



# **The Neuroscience Behind Implicit Bias**

**A Diversity and Inclusion White Paper**



**SpectraDIVERSITY**

Open Minds - Transform Organizations

## ABOUT US



Spectra Diversity is a diversity and inclusion company providing products and tools for those working in the diversity and inclusion field. Partner Amy Tolbert, Ph.D., CSP, was the co-creator of the Discovering Diversity Profile® (DDP). From 1994 – 2015 the DDP was the only valid reliable instrument in the market specifically designed as a learning instrument that helped individuals learn how they respond to diversity issues and where they need to develop increased understanding and skills. Jonamay Lambert was the co-creator of the RespectAbility Self-Assessment Diagnostic Tool. Chris Jones is an internationally recognized writer of all forms of media. Patricia Jespersen brings her experience of working with ProGroup (now KornFerry), a national leader in Diversity and Inclusion services.

Together, our four Spectra Diversity partners have careers rich in diversity and inclusion efforts, while working with clients ranging from corporate leaders to non- profits, and from Fortune 100 companies to storied educational institutions and entrepreneurial start-ups. We are a women-owned business. We are committed to this work.

***Our Mission: Spectra Diversity is committed to honoring differences and helping others to create a diverse and inclusive workforce.***

## OVERVIEW

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***“Hindsight bias makes surprises vanish.”***

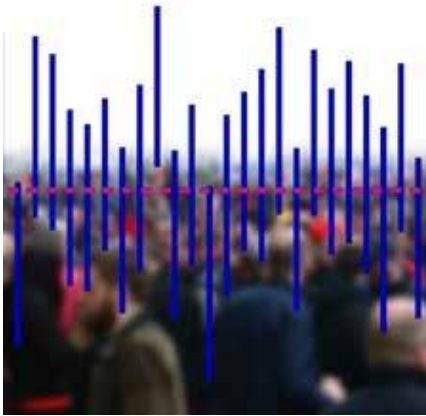
***~ Daniel Kahneman***

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No one really starts out the day saying, “I’m going to show my bias today.” Yet, that is the result...we all have unconscious bias. It may seem frustrating that there is no way to understand or control your unconscious. No need to worry: the past few decades of neuroscience and behavioral research have provided immense information explaining the why and how behind unconscious bias. In this paper, research will be explored, as it affects unconscious bias specifically in the workplace.

The understanding of how implicit bias is based in the brain, dissecting its origins and how socializations reinforce such biases will also be discussed. After establishing implicit biases are based in neuroscience, various types of implicit biases will be explained to deepen the understanding of how such biases can impact interactions in the workplace.

## DEFINITIONS



Let's start by defining some of the terms that will be used consistently throughout this paper, so there is a shared foundation of understanding.



### Implicit (unconscious) bias

Bias in behavior and/or judgment that results from subtle cognitive processes and occurs a level below a person's conscious awareness, without intentional or conscious control. Implicit bias is based in the subconscious and can be developed over time because of the natural accumulation of personal experiences.



### Amygdala

A region in the brain that scientists have associated with emotional learning and fear conditioning; is important to evaluation and preference development. The amygdala is the portion of the brain responsible for the fight, flight or freeze emotional response to stimuli.



### IAT

Acronym for 'implicit association test' which, since 1998 has been a measure within social psychology designed to detect the strength of a person's automatic association between mental representations of objects (concepts) in memory



### Mindbug

Refers to ingrained habits of thought that lead to errors in how we perceive, remember, reason and make decisions. <sup>1</sup>



### Socialization

The process of learning to behave in a way that is accepted by society

## WHAT IS IMPLICIT BIAS?

### HOW IS IT CREATED?



Implicit, or unconscious bias, as defined above, is a subtle cognitive process that starts in the amygdala. This type of bias can be understood as a “form of rapid ‘social categorization,’ whereby we routinely and rapidly sort people into groups.”<sup>2</sup> Dr. Brainard (MS, MA, PhD), of the Brainard Strategy, highlights the parts of the brain that create bias:

- Amygdala
- Hippocampus
- Temporal lobe
- Media frontal cortex

The brain, through the amygdala, processes billions of stimuli per day and our brains must quickly choose what to focus on. This information is used for survival, to make inferences or categorize, and feel emotions that attract us to certain people. Because the amygdala must process billions of stimuli, our conscious brain does not have the opportunity to interpret all that we see.

