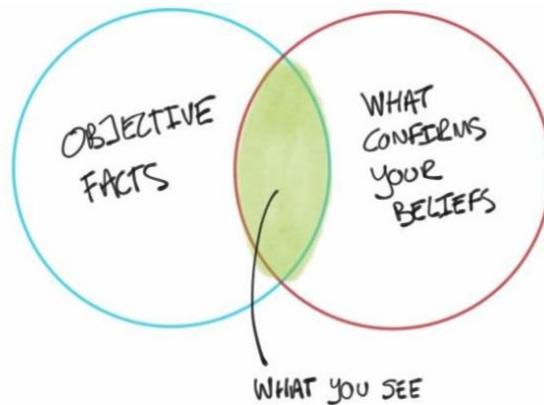




The Neurology of Bias-It Actually IS All In Your Head!

Lesson by Bryana Williams M.S. CCC-SLP



BIAS is defined as “prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair”. Sometimes it’s easy to spot, such as in the INFAMOUS (notorious, disreputable) case of a bakery owner discriminating against a gay couple by refusing to make their wedding cake. We often associated the word “bias” with explicit and obviously unfair examples of PREJUDICE (preconceived opinion not based on reason or actual experience) to the point that being called “biased” is akin to an insult. But whether we aware of it or not-and whether we are, by any definition, a “good” person or not-we are ALL biased in one way or another. How? Well, it’s all about the brain.

Spell: AWARE DEFINITION DISCRIMINATE

What is the topic of the lesson? BIAS

It is defined as “prejudice in favor of or against one ____, ____, or ____ in favor of another, usually in a way considered unfair”. THING, PERSON, GROUP

Define bias in your own words.

What word means “notorious or disreputable”? INFAMOUS

List a synonym for “infamous” from the lesson. NOTORIOUS, DISREPUTABLE

List your own synonym or definition for “infamous”.

A preconceived opinion not based on reason or experience is known as __.

PREJUDICE

What is prejudice?

What do you think of the claim “being called ‘biased’ is akin to an insult”?

Question Type Key

KNOWN – SEMI-OPEN – PRIOR KNOWLEDGE – MATH – OPEN – VAKT



We like to think of our reality as just that: reality. But as we learn more about how the brain works, we understand that the cool, conscious, and logical outlook we believe we have about the world may not, in fact, be all that conscious! Consider this: our brains process 11 million BITS (i.e. a measure of information, often used when discussing computers) of information every second, but we can only *consciously* process 16 to 40 bits. At most, that amounts to only .004% of the total information every second actually reaching our awareness! So, at any given point in time, 99.996% of the processing our brains complete is UNCONSCIOUS.

Spell: PROCESS INFORMATION OUTLOOK

We like to think we are experiencing true ____ . REALITY

We often believe our outlook is cool, conscious, and ____ . LOGICAL

What is one of the three terms we used to describe how people think they are perceiving the world? COOL, CONSCIOUS, LOGICAL

A measure of information is a ____ . BIT

How much information does our brain process every second? 11 MILLION BITS

How much of this can we consciously process? 16 TO 40 BITS or .004 PERCENT

Describe in your own words the amount of information our brains process consciously and unconsciously every second.

Reflect: What do you think are some possible benefits of the brain functioning this way? What are some possible downfalls?

With this amount of information coming in, shortcuts become necessary to avoid overload and allow us to function in the world. One highly efficient means for this is CATEGORIZING (the action or process of placing into classes or groups). This happens with objective information: for example, I see an object with four tires, a steering wheel, and bumpers and determine it fits into the category of “car”. But we also do this with SUBJECTIVE content, our emotions or thoughts about a thing based on our experience of it or even stories we’ve heard about it. A racecar driver might lump “car” together with words like “fast, exciting, good” whereas someone who has just been in a car accident might be quicker to choose words like “bad” or “dangerous”.

Spell: EFFICIENT BUMPER RACECAR

To avoid information overload, ____ become necessary. SHORTCUTS

The action or process of placing into classes or groups is called ____ . CATEGORIZING

What is categorizing?



