



IMPLICIT BIAS: AN OVERVIEW

EQUAL JUSTICE SOCIETY

<http://equaljusticesociety.org/implicitbias>

Neuroscience and Implicit Bias

An overview of “implicit bias” by the Equal Justice Society, based on “The Hard Science of Civil Rights: How Neuroscience Changes the Conversation,” ([download as PDF](#)) by Kimberly Papillon, Esq.

If scientists could scan our brains when we see spiders or snakes, they would see that the area of our brains that focuses on fear, threat, anxiety and distrust is triggered or, as neuroscientists say, “activates.” This same area of the brain activates more when people see pictures of African American faces than when they see pictures of Caucasian ones, studies have found. Remarkably, many of the people who have this reaction state they have no conscious bias or prejudice towards others. They have no idea that these reactions are going on in their minds.

In his bestseller, *Blink*, author Malcolm Gladwell writes about how people engage in rapid cognition based on “instantaneous impressions,” which can result in significant—albeit sometimes unintended—harms. As an example, Gladwell points to the 1999 killing of Guinean immigrant Amadou Diallo and the racial prejudices that led to his death. While the New York City police were attempting to question him, Diallo, scared and confused, reached for his wallet. The police assumed the wallet to be a gun and shot Diallo 41 times.

Neuroscience and the study of implicit bias let us peer into the human brain and unravel the mysteries of why we treat each other with such cruelty or with care, and what ultimately leads us to create policies designed to help or to hurt.

Implicit bias and class

Neuroscience can help us understand why we may have less concern and empathy for the welfare of certain groups of people. A part of our brain called the medial Prefrontal Cortex (mPFC) activates when we see someone as “highly human.” Likewise, that same part of our brain fails to activate when we *dehumanize* people. When we direct emotions such as pity and pride toward other people, we encode them in our brains as more human. Otherwise, they are relegated to a less human status in our minds, potentially leading us to create different policies for people who we see as less human.

A Princeton University study found that people can feel exclusively human emotions with much greater ease for people from non-stigmatized groups than for human beings who have been deemed socially unacceptable, such as the homeless. In the study, there was no indication that the participants knew that they had encoded homeless people as less than human.

Implicit bias and sexual orientation

Neuroscience also gives us insight into the ways we react to one another based on sexual orientation. A computerized test, called the IAT, measures implicit biases by prompting test takers to match a long list of words and images to different categories as quickly and accurately as possible. (IATs can be taken online at <http://implicit.harvard.edu/implicit/>.) For the Sexual Orientation IAT, the test taker is given a list of negative and positive words like “terrible” and “glorious” along with pictures of same-sex couples and straight couples, both in wedding clothes. Then, the test taker is asked to match the words and pictures at top speed to the categories “Straight people and good” and “Gay people and bad.” The computer measures in milliseconds how long it took the test taker to match the words and pictures to these categories, as well as how many mistakes were made.

People who show higher levels of implicit bias toward same sex couples may also have involuntary physical reactions that can be measured through skin conductance response (SCR) tests, tracking the brief increase in the electrical currents that run through the skin. Test takers may show higher SCR when they see pictures of same-sex couples standing next to each other or holding hands. Even more telling, as SCR levels increase, so does activation of a part of the brain called the insula, which activates when we feel aversion or disgust.

Implicit bias and race

The brain also has been shown to react in a biased way towards people of color. Studies have shown that specific areas of the brain, called amygdalae, activate when we feel fear, threat, anxiety and distrust. People with diagnosed phobias of spiders and snakes have significantly higher levels of amygdala activation when they view pictures of those fear triggers than when they view pictures of other predatory or ferocious creatures, such as tigers. A pioneering study showed a measurable increase in the activation of the amygdala when Caucasian participants viewed African American male faces versus Caucasian male faces. The level of amygdala activation correlated with how subjects performed on the Race IAT. Nationwide, 70 to 87 percent of Caucasians in the United States demonstrate bias against African Americans on the Race IAT.