For example, initial instincts may not be based on of fully processed interpretations due to the massive amounts of information coming in at any moment. Consequently, those first instincts often include biases of some kind that we did not consciously “think,” but our brain unconsciously categorized to synthesize the massive amount of information being experienced. For example, you only need to be burned by a flame once, to develop a quick instinctual reaction to fire. These emotional reactions are due to the amygdala’s survival instinct.

As time passes, a person’s socialization and personal memories produces unconscious biases and applies them as the amygdala defines incoming stimuli efficiently and unconsciously.<sup>3</sup> It is common for these lower level of unconscious survival responses to be like those with whom you are in extended contact. Other people are rapidly categorized as “like me” and “not like me.”

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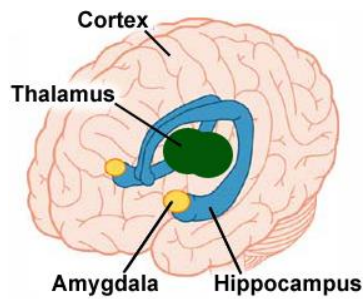
*Example: A male lead is conducting a staff meeting at an advertising agency. Those in the room, mostly men, are asked to brainstorm potential solutions to a problem they ran into for a specific campaign. A female colleague proposes an idea and is not acknowledged, but a male colleague mentions the identical solution five minutes later, which his co-workers praise. The male lead thanks his male colleague for his contribution, while the female colleague continues to be ignored.*

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In this example, it is clear that the workplace is male-dominated. That alone is not enough to create a biased environment, but in this example, the gender bias in the decision-making process is clear. The male lead’s unconscious choice to ignore the woman in the room, but to acknowledge the men could be linked to his bias created in the amygdala. This process of unconscious bias comes from previous socialization, as the male lead’s amygdala categorized the men in his team as “like me” and the woman as “not like me.” By working in a male-dominated industry, and at a majority-male firm, the lead of this meeting has developed an unconscious bias which favors men. This bias happens in a split-second, so while to an outsider the bias may be evident, the one holding this gender bias may or may not be doing so intentionally, due to the nature of how the brain processes, identifies and categorizes information.





The amygdala is where the information is processed; however other parts of the brain are involved in the pervasion of implicit bias. As explained by Andrea Choate, author, HR executive and Strategist, such information goes through the hippocampus as well. The hippocampus is the part of the brain that “forms links between memories and quickly deciphers the meaning of data received.”<sup>4</sup> Because the hippocampus matches new, incoming information with subjective memories, data can be matched to make someone believe their understanding of the data is “correct” when it is simply being unknowingly related to one’s own subjective memory or experience.

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*Continuing with the previous example, the male lead of the meeting decides to follow through with the idea his male colleague proposed. The male lead subsequently feels confident in the success of this idea.*

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This sense of confidence that the male lead feels after accepting a proposal from a fellow male colleague may have nothing to do with the content of the idea. Rather, based on the situation, the male lead feels confidence based on his subjective memory having worked in a male-dominated space where other ideas were successful. Therefore, the instinct that his decision was correct is not based on the content of the idea, as the female colleague had proposed the idea originally, but rather, on the person who proposed the idea due to previous social conditioning.

While the amygdala and hippocampus are where information and memories are processed, much of the explicit bias associating occurs in the left temporal lobe and frontal cortex. The left temporal lobe is used largely to store information about people and objects, and the link between these and social stereotypes.<sup>5</sup> This is because the temporal lobe is responsible for an integration of sounds and words into meaningful memory.<sup>6</sup> The frontal cortex is responsible for empathy, emotional responses as well as rational thought.

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*Example continued: Due to this male lead’s affinity to listening to his male employees over the women in the workplace, he will continue to affirm – unconsciously – the stereotype that men put forth successful work.*

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This has nothing to do with performance, but rather this person’s continued bias to listen to the men in the office more than the women. This gender-based confidence is below one’s level of consciousness. An instinctual feeling will continue to occur when deciding between the proposals generated by men versus women. The confidence associated with the men is a stereotype, but it is rooted in the unconscious and therefore is not available for analysis by the conscious self, as it lives in the left temporal lobe.