What is one of the two types of information we categorize? SUBJECTIVE or OBJECTIVE

What does objective information refer to? FACTS/NON-EMOTIONAL/ETC.

Content that refers to our emotions or thoughts about a thing is _____. SUBJECTIVE

What is subjective content?

Consider the example of a leaf. What are 2-3 objective ways to categorize it?

What are 2-3 subjective ways?

Sounds like a great system, and it is! This “quick and dirty” processing helps us significantly in the right context. Quick ASSOCIATIONS (a bond or connection between two images, thoughts, ideas, or other psychological phenomena, whereby the occurrence of one tends to bring to mind the other) allow us to speed up our reaction time and make decisions more quickly, especially in high-stress situations. But, it can also allow unfair, unconscious or IMPLICIT bias (attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner) to take root.

Spell: SYSTEM UNCONSCIOUS REACTION

In the right context, this “_____” processing helps us significantly. QUICK AND DIRTY

A bond between two thoughts/ideas/etc. is known as an _____. ASSOCIATION

What is an association, according to the lesson?

What do you think “association” means in this context?

What can these quick associations allow us to do that’s beneficial? SPEED REACTION TIME, MAKE QUICKER DECISIONS

What “negative” effect can occur due to quick associations?

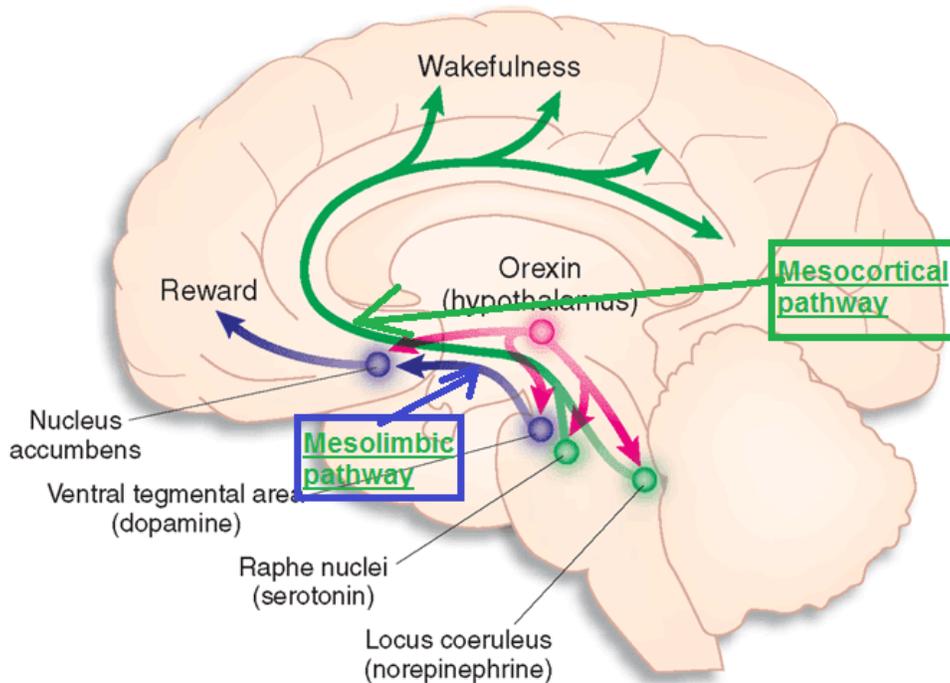
IMPLICIT/UNCONSCIOUS BIAS

Implicit bias refers to attitudes or _____ that affect our understanding, actions, and decisions in an unconscious manner. STEREOTYPES

What’s an example stereotype you may have heard?

Let’s see how this association process works. What are three words or ideas that come to mind when you hear the word “orange”?





<https://i0.wp.com/www.adjuvancy.com/wp-content/uploads/2017/12/mesolimbic-pathway.png?fit=669%2C481&ssl=1>

Implicit bias starts in the LIMBIC system-remember those 11 million bits of data that come in? Well a couple of components of it-the AMYGDALA and a DOPAMINE pathway called the MESOLIMBIC pathway-play a key role in determining which pieces of that information stream reach our conscious awareness. The amygdala is responsible for our fear-based instincts, whereas the mesolimbic system functions in social, emotional, and/or physiological reward. Both of these systems work together to determine what's important for survival, to make INFERENCES (conclusion based on evidence or reasoning) or categorize based on previous experience, and feel emotions that attract us to certain people, all in milliseconds of time-much faster than is necessary for us to consciously process information.

