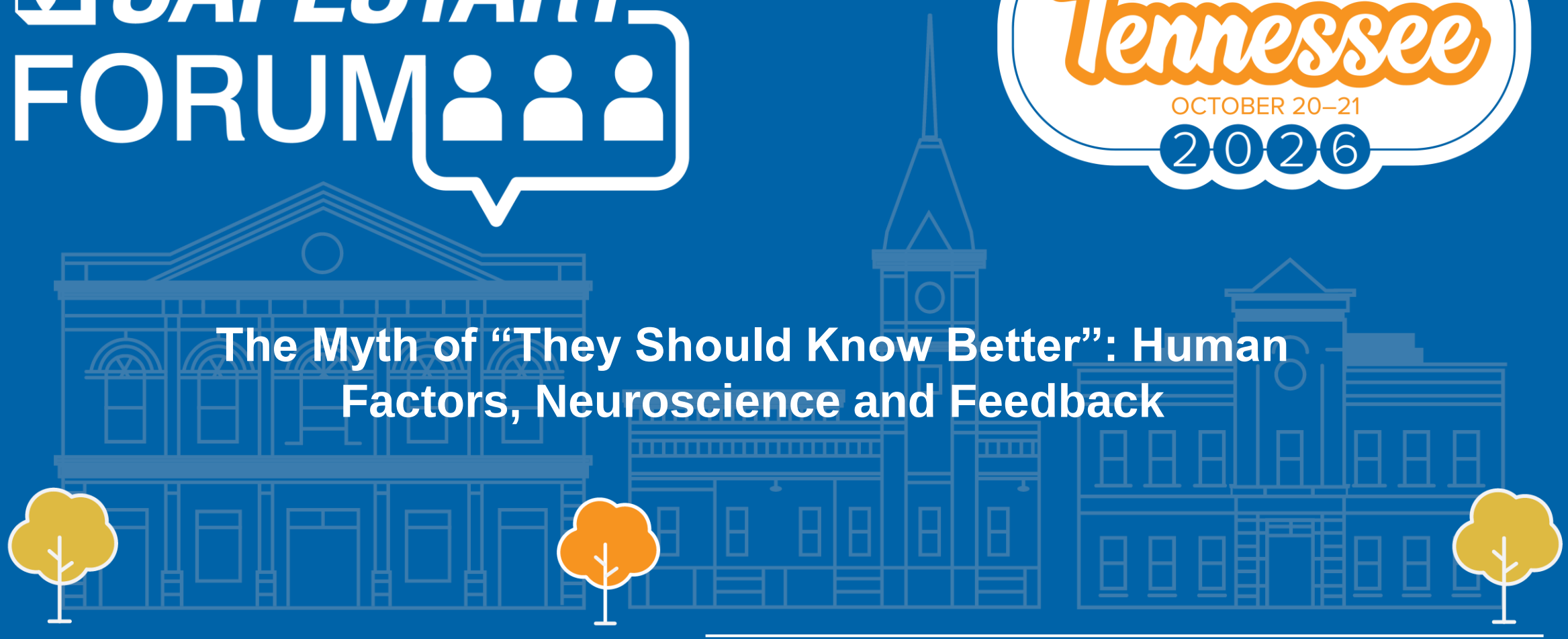
SAFESTART® FORUM

FRANKLIN Tennessee
OCTOBER 20–21
2026

The Myth of “They Should Know Better”: Human Factors, Neuroscience and Feedback

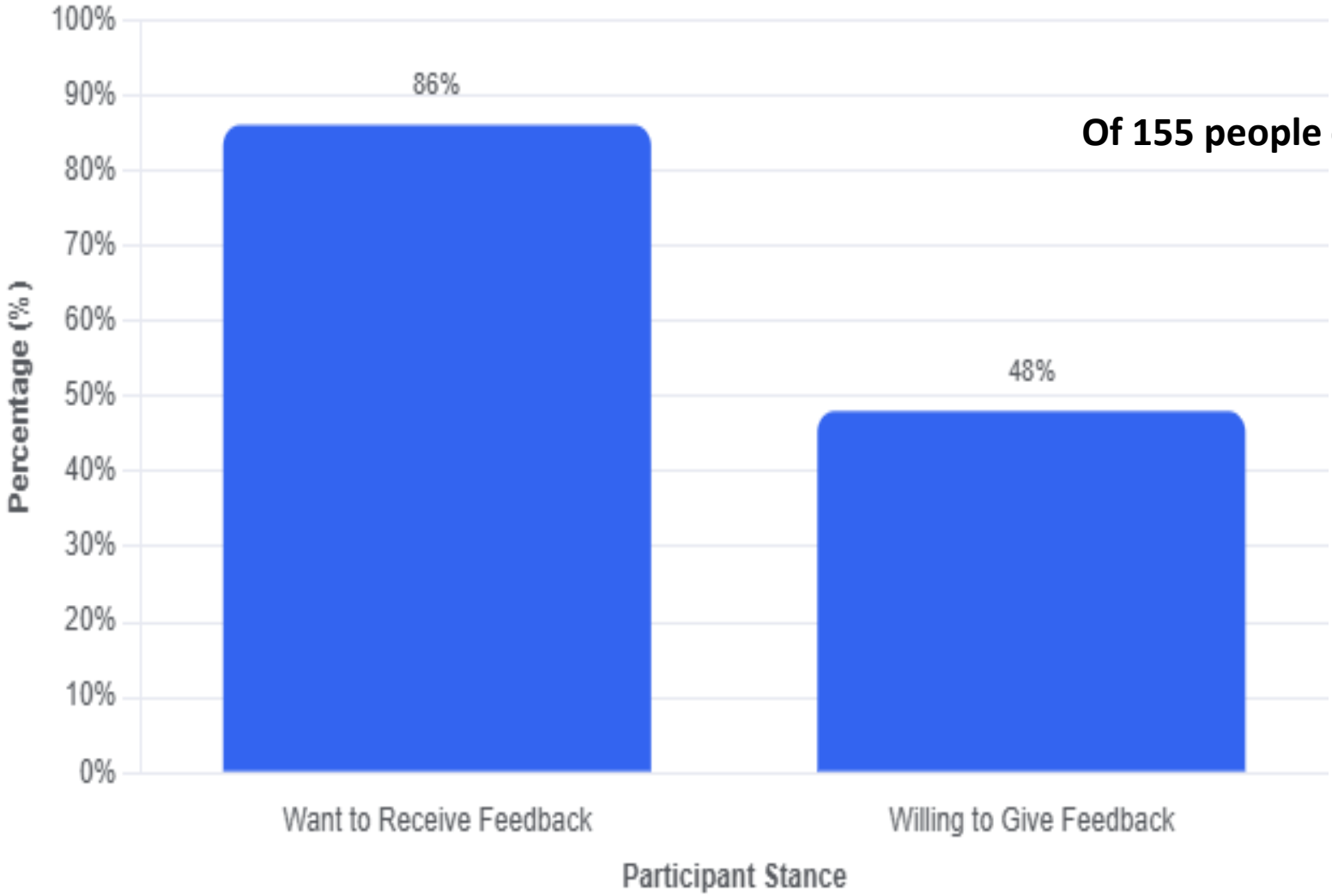


Rick Ricker, CSP, CIT

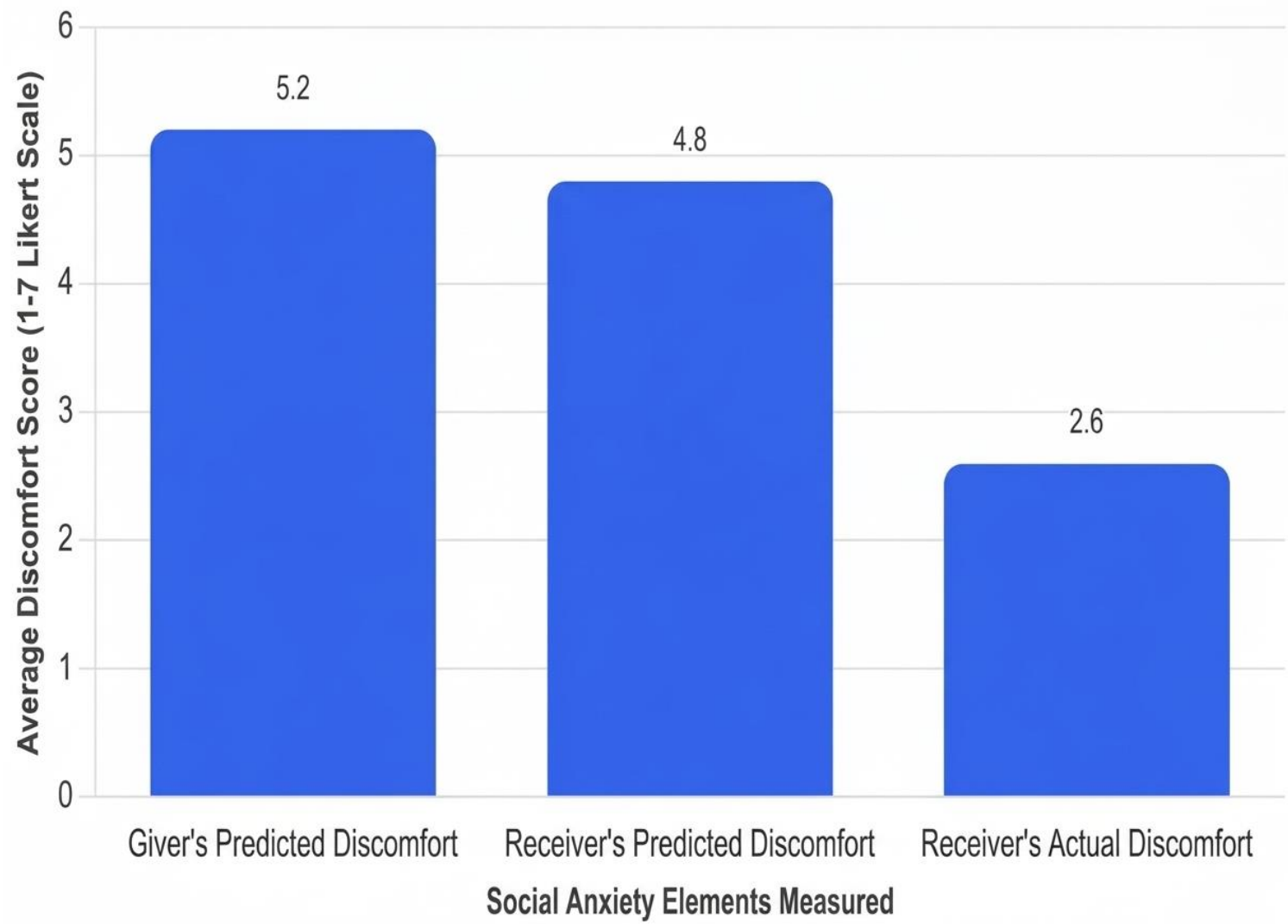
Pair up with a stranger in the room and share one observation or piece of feedback with each other.


The 'Happy to Chat'
Bench
Sit here if you
don't mind someone stopping to say 'Hello.'





Of 155 people only 2.6% spoke up.


Average Discomfort Score (1-7 Likert Scale)
6
5
4
3
2
1
0
5.2
4.8
2.6
Giver's Predicted Discomfort
Receiver's Predicted Discomfort
Receiver's Actual Discomfort
