

Explaining Anxiety in the Brain: Explanations for Children and Adults that Enhance Treatment Compliance in A Whole Brain Approach

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April 14, 2012
Anxiety Disorders Association of America
32nd Annual Conference

No Disclosures.

Anxiety in the Brain...

- We know more about the neuropsychological basis of anxiety than we do about any emotion...
- Are we effectively using this knowledge for our clients' benefit?
- What level of explanation is valuable and helpful, and how much neurology is too much?
- Too much complexity and detail can cause a client's eyes to glaze over!

Note: See *Extinguishing Anxiety:*

Whole Brain Strategies to Relieve Fear and Stress

Explaining Brain Processes that Underlie Anxiety Disorders

- Parsimony (simplicity) is key
- Clarity of explanation
- Explanations may be spread across sessions
- Choose language that is useful in motivating clients
- Use metaphors that are helpful, encouraging

Note: See *Extinguishing Anxiety:*

Whole Brain Strategies to Relieve Fear and Stress

Goals of Explaining Brain Functions Underlying Anxiety Disorders

- Provide explanations that reduce anxiety
- Increase client understanding of
 - anxiety in the brain
 - why treatment is effective
 - how medications affect anxiety
- Increase willingness to comply with treatment
- Increase use of treatment strategies

Explanations that Reduce Client's Anxiety

- Explaining the Fight/Flight/Freeze Response
 - Helps client understand source/purpose of symptoms
 - Helps client recognize meaning of symptoms
 - Reduces catastrophizing
 - Helps client recognize what responses can be controlled and what ones cannot
 - Helps identify relevant coping responses

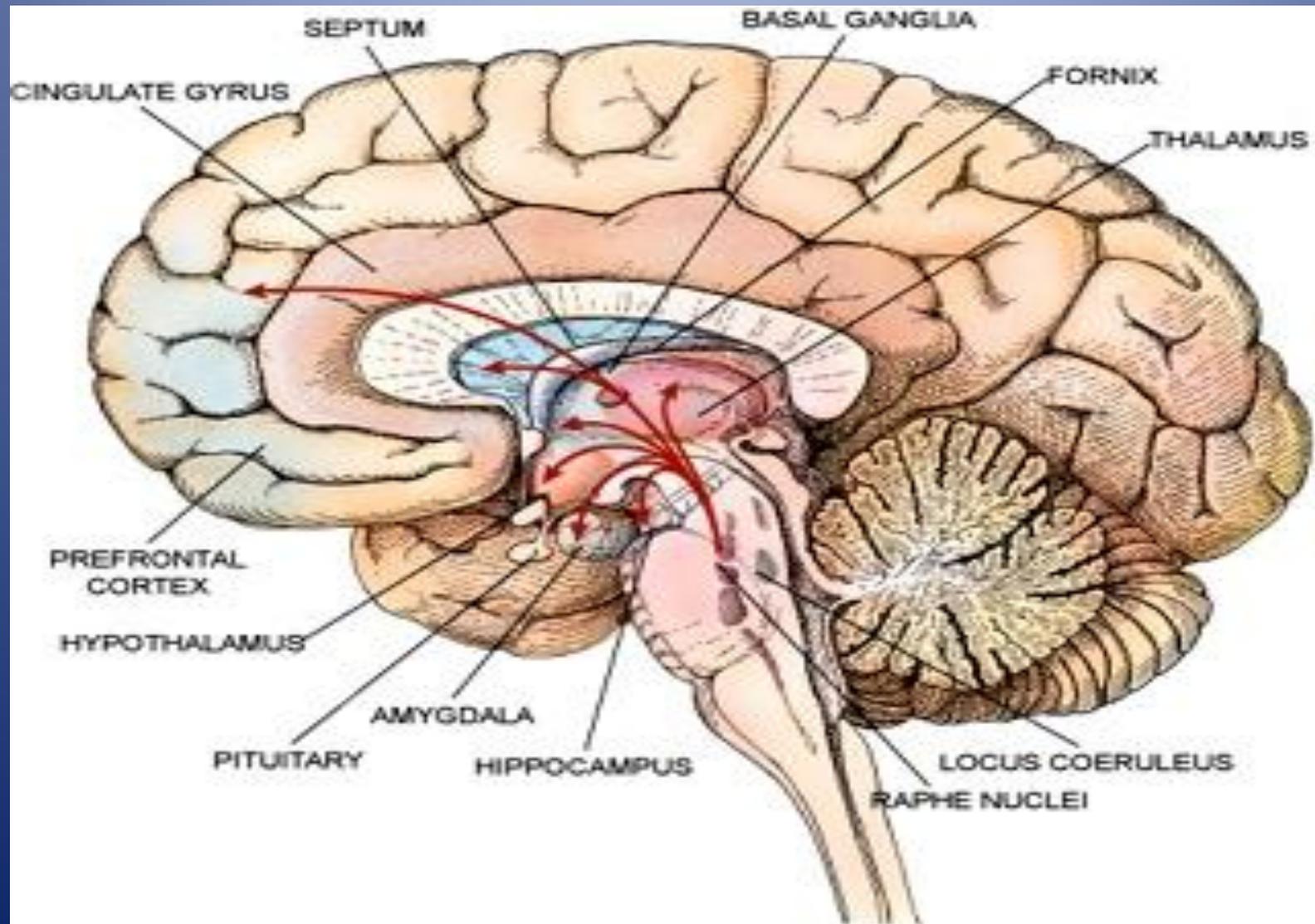
Explanations that Help Client Understand Anxiety in the Brain

