandatory process would make virtual reality exercises

---

that implicit racial biases are also a concern in civil cases. *See* Kang et al., *supra* note 8, at 1152–68.

<sup>193</sup> *Id.* at 1146.

<sup>194</sup> *See* Papillon, *supra* note 67, at 53 (noting the overrepresentation of black convicts in the criminal justice system, and the impact of this fact on perceptions of black individuals' propensity to engage in criminal behavior).

<sup>195</sup> In order to avoid any race salience effects that might arise in explaining the reason for virtual reality, judges would likely be informed of the problem of implicit bias as a general phenomenon. This instruction should not be viewed as deceptive, since even though the exercises are targeted at implicit racial biases in particular, the reductions in automatic self-other distinctions are generalizable and impact the fundamental processes underlying many types of implicit biases.

a requisite aspect of the judicial profession; individuals would not be forced to participate in the exercises, but would have to agree to them in order to enter or remain in the profession. Since individuals are not required to become judges, this policy will be referred to as “pseudo-compulsory” for the remainder of this Article. Importantly, in either policy, the training would serve as a supplemental tool to judicial decision-making (as opposed to a technological solution to implicit racial biases), and should accurately be portrayed as such when explained to judges.<sup>196</sup>

### B. Benefits of the Policies

In order to appreciate the full benefit of virtual reality training, consider the three main parties impacted: (1) the defendant on trial, (2) the justice system at large, and (3) the individual judge participating in the training.<sup>197</sup> Starting with defendants, if a judge chooses to engage in the training (and assuming it successfully attenuates his implicit racial biases), defendants might be more likely to be presumed innocent from the beginning of the hearing. Reducing implicit racial biases would also boost the justice system’s legitimacy—by increasing a judge’s capacity to interpret evidence in an equitable manner, the justice system could better meet its goal of facilitating fair and impartial trials. Plus, if the trial system better fulfilled this intended purpose, citizens would be more confident in their likelihood of receiving a fair trial should they ever find themselves in the position of a defendant. With respect to the individual judge, participating in virtual reality training could conceivably facilitate more adequate compliance with professional and legal duties. Not only is impartiality a professional obligation,<sup>198</sup> but the inability to be impartial also constitutes legal grounds for disqualification from a trial.<sup>199</sup> To the extent that individuals derive benefits from better performance in their chosen line of work, the judge might additionally gain personal satisfaction from more adeptly carrying out his role.

---

<sup>196</sup> Framing the technology as a supplemental tool was crucial to the success of the algorithm-based bail measure discussed in Part IV, *supra*. See Dewan, *supra* note 188.

<sup>197</sup> Dewan, *supra* note 188 (discussing how implicit racial biases can impact judges when setting bail, leading to negative impacts on individual defendants, and de-legitimizing the justice system as a whole).

<sup>198</sup> MODEL CODE OF JUDICIAL CONDUCT r. 2.2–2.4 (AM. BAR ASS’N 2011).

<sup>199</sup> 28 U.S.C. § 144 (2012); 28 U.S.C. § 455 (2012).



### C. Potential Objections

Despite the associated benefits, some individuals might consider virtual reality programs a controversial proposal. Specifically, two main concerns might arise: freedom of thought and coercion.<sup>200</sup>

#### 1. Freedom of Thought

Given that the virtual reality exercises target automatic and hardwired judgments, one might worry that courts (or the parties responsible for designing the paradigms) are “brainwashing” judges—by covertly reducing implicit racial biases, virtual reality programs might shift the very way that judges view and perceive the world around them. However, if the exercises work as expected, virtual reality training should not be conceptualized as a brainwashing phenomenon. By asking people to view their avatar in a mirror, or explore a mundane virtual setting, the exercises are not implanting thoughts into individuals’ minds, erasing opinions about race, or dictating what people should believe.<sup>201</sup> Given that explicit beliefs are often inconsistent with one’s implicit biases,<sup>202</sup> it is highly unlikely that the exercises would alter the judge’s personality, attitudes, or opinions.<sup>203</sup> Yet, even if the exercises would not “brainwash” judges, virtual reality would influence the nature or likelihood of making certain automatic judgments. As a result, the more fundamental question might concern freedom of thought and the interference with a judge’s underlying mental processes.

While freedom of thought merits respect, there are two counterarguments to note. First, multiple scholars contend that automatic processes, like implicit biases or impulses, actually decrease one’s capacity for mental control, particularly when these biases diverge from one’s explicit

---

<sup>200</sup> See *infra* Parts IV.C.1, IV.C.2.