Spell: COMPONENT PATHWAY EMOTIONAL

In which brain system does implicit bias start? LIMBIC

What is one of the components of the limbic system that functions in implicit bias? AMYGDALA, MESOLIMBIC PATHWAY

The amygdala mitigates our ___ instincts. FEAR-BASED

Question Type Key

KNOWN – SEMI-OPEN – PRIOR KNOWLEDGE – MATH – OPEN – VAKT

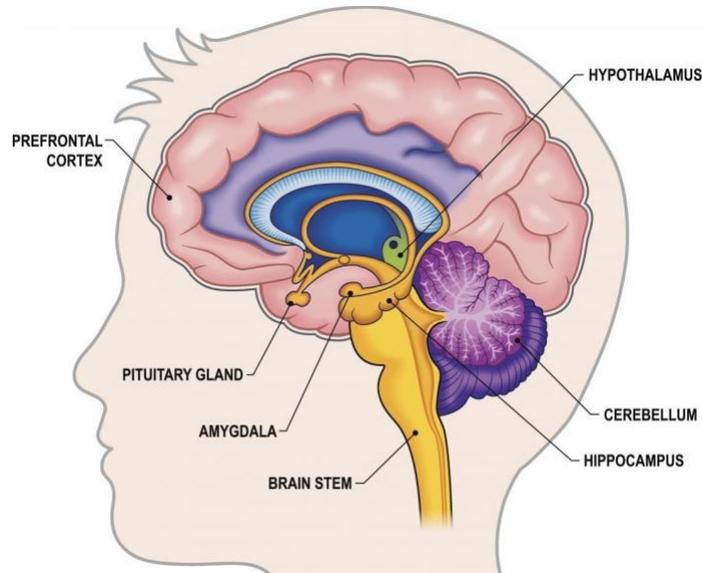


The mesolimbic pathway functions in reward-what is one of the three types listed here? SOCIAL, EMOTIONAL, PHYSIOLOGICAL

Describe the functions of the amygdala and mesolimbic system.

A conclusion based on evidence or reasoning is an __. INFERENCE

What is one thing these systems work together to do? DETERMINATIONS FOR SURVIVAL, MAKE INFERENCES/CATEGORIZE, FEEL EMOTIONS OF ATTRACTION



<https://cdn-prod.medicalnewstoday.com/content/images/articles/313/313295/hippocampus.jpg>

Don't think they are the only CULPRITS (Offenders, perpetrators) behind implicit bias, though! As information is categorized by these areas, it also passes through an adjacent organ called the HIPPOCAMPUS. This little bit of anatomy "forms links between memories and quickly deciphers the meaning of data received." 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.

Spell: MEMORIES BELIEVE ADJACENT

What word refers to the reason or a perpetrator for something? CULPRIT

List another synonym for "culprit" we learned in the lesson. OFFENDER, PERPETRATOR

What other area does the information pass through? HIPPOCAMPUS

Question Type Key

KNOWN – SEMI-OPEN – PRIOR KNOWLEDGE – MATH – OPEN – VAKT



What does the hippocampus do? FORMS LINKS BETWEEN MEMORIES/DECIPHERS THE MEANING OF DATA

How does this lead to bias? MATCHING NEW INFO WITH SUBJECTIVE MEMORIES CAN MAKE SOMEONE THINK THEY UNDERSTAND SOMETHING CORRECTLY

What do you think “subjective memories” means?

Furthermore, the very act of retrieving or referencing memories renders them MALLEABLE (adaptable)-we can actually rewrite memories in attempts to create harmony between our past experiences and what we are learning in the moment. Implicit bias researchers use the term “MINDBUG” to describe this: a mindbug is an ingrained habit of thought that leads to errors in how we perceive, remember, reason and make decisions. They can be triggered visually or experientially and, after being triggered, can create false inferences or even memories to justify a feeling being processed.