We understand how information moves through the brain and can be affected unconsciously by biases and, while it is based in the brain, there are ways to understand unconscious bias outside of the geography of the brain. One term often used by implicit bias researchers is mindbugs. A mindbug is an ingrained habit of thought that leads to errors in how we perceive, remember, reason and make decisions.<sup>7</sup> A mindbug can be triggered visually or experientially and, after being triggered, can create false inferences or even memories to justify a feeling being processed. Certain forms of mindbugs can rewrite past experiences in an attempt to efficiently grasp the moment.



In understanding mindbugs, and the complexities of the human brain, it is important to give as much weight to the social – as well as the literal or visual – understandings the brain produces. Mindbugs point to the utilization of memory as well as physical attributes that lead to the creation of social meaning each person holds. To show this, try the following experiment: <sup>8</sup>

Look at two pictures of strangers. Ask yourself the following...

- Which of the two people seems more trustworthy?
- Which one will be more competent on the job?
- Which one is more likely to dominate the others?

While the answers to these questions are not accurate, they can be surprisingly easy to gather from a static image. Even though it could take more effort to not make these judgments, this is not because the answers are correct; rather they could be quite wrong. There are socialized physical features that evoke trustworthiness, such as a baby face.

Alex Torodov at Princeton University concludes that less distance between ones' eyes can make them look less competent. <sup>9</sup> This example is not to scold people for having these judgments; they indeed are based in the wirings of our brain and the socializations we experience. However, the fact that these biases exist should cause one to take a moment and rethink the process one habitually takes when making important decisions. It is important to be mindful of social mindbugs as they can wrongly attribute trustworthiness to those who may not deserve it, as well as wrongly attributing suspicion upon others. <sup>10</sup> Social mindbugs show up in many forms, based on one's revised memory, as well as physical stereotypes based on race/ethnicity, age, gender, sexuality, etc. Therefore, it is important to break down the various types of biases that can show up and affect the workplace.

The rewriting of history is a specific type a bias called: retroactive inference. This inference is "the influence of after-the-fact-experiences on our memory." <sup>11</sup> Retroactive Inference can affect leadership in the workplace very directly.

Another type of bias, based in the frontal cortex and left temporal lobe, is called confirmation bias. This type of bias is an apathetic process as the brain looks for information to confirm a preconceived notion. <sup>12</sup> Leaders who struggle with confirmation bias are simply reiterating their ideas as right rather than looking for other possible solutions.

When trying to understand biases, it is vital to understand that an organization can hold and perpetuate biases that, in turn, create implicit biases within the organization's employees. While biases also exist on the individual level, both individual and organizational biases should be addressed in the workplace to create a more productive, safer space.

## TYPES OF BIASES

*Senior leaders often believe they are exceptional at hiring talent. When asked why they believe this, they reference their successes, but fail to acknowledge the hires that were unsuccessful. This is an example of retroactive inference.*

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*"We find comfort  
among those who  
agree with us -  
growth among  
those who don't."*

— Frank Clark

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## IS UNCONSCIOUS BIAS MEASURABLE?



There are more than 150 types of unconscious bias that are common in the workplace. <sup>13</sup> Some of the most common are outlined below:

- Affinity Bias: having the tendency to prefer or like those like oneself; this is a type of bias that is also understood through the lens of race, age, gender, religion, to name a few
- In-Group Bias: like affinity bias, this is the positive perception of people simply because they are like you
- Out-Group Bias: perceiving those who are different from you in a negative way
- Perception Bias: having the tendency to form assumptions or stereotypes about certain groups making it impossible to have objective views/perceptions about members within that group
- Blind Spot: identifying biases in others, but not oneself
- Group Think: having the tendency to try and fit into a certain group through mimicking behavior or withholding thoughts out of fear of being excluded
- Anchoring Bias: having the tendency to rely on the first piece of information rather than continuing to evaluate through seeking multiple sources of information before making a decision