<sup>201</sup> Not only does the design of these exercises avoid portraying any explicit message, but the mechanisms driving the effects are also primarily based on bottom-up sensory perception, as opposed to top-down executive processing. See Lara Maister & Manos Tsakiris, *The Plasticity of Self-Other Boundaries: From Body Ownership to Social Cognition*, in 2 CONCEPTUAL AND INTERACTIVE EMBODIMENT: FOUNDATIONS OF EMBODIED COGNITION 178–82 (Martin H. Fischer & Yann Coello eds., 2015) (discussing neural mechanisms underlying body ownership illusions, highlighting the influence of somatosensory and motor mirror systems).

<sup>202</sup> Banaji et al., *supra* note 9, at 57–58.

<sup>203</sup> By reducing self-other distinctions, it is possible that the opinions or attitudes of those who are explicitly racist might be modulated to some degree. In other words, for those whose implicit and explicit biases do not align, attenuating implicit biases could *potentially* have an impact on the strength of the explicit bias. Even if this were the case, these individuals would theoretically have already been removed from the judiciary as a result of their explicit prejudice.

attitudes.<sup>204</sup> By clouding a person's ability to thoroughly exercise his consciously held beliefs or opinions, implicit biases can impair freedom of thought and autonomous decision-making in their own right.<sup>205</sup> Second, under both voluntary and pseudo-compulsory policies, judges would have to agree to participate in the training, knowing that it modulates mental processes to some degree. If judges make an informed choice to do so, then respecting freedom of thought and autonomy simultaneously entails honoring judges' decisions.<sup>206</sup> Considering the nature of the exercises and the volitional facet of the policies, virtual reality training should not be considered an objectionable impediment to freedom of thought.

## 2. Coercion

When evaluating the policies' respect for freedom of thought, particularly in the pseudo-compulsory case, critics might raise the question of coercion; namely, would judges *truly* be making an unburdened, autonomous decision to participate in the training? The short answer to this question is "yes." Coercion typically entails three main criteria: (1) reducing an individual's available choices, (2) negatively impacting the individual and depriving him of something to which he is entitled, and (3) intentionally manipulating the individual to achieve a certain outcome.<sup>207</sup> The pseudo-compulsory policy fails to meet any of these elements.

Starting with the first requirement (reducing available options), one *could* claim that the judge's choice set has been limited: whereas current or aspiring judges previously had the option to serve without agreeing to the training, this choice is no longer available. However, it is not entirely clear that a judge's choice set has been narrowed as opposed to merely complicated through additional conditions. Remember that professions contain a set of requirements with which members must comply, and failure to meet such obligations bars individuals from entering or remaining in that occupation.<sup>208</sup> Consequently, the choice set for judges can be viewed as (a)

---

<sup>204</sup> Bublitz, *supra* note 84, at 9; Thomas Douglas, *Moral Enhancement*, 25 J. APPLIED PHIL. 228, 231 (2008).

<sup>205</sup> Bublitz, *supra* note 84, at 9; Douglas, *supra* note 204, at 231.

<sup>206</sup> See 3 JOEL FEINBERG, *THE MORAL LIMITS OF THE CRIMINAL LAW: HARM TO SELF* 43 (1986) (noting that autonomy involves making decisions for oneself, including being responsible for consequences that ensue as a result of the decision).

<sup>207</sup> ALAN WERTHEIMER, *COERCION* 202–21 (1987); Jennifer S. Hawkins & Ezekiel J. Emanuel, *Clarifying Confusions about Coercion*, 35 HASTINGS CENTER REP. 16, 17 (2005).

<sup>208</sup> See MODEL CODE OF JUDICIAL CONDUCT Scope (AM. BAR ASS'N 2011) ("The Canons state overarching principles of judicial ethics that all judges must observe. Although a judge may be disciplined only for violating a Rule, the Canons provide important guidance in interpreting the Rules").

comply with the obligations required for the profession or (b) lose your qualification to hold this position. Although the stipulations have changed under the pseudo-compulsory policy, this overall option set stays the same.