In addition, studies have found that people tend to automatically associate African Americans and crime, sometimes to dire consequences. According to studies like the “Shoot/No Shoot” test, created at the University of Chicago, they may even be willing to take severe action when the threat is an imagined reaction based on their implicit biases.

Implicit bias has an undeniable impact on our policies and decisions in the areas of criminal justice, employment, environmental justice, housing and more. If we believe that certain people are more frightening and dangerous, then we may want to create policies to protect ourselves from them. If we believe that certain people are more threatening, then we may be less willing to protect them from unjust laws. If we believe certain people are more likely to commit crimes, then we may want to build more jails and fewer schools to serve that population.

The hard science redefines the conversation surrounding civil rights. When we talk about disproportionate minority contact (the disproportionate number of minority youth who come into contact with the juvenile justice system), we must also talk about disproportionate amygdala activation. When we talk about disparate decision-making we must also talk about disparate medial Prefrontal Cortex activation.

Today's civil rights leaders face a new challenge: to expose the subconscious and subtle forms of bias and fear that exist in us and of which we often are unaware. If the law does not acknowledge the role of implicit bias and structural inequities, people challenging unfair policies or decisions have to prove the people responsible for them intentionally discriminated, which is a near impossible hurdle. Implicit bias is often how discrimination reveals itself today. If we can understand how our brains work, we finally may be able to figure out how to conquer these biases and work together toward a fair and just society.

For more information on implicit bias, visit the Equal Justice Society website at <http://equaljusticesociety.org/implicitbias>.

The Hard Science of Civil Rights: How Neuroscience Changes the Conversation

By Kimberly Papillon, Esq.

If scientists could scan our brains when we see spiders or snakes, they would see that the area of our brains that focuses on fear, threat, anxiety and distrust is triggered or, as neuroscientists say, “activates.” Suppose scientists scanned the brains of people with unconscious or implicit biases towards African Americans. Would they also see that part of our brains activate?

In short, yes. Studies have found that this same area of the brain activates more when they see pictures of African American faces than when they see pictures of Caucasian faces. What is truly remarkable is that many of the people who have this reaction state they have no conscious bias or prejudice towards others. They have no idea that these reactions are going on in their minds.

Biases based on race, age, gender and sexual orientation have been analyzed in numerous contexts. History, anthropology, sociology and political science are all used to explain why some groups enjoy privilege while others remain subjugated in our society. While valid, these approaches provide an incomplete picture; they focus on people as part of a *system* without understanding the *system* inside each of us.

Neuroscience gives us insight into ways we react to, advocate for and seek to punish one another. In addition, a computerized test, called the Implicit Association Test (IAT), helps us see our unconscious or implicit biases and preferences for certain groups. Neuroscience and the study of implicit bias let us peer into the human brain and unravel the mysteries of why we treat each other with care or cruelty, show empathy or apathy, and legislate to help or to hurt.

Neuroscience does not provide an excuse to continue to have and act on our biases. Instead, it reveals those biases and removes our ability to deny the tendencies of our unconscious mind. If we can understand how our brains work, we may become aware of and begin to unlearn implicit biases. We finally may be able to figure out how to conquer these biases and work together toward a fair and just society.

Neuroscience, Class and Dehumanization

A part of our brain called the medial Prefrontal Cortex (mPFC) activates when we see someone as “highly human.” Likewise, that same part of our brain fails to activate when we *dehumanize* people. As a result, we may have less concern for their welfare and less empathy for their circumstances. When we direct uniquely human emotions such as pity and pride toward other people, we encode them in our brains as more human. Otherwise, they are relegated to a less human status in our minds, potentially leading us to create different policies for people who we see as less human.