Social Anxiety Elements Measured

WHAT IS FEEDBACK?



WHAT IS FEEDBACK?

Feedback is

- any sensory signal from the internal or external environment
- that the brain uses to measure the gap between **expectation** and **reality**,
- allowing it to modify behavior and update its internal models.



An infant brain doubles in size by the end of their first year.

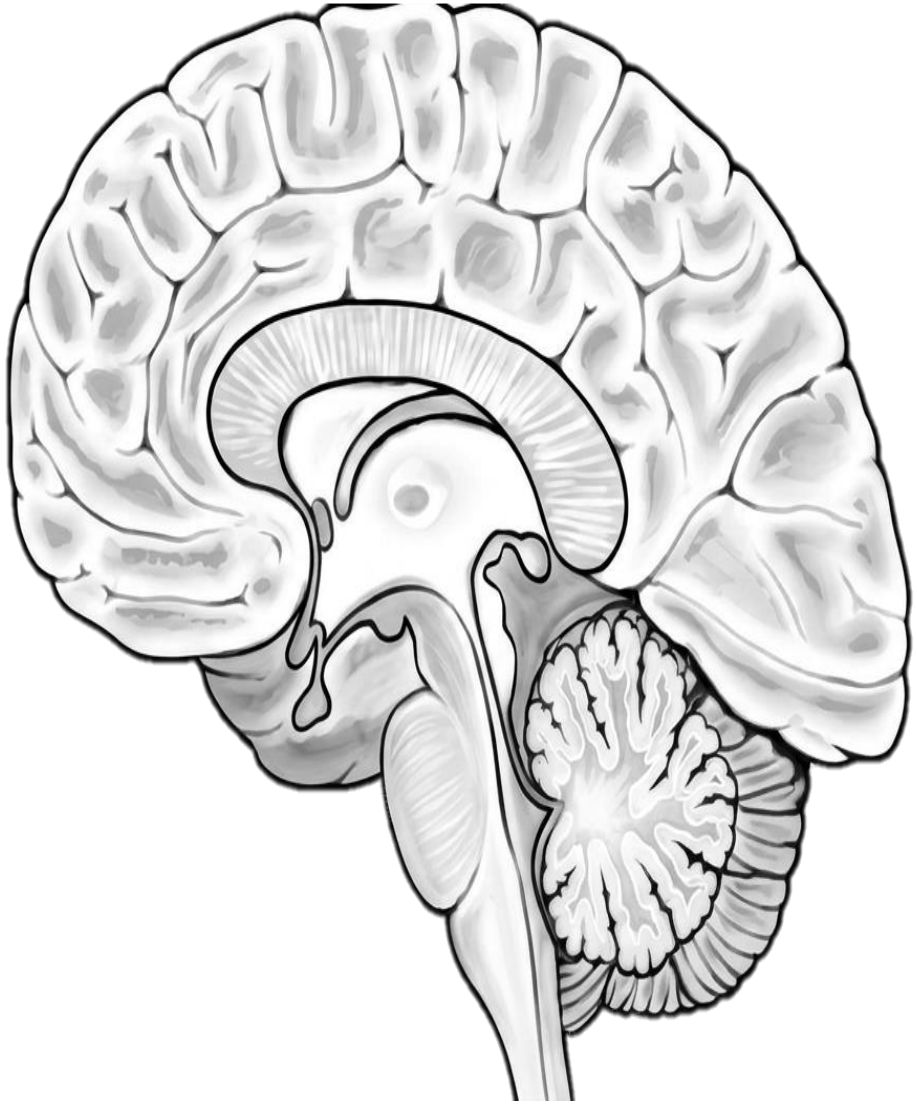
- **Rapid Wiring:** the brain forms more than **1 million new neural connections every second**.
- **Energy Demand:** a newborn uses about **half of their daily energy intake** just to fuel brain growth

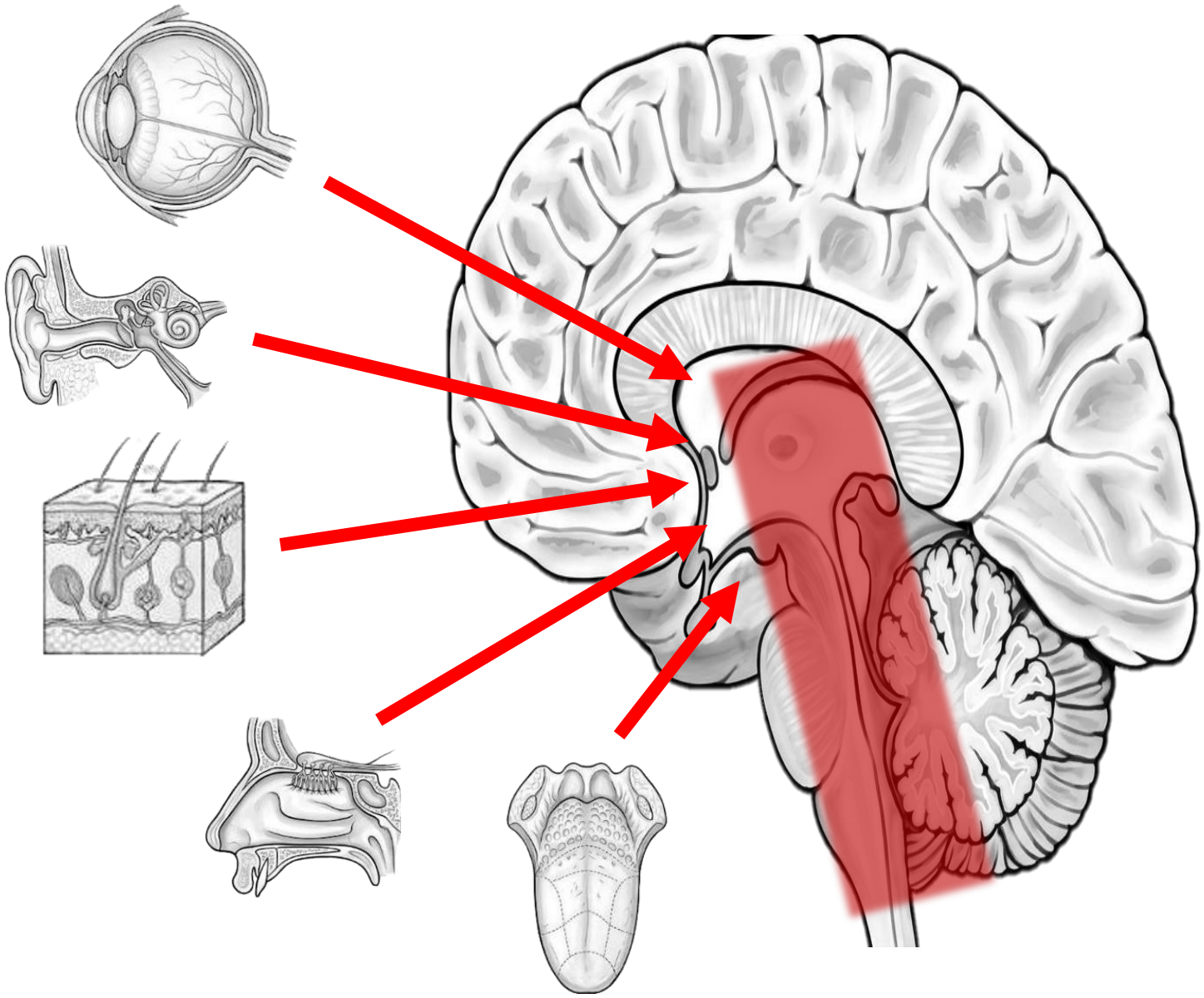
  Genetics (The Blueprint)

