

Race, Brain Science, and Critical Decision-Making in the Context of Constitutional Criminal Procedure

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INTRODUCTION

If there is one truth in every human interaction, it is that each involves the human brain. This is equally true, of course, among interactions between officers and individuals. Whether occurring as part of an officer's scrutiny of data on a suspect's computer, or as an officer decides whether to initiate a traffic stop, innumerable neural processing moments shape and direct investigative and enforcement actions. Similarly, individuals who experience a criminal event or are subject to law enforcement actions also constantly rely on their cognitive systems to interpret and make decisions during these moments. Thus, the brain operates both generally and specifically in ways that uniquely affect the field of constitutional criminal procedure. For ubiquity alone, it is

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therefore appropriate to analyze the infinite complexity of criminal investigation and encounter through the ever-increasing field of neurology.

Neuroscientific studies continue to shed new light on intricate interactions between the brain, its environment, and the mind that produce experience and create subjective realities.¹ These interactions produce perception and awareness, affect attention and memory, and underlie our decision-making processes and judgment. Knowledge of these functions and patterns is invaluable to understanding individual and group behavioral dynamics. Such knowledge is also particularly crucial to criminal procedure, an area focusing much of its own attention on the quality of perceptual data and decision-making results that affect police and civilian action in deeply meaningful ways. Many authors are now exploring the implications of brain science research for a variety of legal areas.² As such, our appreciation of the role the brain plays in social and legal interactions continues to expand.

Researchers are beginning to unpack the manner in which our brains are influenced by race, culture, and the culture of race.³ Numerous studies have detailed the subtle, yet significant, ways that race and racial identification affect the information processing in which alert—that is, conscious—brains are constantly engaged.⁴ Collectively, this research suggests that race affects information processing in multiple phases, including information input during

1. See Susan B. Bandes, *The Promise and Pitfalls of Neuroscience for Criminal Law and Procedure*, 8 OHIO ST. J. CRIM. L. 119, 119 (2010); Anthony G. Greenwald & Linda Hamilton Krieger, *Implicit Bias: Scientific Foundations*, 94 CALIF. L. REV. 945, 946 (2006); Joëlle A. Moreno, *The Future of Neuroimaged Lie Detection and the Law*, 42 AKRON L. REV. 717, 722 (2009).

2. E.g., Bandes, *supra* note 1, at 119-20 (discussing how the last decade's "explosion" of brain science information has impacted traditional bases of criminal responsibility, including mens rea and mental competency); Greenwald & Krieger, *supra* note 1 (discussing the implications that the "new science" of implicit bias and unconscious mental processing have for discrimination law); Moreno, *supra* note 1 (predicting how new studies in cognitive neuroscience will change criminal investigation, jury selection, adjudication, and sentencing).

3. See, e.g., William A. Cunningham et al., *Separable Neural Components in the Processing of Black and White Faces*, 15 PSYCHOL. SCI. 806 (2004) [hereinafter Cunningham et al., *Processing Faces*]; William A. Cunningham et al., *Implicit and Explicit Ethnocentrism: Revisiting the Ideologies of Prejudice*, 30 PERSONALITY & SOC. PSYCHOL. BULL. 1332 (2004) [hereinafter Cunningham et al., *Ideologies of Prejudice*]; Bernd Wittenbrink et al., *Evidence for Racial Prejudice at the Implicit Level and Its Relationship with Questionnaire Measures*, 72 J. PERSONALITY & SOC. PSYCHOL. 262 (1997); see also *infra* notes 40-44 and accompanying text.

4. E.g., Allen J. Hart et al., *Differential Response in the Human Amygdala to Racial Outgroup vs Ingroup Face Stimuli*, 11 NEUROREP. 2351, 2353-54 (2000); Sophie Trawalter et al., *Attending to Threat: Race-Based Patterns of Selective Attention*, 44 J. EXPERIMENTAL SOC. PSYCHOL. 1322, 1326 (2008); see also *infra* notes 40-44 and accompanying text.

perception, information storage during memory encoding, and information processing during recall and decision-making.⁵ It takes little imagination to predict the particular salience that these influences will have on the information processing cycles⁶ that police and civilians go through during critical moments of interaction. This immediate perceptual and behavioral impact is made more complex by the subjective invisibility⁷ and actor independence of racial effects,⁸ and is therefore largely beyond scrutiny and an individual's moment-to-moment control.

Given the inherent role played by mind and brain, and considering the strong influence that race imparts on both, it is worthwhile to ask what one can learn about race and the brain in law enforcement encounters. The inquiry could be focused in a number of useful ways but, at the very least, we might begin to develop more nuanced ways of explaining some irrational patterns and doctrines within criminal procedure. Whether evaluating the differential rate of stop-and-frisk incidents between white and non-white individuals,⁹ seeking to

5. See *infra* notes 40-44 and accompanying text.

6. An information processing cycle is a model used to describe how the human brain interacts with its environment to turn stimulus into response. See Saul Mcleod, *Information Processing*, SIMPLY PSYCHOL. (2008), <http://www.simplypsychology.org/information-processing.html>. This model suggests the human brain processes information analogously to computers. See *id.* In an information processing cycle, the observer goes through four steps: (1) receiving input (or stimulus); (2) analyzing, coding, or evaluating the input; (3) producing output (or response); and (4) generating new input, which in turn triggers a new cycle. *Id.*; see also Victor Kaptelinin, *Activity Theory: Implications for Human-Computer Interaction*, in CONTEXT AND CONSCIOUSNESS 103, 105 fig.5.1 (Bonnie A. Nardi ed., 1996).

7. That is to say, racial bias tends to affect an individual's perception and decision-making processes in ways that are not apparent to that subject and defy her conscious awareness. See Cunningham et al., *Processing Faces*, *supra* note 3, at 811-12; Cunningham et al., *Ideologies of Prejudice*, *supra* note 3, at 1344; Wittenbrink et al., *supra* note 3, at 273.

8. Researchers have found that the skewing effect that race can have on cognitive dynamics affects Americans of different races roughly equally. See Hart et al., *supra* note 4. It is important to note, in this regard, that while the effects observed were consistent across races, all relevant studies discussed herein involved members of the United States' cultural and political community. To the extent that race might affect brains raised in different cultural, political, and racial climates in measurably different ways, such findings would shine a bright light on the version of Americanism that tends to produce greater social pathology around race, and could support important conversations about how to better understand both our individual differences and also our essential collective sameness.

9. See, e.g., MARC KRUPANSKI ET AL., CTR. FOR CONSTITUTIONAL RIGHTS, RACIAL DISPARITY IN NYPD STOPS-AND-FRISKS 7-10 (2009), available at http://ccrjustice.org/files/Report_CCR_NYPD_Stop_and_Frisk_1.pdf (providing a full report and analysis on stop-and-frisk data spanning from 2005 through 2008); Al Baker, *New York Minorities More Likely to Be Frisked*, N.Y. TIMES, May 13, 2010, at A1, available at <http://www.nytimes.com/2010/05/13/nyregion/13frisk.html> (reporting that, in the 575,000 stops made by New

explain high rates of incarceration¹⁰ and violent encounters with law enforcement,¹¹ or depicting patterns of over-policing in certain communities,¹² we can and should ask, “What embedded influences might invisibly be at work?”