Spell: FURTHERMORE HARMONY DECISION

Retrieving memories can render them ____. MALLEABLE

What is another word for malleable? BENDABLE, ADAPTABLE, PLIABLE, ETC.

What can we end up doing to our memories when we recall them?

REWRITE/CHANGE THEM

An ingrained habit of thought that leads to errors in how we perceive, remember, reason, and make decisions is a _____. MINDBUG

Define “mindbug”

What is one way they can be triggered? VISUALLY, EXPERIENTIALLY

What can happen when a mindbug is triggered? CREATE FALSE INFERENCE OR MEMORIES

Can you think of your own example of a mindbug?

Let’s look at an example of this. Look at two pictures of strangers below and ask yourself the following questions:

- 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?



Person A

Person B

Even though we know any answer we come up with is ill-informed and likely inaccurate, we still make an inference based on only a couple of static images. In fact, it can take us more effort NOT to make a judgement when presented with this task! This does not make us terrible people-it has everything to do with how our experiences, socially or literally, shape the judgements of our limbic brain in terms of who is “like us” (i.e. safe) and “not like us” (i.e. suspect). Researchers have shown there are socialized physical features that EVOKE (bring or recall to the conscious mind) trustworthiness, such as a “baby face”. In another investigation, ALEX TORODOV at Princeton University concluded that less distance between ones’ eyes can make them look less competent!

Spell: INFORMED LITERAL RECALL

Even when viewing ___ images, we still make judgements or inferences. STATIC

Our ___ shape the judgements of our limbic brain. EXPERIENCES

What word means to bring to the conscious mind. EVOKE

Use “evoke” in your own sentence about implicit bias.

Tell me about one of the socialized physical features we often associate with trustworthiness or competence. BABY FACE, CLOSELY SPACED EYES

Based on what we’ve learned about the brain and how it develops bias, why do you think features like a younger-looking face or wider set eyes evoke trust?

We know, logically, that a person’s physical features do not DICTATE (prescribe/lay down authoritatively) their personality or character, yet our brains spit out assumptions regardless. This quick-inferencing is an unavoidable attribute

Question Type Key

7

KNOWN – SEMI-OPEN – PRIOR KNOWLEDGE – MATH – OPEN - VAKT



of a system designed to make processing faster which- again-can be helpful in the right circumstances. If I hear a strange noise in a dark ally, I want my amygdala to give off those warning bells and allow me to get to safety. The “danger” message is neither reliable nor helpful, though, when I am simply interacting with someone of a different race or culture.