  Sensory Experiences (The Sculptor)

  Serve and Return interactions

  Health and nutrition





<u>Reticular Activating System (RAS):</u> distributed arousal/attention network involving the brainstem and neuromodulatory systems, that helps determine alertness and which signals receive priority.

Regulation of Sleep

Sensory Filtering

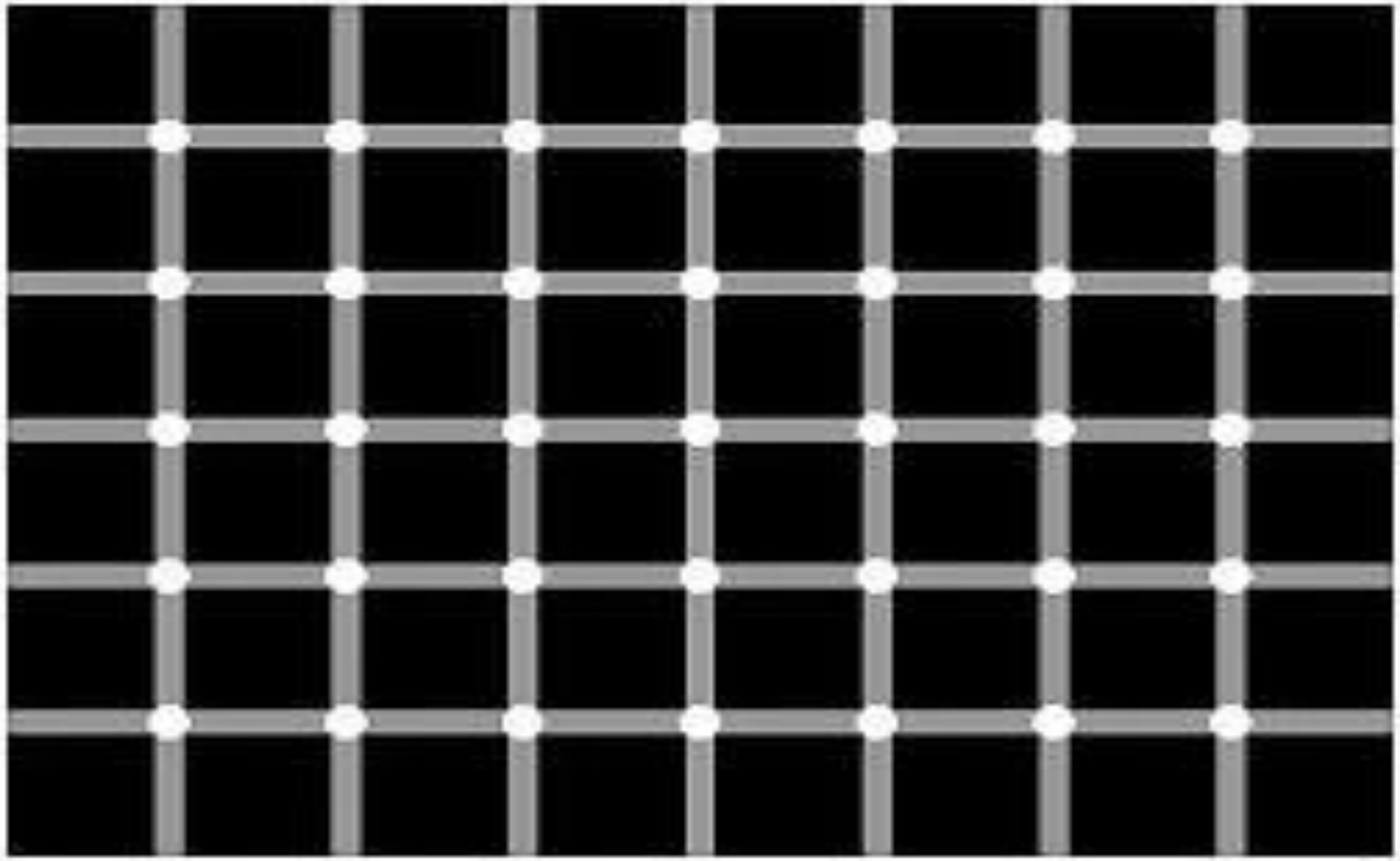
Threat and Novelty Detection

Psychological bias



When you “LOOK” at something do you really “SEE”?

Count the number of black dots



A Bari**sta R**ecords spokesperson says the fir**st ar**rival of Lo**st Ar**k, the new CD by Co**sta R**ican gang**sta r**apper Bu**sta R**ugg, is ju**st ar**ound the corner.

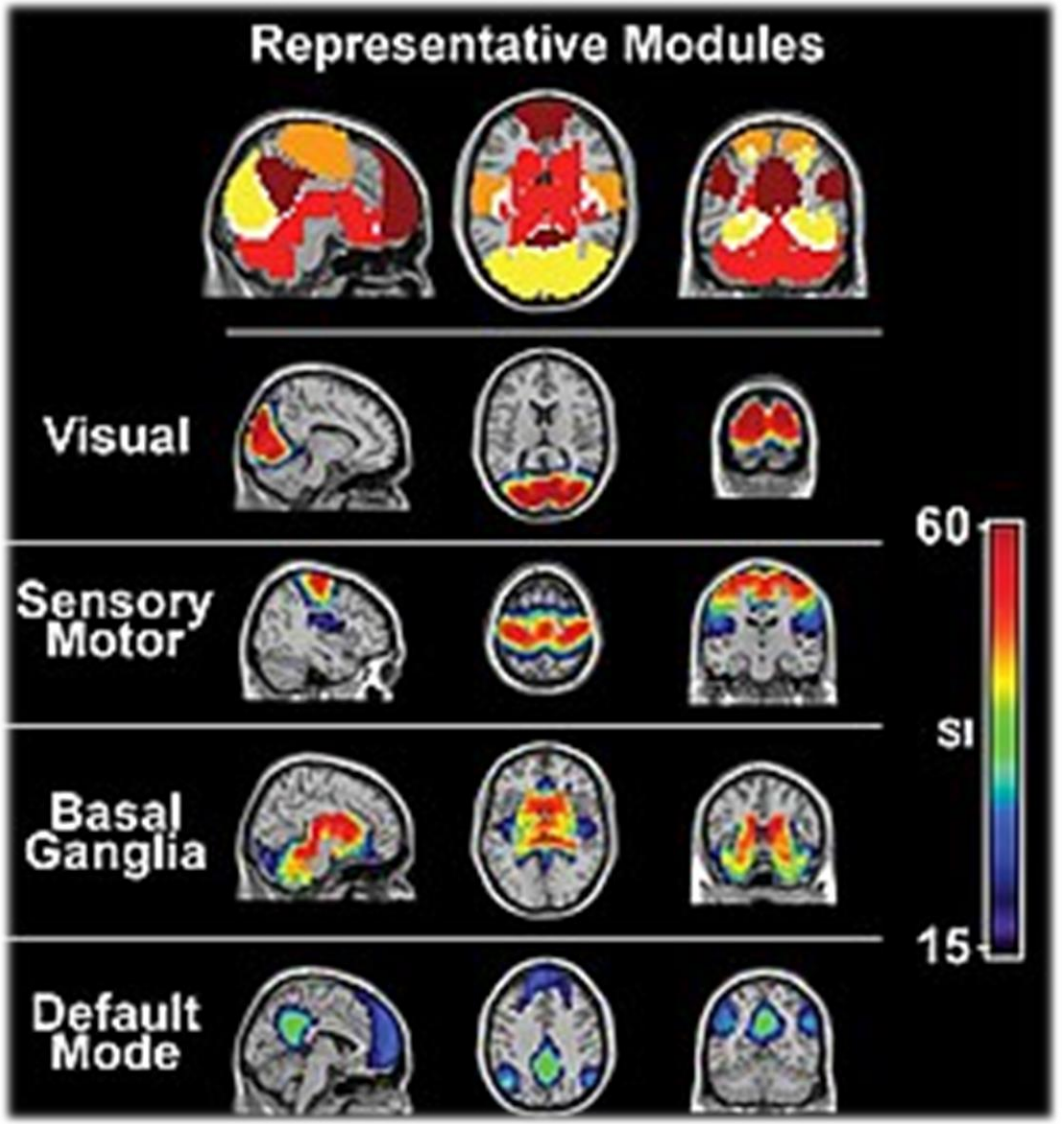
FINISHED FILES ARE THE RESULT OF YEARS OF SCIENTIFIC STUDY COMBINED WITH THE EXPERIENCE OF YEARS.