Whether or not we believe that options have been reduced, the more questionable claims are that judges are worse off as a result of the policy, and that they have been deprived of something to which they are entitled (i.e., the second requirement for coercion).<sup>209</sup> In the case of judges currently sitting on the bench, one might argue that making them resign from their position for failure to consent to the training would have a negative impact on their lives; they would lose their job, their financial security, their self-identity, and the ability to work in a role about which they might be fervently passionate. For those aspiring to enter the profession, withholding their consent and forfeiting their eligibility might undermine all of the effort and resources that these individuals had invested in order to one day have the opportunity to serve as a judge. Although these consequences might exist, it seems strange to afford them much weight. These “negative” impacts concern infringing upon an individual’s interest in being a judge; yet, the virtual reality exercises would enable judges to better perform their jobs, uphold fundamental values of the position, and theoretically promote the very interest in question. Regardless, the pseudo-compulsory policy would not deprive judges of a right. There is no right to be a judge, let alone to have any particular job. Moreover, as stated earlier, every profession contains a set of rules that its members are expected to follow, simply by virtue of being in that profession. Judges choose to accept these obligations, and would only be faced with this pseudo-compulsory decision if they voluntarily elected to join the judiciary, which is something they are in no way compelled to do, nor are entitled to do.<sup>210</sup>

Moving to the third element of coercion (manipulative intent), one could theoretically contend that the government creates this restrictive choice set for the sole purpose of facilitating its desired outcome. Assuming that judges have a strong interest in keeping their positions, they might consent to the exercises (even against their preferred wishes) in order to qualify for the profession. As a result, these judges would directly perpetuate the government’s goals and interests. However, this argument is tenuous at best. While judges might weigh the virtual reality exercises differently than they would if the consequence did not entail losing their jobs, the purpose of the policy and the intentions behind it are not focused on making judges succumb to the government’s desires. Instead, the policy is designed to enhance the fairness of the justice system, create positive benefits for

---

<sup>209</sup> WERTHEIMER, *supra* note 207, at 202–21; Hawkins & Emanuel, *supra* note 207, at 17 (explaining that coercion typically entails the deprivation of an entitlement that leaves the coerced party worse off).

<sup>210</sup> MODEL CODE OF JUDICIAL CONDUCT.

citizens, and enable judges to more adequately meet their professional and legal duties.

#### D. *The Case for a Pseudo-Compulsory System*

Thus far, this Article has argued that (a) voluntary and pseudo-compulsory policies would bring substantial benefits to the courtroom, and (b) that both setups could be justifiably implemented. Although a voluntary scheme would constitute a less drastic measure, a pseudo-compulsory system should be the ultimate goal for two main reasons: equitable access and distributed burdens. First, a pseudo-compulsory policy enables *every* defendant to access the benefits of bias reduction, not just those who happen to be assigned a judge who elected to participate in the training. Second, if a system with less biased judges enhances the legitimacy of both the judiciary and the trial process as a whole, only those who engaged in the training would be supplying these benefits. While some judges would be taking on an extra burden, those who refused to participate would reap the advantages of this fairer trial system without providing the necessary contributions themselves.<sup>211</sup> Integrating virtual reality training into professional requirements through a pseudo-compulsory policy would allocate each judge a role in bringing about the policy's benefits. Accordingly, while both voluntary and pseudo-compulsory policies would improve the status quo, the latter more closely aligns with the justice system's respect for fairness and equity.<sup>212</sup>

However, since virtual reality training would present a large departure from current practice, incremental implementation is advisable. Courts could first introduce training on a voluntary basis, allowing judges sufficient time to build familiarity with the exercises. Once the training programs had a

---

<sup>211</sup> See generally Alan Wertheimer, *Liberty, Coercion, and the Limits of the State*, in THE BLACKWELL GUIDE TO SOCIAL AND POLITICAL PHILOSOPHY 57 (Robert L. Simon ed., 2002) (discussing the Justice Principle and free-riding).

<sup>212</sup> While a pseudo-compulsory policy might sound severe, it is worth noting that a similar setup already exists in the medical setting. Take the case of mandatory vaccinations for health care workers, which some states and hospitals currently require. See *State Immunization Laws for Healthcare Workers and Patients*, CENTERS FOR DISEASE CONTROL AND PREVENTION (Nov. 19, 2014), <http://www2a.cdc.gov/vaccines/statevaccsApp/AdministrationbyPatientType.asp?PatientType=Hospital%20Employees#1> [<https://perma.cc/3QZT-WMZ3>] (for a list of voluntary and mandatory immunization policies for each state). The comparison between health care workers and judges can be made on multiple levels—health care workers choose to enter the profession, have duties to protect and serve both individuals and the broader public, professional obligations require them to take certain actions that prevent harm to patients and the health care system at large, and finally, failure to comply with such requirements compromises their ability to adequately perform their job.

chance to gain traction, courts could then transition to pseudo-compulsory policies. Even though voluntary approaches are not ideal for the reasons mentioned above, obtaining internal support among the judiciary is crucial for the program's ultimate success, and any reduction in implicit racial bias would be an improvement over the present system.