In addition to suggesting possible pathways for explaining the results of our law enforcement system, a robust understanding of the way in which race operates on cognitive processes may help us evaluate the quality of our existing responses to law enforcement misbehavior. To the extent that we currently enforce constitutional procedural protections by use of analytical mechanisms that do not account for demonstrable influences introduced by race, we may consider either reforming or replacing those conventional approaches with more-informed alternatives.

This article proceeds in three basic parts. Part I provides a brief survey of research depicting a connection between race and neurological functioning. While many features of this connection could be highlighted, Part I focuses on the role of emotion, trust determinations, and bias awareness as particularly salient aspects for purposes of police regulation. Part II turns to identify some of the common perceptual and decision-making scenarios with which the law of criminal procedure must deal. It is these situations where our neurological conditioning can be most influential and our neuroscientific insights can be most useful. Finally, Part III takes a brief look at the social and legal implications of the findings presented herein. It seeks to situate a race-meets-brain-science approach to thinking about criminal procedure within the larger discourse of race as a cultural construct. The article concludes by suggesting ways in which the law might be forced to conform to our new understandings.

York City Police officers in 2009, 490,000 of those stopped were black or Latino, while only 53,000 were identified as white—a rate nine times higher for people of color than for whites).

10. See U.S. CENSUS BUREAU, U.S. DEP’T OF COMMERCE, STATISTICAL ABSTRACT OF THE UNITED STATES: 2012, at 218 tbl.349 (2012), *available at* <http://www.census.gov/prod/2011pubs/12statab/law.pdf>; see also MICHELLE ALEXANDER, *THE NEW JIM CROW: MASS INCARCERATION IN THE AGE OF COLORBLINDNESS* 225 (2010). In 2009, roughly 767,000 people were incarcerated in the United States. U.S. CENSUS BUREAU, *supra*. Of those people incarcerated, 424,500, or over fifty-five percent, were black or Latino. *Id.*

11. See KRUPANSKI ET AL., *supra* note 9, at 4. The Center for Constitutional Rights’ study found that, from 2005 to 2008, New York City police used force against whites in seventeen percent of stops and against blacks and Latinos in twenty-four percent of stops. *Id.*

12. See Eric J. Miller, *Role-Based Policing: Restraining Police Conduct “Outside the Legitimate Investigative Sphere,”* 94 CALIF. L. REV. 617, 625-34 (2006); Imani Perry, *Post-Intent Racism: A New Framework for an Old Problem*, 19 NAT’L BLACK L.J. 113, 133 (2006).

I. IMPLICATIONS OF THE RACE-CONSCIOUS BRAIN

Current neurological studies show that race, as one factor in a controlled experiment, can have significant impacts on the functioning of the human brain. Further, race often impacts the resulting experience and reality constructed by the individual to whom it is exposed. This section provides a brief overview of several studies that show connections between race and human emotion, and between race and trust or credibility determinations. This section also summarizes several recent reports indicating that racial awareness or bias is generally implicit rather than explicit, that it impacts subjects of different races roughly equally, and that it operates on an unconscious rather than conscious level. These studies build on centuries of research and speculation about brain development and architecture,¹³ and integrate the much more recent explosion of findings that have come through the use of functional neural imaging techniques, including the task-based electroencephalogram (“EEG”) and the functional magnetic resonance image (“fMRI”).¹⁴ Together these techniques show that race impacts highly relevant brain activity in significant, yet subtle, ways that essentially defy observation by the subject whose brain activity is being measured.

A. *Amygdala Activation, Memory, and the Race/Emotion Complex*

The beginning of human information processing—what we think, what we see, what we remember, and what we do—may be what we feel. Our emotions appear to influence these matters at least as much as our reason does, insofar as we have been able to associate particular regions of the brain with these discrete aspects of our processing system.¹⁵ Every variety of brain function is

13. See MORTON HUNT, *THE STORY OF PSYCHOLOGY* 18-19 (updated & rev. ed. 2007) (chronicling the rise of psychological studies, beginning as early as the fourth century B.C.E. with Hippocrates’ theories of the brain and its role in cognition).

14. See, e.g., ROBERT J. STERNBERG, *COGNITIVE PSYCHOLOGY* 41-42, 47-48 (5th ed. 2009) (explaining the use of EEGs and fMRIs in cognitive research); see also FUNCTIONAL NEUROIMAGING IN CLINICAL POPULATIONS (Frank G. Hillary & John DeLuca eds., 2007); Monique Ernst & Sven C. Mueller, *The Adolescent Brain: Insights from Functional Neuroimaging Research*, 68 *DEVELOPMENTAL NEUROBIOLOGY* 729 (2008); Grit Herzmann et al., *The Neural Correlates of Memory Encoding and Recognition for Own-Race and Other-Race Faces*, 49 *NEUROPSYCHOLOGIA* 3103 (2011) (using EEG technology to study the influence of race on facial recognition).

15. See R.J. Dolan, *Emotion, Cognition, and Behavior*, 298 *SCIENCE* 1191, 1191 (2002) (“The importance of emotion to the variety of human experience is evident in that what we notice and remember is not the mundane but events that evoke feelings of joy, sorrow, pleasure, and pain. Emotion provides the principle currency in human relationships as well as the motivational force for what is best and worst in human behavior.”).

made up of millions of separate coordinated actions,¹⁶ most of which involve multiple structures or regions of the brain.¹⁷ And while every individual brain has its own uniqueness,¹⁸ the human amygdala appears at the center of an important list of networked functions that produce these cognitive conditions and our behavior.¹⁹ One of those networking functions is the creation of our emotional landscape and the modulation of our cognitive strategies in light of our emotional responses to our environment.²⁰ In playing that role, the amygdala exerts certain influences on the other cognitive processes that occur simultaneously.²¹

For example, emotion fundamentally affects memory. Starting with perception and encoding, continuing with retention and consolidation, and eventually culminating with retrieval or recall, emotion plays a central role in memory and the amygdala is its pathway.²² Studies show that emotional stimulation—that is, events that tend to trigger “instinctive” reactions such as fear, anger, grief, joy, etc.—can enhance perception and allow us to focus on the specific details of an experience.²³ During experiments designed to measure that stimulation, brain scans for study subjects reveal both that the amygdala is activated by the emotional experience, and that the amygdala is interacting during these moments with the visual cortex.²⁴ This interaction produces an apparent enhancement of our perceptual acuity²⁵ by sending

16. See Olaf Sporns, *Network Analysis, Complexity, and Brain Function*, COMPLEXITY, Sept./Oct. 2002, at 56, 56-58.

17. *Id.* at 57.

18. See *id.* at 58-59.

19. See MICHAEL S. GAZZANIGA ET AL., COGNITIVE NEUROSCIENCE 77-83 (3d ed. 2009). The amygdala is a group of neurons located within the larger, more primitive limbic system that surrounds the brainstem. *Id.* This structure is a “profoundly important” component in our system of emotional regulation and emotional memory. Bernard J. Baars, *The Brain*, in COGNITION, BRAIN, AND CONSCIOUSNESS 121, 144 (Bernard J. Baars & Nicole M. Gage eds., 2007); see also GAZZANIGA ET AL., *supra*, at 77-83, 368-85.