In a Princeton University study, participants were required to make judgments about people who were socioeconomically disadvantaged (specifically, homeless people) and then to make judgments about middle class people.¹ (They were also required to make judgments about IV drug users and non-drug users). While making the judgments, the participants’ brains were scanned using an MRI machine, a process called functional Magnetic Resonance Imaging (fMRI).

As participants made judgments about the middle class people, their mPFC activated, showing that the middle class people were encoded as human. However, when asked to

make the same judgments about homeless people, the mPFC of the participants was not fully activated. (The same contrast occurred when people made judgments about IV drug users versus non-drug users). In other words, people can feel exclusively human emotions with much greater ease for people from non-stigmatized groups than for human beings who have been deemed socially unacceptable. The ability to feel human emotions for others is directly linked to the ability to see and treat others as human beings.

These reactions were not intentional or perhaps even conscious. There was no indication that the participants in the study consciously reacted differently to the homeless people. There was no indication that the participants knew that they had encoded homeless people as less than human.

Neuroscience, Sexual Orientation, and Implicit Bias

Neuroscience also gives us insight into the ways we react to one another based on sexual orientation, gender and race. The latest studies link the results from computerized tests, such as the IAT, and brain scans to reveal why we may make biased decisions in employment, in criminal justice, in policy and even in how we cast our votes.

The IAT is a computerized test that measures implicit biases.² (One can take the IATs online at <http://implicit.harvard.edu/implicit>). The test taker must match a long list of words and images to different categories as quickly and accurately as possible. For the Sexual Orientation IAT, the test taker is given a list of negative and positive words like “terrible” and “glorious” along with pictures of same sex couples and straight couples, both in wedding clothes.³ Then, the test taker is asked to match the words and pictures at top speed to the categories:

1. “Straight people and good”; and
2. “Gay people and bad”.

The computer will measure in milliseconds how long it took the test taker to match the words and pictures to these categories, as well as how many mistakes were made. The categories are then switched to:

1. “Gay people and good”: and
2. “Straight people and bad”.

Once again the same picture and the same words will appear quickly on the computer screen. If the test taker takes longer to match the words and pictures or makes more mistakes with this set of categories than with the other, he or she may have an implicit bias against LGBTQ people.

People who show higher levels of implicit bias toward same sex couples on the Sexual Orientation IAT may also have involuntary physical reactions that can be measured through skin conductance response (SCR) tests. SCR is a brief increase in the electrical currents that run through the skin. Test takers may show higher SCR when they see pictures of same sex couples standing next to each other or holding hands.⁴

The science doesn’t end there. Increased SCR levels are linked to an even more telling physical reaction in the brain. As SCR levels increase, so does activation of a part of the brain called the insula.⁵ The insula activates when we feel aversion or disgust. The insula is also the part of the brain that activates when we smell rotten garbage.⁶

Neuroscience, Race and Fear

The brain may also react in a biased way towards people of color. Studies have shown that specific areas of the brain called amygdalae – a pair of small subcortical nodes – activate when we feel fear, threat, anxiety and distrust.⁷ People with diagnosed phobias of spiders and snakes have significantly higher levels of amygdala activation when they view pictures of those fear triggers than when they view pictures of other predatory or ferocious creatures, such as tigers.

Similarly, a pioneering fMRI study showed a measurable increase in the activation of the amygdala when Caucasian participants viewed African American male faces versus Caucasian male faces.⁸ The level of amygdala activation correlated with how subjects performed on the Race IAT. Subjects who demonstrated more bias against African Americans, as measured by the Race IAT, had matching higher amygdala or fear reactions to African American male faces. Nationwide, statistically significant samples show that 70 to 87 percent of Caucasians in the United States demonstrate bias against African Americans on the Race IAT.

African Americans, Negative Concepts, and Crime

Studies also have found that people tend to automatically associate African Americans and crime. In a study conducted at Stanford University, researchers first showed participants either a picture of an African American male face or a Caucasian male face (a third control group received no priming images).⁹ Participants then were asked to identify pictures of different objects. Some of the objects were crime-related, such as guns, knives and handcuffs, and some of the objects were not crime related, such as suitcases and fishing poles. Initially blurry, each picture became clearer with each passing second as participants watched. Participants signaled when they could identify the object in the picture.