## V. VIRTUAL REALITY AND JURIES

While the judiciary is a sensible starting point for bias reduction training, judges are not the only population in the courtroom setting affected by implicit racial biases. As mentioned in Part I, studies with mock jurors highlight the strong influence that biases can have on interpretations of information and evaluations of guilt.<sup>213</sup> In contrast to the argument for judges, the analysis for jurors is significantly more complicated given the unique characteristics and protections afforded to juries.<sup>214</sup> Additionally, cultural acceptance of training policies might be more difficult to achieve since jury service is not an optional duty,<sup>215</sup> and logistical barriers might arise considering the size of juries (as compared to a single judge).<sup>216</sup> Nevertheless, given the prevalence and impact of implicit racial biases, it is worth extending the analysis to the jury, one of the most influential decision-making groups in the courtroom setting. The subsequent section follows a similar framework to the discussion of judges, explaining what the respective policies might look like, addressing relevant benefits and potential concerns, and analyzing the unique demands of the juror role.

### A. Virtual Reality Training Policies

As with judges, virtual reality training with jurors could be voluntary or pseudo-compulsory. In a voluntary scheme, upon being summoned for jury service, potential jurors would be informed of the problem of implicit biases

---

<sup>213</sup> Kang et al., *supra* note 8, at 1142–52; Larson, *supra* note 10, at 154–58; Levinson et al., *supra* note 39, at 207; Levinson & Young, *supra* note 53, at 344–45; Sommers & Ellsworth, *supra* note 10, at 220–21.

<sup>214</sup> See, e.g., FED. R. EVID. 606 (explaining protected status of jury's deliberative process, noting that jurors cannot testify about their conversations or the thought processes involved in their decision); ANDREW G. FERGUSON, WHY JURY DUTY MATTERS: A CITIZEN'S GUIDE TO CONSTITUTIONAL ACTION 12–21 (2013) (noting the special and distinct nature of jury service).

<sup>215</sup> 28 U.S.C. § 1866(g) (2012).

<sup>216</sup> For example, completing the virtual reality training with each juror before trial might take longer than completing the exercises with a single judge, and larger quantities of the necessary equipment would likely be required as well. While this is by no means a complete list of potential logistical factors, a full analysis of the practical considerations is beyond the scope of this Article.

in the courtroom and given facts about virtual reality exercises. Jurors would then have the option to participate in the training prior to the start of the trial, and could potentially perform the exercises while waiting to be called for *voir dire*,<sup>217</sup> as a supplement to the orientation videos that jurors are already expected to watch.<sup>218</sup> A pseudo-compulsory policy, on the other hand, would make the exercises a requisite aspect of jury service. In order to only conduct *voir dire* with those who could actually meet the requirements of the juror role, potential jurors would be given the option to consent to the training prior to the jury selection process. Only those jurors who agreed to the training would continue with *voir dire*, and if selected would partake in the exercises before the trial commenced. However, to prevent virtual reality training from simply providing an easy excuse to avoid serving, individuals who declined to give their consent would be required to fulfill some other civic duty.<sup>219</sup>

### B. Benefits of the Policies

Mirroring the argument for judges, a juror's choice to participate in the training confers benefits to the defendant on trial, the justice system at large, and the juror participating in the exercises. By reducing their implicit racial biases, jurors would help facilitate a defendant's right to a fair trial, promote the presumption of innocence, and enable the justice system to better meet its intended purpose. Moreover, since jurors are required to hear cases impartially,<sup>220</sup> virtual reality exercises would allow individuals to better

---

<sup>217</sup> Ideally, jurors would be asked to make their decision prior to *voir dire* so that their choice to participate would not be influenced by the jury selection process. Otherwise, if the willingness to consent to participate was a subject during *voir dire*, potential jurors might be swayed to answer in a manner counter to their actual preferences. Returning to the social desirability effects mentioned in Part I, potential jurors might give their consent when asked in the presence of the attorneys and judge in order to conform to what they believe is expected from them. Alternatively, one could also imagine that potential jurors might decline to give their consent when asked during *voir dire* solely as a strategy to get out of jury service. Requiring a decision before *voir dire* might circumvent these issues.

<sup>218</sup> See JODY GEORGE ET AL., FED. JUDICIAL CTR., HANDBOOK ON JURY USE IN THE FEDERAL DISTRICT COURTS 63–64 (1989) (describing the orientation process, including the frequent use of videos).