20. Benedetto De Martino et al., *Frames, Biases, and Rational Decision-Making in the Human Brain*, 313 SCIENCE 684, 686 (2006).

21. See GAZZANIGA ET AL., *supra* note 19, at 77-83, 368-85.

22. Turhan Canli et al., *Event-Related Activation in the Human Amygdala Associates with Later Memory for Individual Emotional Experience*, 20 J. NEUROSCI. RC99, at 3-4 (2000).

23. Stephan B. Hamann et al., *Amygdala Activity Related to Enhanced Memory for Pleasant and Aversive Stimuli*, 2 NATURE NEUROSCI. 289, 289-90 (1999).

24. See Dolan, *supra* note 15; Elizabeth A. Phelps, *Human Emotion and Memory: Interaction of the Amygdala and Hippocampal Complex*, 14 CURRENT OPINION NEUROBIOLOGY 198, 199 (2004).

25. Perceptual acuity is a way of describing our ability to make sense of what we see. See generally Wilson S. Geisler, *Visual Perception and the Statistical Properties of*

signals to that region of the cortex responsible for shifting our attention, and decreasing the level of activity elsewhere.²⁶ In essence, emotional triggering of the amygdala increases our attention to certain immediate details, but does so by inhibiting shifts of attention to other stimuli. This produces not a greater overall awareness of the details of such an event, but rather a greater awareness within a selective range of those event details.²⁷

Similarly, emotion has been shown to affect memory retention and consolidation in several ways. First, research shows that retention of emotionally stimulating events actually remains the same for some time, whereas “normal” memory begins to degrade immediately.²⁸ This may be explained by the fact that, during the retention phase following an emotional experience, the amygdala is seen interacting in an extended “dialogue” of sorts with the hippocampus.²⁹ The hippocampus is a region of the brain also sharing responsibility for memory, especially in connecting memory to emotion and the senses.³⁰ The amygdala appears to engage with the hippocampus function in a way that improves the initial durability of that memory, but which requires some time for the effect to manifest.³¹

Finally, when looking at the confluence of emotion and memory recall or retrieval, studies show consistent particularized relationships. First, emotional memories tend to be reported with a high level of resolution and confidence in the recollection.³² However, studies also indicate that, just as with “normal” memory, the accuracy of emotional memory ultimately decays and degrades with time.³³ Nevertheless, and in contrast to non-emotional memories, subjective confidence in the detail and accuracy of an emotional memory stays

Natural Scenes, 59 ANN. REV. PSYCHOL. 167 (2008); Jan Theeuwes et al., *Attentional Capture Modulates Perceptual Sensitivity*, 11 PSYCHONOMIC BULL. & REV. 551 (2004). In this way, it functionally combines visual acuity (i.e., quality of observation) with cognitive acuity (i.e., quality of understanding). See generally Geisler, *supra*; Theeuwes et al., *supra*.

26. See Dolan, *supra* note 15; Trawalter et al., *supra* note 4, at 1322, 1325-26.

27. See Ulrike Rimmele et al., *Emotion Enhances the Subjective Feeling of Remembering, Despite Lower Accuracy for Contextual Details*, 11 EMOTION 553, 560-61 (2011); Tali Sharot et al., *How Emotion Enhances the Feeling of Remembering*, 7 NATURE NEUROSCI. 1376, 1379 (2004) (noting that studies show “the subjective sense of remembering emotional events can be heightened relative to that for neutral events, even when the objective accuracy of these memories is the same”).

28. Rimmele et al., *supra* note 27, at 553.

29. See *id.*; see also Phelps, *supra* note 24, at 199-200.

30. Phelps, *supra* note 24, at 198.

31. *Id.* at 199.

32. Rimmele et al., *supra* note 27, at 553, 560.

33. *Id.* at 553.

the same over time, contrary to the objective measures of both.³⁴ Moreover, while the parahippocampus (a region of the brain responsible for recognizing places and faces) would normally be involved in processing and encoding the contextual details of an experience,³⁵ emotional memories involve a high degree of amygdala activation and suppressed levels of parahippocampal activation relative to non-emotional experiences.³⁶ This enhances the influence that the amygdala can have on memory recall because, unlike the parahippocampus, the amygdala is more or less equally aroused by actual memories as it is by reference to generally similar emotional events.³⁷

Ultimately, it appears that highly emotional events reduce awareness and recollection of the event's contextual details, and that emotional memories produce a high degree of confidence in recall without any corresponding increase in accuracy.³⁸ In addition, emotional experiences can enhance certain aspects of memory, but such effects are highly selective, and people firmly believe that they are not subject to these memory influences.³⁹

These realities have important consequences when considering the role of race in law enforcement interactions. Chief among the reasons for this may be the fact that race, as perceived by the subject brain, produces high rates of amygdala arousal,⁴⁰ just as if that brain were dealing with an emotionally charged experience.⁴¹ These effects are scalable, meaning that we are capable of stronger and milder reactions to race just as we are capable of stronger or milder reactions to an emotional event.⁴² However, the complex brain activity depicted using available functional scanning technology shows exceedingly

34. William Hirst et al., *Long-Term Memory for the Terrorist Attack of September 11: Flashbulb Memories, Event Memories, and the Factors that Influence Their Retention*, 138 J. EXPERIMENTAL PSYCHOL.: GEN. 161, 163 (2009).

35. Sharot et al., *supra* note 27, at 1376-80.

36. *Id.*

37. Phelps, *supra* note 24, at 200 (discussing fMRI studies suggesting that "having an instructed, episodic representation of the emotional significance of a stimulus can lead to activation of the amygdala, which in turn mediates the physiological expression of [emotions such as] fear when this stimulus is encountered. These types of fears are imagined and anticipated, but never actually experienced, yet they rely on similar neural mechanisms for expression as those that are learned through direct experience.").

38. *See supra* notes 28-36 and accompanying text.

39. *See supra* notes 28-36 and accompanying text.

40. Hart et al., *supra* note 4, at 2351, 2353; Elizabeth A. Phelps et al., *Performance on Indirect Measures of Race Evaluation Predicts Amygdala Activation*, 12 J. COGNITIVE NEUROSCI. 729, 732 (2000).

41. Hart et al., *supra* note 4, at 2351.

42. Phelps et al., *supra* note 40, at 730-32 (discussing test subjects' differential responses to the faces of various races, and the correlation between the magnitude of the difference and amygdala activation).

similar patterns. Just as images of emotionally charged experiences trigger amygdala activity, so do facial images of people from different races.⁴³ Indeed, studies show that amygdala activation correlates directly with other well-established measures of implicit racial bias.⁴⁴

B. *Race and Trust*

Perhaps because of the amygdala bridge, neuroscientific evidence also demonstrates a relationship between brain activity, race (or social group membership), and trust determinations.⁴⁵ Of the many decision-making centers in the brain, the striatum is particularly involved in connecting our assessment of outcomes to our selection of action,⁴⁶ and the striatum interacts heavily with the amygdala during this process.⁴⁷ Again, remembering that race triggers significant amygdala activity,⁴⁸ and that the amygdala is a central part of our primitive limbic system,⁴⁹ it may come as no surprise that trust determinations—being so essential to survival—would be subject to this influence. It is also important to note, however, that amygdala activity can reinforce implicit bias, and further, that implicit bias and trust determinations are likewise directly correlated.⁵⁰

43. *Id.* at 731-32.