1. Stare at the red dot on the girl's nose for 30 seconds.
2. Turn your eyes to a plain surface (your ceiling or blank wall).
3. Blink repeatedly and quickly. Tell me if that isn't the coolest thing?



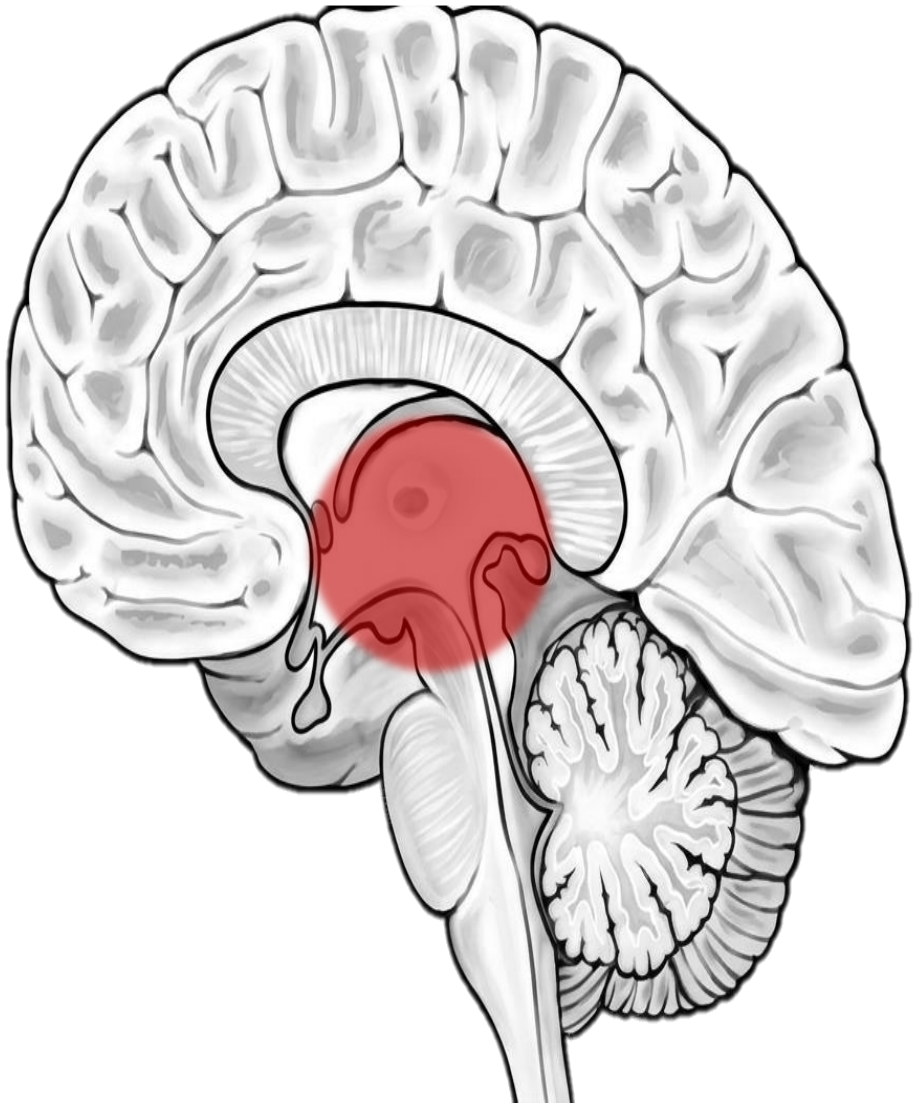
fMRI – Functional Magnetic Resonance Imaging



EARLY CHILDHOOD

“Get out of the road!”
Fast, emotional, survival-based feedback.

Amygdala: Detects threat – Triggers fight, flight or freeze.



What it teaches: Immediate compliance. Works for real danger but can create fear.

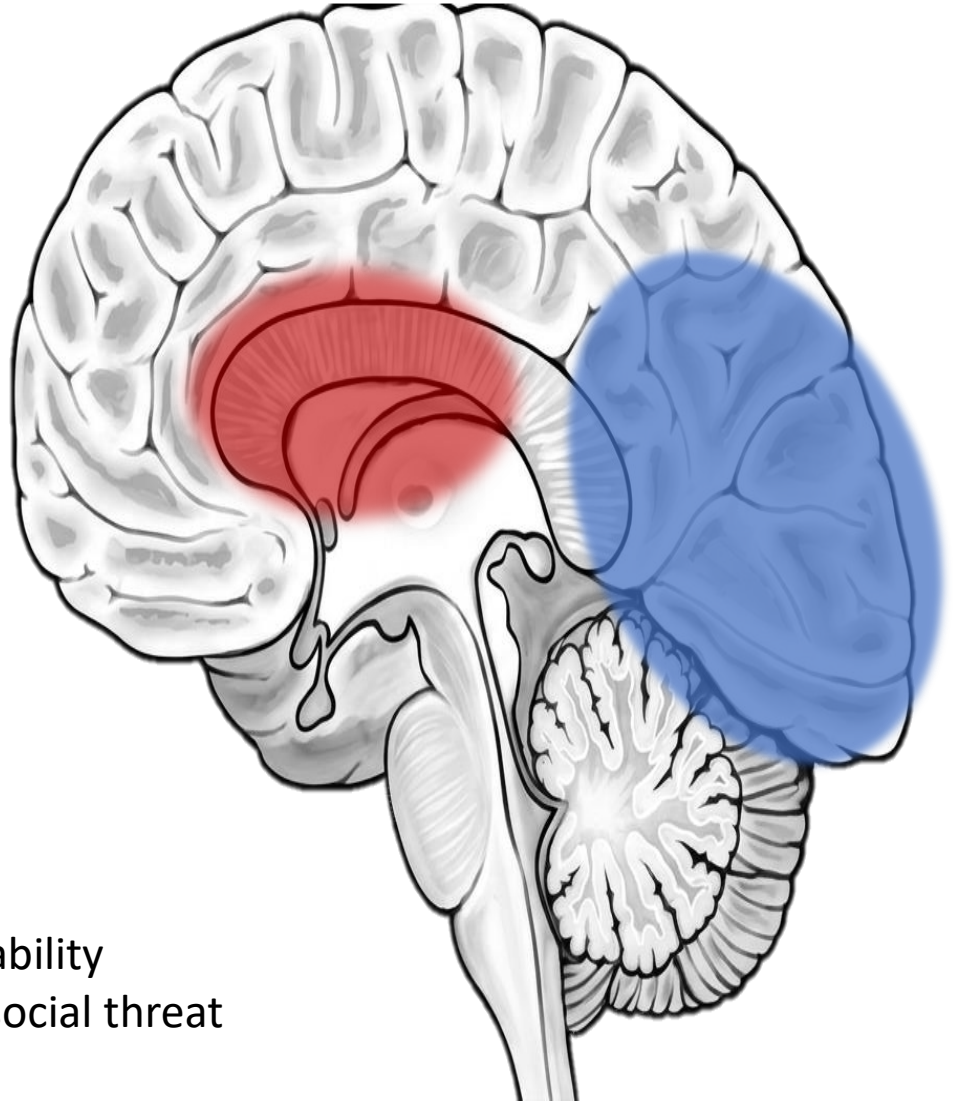
Key Neurochemicals:
Adrenaline & Cortisol
Increase heart rate, heighten alertness, prioritize survival over learning.

SCHOOL YEARS

“Wrong answer.”
Feedback shapes confidence and risk-taking.

Anterior Cingulate Cortex (ACC): Detects errors and conflict.

Prefrontal Cortex: Supports thinking, planning and self-control.



What it teaches: Avoid mistakes, seek approval. Public correction can reduce confidence and willingness to take risk.