According to the study, if participants first saw a picture of an African American male face – rather than the Caucasian male face – they identified the crime-related objects more quickly. If primed with the African American face, participants were able to correctly identify the crime-related objects very quickly, at the 18th frame. Subjects primed with the Caucasian face took much longer to identify the crime-related objects, at the 27th frame. Notably, participants who were not primed with any faces identified both the crime-related and non-crime-related objects at

approximately the 23rd frame. The study demonstrated that, not only did the African American face accentuate recognition of crime-related objects, but also that the Caucasian face inhibited recognition of those same crime-related objects.

Implicit bias has an undeniable impact on our policies and decisions in the areas of criminal justice, employment, housing and more. If we believe that certain people are more frightening and dangerous, then we may want to create more policies to protect ourselves from them. If we believe that certain people are more threatening, then we may be less willing to protect them from unjust laws. If we believe certain people are more likely to commit crimes, then we may want to build more jails and fewer schools to serve that population.

The level of implicit bias against Latinos has been recorded on the IAT as well. Recent studies on the Hispanic IAT demonstrate that people who show implicit bias towards Latinos are more likely to oppose both illegal *and* legal immigration.¹⁰

Shoot/No Shoot Test

If people make more negative associations about African Americans, show a neurophysiologic fear and threat reaction to African Americans, and associate crime objects more readily with African Americans, then they may be willing to take more severe corrective action in the face of a perceived threat. They may even be willing to take severe action when the threat is an imagined reaction based on their implicit biases.

In the “Shoot/No Shoot” test, created at the University of Chicago, pictures of African American and Caucasian men in various poses are flashed on the computer screen.¹¹ In the pictures, each man is holding either a gun, a cell phone or a soda can. As quickly as possible, participants must press a key on the computer keyboard to indicate that they will either “shoot” or “not shoot” the man in the picture. They are directed to “shoot” if they believe that

the man has a gun. They must hit “no shoot” if they believe that the man in the picture has a soda can or a cell phone. As with the Race IAT, the computer measures the length of time it takes the player to respond in milliseconds and records the number of errors.

Previous studies have repeatedly found that the overwhelming majority of players will make more mistakes and “shoot” the African American man even when he is not holding a gun more often than the Caucasian man. Likewise, it takes longer for the overwhelming majority of players to determine that the African American man is holding a soda can or a cell phone than it takes them to make the same determination for the Caucasian man.

The Shoot/No Shoot study can lead us to conclude that a stronger association between crime, threat or fear, and African Americans can result in differential action. Though the subjects in this study were required to make a choice ostensibly to protect themselves, they displayed a more aggressive reaction and willingness to injure when faced with the African American. Most importantly, these responses were based on implicit biases, unknown to the subjects. In fact, most of the subjects consciously held strong values for fairness and egalitarianism and abhorred the notion of racial bias and discrimination.

But the conscious mind and its implicit biases do not always agree.

Neuroscience and Redefining the Analysis

The hard science redefines the conversation surrounding civil rights. When we talk about disproportionate minority contact we must also talk about disproportionate amygdala activation. When we talk about disparate

decision-making we must also talk about disparate medial PFC activation. The civil rights community has accomplished great things, but there is more to be done. An approach to civil rights work that focuses exclusively on identifying the consciously-biased actors in a government institution or private company will overlook most of the biased decisions that occur in our society on a daily basis. Today’s civil rights leaders face a new challenge: to expose the subconscious and subtle forms of bias and fear that exist in us and of which we often are unaware. Focusing on the new analysis of the problem will yield new and meaningful solutions. In the end, the ultimate goal of those who care about equal access and fairness will be only slightly modified -- to change hearts, minds *and* brains.