<sup>219</sup> The exact nature of this civic duty is beyond the scope of this Article, but some safeguards would be necessary to prevent virtual reality exercises from becoming a pretense for not serving for reasons separate from the training exercises themselves.

<sup>220</sup> See U.S. CONST. amend. VI (“the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the state and district wherein the crime shall have been committed”); 28 U.S.C. § 1866(c) (2012) (“any person summoned for jury service may be . . . excluded by the court on the ground that such person may be

perform their civic and legal duties.

While both voluntary and pseudo-compulsory schemes would achieve these benefits, the same arguments introduced in Part IV.D apply to jurors. With a pseudo-compulsory policy, all members of all juries would have attenuated implicit racial biases (at least to some degree). Compared to a voluntary policy, a pseudo-compulsory system would ensure *each* defendant access to a less biased jury, and could potentially produce greater reductions in overall bias—having 12 less partial jurors is conceivably more desirable than having only a select few (depending on how many jurors decided to participate in the voluntary scheme). A pseudo-compulsory system would also distribute the burdens more equally across jurors, and perhaps across the citizenry in general (given that jury service is a mandatory civic duty).<sup>221</sup> And so, while both policies could facilitate more impartial trials, a pseudo-compulsory policy would likely deliver greater benefits. Nevertheless, as argued in Part IV.D, a voluntary policy would be a desirable starting place to incrementally build momentum and support for the training before transitioning to pseudo-compulsory requirements.

### C. Potential Objections

In addition to freedom of thought and coercion, one might also worry about the representativeness of the jury (e.g., obtaining a jury of one's peers and a fair cross-section of the community).<sup>222</sup> Although the analysis for freedom of thought is largely identical to the argument put forth for judges, the latter two issues (representativeness of the jury and coercion) present unique considerations in the jury context.

#### 1. A Representative Jury

Within the issue of representation, there are two similar but distinct questions. First, would the virtual reality exercises, by reducing implicit racial biases, modulate jurors in such a way that they no longer qualify as a defendant's "peers"? Second, is there a certain type of individual who is more likely to consent to the exercises, thereby diminishing the likelihood of obtaining a fair cross-section of the community?<sup>223</sup>

With respect to the first question, it is highly unlikely that virtual reality training would create a "superclass" of potential jurors. As mentioned in the discussion on freedom of thought,<sup>224</sup> the exercises would not fundamentally

---

unable to render impartial jury service").

<sup>221</sup> 28 U.S.C. § 1866(g) (describing jury service as a mandatory civic duty).

<sup>222</sup> Taylor v. Louisiana, 419 U.S. 522, 527 (1975).

<sup>223</sup> *Id.*

<sup>224</sup> See *supra* Part IV.C.1.

alter personalities or opinions,<sup>225</sup> especially given that implicit racial biases often diverge from individuals' consciously held beliefs.<sup>226</sup> Further, it is unlikely that the virtual reality techniques would wholly eliminate biases,<sup>227</sup> let alone reduce all jurors' biases to the exact same level.

While the law does not explicitly define the term "peer," the Supreme Court has linked the notion to citizenship,<sup>228</sup> and declared that juries must represent a fair cross-section of a defendant's contemporary, local community.<sup>229</sup> Yet, as the Supreme Court has stated, there is "no requirement that petit juries actually chosen must mirror the community and reflect the various distinctive groups in the population. Defendants are not entitled to a jury of any particular composition."<sup>230</sup> Returning to the context in question, most people in the population possess at least some level of implicit racial bias, and the extent of this bias can vary from one person to the next.<sup>231</sup> While jurors who participate in the virtual reality training might exhibit lower levels of bias on average, the law does not require juries to mimic the precise distribution of personal characteristics within a community.<sup>232</sup> As a result, even if jurors differ from members of their community with respect to implicit racial biases, they would almost certainly still qualify as a defendant's "peers" according to the Supreme Court's conceptualization of the term.<sup>233</sup>

Moving to the second question, it seems equally far-fetched that only a select type of individual would agree to participate in the exercises. One might worry, for example, about age groups, since people from younger generations tend to be more accepting of new technologies,<sup>234</sup> and are likely

---

<sup>225</sup> This argument assumes that the individuals in question do not hold explicitly racist beliefs. While it is possible that the virtual reality exercises could modulate racist attitudes by reducing self-other distinctions, individuals with explicit racial prejudice should have already been removed from the jury pool during *voir dire*.

<sup>226</sup> Banaji et al., *supra* note 9, at 57–58.