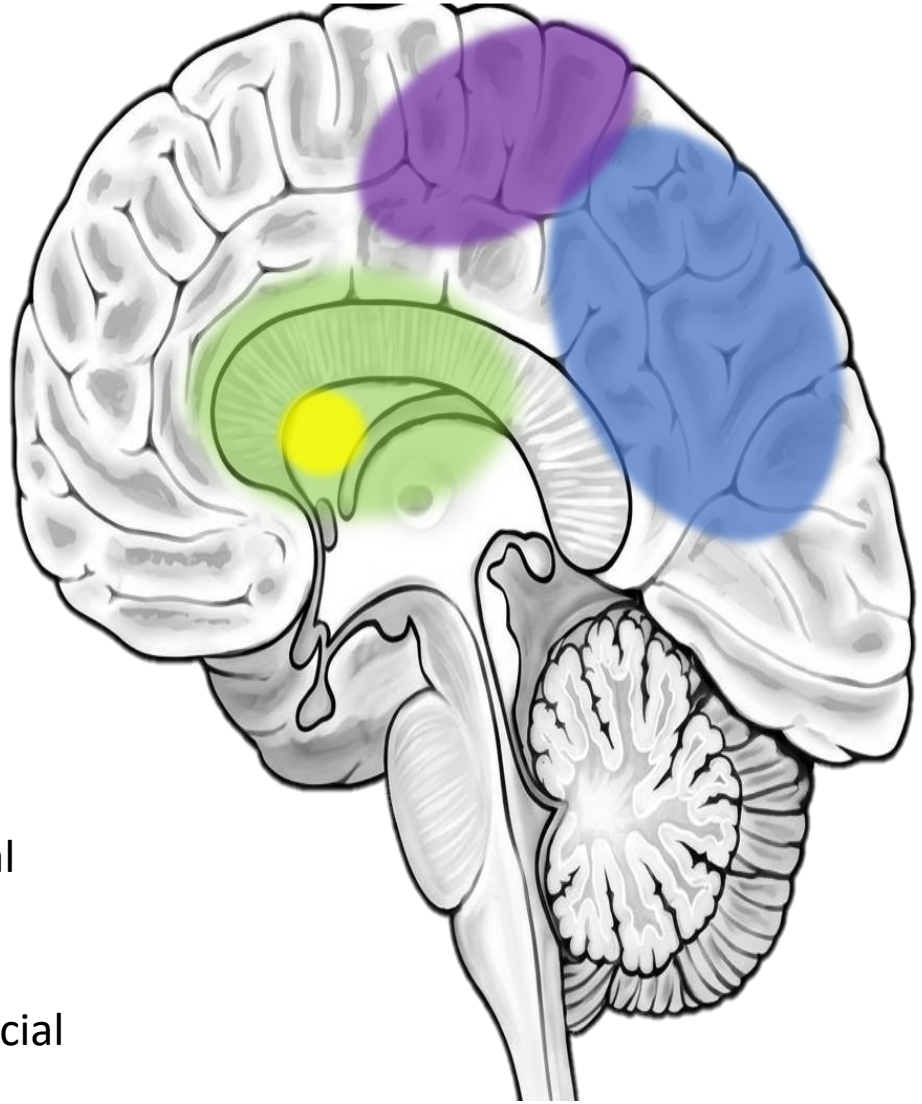
Key Neurochemicals:
Dopamine – motivation and reward
Serotonin – mood and emotional stability
Cortisol – Increases with perceived social threat (e.g. embarrassment)

TEENAGE YEARS

“Everybody else is doing it.”
The brain craves belonging and acceptance.

Nucleus Accumbens: Reward and pleasure center (Social Acceptance)

Prefrontal Cortex: Still developing (More vulnerable to peer influence.)



What it teaches: Belonging matters. Peer influence is powerful – and it never fully turns off.

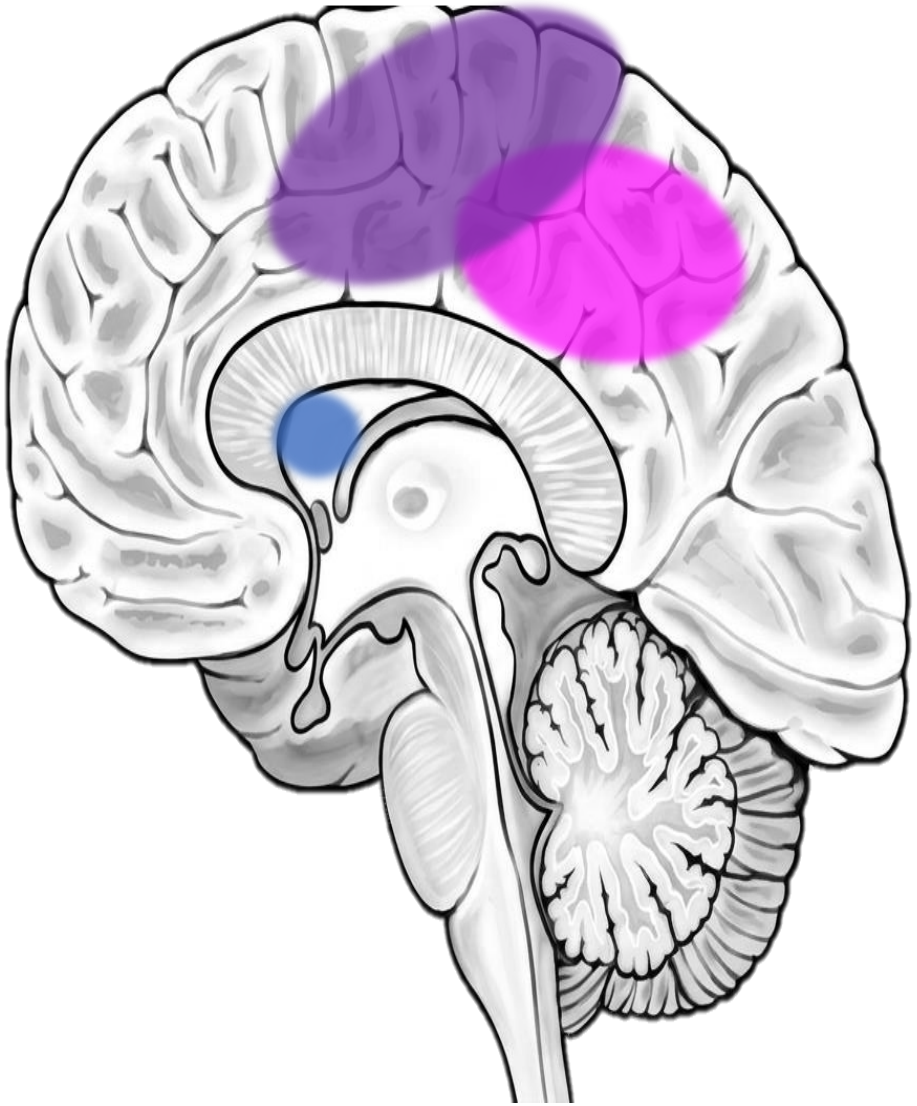
Key Neurochemicals:
Dopamine – Reward, pleasure, social acceptance.
Oxytocin – social bonding and trust
Serotonin – Influences mood and social behavior

EARLY CAREER

‘Watch and learn.”
We learn by observing others.

Pre-motor cortex and MIRROR NEURONS: Fire when we observe and when we do, helping us learn by example.

Parietal Lobe – Integrates sensory information and helps with imitation and skill learning.



Key Neurochemicals:
Dopamine – Reinforces learning through observation and repetition.
Acetylcholine – Supports attention and memory formation.

What it teaches: We adopt the behaviors (Good and Bad) we see around us. Culture is caught not taught.

The Action Observation Network (AON): When an observer tracks a peer about to trip on the box while watching their cell phone, their AON fires as if they are making that physical move. The motor cortex literally rehearses the physical activity safely in the mind.