44. *Id.* at 730.

45. See Damian A. Stanley et al., *Implicit Race Attitudes Predict Trustworthiness Judgments and Economic Trust Decisions*, 108 PROC. NAT'L ACAD. SCI. 7710, 7711-12 (2011); M. van 't Wout & A.G. Sanfey, *Friend or Foe: The Effect of Implicit Trustworthiness Judgments in Social Decision-Making*, 108 COGNITION 796, 797-99, 801 (2008).

46. Bernard W. Balleine et al., *The Role of the Dorsal Striatum in Reward and Decision-Making*, 27 J. NEUROSCI. 8161, 8163 (2007) ("Studies in humans corroborate the research in animals suggesting that the dorsal striatum is an integral part of a circuit involved in decision-making."); Mauricio R. Delgado, *Reward-Related Responses in the Human Striatum*, 1104 ANNALS N.Y. ACAD. SCI. 70, 72, 80-83 (2007).

47. Rudolf N. Cardinal et al., *Emotion and Motivation: The Role of the Amygdala, Ventral Striatum, and Prefrontal Cortex*, 26 NEUROSCI. & BIOBEHAV. REVS. 321, 328, 329 fig.3 (2002); Nura W. Lingawi & Bernard W. Balleine, *Amygdala Central Nucleus Interacts with Dorsolateral Striatum to Regulate the Acquisition of Habits*, 32 J. NEUROSCI. 1073 (2012).

48. Hart et al., *supra* note 4, at 2353; Jonathan B. Freeman et al., *The Neural Origins of Superficial and Individuated Judgments About Ingroup and Outgroup Members*, 31 HUM. BRAIN MAPPING 150, 156-58 (2010).

49. GAZZANIGA ET AL., *supra* note 19, at 77-83, 368-85.

50. See Stanley et al., *supra* note 45; van 't Wout & Sanfey, *supra* note 45, at 801-02; see also Phelps, *supra* note 24, at 199-200; Phelps, et al., *supra* note 40.

Rather obviously, we tend to distrust those against whom our implicit biases run, and tend to trust those whom our biases favor. Accordingly, the end result of these tendencies is the same: we are far more likely to trust those of our own race, and less likely to trust those we perceive as racially different.⁵¹ This trust effect extends to simple credibility determinations (such as a presumption of truth-telling), but also to the development of trust necessary to overcome incentives against cooperative behavior.⁵² For example, researchers have shown that it is far more likely that an individual will risk his or her own self-interest when collaborating with another running the same risk, in order to achieve superior results for both.⁵³ In contrast, where the bargaining partners are of different races, studies show that the negotiating pairs regularly failed to produce cooperative trust and that these negative trustworthiness determinations strongly correlated with the individuals' implicit racial biases.⁵⁴

Indeed, what we see in the brain is reduced amygdala activation and reduced striatum activation when interacting with same-race partners,⁵⁵ and increased activation in both centers when interacting with different race partners.⁵⁶ This indicates that racial feedback is relevant to informing our assessments of future outcomes, and that emotional processing of racial input is directly involved in those assessments. Importantly, studies continue to show that black individuals are both more likely to be perceived as threatening, and more difficult to perceive as non-threatening, than white individuals.⁵⁷ When subjects make decisions that heavily depend on amygdala and striatum inputs—such as whether to “shoot” or “not shoot” a particular target—the outcomes clearly correlate with the race of that target.⁵⁸ This suggests that we implicitly use race, along with a variety of other visual and cultural cues, to decide who is trustworthy, of whom we should be suspicious, and whom we should fear.

51. See Stanley et al., *supra* note 45, at 7712-13.

52. See *id.*

53. See van 't Wout & Sanfey, *supra* note 45, at 797.

54. See Stanley et al., *supra* note 45, at 7710, 7712-14.

55. See Phelps et al., *supra* note 40, at 733.

56. See *id.*

57. E.g., Joshua Correll et al., *Event-Related Potentials and the Decision to Shoot: The Role of Threat Perception and Cognitive Control*, 42 J. EXPERIMENTAL SOC. PSYCHOL. 120 (2006); Joshua Correll et al., *The Police Officer's Dilemma: Using Ethnicity to Disambiguate Potentially Threatening Individuals*, 83 J. PERSONALITY & SOC. PSYCHOL. 1314 (2002) [hereinafter Correll et al., *The Police Officer's Dilemma*].

58. Phelps et al., *supra* note 40, at 733.

C. Race Bias, Reflection, and Non-Awareness

One final aspect of this ongoing research, which is exceedingly relevant to the regulation of police officers acting in a racially diverse community, is that the effects and influences detailed above are largely subjectively invisible. If you could screen out all those individuals who harbor an explicit, conscious bias against people of different races, you would still see a predominance of racially skewed results in the remaining, subjectively unbiased members of the pool. This is because race bias, at least as it can be suggested by or measured in brain activity, is extremely elusive, being both implicit and unconscious.

Bias is often implicitly expressed, resulting in attitudes and opinions rather than overt statements and actions of a racial nature.⁵⁹ The research indicates that there is a significant divergence between explicit, self-reported race bias and implicit, measurable race bias in the same individual study subjects.⁶⁰ The evidence strongly suggests that explicit bias is less prevalent, perhaps due to social conditioning, than implicit measures would predict.⁶¹ Moreover, researchers have shown that implicit bias—that is, uniformly “pro-White” and “anti-Black” bias—is present early in childhood, and that the divergence between explicit and implicit bias increases over time and is most pronounced by adulthood.⁶²

In addition to showing a mechanism for expression, these studies also suggest that race bias often defies an individual’s self-awareness.⁶³ Even as the brain scans of test subjects were creating a visual image suggesting the influence of bias, many of those subjects were honestly and confidently convinced of their race neutrality.⁶⁴ This unconscious, implicit racial bias can be driven by social coding and conditioning, as well as by personal moral choice. The seeming impenetrability of the former, however, makes responding to the attendant social harms particularly challenging.

59. See Anthony G. Greenwald & Mahzarin R. Banaji, *Implicit Social Cognition: Attitudes, Self-Esteem, and Stereotypes*, 102 PSYCHOL. REV. 4, 4 (1995).

60. See *id.* at 15.

61. See *id.*

62. See Andrew Scott Baron & Mahzarin R. Banaji, *The Development of Implicit Attitudes: Evidence of Race Evaluations from Ages 6 and 10 and Adulthood*, 17 PSYCHOL. SCI. 53, 57 (2006).