<sup>227</sup> See Amodio, *supra* note 26, at 679 (discussing the incredibly hardwired nature of implicit racial biases and their inability to be completely unlearned).

<sup>228</sup> *Strauder v. West Virginia*, 100 U.S. 303, 308 (1879) ("The very idea of a jury is a body of men composed of the peers or equals of the person whose rights it is selected or summoned to determine; that is, of his neighbors, fellows, associates, persons having the same legal status in society as that which he holds").

<sup>229</sup> *Taylor v. Louisiana*, 419 U.S. 522, 537 (1975).

<sup>230</sup> *Id.* at 538.

<sup>231</sup> Banaji et al., *supra* note 9, at 58.

<sup>232</sup> *Taylor*, 419 U.S. at 538.

<sup>233</sup> *Strauder*, 100 U.S. at 308 (explaining the Supreme Court's interpretation of the term "peer").

<sup>234</sup> Pew Res. Ctr., *Millennials: Confident. Connected. Open to Change*, 13, 26 (2010), <http://www.pewsocialtrends.org/files/2010/10/millennials-confident-connected-open-to-change.pdf> [<https://perma.cc/X59H-KVYB>].



more experienced with, or interested in, virtual reality in particular.<sup>235</sup> Yet, virtual reality is becoming so commonplace that anyone with a *New York Times* print subscription has likely heard of virtual reality and owns a Google Cardboard headset.<sup>236</sup> But beyond the technological aspects of virtual reality, individuals from older generations might simply feel a stronger impetus to fulfill their civic duty and participate on a jury.<sup>237</sup> The bottom line is that *many* factors will likely guide individuals' acceptance of virtual reality exercises and motivations to participate in the training. It therefore seems reasonable to expect that a fair cross-section of the community would indeed be represented.

## 2. Coercion

Among the list of potential concerns, coercion might present the most pressing issue. As noted in the previous section,<sup>238</sup> coercion typically involves three main aspects: (1) a reduced set of options, (2) an adverse deprivation of something to which an individual is entitled, and (3) manipulative intent by the agent creating the choice.<sup>239</sup> Compared to the situation with judges, critics could make a more compelling case for viewing a pseudo-compulsory system with jurors as coercive. However, the following section contends that even if we decide the policy contains coercive elements, the policy should not be considered problematic.

Starting with the first criterion, one could argue that since a potential juror under the pseudo-compulsory scheme no longer has the option of serving without participating in the training, an option has been taken away from her. Yet, as with the case of judges, this Article suggests that a juror's set of available choices has not been reduced, but instead modulated with additional conditions. In the existing system, if selected for the jury, individuals essentially have two choices—serve or face consequences of monetary fines or potential arrest.<sup>240</sup> With the proposed policy, jurors have a

---

<sup>235</sup> *Here's How Gaming Will Fuel Rapid Growth in the Virtual Reality Market*, BUSINESS INSIDER (Sept. 22, 2015, 5:00 PM), <http://www.businessinsider.com/gaming-will-fuel-the-virtual-reality-market-2015-5> [<https://perma.cc/3NAD-49UR>].

<sup>236</sup> Robertson, *supra* note 184.

<sup>237</sup> See Associated Press, *5 Things About Americans' Slipping Sense of Civic Duty*, N.Y. POST (Dec. 29, 2014, 2:14 PM), <http://nypost.com/2014/12/29/5-things-about-americans-slipping-sense-of-civic-duty/> [<https://perma.cc/A2HB-5VER>] (noting that younger generations feel less compelled by a sense of civic duty than older generations).

<sup>238</sup> See *supra* Section IV.C.2.

<sup>239</sup> WERTHEIMER, *supra* note 207, at 202–21; Hawkins & Emanuel, *supra* note 207, at 17.

<sup>240</sup> 28 U.S.C. § 1866(g) (2012).

more complicated set of options. A potential juror could choose to (a) consent to the training and serve if selected; (b) consent to the training, refuse to serve if selected, and subsequently face the same punitive ramifications as in the existing system; (c) not provide consent to the training, forfeit the opportunity to serve if selected, and fulfill some alternative civic duty instead; or (d) not provide consent to the training, forfeit the opportunity to serve, refuse to fulfill the alternative civic duty, and face punitive consequences.