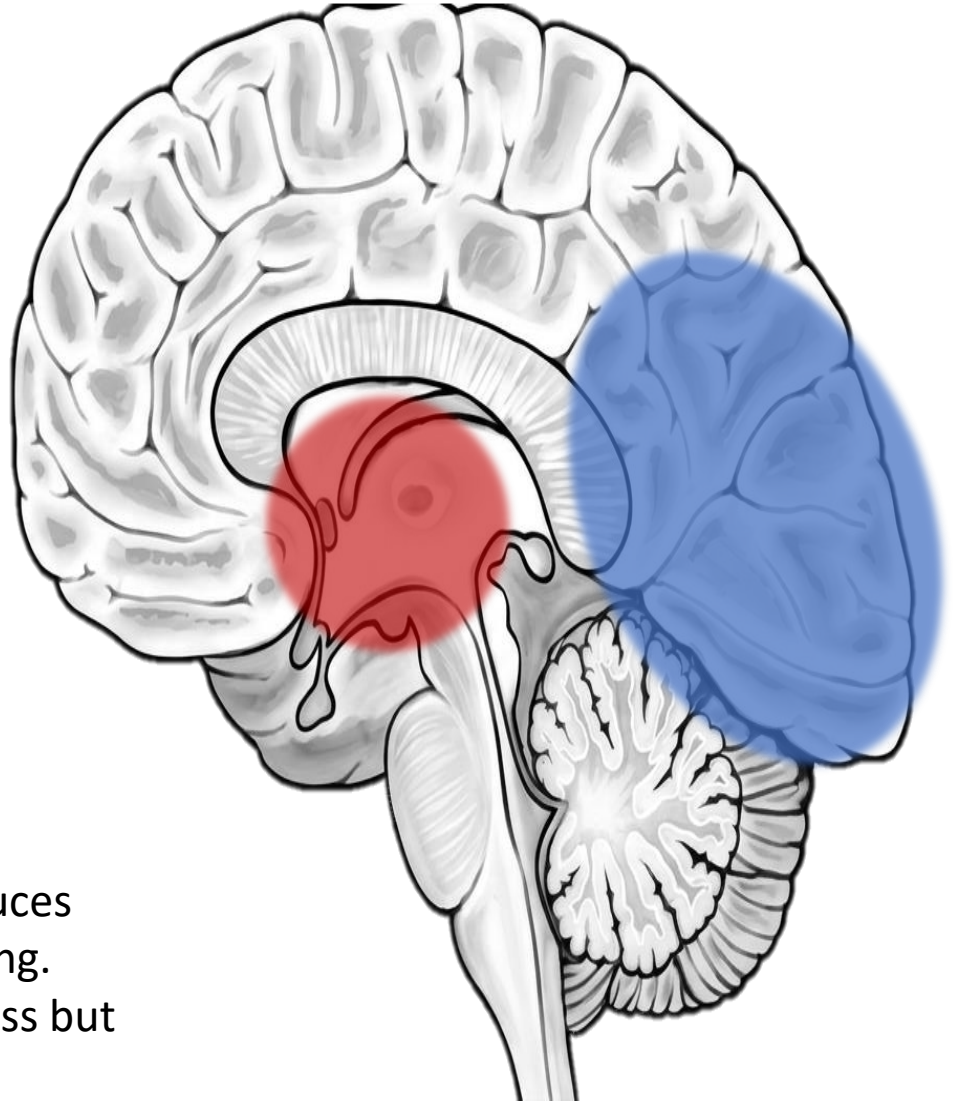
The Anterior Cingulate Cortex (ACC): The ACC is the brain's internal conflict and error-monitoring hub. When you watch a coworker rush or slip, the ACC fires a sharp electrical signal known as Error-Related Negativity (ERN).

UNDER PRESSURE

‘Just get it done.”
Stress changes how the brain works.

Amygdala: Becomes more active under stress.

Prefrontal Cortex: Less active under stress, making it harder to think clearly and consider consequences.



What it teaches: Under pressure, we rely on habits and shortcuts. Good intentions aren’t always enough.

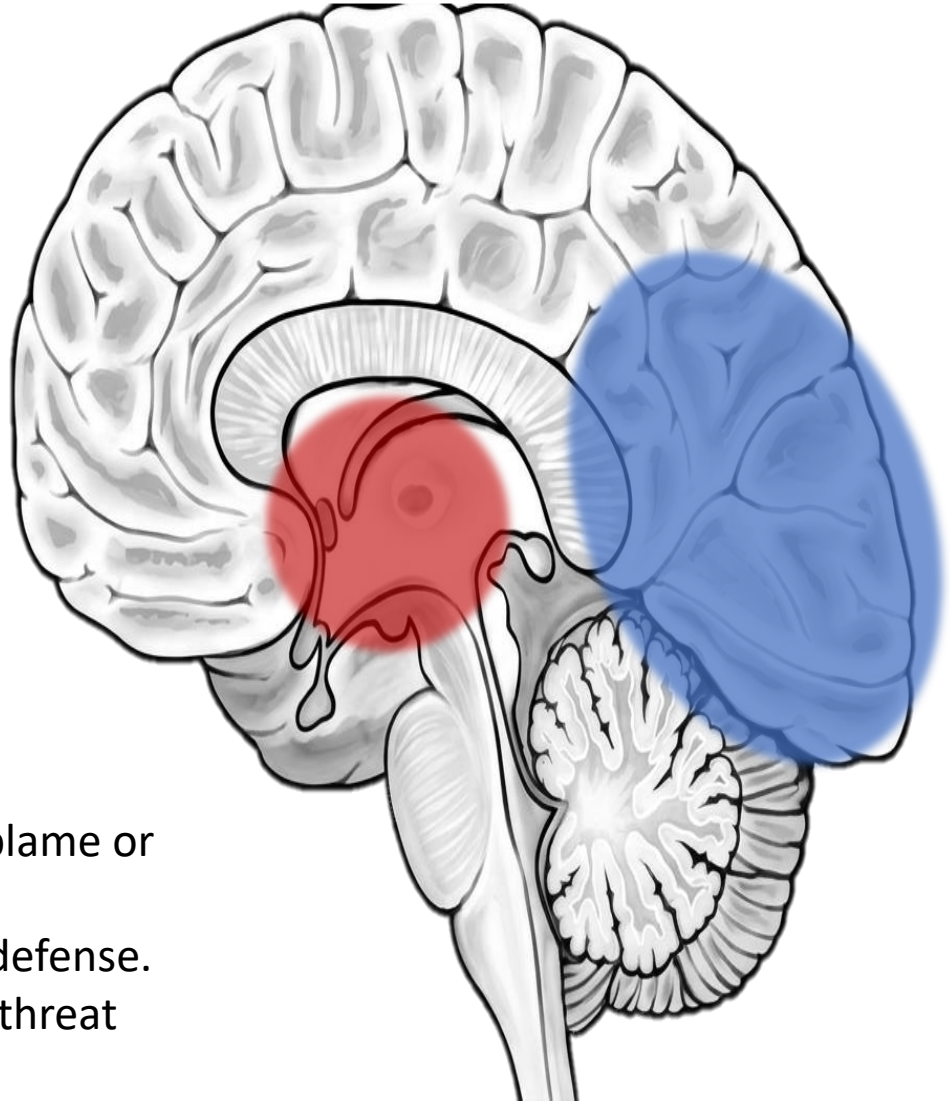
Key Neurochemicals:
Cortisol – Increases with stress, reduces working memory and decision making.
Norepinephrine – Heightens alertness but narrows attention (tunnel vision).

INCIDENT RESPONSE

“Why did you do that?”
Blame triggers threat and shuts down learning.

Amygdala: Perceives threat and triggers defensiveness.

Prefrontal Cortex: Less active when threatened making it harder to be open and reflect and learn.



Key Neurochemicals:
Cortisol – Increases with perceived blame or judgement
Adrenaline – Prepares the body for defense.
Dopamine – Decreases when under threat (reducing the openness to learn.)