Kimberly Papillon is a nationally recognized expert on the subject of judicial and legal decision-making. She has delivered over 100 lectures nationally and internationally on the implications of neuroscience, psychology and implicit association in the analysis of judicial decision-making to multiple audiences including the National Council of Chief Judges of the State Courts of Appeal, the U.S. District Court for the Eastern District of California, the D.C. Court of Appeals, the National Council of Juvenile and Family Court Judges, the judges of the High Court of New Zealand, the judiciaries of Vermont, Washington, Nebraska, Texas, Idaho, New Mexico and California and the California State Bar. Ms. Papillon is an attorney who serves as regular faculty at the National Judicial College. She has a BA degree from U.C. Berkeley and a JD degree from Columbia University School of Law.

Special thanks to Layla Razavi and Bilen Mesfin for their feedback on this article.

¹ L.T. Harris & S.T. Fiske, *Dehumanizing the Lowest of the Low: Neuroimaging Responses to Extreme Out-Groups*, 17 PSYCHOL. SCI. 847 (2006).

² B.A. Nosek, A.G. Greenwald & M.R. Banaji, *The Implicit Association Test at Age 7: A*

methodological and conceptual review, in SOC. PSYCHOL. AND THE UNCONSCIOUS: THE AUTOMATICITY OF HIGHER MENTAL PROCESSES 265-92 (J.A. Bargh ed., 2006).

³ *Id.*

⁴ Y. Inbar, D.A. Pizarro, J. Knobe & P. Bloom, *Disgust Sensitivity Predicts Intuitive Disapproval of Gays*, 9 *EMOTION* 435-39 (2009).

⁵ K.B. Smith, D. Oxley, M.V. Hibbing, J.R. Alford & J.R. Hibbing, 6 *DISGUST SENSITIVITY AND THE NEUROPHYSIOLOGY OF LEFT-RIGHT POLITICAL ORIENTATIONS*10 (2011), *available at*:

<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0025552>.

⁶ D. Mataix-Cols, S.K. An, N.S. Lawrence, X. Caseras, V. Giampietro, M. Brammer, A. Speckens & M.L. Phillips, *Individual Differences in Disgust Sensitivity Modulate Neural Responses to Aversive/Disgusting Stimuli*, 27 *EUR. J. NEUROSCI.* 3050 (2008).

⁷ S.G. Costafreda, M.J. Brammer, A.S. David & C.H. Fu., *Predictors of Amygdala Activation during the Processing of Emotional Stimuli: A Meta-Analysis of 385 PET and fMRI Studies*, 58 *BRAIN RES. REV.* 57 (2008); F. Van Overwalle, *Social*

Cognition and the Brain: A Meta-Analysis, 30 *HUM. BRAIN MAPPING* 829 (2009).

⁸ Phelps, E.A., O'Connor, K.J., Cunningham, W.A., Funayama, E.S., Gatenby, J.C., Gore, J.C. & Banaji, M.R., *Performance on Indirect Measures of Race Evaluation Predicts Amygdala Activity*, 12 *JOURNAL OF COGNITIVE NEUROSCIENCE* 1-10 (2000).

⁹ J.L. Eberhardt, P.A. Goff, V.J. Purdie, & P.G. Davies, *Seeing Black: Race, Crime, and Visual Processing*, 87 *J. OF PERSONALITY AND SOC. PSYCHOL.* 876 (2004).

¹⁰ E.O. Pérez, *Explicit Evidence on the Import of Implicit Attitudes: The IAT and Immigration Policy Judgments*, 32 *POL. BEHAV.* 517 (2010).

¹¹ J. Correll, B. Park, C.M. Judd & B. Wittenbrink, *The Police Officer's Dilemma: Using Ethnicity to Disambiguate Potentially Threatening Individuals*, 83 *J. OF PERSONALITY AND SOC. PSYCHOL.* *Journal of Personality and Social Psychology* 1314 (2002).