63. See *id.* at 53, 56; see also Greenwald & Banaji, *supra* note 59, at 4, 6.

64. See Greenwald & Banaji, *supra* note 59, at 15.

II. WHEN AND WHERE DOES THIS MATTER? PERCEPTION AND DECISION- MAKING IN THE CONTEXT OF RACE

If neuroscientific research can provide us with a glimpse of the brain's response to its immediate environment as it receives racial stimuli, what can reason tell us about when and where these insights will be useful? Criminal procedure is largely driven by the reconstruction and evaluation of perceptual data or evidence,⁶⁵ which itself often must be remembered and recalled prior to becoming part of any investigative or judicial record. Further, such evidence is frequently influenced by compounded levels of decision-making.⁶⁶ Of the many perceptual and decision-making moments that routinely occur in law enforcement investigations and encounters, a significant number involve race.⁶⁷

The interconnected roles of race and emotion in our brain's information processing and storage mechanisms present challenges in the following three contexts: eyewitness identifications, suspect or offender threat assessments and the use of force, and determinations of credibility or suspicion. Each of these perceptual and related decision-making moments involves components of the cognitive complex that show sensitivity to race. Moreover, these are moments that we already seek to measure and regulate through criminal procedure.⁶⁸ They therefore offer an opportunity to sample the Constitution's response to a problem of inherent racial dimension and, subsequently, to consider possible changes to the prevailing approach.

65. An evidentiary hearing on the admissibility of an eyewitness identification is a perfect example of such a task. At that hearing, a judge's responsibility is to assess the quality of a proffered witness's initial perception, memory, and recollection with respect to the criminal event. *See* FED. R. EVID. 601, 701(a).

66. A probable cause determination made in evaluating the legality of a warrantless automobile search is an example of this familiar task. In assessing whether the searching officer had probable cause prior to inspecting the suspect automobile, a judge would have to consider all the perceptual and memory evidence offered by the testifying officer, and additionally would have to consider the quality of the inferential conclusions the officer reached on the basis of those observations. *See, e.g., Ornelas v. United States*, 517 U.S. 690, 696-97 (1996).

67. *See generally Table 43a: Arrests by Race, 2010*, FED. BUREAU OF INVESTIGATION, <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2010/crime-in-the-u.s.-2010/tables/table-43/10tbl43a.xls/> (last visited Dec. 23, 2011). The Federal Bureau of Investigation estimated there were 10,177,907 arrests nationwide in 2010. *Id.* Of these arrests, 2,846,862, or approximately twenty-eight percent, involved black suspects. *Id.*

68. For example, eyewitness identification testimony is subject to both Sixth Amendment and Fourteenth Amendment review, *see Dutton v. Evans*, 400 U.S. 74, 79 (1970) (plurality opinion), while threat, use of force, and suspicion determinations all are subject to various iterations of the Fourth Amendment's "reasonableness" analysis, *see Graham v. Connor*, 490 U.S. 386, 396-97 (1989).

A. Eyewitness Identification

Eyewitness identifications are a problematic procedure familiar to both federal and state courts.⁶⁹ Although evidence indicates that eyewitness identifications are fraught with both perceptual and structural error,⁷⁰ they continue to play an immensely important role in police investigations and criminal prosecutions. For example, statistical and psychological data has shown that eyewitness identifications, whether lineup⁷¹ or show-up confrontations,⁷² produce highly unreliable evidence and frequently are inaccurate.⁷³ Notwithstanding those findings, jurors continue to place a high degree of probative weight on eyewitness identifications,⁷⁴ and on average show a poor understanding of the scientific research on the reliability of such identifications.⁷⁵

Introducing race into this questionable environment may reinforce existing sources of error or even exacerbate the likelihood of mistaken identification. First, cross-racial identifications in general are demonstrably less reliable than same-race identifications—that is, for people of all races, we tend to recognize members of our racial group much more readily than members of other racial groups.⁷⁶ Second, multiple studies have shown that Americans of all races

69. See FELIX FRANKFURTER, *THE CASE OF SACCO AND VANZETTI* 30 (1927). Justice Frankfurter's evaluation of the credibility of eyewitness testimony strongly influenced the Warren Court in *United States v. Wade*, 388 U.S. 218, 228, 234 (1967).

70. See *Wade*, 388 U.S. at 228 (describing eyewitness identification as “peculiarly riddled with innumerable dangers and variable factors which might seriously, even crucially, derogate from a fair trial,” and concluding that these “vagaries” were “well-known”); 2 MICHAEL H. GRAHAM, *HANDBOOK OF FEDERAL EVIDENCE* § 103:1 (7th ed. 2012) (“Some errors are so fundamental that they infect the entire trial process undermining its structural integrity . . .”).

71. A lineup identification procedure is one in which the suspect, along with several other persons, are lined up next to one another and displayed to a witness for the purpose of determining the suspect's possible involvement in criminal activity. See *Gilbert v. California*, 388 U.S. 263, 269-70 (1967).

72. A show-up identification procedure is a one-on-one confrontation in which a suspect is shown to an eyewitness for identification. See *Neil v. Biggers*, 409 U.S. 188, 195 (1972).

73. Gary L. Wells & Elizabeth F. Loftus, *Eyewitness Memory for People and Events*, in 11 *HANDBOOK OF PSYCHOLOGY* 149, 149 (Alan M. Goldstein & Irving B. Weiner eds., 2003).

74. See John P. Rutledge, *They All Look Alike: The Inaccuracy of Cross-Racial Identifications*, 28 AM. J. CRIM. L. 207, 210 (2001).

75. See Richard S. Schmechel et al., *Beyond the Ken? Testing Jurors' Understanding of Eyewitness Reliability Evidence*, 46 JURIMETRICS J. 177, 178 (2006).

76. Gillian Rhodes et al., *Race Coding and the Other-Race Effect in Face Recognition*, 38 PERCEPTION 232, 232 (2009).

make positive associations with white-identified faces and equally negative associations with black-identified faces,⁷⁷ thus revealing powerful implicit expectations regarding character and race. Finally, and perhaps most subtly, the presence of race as an element of an encounter can impair the entire eyewitness account flowing from that event.⁷⁸ Because eyewitness identifications are the distillation of all three phases of memory—perception, retention, and recall—those that involve race are potentially more problematic than those that do not due to the heightened distortions of an emotionally triggered amygdala. This means that eyewitness accounts in which race was a perceived element have the potential to be less detailed and less accurate than a similar account of a race-neutral event, yet told with even more confidence.⁷⁹

While this is only one of many considerations influencing our evaluation of eyewitness identifications, and while it might be a manageable consideration when implemented as part of a nuanced approach to such evidence, eyewitness testimony is currently evaluated using only the Sixth Amendment's Right to Counsel⁸⁰ or the Fourteenth Amendment's Due Process Clause.⁸¹ These tests focus on specific formal guarantees and specific procedural safeguards in individual cases, but have not been used to take a broader, more nuanced, look at the nature and quality of eyewitness testimony in general. In other words, the current procedural safeguards are too narrow to account for our increasing understanding of how race can influence eyewitness identifications.

B. *Threat Assessment and Use of Force*

Another perceptual moment that has significant consequences for law enforcement encounters is the manner in which an officer assesses the threat posed by a person with whom he or she is interacting.⁸² In order to preserve

77. See Baron & Banaji, *supra* note 62, at 53-56.

78. See discussion *supra* Part I.A.

79. See *supra* note 39 and accompanying text.

80. See, e.g., *United States v. Ash*, 413 U.S. 300, 314 (1973) (concluding that the Sixth Amendment right to counsel encompasses police lineups); *Kirby v. Illinois*, 406 U.S. 682, 690 (1972) (explaining that police lineups are one of the "critical stages" where the accused are allowed the right to counsel under the Sixth Amendment); *United States v. Wade*, 388 U.S. 218, 221-24 (1967) (prohibiting the admission of eyewitness identification conducted without presence of counsel in order to prevent the introduction of unreliable evidence).