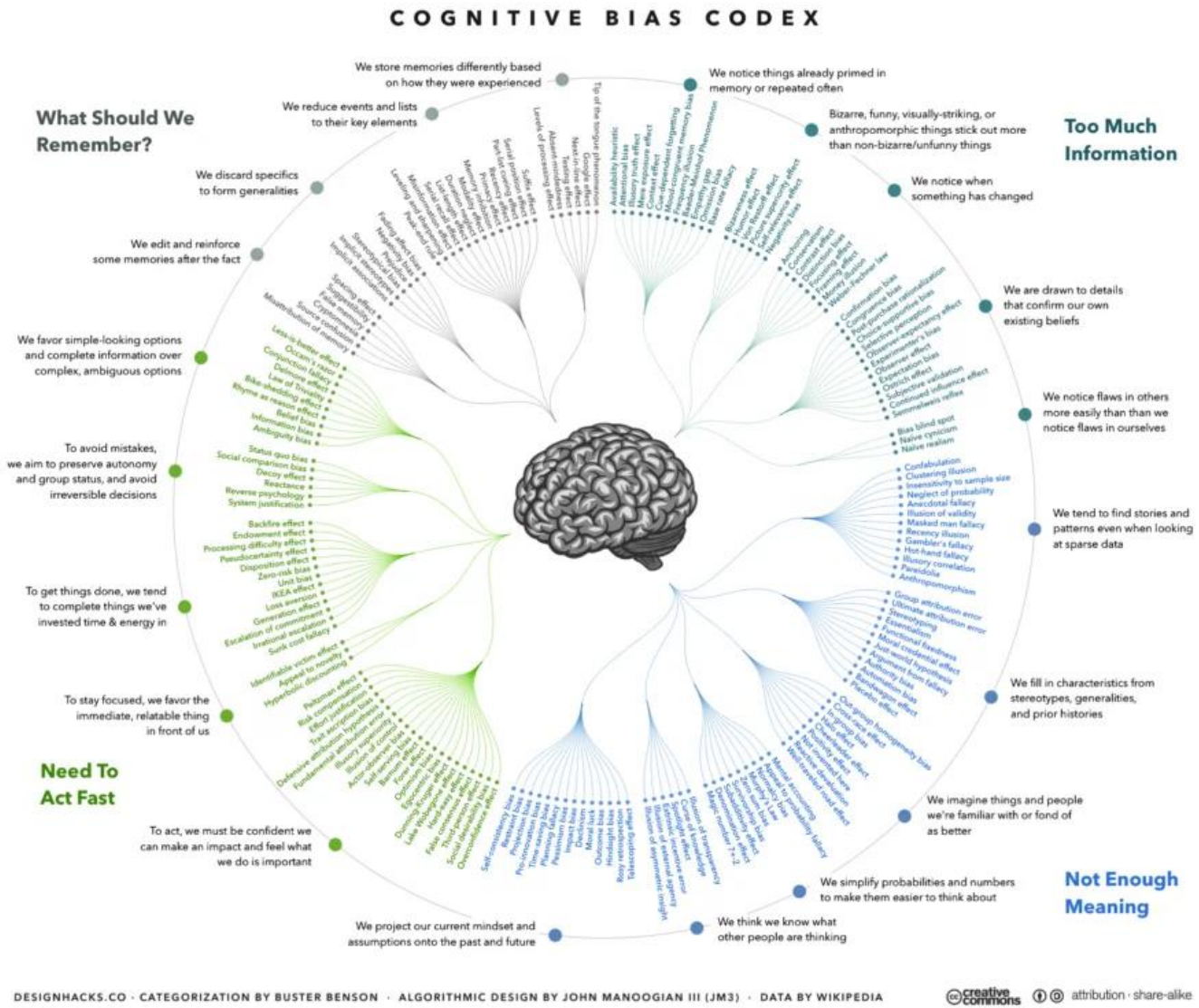
What it teaches: Threat blocks honesty and learning. Curiosity and respect keep the thinking brain online.

The brain is pattern recognition machine!

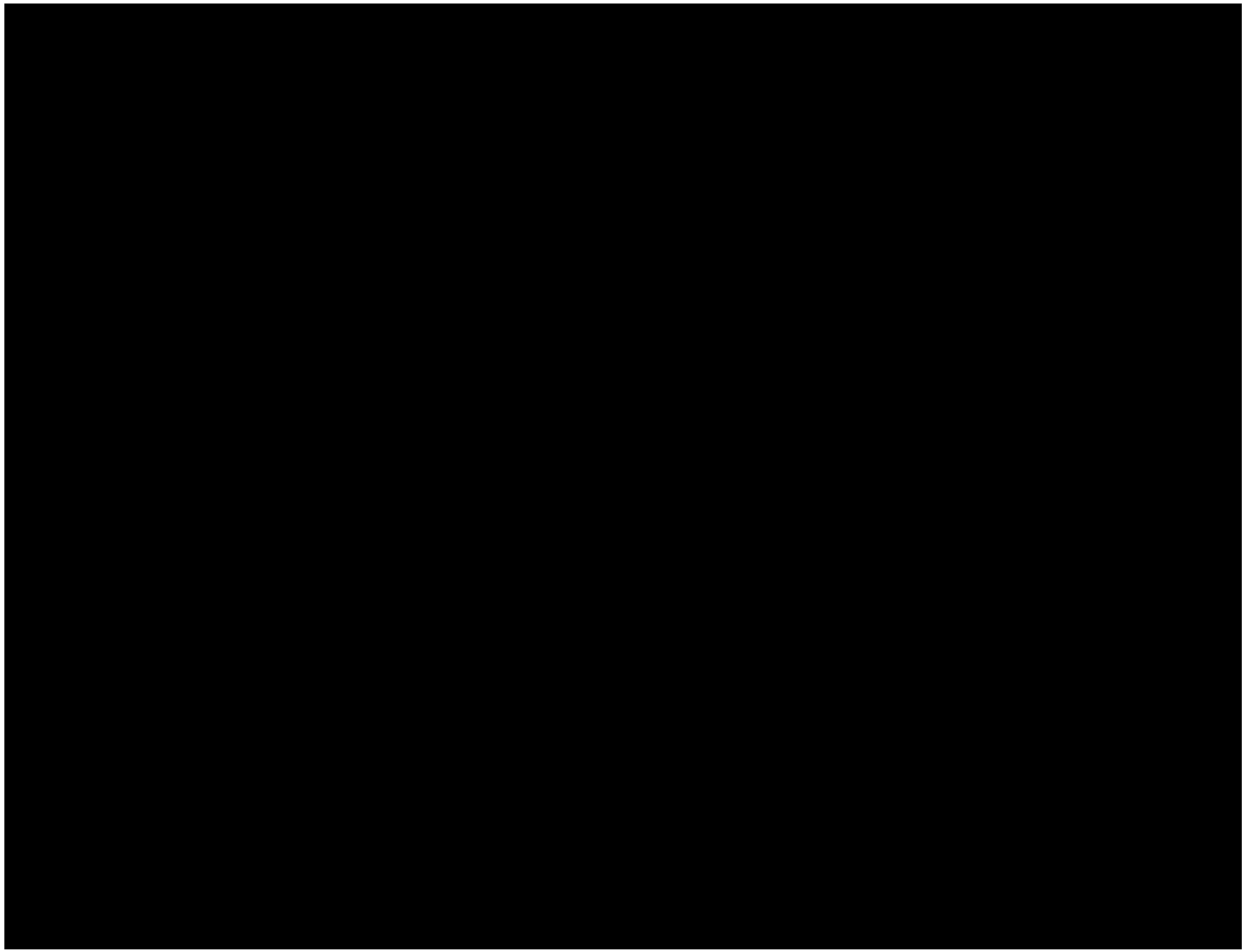
"Aoccdrnig to rscheearch at Cmabrigde Uinervtisy, it deosn't mttaer in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteers be at the rghit pclae. The rset can be a toatl mses and you can sitll raed it wouthit porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe."

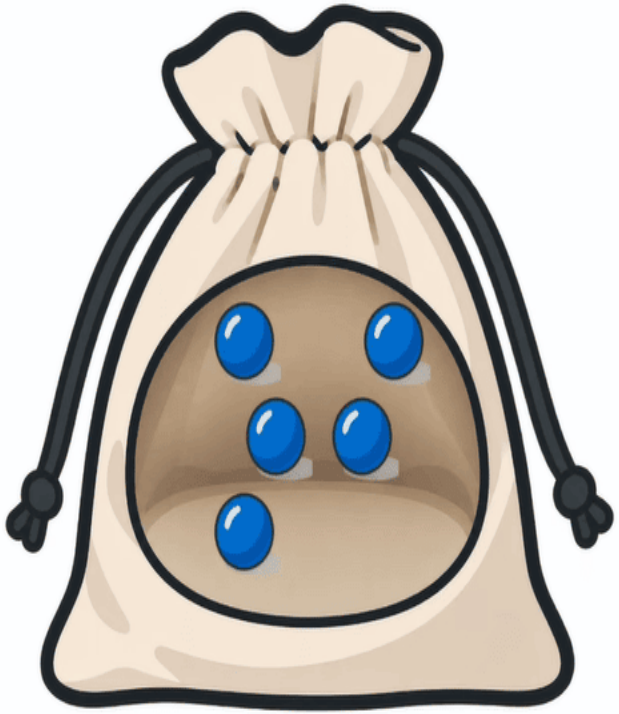
“…..it is perception that governs beliefs, attitudes and behaviors.”

Dr. Stephen R. Covey, Principal-Centered Leadership


COGNITIVE BIAS CODEX
What Should We Remember?
We store memories differently based on how they were experienced
We reduce events and lists to their key elements
We discard specifics to form generalities
We edit and reinforce some memories after the fact
We notice things already primed in memory or repeated often
Bizarre, funny, visually-striking, or anthropomorphic things stick out more than non-bizarre/unfunny things
We notice when something has changed
Too Much Information
We are drawn to details that confirm our own existing beliefs
We notice flaws in others more easily than than we notice flaws in ourselves
We tend to find stories and patterns even when looking at sparse data
We fill in characteristics from stereotypes, generalities, and prior histories
We imagine things and people we're familiar with or fond of as better
We simplify probabilities and numbers to make them easier to think about
Not Enough Meaning
We think we know what other people are thinking
We project our current mindset and assumptions onto the past and future
To act, we must be confident we can make an impact and feel what we do is important
To stay focused, we favor the immediate, relatable thing in front of us
Need To Act Fast
To get things done, we tend to complete things we've invested time & energy in
To avoid mistakes, we aim to preserve autonomy and group status, and avoid irreversible decisions
We favor simple-looking options and complete information over complex, ambiguous options
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Tide





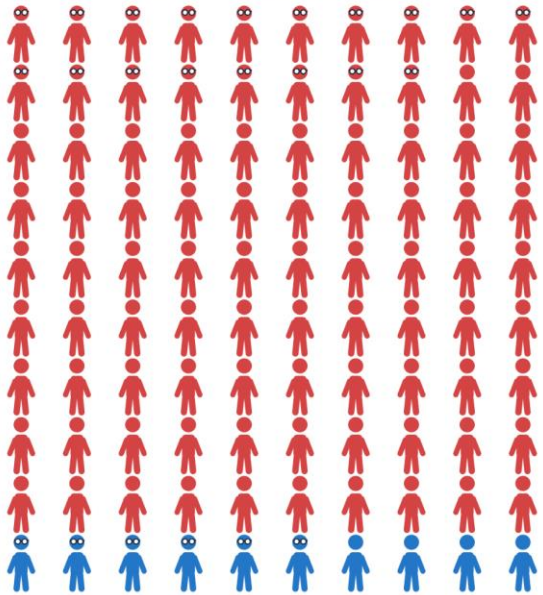


Now suppose you bump into someone in the hallway and they are wearing glasses. Are they more likely to be a jock or a nerd?