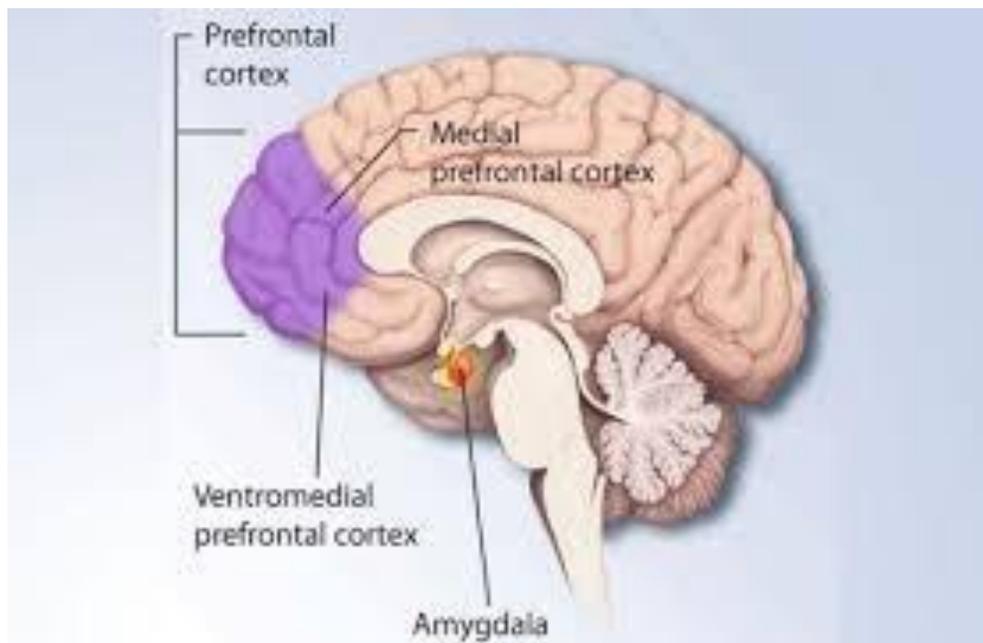
Spell: LOGIC STRANGE SAFETY

A person's ___ do not define their personality or character. PHYSICAL FEATURES

To prescribe or lay down authoritative law is to __. DICTATE

What does “dictate” mean?

Why do you think our brains might give off a signal like “Danger” when we meet people who are “not like us”?



This example highlights why social mindbugs and biases, left unchecked, can be PERILOUS (dangerous/risky): they can wrongly attribute trustworthiness to those who may not deserve it, as well as wrongly cast suspicion upon others. But remember our brain still has that precious .004% of conscious attention-though it may seem small, it is mighty! Our abilities to use METACOGNITION (i.e. awareness and understanding of our own thought processes), mediated by such brain areas



as the MEDIAL PREFRONTAL CORTEX or mPFC, allow us to take the slower route to decision making-in other words, to check our bias.

Spell: DESERVE SUSPICION ROUTE

A word for dangerous or risky is _____. PERILOUS

Why are unchecked social mindbugs dangerous, according to the lesson?

UNFAIRLY ATTRIBUTE TRUST TO SOME AND SUSPICION TO OTHERS

What is metacognition? AWARENESS OF OUR OWN THOUGHT PROCESSES

What is the full name of an area that's active in metacognition? MEDIAL PREFRONTAL CORTEX

What do you think it means to "check our bias" in terms of brain involvement?

Furthermore, NEUROPLASTICITY works in our favor: the amygdala actually restructures itself in response to exposure, subsequently changing our unconscious and conscious behavior! This means, for example, that by working in an environment of inclusion, we ourselves become more inclusive. Between exposing ourselves to new experiences and actively checking our thinking, we have significant help from our brain to combat unseen bias.

Spell: FAVOR INCLUSION COMBAT

The ability for our brain to neurologically adapt is known as ___. NEUROPLASTICITY

How does neuroplasticity apply to the amygdala? RESTRUCTURES ITSELF IN RESPONSE TO EXPOSURE

Creative Writing

1. What are the top three ways you think people could work through implicit bias against people with disabilities?
2. The brain has both its conscious and unconscious sides-that which we have awareness of, and that which we don't. What is one thing you feel people have awareness of about nonspeaking people, and something they don't?
3. How would you respond to someone who claims they have no bias?
4. Personify the areas of the brain that work in bias-write a discussion between them.

Want to learn more? Check out I-ASC's blog "Biases and How to Avoid Building the Next Stereotype"

Question Type Key

KNOWN – SEMI-OPEN – PRIOR KNOWLEDGE – MATH – OPEN – VAKT

9



<https://i-asc.org/biases-and-how-to-avoid-building-the-next-stereotype/>



[Bryana Williams](#), M.S., CCC-SLP, S2C Practitioner

[The Growing Place](#), Atlanta & Nashville

Sources:

<https://www.sciencenewsforstudents.org/article/think-youre-not-biased-think-again>

<https://neurosciencenews.com/neuroscience-bias-9431/>

<https://www.spectradiversity.com/2017/12/27/unconscious-bias/>

<https://www.nature.com/articles/s41467-020-17192-7>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3318765/>

The mission of [I-ASC](#) is to advance communication access for nonspeaking individuals globally through [training](#), [education](#), [advocacy](#) and [research](#). I-ASC supports all forms of augmentative and alternative communication (AAC) with a focus on methods of spelling and typing. I-ASC currently offers [Practitioner training](#) in [Spelling to Communicate \(S2C\)](#) with the hope that other methods of AAC using spelling or typing will join our association.

Question Type Key

KNOWN – SEMI-OPEN – PRIOR KNOWLEDGE – MATH – OPEN – VAKT



2020 I-ASC All Rights Reserved