81. See, e.g., *Manson v. Brathwaite*, 432 U.S. 98, 105-06 (1977) (relying on the Due Process Clause to prevent the admission of eyewitness identification evidence that is so unnecessarily suggestive as to raise the likelihood of mistaken identification); see also *Watkins v. Sowders*, 449 U.S. 341, 349 (1981).

82. See *Terry v. Ohio*, 392 U.S. 1, 24 (1968) (recognizing that police must assess

their own safety and complete the objectives of their profession, officers frequently must predict whether an individual is “armed and presently dangerous,”⁸³ and do so on the basis of rapidly evolving, but limited information.⁸⁴ This predictive need can arise during a routine traffic stop as easily as it can during an effort to overcome forcible resistance to formal arrest. An officer’s individual threat-assessment, moreover, has significant effects on the officer’s subsequent behavior.

Race has the capacity to influence these perceptions in meaningful ways. If the essential calculus is whether an individual poses a threat of harm to the officer, then the officer’s perception of what and who is harmful becomes centrally important. There are at least two ways in which race might skew this perception, even in the well-trained, consciously unbiased officer. First, as previously mentioned, studies have shown that Americans typically are much more inclined to have negative associations with people of color, particularly African American males.⁸⁵ There is a persistent and irrational expectation and perception of heightened propensity for violence and criminality in black men,⁸⁶ and these expectations operate on the brain’s information processing mechanisms to instantly, but invisibly, color our judgment.⁸⁷ The influence this may have on stress-filled and split-second judgments—such as an officer’s perception of dangerousness and the decision to use force against an individual—are unavoidably impacted by these cognitive processing patterns.⁸⁸

Second, as set forth above, an individual’s response to a person of different racial background has a tendency to generate amygdala activity.⁸⁹ The activity of the amygdala affects the visual cortex by narrowing the focus of the officer, especially as he or she perceives potential threat indicators, and defocuses

potential threats to protect themselves and others).

83. *Id.* (“[W]e cannot blind ourselves to the need for law enforcement officers to protect themselves and other prospective victims of violence in situations where they may lack probable cause for an arrest.”).

84. *See* *Graham v. Connor*, 490 U.S. 386, 397 (1989) (“[P]olice officers are often forced to make split-second judgments—in circumstances that are tense, uncertain, and rapidly evolving—about the amount of force that is necessary in a particular situation.”).

85. *See, e.g.,* Baron & Banaji, *supra* note 62, at 53, 56; Cunningham et al., *Processing Faces*, *supra* note 3, at 806, 811-12; Trawalter et al., *supra* note 4, at 1322, 1326.

86. Sheri Lynn Johnson, *Cross-Racial Identification Errors in Criminal Cases*, 69 CORNELL L. REV. 934, 950 (1984).

87. *See* E. Ashby Plant et al., *Selective Responses to Threat: The Roles of Race and Gender in Decisions to Shoot*, 37 PERSONALITY & SOC. PSYCHOL. BULL. 1274, 1274-79 (2011); E. Ashby Plant & B. Michelle Peruche, *The Consequences of Race for Police Officers’ Responses to Criminal Suspects*, 16 PSYCHOL. SCI. 180, 180-84 (2005).

88. Plant & Peruche, *supra* note 87, at 180.

89. *See* Phelps et al., *supra* note 40, at 732-34.

attention to other contextual details that inform the threat assessment and decision-making process.⁹⁰ This generally heightens the emotional involvement of the subject in the event,⁹¹ resulting in the increased role of negative emotion in generating meaning and choosing responsive action.⁹² Of particular relevance, the amygdala has been shown to be centrally involved in regulating emotion, assessing trustworthiness, and managing fear⁹³—three of the dynamics essential to making threat and use of force determinations.

Law enforcement officers resort to the use of force in hundreds of thousands of public encounters every year.⁹⁴ Generally, the test for whether an officer lawfully used force against an individual is whether the officer reasonably believed such force was necessary to achieve a legitimate law enforcement purpose.⁹⁵ Thus, prior to using force upon an individual, police are compelled to make a very basic, but terribly difficult calculation: “Am I being reasonable?” Reasonableness is an elusive concept, combining both subjective and objective elements that are measured against the specifics of the particular encounter.⁹⁶ Nonetheless, it is a determination of which officers, courts, and juries struggle. In reviewing an officer’s decision to use force upon an individual, the judge and/or jurors ask themselves: “How would I feel in those circumstances? How should I feel in those circumstances?” To the

90. See Dolan, *supra* note 15, at 1192.

91. See *id.*

92. See *id.*

93. See Dominic T. Cheng et al., *Human Amygdala Activity During the Expression of Fear Responses*, 120 BEHAV. NEUROSCI. 1187, 1187-93 (2006); Elizabeth A. Phelps et al., *Activation of the Left Amygdala to a Cognitive Representation of Fear*, 4 NATURE NEUROSCI. 437, 437-40 (2001); see also *supra* notes 45-50 and accompanying text.

94. Department of Justice research showed that just over forty million individual, face-to-face encounters with the police occurred in 2008, with officers using or threatening to use force in roughly 1.4% (or 560,000) of those encounters. CHRISTINE EITH & MATTHEW R. DUROSE, BUREAU OF JUSTICE STATISTICS, U.S. DEP’T OF JUSTICE, SER. NO. NCJ 234599, CONTACTS BETWEEN POLICE AND THE PUBLIC, 2008, at 2 & tbl.1 (2011), available at <http://www.bjs.gov/content/pub/pdf/cpp08.pdf>. These numbers were both down slightly from previous studies in 2005 and 2002. *Id.* at 2 tbl.1 & 3.

95. See *Graham v. Connor*, 490 U.S. 386, 396 (1989); see also TOM MCEWEN, BUREAU OF JUSTICE STATISTICS & NAT’L INST. OF JUSTICE, U.S. DEP’T OF JUSTICE, SER. NO. NCJ-160113, NATIONAL DATA COLLECTION ON POLICE USE OF FORCE 5-6 (1996), available at <http://www.bjs.gov/content/pub/pdf/ndcopuof.pdf>.

96. See, e.g., *Graham*, 490 U.S. at 396 (adopting the objective reasonableness test as the standard for measuring an officer’s use of force); *Thomas v. Durastanti*, 607 F.3d 655, 664 (10th Cir. 2010) (listing factors that are useful in determining whether an officer used excessive force, all of which are to be assessed from the perspective of an officer on the scene); *Staats v. Brown*, 991 P.2d 615, 625 (Wash. 2000) (stating that reasonableness is to be determined in light of the officer’s subjective perception at the moment, not in hindsight).

extent this article has illustrated anything regarding explicit and implicit racial bias mechanisms, one should expect the judge and the juror to be influenced by the same cognitive forces that were at play in the mind of the officer. There is little reason to expect a meaningful difference of impression or opinion in the mind of the subsequent fact-finder.