A school with 100 students

● = jocks ● = nerds

Each figure represents one student



Jocks: 90% of the students,
20% of whom wear glasses
(that's 90 students, 18 wearing glasses)

Nerds: 10% of the students,
60% of whom wear glasses
(that's 10 students, 6 wearing glasses)

Natural frequencies	Percentages
Out of every 100 students, 90 are jocks and 10 are nerds. Of the 90 jocks, 18 wear glasses. Of the 10 nerds, 6 wear glasses.	90% are jocks; 10% are nerds. 20% of jocks wear glasses. 60% of nerds wear glasses.

Of those wearing glasses,
75% are jocks and 25% are nerds.

Common Sense?

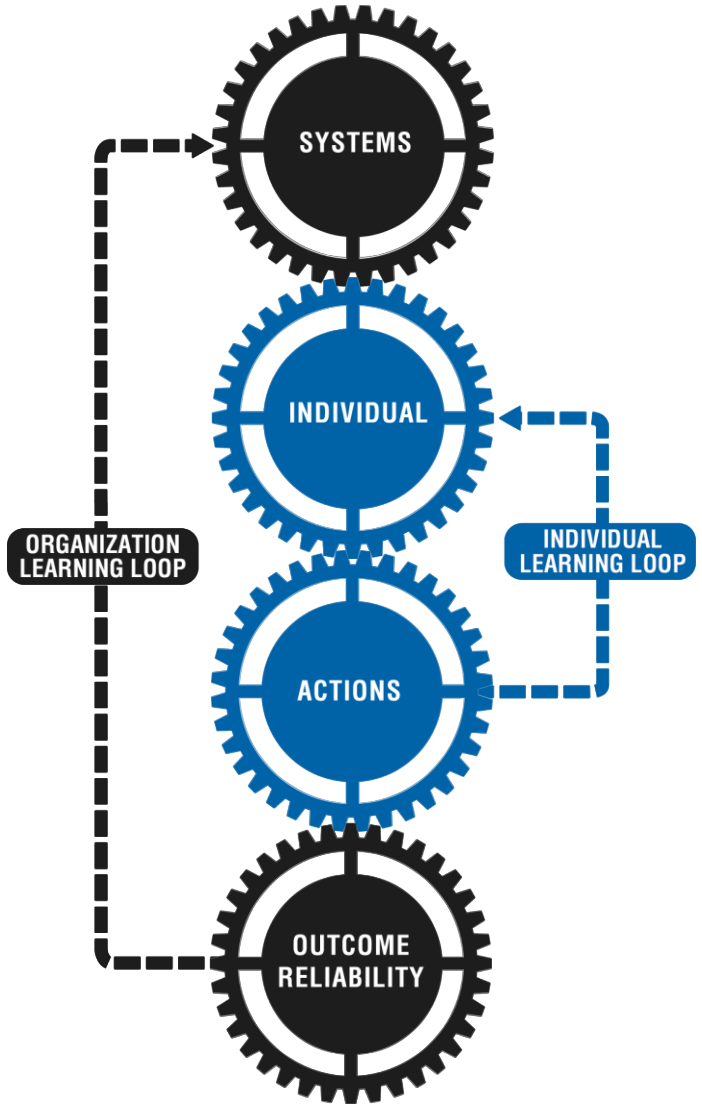
Growth Mindset?







Blame is Blame!



Culture

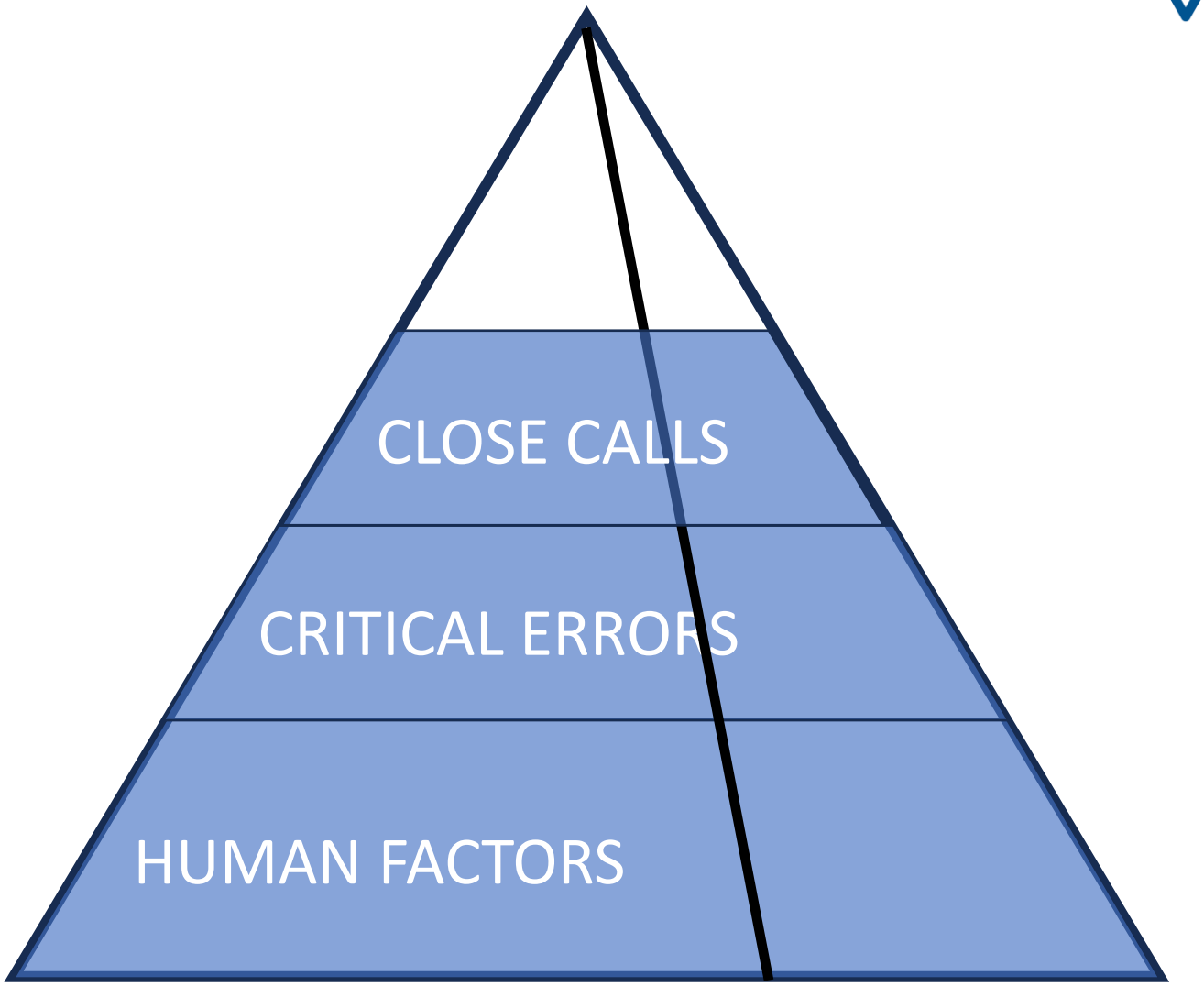
Policies

Procedures

Management

Training

What are the things our organizations are doing to better learn from our close calls, Critical Errors and Human Factors?





HOW DID YOU FEEL WHEN I ASKED YOU TO GO GIVE SOMEONE FEEDBACK?

HOW DID YOU FEEL AFTER YOU GAVE THEM THE FEEDBACK?

“People do not fail because they don’t care.
They fail because they are human.
The question is not:
‘Why did they do that?’
The better question is:
‘What made it make sense at the time?’”

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THANK YOU FOR ATTENDING!

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