If we entertain the idea that an option set has been constrained, the question of whether it has been constrained in an inherently detrimental way depends on whether a juror has a right to serve.<sup>241</sup> Although a few legal provisions come close, there does not appear to be an explicit legal right to jury service. All citizens have a right to “have the opportunity to be considered for service,”<sup>242</sup> yet, the right to be considered is not equivalent to the right to actually serve, and the opportunity to be summoned (which this provision seems to encapsulate)<sup>243</sup> is different than the opportunity to be selected. Next, while the Supreme Court has acknowledged a right to not be excluded from service for reasons such as race,<sup>244</sup> a positive right to serve has never been officially pronounced.<sup>245</sup> Moreover, the Supreme Court has recognized states’ abilities to set “relevant qualifications” for juror eligibility.<sup>246</sup> The willingness to participate in virtual reality training could plausibly be considered a relevant factor, since impartiality is a core tenet of the jury system. Nevertheless, some scholars assert that a right to serve is implicit in other rights, such as the right to vote, or First Amendment rights protecting civic participation.<sup>247</sup> Whether or not such arguments actually establish a *legal* right to serve, they seem to imply a moral right or privilege to serve. According to this line of thinking, citizens might be tacitly entitled

---

<sup>241</sup> WERTHEIMER, *supra* note 207, at 202–21 (explaining that coercion entails being deprived of something to which one is entitled).

<sup>242</sup> 28 U.S.C. § 1861 (2012).

<sup>243</sup> *Id.* (“It is further the policy of the United States that all citizens shall have the opportunity to be considered for service on grand and petit juries in the district courts of the United States, and shall have an obligation to serve as jurors when summoned for that purpose”).

<sup>244</sup> *Powers v. Ohio*, 499 U.S. 400, 402–11 (1991).

<sup>245</sup> Interestingly, an American Bar Association paper cites *Powers v. Ohio* as articulating a legal right of all citizens to serve on juries, despite the fact that the actual opinion does not support such a claim. See ABA Comm’n on the Am. Jury Project, *ABA Principles for Juries and Jury Trial*, 11 (2005), [http://www.americanbar.org/content/dam/aba/migrated/2011\\_build/american\\_jury/final\\_commentary\\_july\\_1205.authcheckdam.pdf](http://www.americanbar.org/content/dam/aba/migrated/2011_build/american_jury/final_commentary_july_1205.authcheckdam.pdf) [<https://perma.cc/V73R-TM99>].

<sup>246</sup> *Carter v. Jury Comm’n of Green Cty.*, 396 U.S. 320, 332–33 (1970).

<sup>247</sup> AKHIL R. AMAR & ALAN R. HIRSCH, FOR THE PEOPLE: WHAT THE CONSTITUTION REALLY SAYS ABOUT YOUR RIGHTS 61–63 (1999); FERGUSON, *supra* note 214, at 12–21.

to have the opportunity to serve as a function of their membership in society—jury service allows citizens to contribute to the societal and legal framework under which they operate on a daily basis, and upholds fundamental Constitutional values that comprise a democratic nation.<sup>248</sup>

The third prong of the coercion definition, manipulation, seems the most difficult to contend.<sup>249</sup> The intent of a pseudo-compulsory policy is to increase the fairness of the trial system, not to make jurors do something against their will. However, given that jury service is mandatory if an individual is selected, and that citizens might have a strong desire to participate in the justice system, one could argue that the government, by instituting a pseudo-compulsory policy, is exploiting the interests of jurors to advance its own goals.

Even if we accept that the pseudo-compulsory policy contains coercive elements (although this Article has posited multiple reasons to doubt such a position), not all individuals would necessarily be coerced into agreeing to the virtual reality training. For instance, some individuals might lack a strong interest in serving. Given that many citizens attempt to get out of jury service and view it as an unpleasant burden,<sup>250</sup> the idea that some individuals would uninhibitedly choose to waive a “moral right” to service seems reasonable or even predictable. Additionally, other individuals might actively desire to participate in the virtual reality exercises, and thus would not be pressured into making the decision to do so. That being said, consent *might* be undermined in individuals who harbor a strong interest in serving, but possess qualms about the exercises. Yet, although coercion is a serious issue, this particular case does not seem especially problematic. Jurors are required to impartially hear the case before them. If an individual has a substantial interest in engaging in the justice system through this civic duty, then the policy would be furthering the interests of this individual—the policy advances the goals that jury service entails, and allows jurors to better meet their required duties. In other words, if the exercises work as expected, it seems counterintuitive that a potential juror would have a strong interest in serving but be averse to the training.

Accordingly, although freedom of thought, representativeness, and coercion each deserve legitimate discussion, this Article suggests that none of these objections actually undermine the proposal in question.

---

<sup>248</sup> AMAR & HIRSCH, *supra* note 247, at 61-63; FERGUSON, *supra* note 214, at 18–24.