Consequently, it is fundamentally important for law enforcement officers to receive quality departmental training and continuous support in their professional development. Officers need a clear set of guidelines and protocols for measuring the necessity of the use of force in order to encourage rational and dispassionate reflection prior to decision-making. Unfortunately, while many officers credit their training with helping them make the right use of force decisions,⁹⁷ far too many officers report feeling undertrained and unprepared to handle this crucial choice.⁹⁸

C. Credibility vs. Suspicion

A final instance illustrating the neurological implications of race on criminal procedure exists in the context of credibility determinations. Law enforcement officers must routinely assess whether a person with whom they are dealing—suspect, witness, or otherwise—is communicating with them honestly. Suspicion is honesty's opposite: the perception that the individual with whom the officer is dealing possesses nefarious intent or is involved in wrongdoing. The perception of that honesty is a culturally, biologically, and rationally driven process, involving both the object and the subject in the final calculus.⁹⁹ Within the realm of this inherent subjectivity, the race of the actors can play a dominant effect.

The notion that individuals tend to trust those of their "own" race more easily¹⁰⁰ and tend to trust people of other racial backgrounds less often,¹⁰¹ has obvious implications for encounters between people of color and the law enforcement complex. Race operates on the mind to create in-group and out-of-group identification.¹⁰² These simple binary categorization strategies can trigger implicit expectations about trustworthiness, cooperation, integrity, and

97. See, e.g., JEROME H. SKOLNICK & JAMES J. FYFE, ABOVE THE LAW: POLICE AND THE EXCESSIVE USE OF FORCE 7 (1993); James J. Fyfe, *Training to Reduce Police-Civilian Violence*, in POLICE VIOLENCE 165 (William A. Geller & Hans Toch eds., 1996).

98. See Skolnick & Fyfe, *supra* note 97.

99. See Luke J. Chang et al., *Seeing Is Believing: Trustworthiness as a Dynamic Belief*, 61 COGNITIVE PSYCHOL. 87, 87-88, 101-02 (2010).

100. Freeman et al., *supra* note 48, at 151.

101. Stanley et al., *supra* note 45, at 7712-13.

102. See Freeman et al., *supra* note 48, at 151-57.

criminality that determine whether an encounter is perceived and managed cordially or with hostility. Such expectations influence whether an individual's explanation for his or her behavior is likely to be believed, and therefore whether that individual may be subject to further investigation in an on-the-street encounter. These expectations can even influence whether an individual is initially perceived as a suspect, or instead as a victim, when officers first come to the scene of a crime.¹⁰³

Suspicion is especially relevant when considered in context of the Fourth Amendment's prohibition against unreasonable searches and seizures. The constitutionality of a search or seizure may turn on whether a judge had probable cause to issue a warrant,¹⁰⁴ whether a police officer had probable cause to make a plain view seizure,¹⁰⁵ or whether a police officer had reasonable suspicion to perform a stop and frisk.¹⁰⁶ The justification for these intrusions, however, is always the heart of the matter. Provided the awareness that race unconsciously shapes individual credibility determinations, the question becomes whether this should affect our review of officer suspicion determinations.

III. THIS IS YOUR BRAIN ON RACE: WHAT TO DO WITH WHAT WE FIND IN THE MIND?

Although race has certainly evolved, both as a construct and as a feature of American life, it seems no less important today than it was at some of the lowest moments in our racial history. Fortunately, overt racial discrimination and hostility appear to be waning continuously.¹⁰⁷ Still, implicit, unconscious,

103. See Johnson, *supra* note 86, at 934, 946, 949-51.

104. See, e.g., *United States v. Ventresca*, 380 U.S. 102, 105-07 (1965).

105. See *Arizona v. Hicks*, 480 U.S. 321, 323-25 (1987).

106. See, e.g., *United States v. Arvizu*, 534 U.S. 266, 273 (2002); *Illinois v. Wardlow*, 528 U.S. 119, 123-24 (2000); *Florida v. Royer*, 460 U.S. 491, 499-500 (1983).

107. This trend has been noted generally, see, e.g., Gordon Hodson et al., *The Aversive Form of Racism*, in 1 *THE PSYCHOLOGY OF PREJUDICE AND DISCRIMINATION: RACISM IN AMERICA* 119, 130-31 (Jean Lau Chin ed., 2004); Russell K. Robinson, *Perceptual Segregation*, 108 COLUM. L. REV. 1093, 1130-31 (2008). It has also been recognized in the context of specific areas of law, including employment discrimination and capital punishment. See David C. Baldus et al., *Racial Discrimination and the Death Penalty in the Post-Furman Era: An Empirical and Legal Overview, with Recent Findings from Philadelphia*, 83 CORNELL L. REV. 1638, 1723 (1998) ("During the post-Furman period, the level of overt racial animus appears to have declined throughout the nation . . ."); Chad Derum & Karen Engle, *The Rise of the Personal Animosity Presumption in Title VII and the Return to "No Cause" Employment*, 81 TEX. L. REV. 1177, 1188 (2003) (discussing the "less overt, unconscious, or more complex forms of [employment] discrimination . . . emerging after the law had begun to respond to overt forms of discrimination"); see also Phelps, *supra*

and institutionalized racial bias is alive and well¹⁰⁸ and permeating the criminal justice system.¹⁰⁹

A complete catalog of implicit bias is beyond the scope of this paper. Nonetheless, myriad forces have been identified as part of the social coding mechanism that produces race (un)consciousness:¹¹⁰ rampant deployment of racial stereotypes in the media¹¹¹ and entertainment industries,¹¹² visible de facto segregation creeping back into public schools,¹¹³ the resurgence of race as a genetic concept,¹¹⁴ as well as drastic differences in employment,¹¹⁵ health,¹¹⁶ and perhaps even sporting outcomes.¹¹⁷ These highly visible racial disparities reinforce the public perception that race is a “thing” that matters. No doubt,

note 40, at 729 (“Over the last several decades, research has shown that expressions of prejudicial attitudes toward Black and White social groups, as measured by self-report, have declined steadily.” (citations omitted)).

108. Bill Ong Hing, Keynote Essay, *Reason over Hysteria*, 12 LOY. J. PUB. INT. L. 275, 285 (2011).

109. See generally ALEXANDER, *supra* note 10, at 224-26 (discussing institutionalized racism).

110. See Charles R. Lawrence, *The Id, the Ego, and Equal Protection: Reckoning with Unconscious Racism*, 39 STAN. L. REV. 317, 322-23 (1987) (discussing possible explanations for unconscious racism).

111. See John Tehranian, *The Last Minstrel Show? Racial Profiling, the War on Terrorism and the Mass Media*, 41 CONN. L. REV. 781, 798-801 (2009) (discussing media depictions of ethnic and cultural minorities, especially those of Middle Eastern descent).

112. See, e.g., Leonard M. Baynes, *White out: The Absence and Stereotyping of People of Color by the Broadcast Networks in Prime Time Entertainment Programming*, 45 ARIZ. L. REV. 293, 293-95 (2003) (discussing media depictions of people of color and suggesting that the media perpetuates stereotypes).

113. See generally Danielle R. Holley, *Is Brown Dying? Exploring the Resegregation Trend in Our Public Schools*, 49 N.Y.L. SCH. L. REV. 1085 (2005); Girardeau A. Spann, *Disintegration*, 46 U. LOUISVILLE L. REV. 565 (2008) (discussing modern racial integration in schools).

114. See Jonathan Kahn, *Race-ing Patents/Patenting Race: An Emerging Political Geography of Intellectual Property in Biotechnology*, 92 IOWA L. REV. 353, 359-60 (2007).