There are many types of biases that take place in the unconscious, as has been discussed. As another step to understanding how implicit biases function, it seems there should be some way to scientifically measure one's biases, right? Well, there is: Project Implicit at Harvard University created the [Implicit Association Test \(IAT\)](#). Tony Greenwald, Mahzarin Banaji and Brian Nosek – of University of Washington, Harvard and University of Virginia respectively – founded this test in 1998. With the purpose of creating an international collaboration on implicit social cognition, they hoped to educate about hidden biases through their virtual database of results. <sup>14</sup> Through more than six million uses of this test, Project Implicit has been able to understand patterns of social biases and hierarchies that affect our unconscious decision-making. Beyond the IAT, they have created the Race IAT as well as Project Implicit Mental Health – working to better understand various attitudes or hidden biases regarding mental health related illnesses and behaviors.

The IAT can provide a deeper understanding of an individual's implicit biases. This test is effective because it "relies on the fact that your brain has stored years of past experiences that you cannot set aside when you do the IAT's sorting tasks." <sup>15</sup> Through utilizing the psychological phenomenon called mental association, also described as 'the mental glue that can allow two categories to combine into one,' the test is able to see how you place value based on the sorting method and, consequently, where biases lie. <sup>16</sup>

Individuals can access the test, getting their results privately as well as choose to add their results anonymously to a growing dataset run by Project Implicit. The project can also be administered in a workshop setting among organizations or companies. In this setting, the test can serve as a learning tool to identify and discuss potential predominant biases on an organization, team, or individual level. These workshops can serve as a productive starting point to understand where biases may exist before launching further bias training programs.

## NOW WHAT?



Learning about how unconscious is based in neuroscience, on a level below our conscious thinking, can help to start the grounding process before any potential training or learning activities is implemented. Unconscious bias, while it has basis in societal understandings, is scientifically proven and exists for every individual. Once that is understood, a more open approach to training around biases can begin.

## FOOTNOTES

1. Banaji, Mahzarin R., and Anthony G. Greenwald. *Blindspot: Hidden Biases of Good People* pg. 4
2. Brainard, Michael. *LEADERSHIP PITFALLS AND INSIGHTS INTO UNCONSCIOUS BIAS* pg. 1
3. Choate, Andrea. *Neuroleadership Lessons: Recognizing and Mitigating Unconscious Bias in the Workplace* pg. 2
4. Brainard, Michael. *LEADERSHIP PITFALLS AND INSIGHTS INTO UNCONSCIOUS BIAS* pg. 4
5. Choate, Andrea. *Neuroleadership Lessons: Recognizing and Mitigating Unconscious Bias in the Workplace* pg. 3
6. Brainard, Michael. *LEADERSHIP PITFALLS AND INSIGHTS INTO UNCONSCIOUS BIAS* pg. 5
7. Banaji, Mahzarin R., and Anthony G. Greenwald. *Blindspot: Hidden Biases of Good People* pg. 14
8. Banaji, Mahzarin R., and Anthony G. Greenwald. *Blindspot: Hidden Biases of Good People* pg. 14
9. Banaji, Mahzarin R., and Anthony G. Greenwald. *Blindspot: Hidden Biases of Good People* pg. 15
10. Banaji, Mahzarin R., and Anthony G. Greenwald. *Blindspot: Hidden Biases of Good People* pg. 15
11. Brainard, Michael. *LEADERSHIP PITFALLS AND INSIGHTS INTO UNCONSCIOUS BIAS* pg. 4
12. Brainard, Michael. *LEADERSHIP PITFALLS AND INSIGHTS INTO UNCONSCIOUS BIAS* pg. 4
13. Choate, Andrea. *Neuroleadership Lessons: Recognizing and Mitigating Unconscious Bias in the Workplace* pg. 4
14. ProjectImplicit, [www.projectimplicit.net/index.html](http://www.projectimplicit.net/index.html).
15. Banaji, Mahzarin R., and Anthony G. Greenwald. *Blindspot: Hidden Biases of Good People* pg. 39
16. Banaji, Mahzarin R., and Anthony G. Greenwald. *Blindspot: Hidden Biases of Good People* pg. 39

## FOR MORE INFORMATION

[www.SpectraDiversity.net](http://www.SpectraDiversity.net)

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