<sup>249</sup> Hawkins & Emanuel, *supra* note 207, at 17 (explaining that coercion typically involves an element of manipulation).

<sup>250</sup> AMAR & HIRSCH, *supra* note 247, at 62.

*D. Civic Duties and the Demands of the Role*

Beyond arguing that virtual reality training with jurors would be justifiable, this Article suggests that jurors should be *expected* to participate in the training exercises. The system of trial by jury affords citizens a remarkably important role in society. Individuals are asked to decide matters that could completely change the course of another citizen's life. While jury duty is mandatory for those eligible,<sup>251</sup> it is also an opportunity for citizens to partake in a democratic process, and promote the values and liberties central to the Constitution.<sup>252</sup> But, if we are to champion the importance of the jury and its role in preserving a democratic society, then we also have to acknowledge that jury service is a duty that entails certain requirements. If jurors are not impartial, they cannot adequately uphold the values of fairness and the presumption of innocence that the justice system and democracy demand. And so, even though jurors do not actively choose to contribute to the justice system in the way that judges do, they should still be expected to fulfill their roles to the best of their ability.

Importantly, the law already has a set of standards in place to prevent those deemed incapable of fulfilling their duties from serving.<sup>253</sup> For instance, individuals considered too young, with insufficient English language fluency, with certain mental disabilities, or with obvious conflicts of interest are all ineligible for service.<sup>254</sup> Moreover, during the trial period, jurors are prohibited from speaking to each other at specific times about certain topics, their freedom of movement may be restricted, and their access to various sources of information may be limited.<sup>255</sup> These regulations reflect an expectation that jurors not only perform their civic duty, but also perform it well. If virtual reality training enables jurors to reduce implicit racial biases and engage in more impartial decision-making, then it seems quite reasonable to expect them to do so as a function of their role.

## CONCLUSION

Our criminal justice system places substantial value on fairness and the presumption of innocence. A plethora of rules and protections exist to prevent the conviction of an innocent individual, even at the cost of potentially acquitting a guilty perpetrator.<sup>256</sup> For example, the burden of

---

<sup>251</sup> 28 U.S.C. § 1866(g) (2012).

<sup>252</sup> AMAR & HIRSCH, *supra* note 247, at 61–63; FERGUSON, *supra* note 214, at 21–22; GREENE & HEILBRUN, *supra* note 6, at 297.

<sup>253</sup> U.S. CONST. amend. VI; 28 U.S.C. § 1865(b) (2012); 28 U.S.C. § 1866(c).

<sup>254</sup> 28 U.S.C. § 1865(b).

<sup>255</sup> ADMIN. OFFICE OF U.S. COURTS, *supra* note 134, at 10–14.

<sup>256</sup> U.S. CONST. amends. V, VI, XIV § 1; *In re Winship*, 397 U.S. 358 (1970).

proof is on the prosecution,<sup>257</sup> the threshold for a guilty verdict is beyond a reasonable doubt,<sup>258</sup> defendants are guaranteed the right to a fair trial by an impartial jury,<sup>259</sup> and Constitutional amendments emphasize due process during trials.<sup>260</sup> While this framework is revered for promoting a transparent and just system, the prevalence and impact of implicit racial biases in the courtroom serve to undermine the realization of these values and standards. If black defendants tend to be automatically associated with guilt, criminality, and threat on a subconscious level, especially by those in influential decision-making positions, it becomes impossible to truly achieve the requirements of impartiality and the presumption of innocence.

In light of the persisting impact of implicit racial bias in the courtroom, this Article has put forth an unconventional and novel approach in the search for a solution. While much research remains to be conducted, virtual reality exercises have the potential to reduce implicit racial biases more effectively than measures proposed in existing literature. If virtual reality proves sufficiently effective, this Article has suggested policies for implementation, arguing that virtual reality training should become a justifiable expectation among both judges and jurors. However, even if virtual reality mechanisms do not live up to their potential, the discussion of virtual reality in the courtroom is still a fruitful endeavor. If nothing else, such a proposition should inspire further conversation about the use of innovative methods for curbing implicit racial biases. Virtual reality training might not be the ultimate answer, but it deserves serious consideration.

---

<sup>257</sup> See *Winship*, 397 U.S. at 361–63 (discussing the “beyond a reasonable doubt” standard).

<sup>258</sup> *Id.*

<sup>259</sup> U.S. CONST. amend. VI.

<sup>260</sup> U.S. CONST. amends. V, XIV § 1.