115. See Melissa Hart, *Subjective Decisionmaking and Unconscious Discrimination*, 56 ALA. L. REV. 741, 745 (2005); Jonathan C. Ziegert & Paul J. Hanges, *Employment Discrimination: The Role of Implicit Attitudes, Motivation, and a Climate for Racial Bias*, 90 J. APPLIED PSYCHOL. 553, 553-54 (2005).

116. See, e.g., 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, 1231-38 (2007); Michael S. Shin, Comment, *Redressing Wounds: Finding a Legal Framework to Remedy Racial Disparities in Medical Care*, 90 CALIF. L. REV. 2047, 2051 (2002).

117. See Joseph Price & Justin Wolfers, *Racial Discrimination Among NBA Referees*, 125 Q.J. ECON. 1859, 1860-62 (2010).

these forces are being actively and ably challenged, but certainly some time remains before their patterns and structures can be entirely dismantled.

In the meantime, what can be done to offset harms emanating from racial distortion of perception and decision-making? One matter that immediately calls for reevaluation is our systemic reliance on deterrence as the exclusive rationale or justification for the exclusionary rule in criminal prosecutions.¹¹⁸ By definition, and according to available science, the tendencies that might skew awareness and choice are difficult, if not impossible, to deter. Restricting the exclusionary rule to only those situations where the underlying behavior can be substantially deterred in the future tends to categorically insulate those behaviors over which an officer has little effective control. This also limits the extent to which developing that control will be seen as a legitimate objective in officer training and education.

Another matter on which debate continues is the ongoing effort to increase racial diversity in American police departments.¹¹⁹ Such efforts should extend both to rank and file officers and department leadership—but especially those departments serving racially diverse communities. This is an admirable and well-chosen goal, the success of which could produce many beneficial effects. Unfortunately, it remains merely a goal¹²⁰ and arguably incapable of solving problems of race consciousness because both white and non-white study subjects tend to show the same inclination in implicit bias test studies.¹²¹ It may prove to be the case that adding more African American and Latino officers, who are likewise socially programmed, changes little, if anything.

Some optimism for offsetting racial bias can be found in studies of implicit bias and the neural pathways for its operation and expression. In particular, scientists have observed evidence that training can diminish the strength of the

118. See Sharon L. Davies & Anna B. Scanlon, *Katz in the Age of Hudson v. Michigan: Some Thoughts on "Suppression as a Last Resort,"* 41 U.C. DAVIS L. REV. 1035, 1041-42 (2008) (providing a helpful and duly critical review of the evolution of the exclusionary rule, from its remedial roots to its modern deterrence rationale).

119. For a helpful overview of the landscape of that debate, see David Alan Sklansky, *Not Your Father's Police Department: Making Sense of the New Demographics of Law Enforcement*, 96 J. CRIM. L. & CRIMINOLOGY 1209 (2006).

120. See JACK McDEVITT ET AL., INST. ON RACE & JUSTICE, NE. UNIV., COPS EVALUATION BRIEF NO. 1, PROMOTING COOPERATIVE STRATEGIES TO REDUCE RACIAL PROFILING 14-15 (2008), available at <http://www.cops.usdoj.gov/files/RIC/Publications/e08086157.pdf>.

121. See, e.g., Correll et al., *The Police Officer's Dilemma*, *supra* note 57; Cheryl L. Dicker & Bruce D. Bartholow, *Racial Ingroup and Outgroup Attention Biases Revealed by Event-Related Brain Potentials*, 2 SOC. COGNITIVE & AFFECTIVE NEUROSCI. 189, 196-97 (2007); Ottmar V. Lipp et al., *Electro-Cortical Implicit Race Bias Does Not Vary with Participants' Race or Sex*, 6 SOC. COGNITIVE & AFFECTIVE NEUROSCI. 591, 599-600 (2011); Stanley et al., *supra* note 45, at 7713-14.

bias in measurable amounts.¹²² Such training has been shown to be effective in improving cross-racial recognition¹²³—one of the most powerful sources of errors in eyewitness identifications.¹²⁴ Perhaps most promisingly, researchers have noted that improvements in out-of-group identification ability¹²⁵ correlates with or even *produces reduced bias on subsequent implicit association tests*.¹²⁶ This may suggest that the ability to recognize a person of another race, as an individual and identifiable person, can reduce the social bias we may have for them.

CONCLUSION

These findings indicate that race sensitivity may be something that is both learned and susceptible of being unlearned. This unlearning can be accomplished by new and veteran officers who already routinely receive ongoing professional training.¹²⁷ Such unlearning, and the need for it, can be validated by judicial officers, who might also receive enhanced initial and ongoing training regarding the neuroscience of race bias, perception, and decision-making. The justice system might even go so far as to educate juries,

122. Rankin W. McGugin et al., *Race-Specific Perceptual Discrimination Improvement Following Short Individuation Training with Faces*, 35 COGNITIVE SCI. 330, 343 (2011).

123. *Id.*

124. Radha Natarajan, *Racialized Memory and Reliability: Due Process Applied to Cross-Racial Eyewitness Identifications*, 78 N.Y.U. L. REV. 1821, 1822-23 (2003); Rutledge, *supra* note 74, at 207. The last thing we can do is go on with business as usual in the continued uncritical approach to eyewitness identifications. The time has long since passed for the U.S. Supreme Court to take a new and exacting look at the basic integrity and reliability of this type of evidence, and that day appears to finally be on the horizon. *See Perry v. New Hampshire*, 131 S. Ct. 2932 (2011) (mem.), *certifying questions to State v. Perry*, No. 2009-0590 (N.H. Nov. 18, 2010).

125. Sophie Lebrecht et al., *Perceptual Other-Race Training Reduces Implicit Racial Bias*, PLOS ONE, Jan. 21, 2009, at e4215, at 1, 3, <http://www.plosone.org/article/attachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0004215&representation=PDF> (stating that, while “people perceive[] other-race faces as more similar than own-race faces,” greater experience over the course of a lifetime “leads to greater expertise in individuating faces”).

126. *Id.*

127. For example, the Miami Police Department’s Training and Personnel Development Section administered at least fifty individual training courses and produced at least 743 graduates in 2010. *See Training & Personnel Development*, MIAMI POLICE DEP’T, <http://www.miami-police.org/training.html> (last visited Dec. 24, 2011). Similarly, California requires its officers to complete at least twenty-four hours of training every two years. *See Refresher Training*, CAL. COMM’N ON PEACE OFFICER STANDARDS & TRAINING, <http://www.post.ca.gov/refresher-training.aspx> (last visited Dec. 24, 2011).

in appropriate cases, regarding the role that race can play in shaping and misshaping the evidence presented to them. Particularly where there is little or no other evidence of guilt,¹²⁸ the perceptions and conclusions of an honest, but race-sensitive, brain should be viewed by the jury with more skepticism than the current standard practices advise. Instead of leaving this matter to the discretion of trial judges,¹²⁹ making the science behind race and perception more generally and uniformly part of juror education could incrementally increase public awareness regarding the implicit racial bias perpetuated by our laws and culture.

128. See Schmechel et al., *supra* note 75, at 189-90.

129. *Id.* at 185-87.