- Introducing the Amygdala
 - The part of the brain that creates, maintains, or modifies anxiety and fear responses
 - Contrast with **The Cortex**
 - The Cortex: The Thinking Brain
 - Reasoning, Logic
 - Conscious Memories
 - Awareness
 - Detailed Information

The Amygdala

- Almond-shaped structure that serves as an “alarm system” in the brain
- Other functions, too, but scans for danger signals
- Capable of turning on the Fight/Flight/Freeze Response in a matter of milliseconds
- The amygdala has extensive connections
 - can influence sympathetic nervous system, hormones, cortex
- The amygdala that we each inherit may be more or less sensitive to potential danger

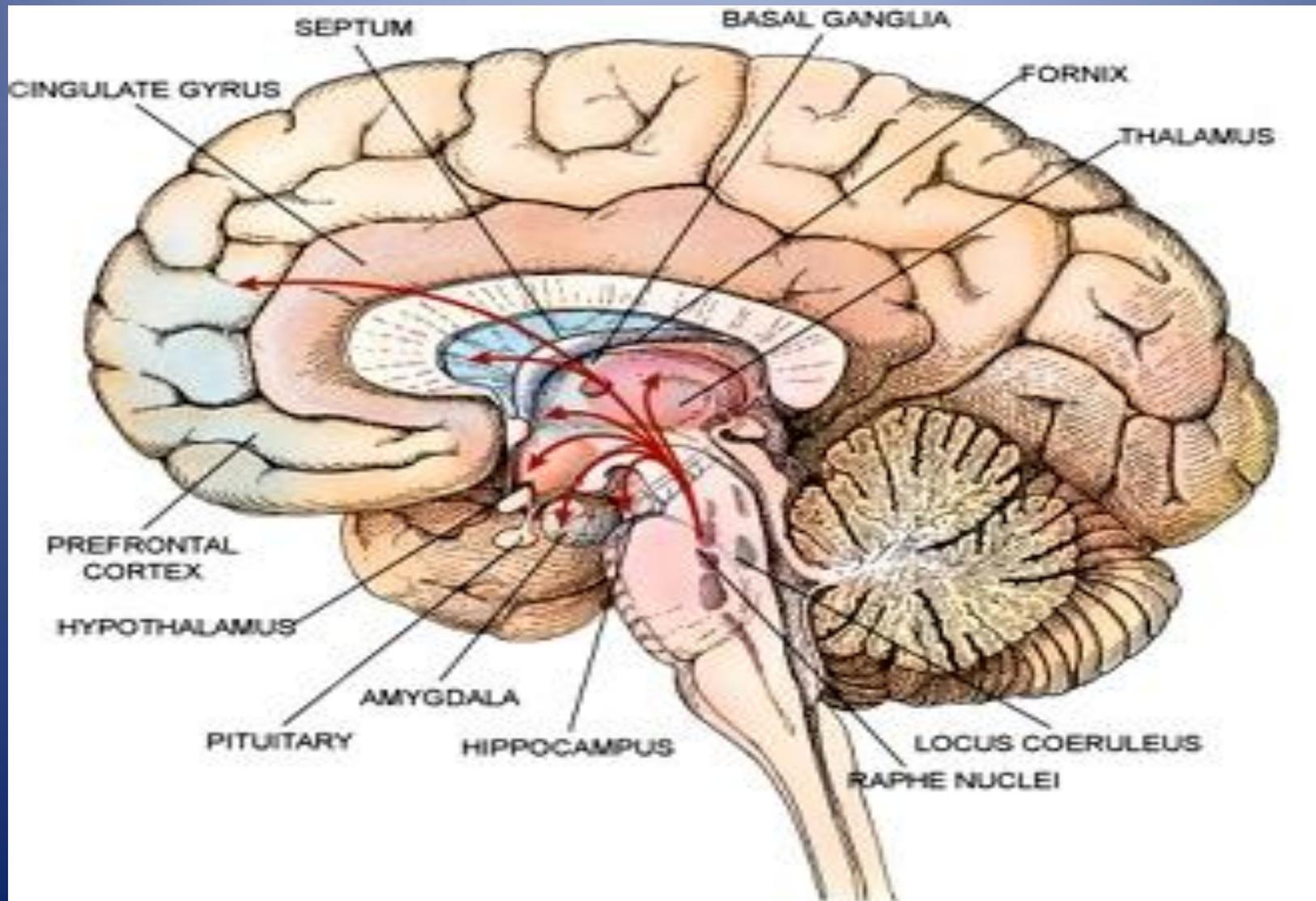
Locating the Cortex and the Amygdala



Express Lane vs. the Local Lane

- The amygdala makes it possible for us to respond to a danger before we know what the danger is
- Information from the senses is relayed directly to the amygdala from the thalamus
- The amygdala can initiate a well-coordinated response to danger BEFORE the person completely understands the danger

The Express Lane vs. the Local Lane



Two Separate Systems to Consider: Amygdala and Cortex

- The amygdala is able to produce fear/anxiety responses without the involvement of the cortex
- The amygdala can, in fact, override the cortex and influence or even control our thoughts and focus of attention
- The cortex can also initiate anxiety responses by alerting the amygdala to potential dangers

Two Separate Systems to Consider: Amygdala and Cortex

- These two systems operate independently and on different schedules
- The amygdala can override the cortex at times
 - Relate to client's experiences
- The amygdala has information not available to cortex (e.g., Korsakoff's, cortical blindness)
- Proposal: When it comes to fear/anxiety, we have an emotional brain as well as a thinking brain. We need to address both.

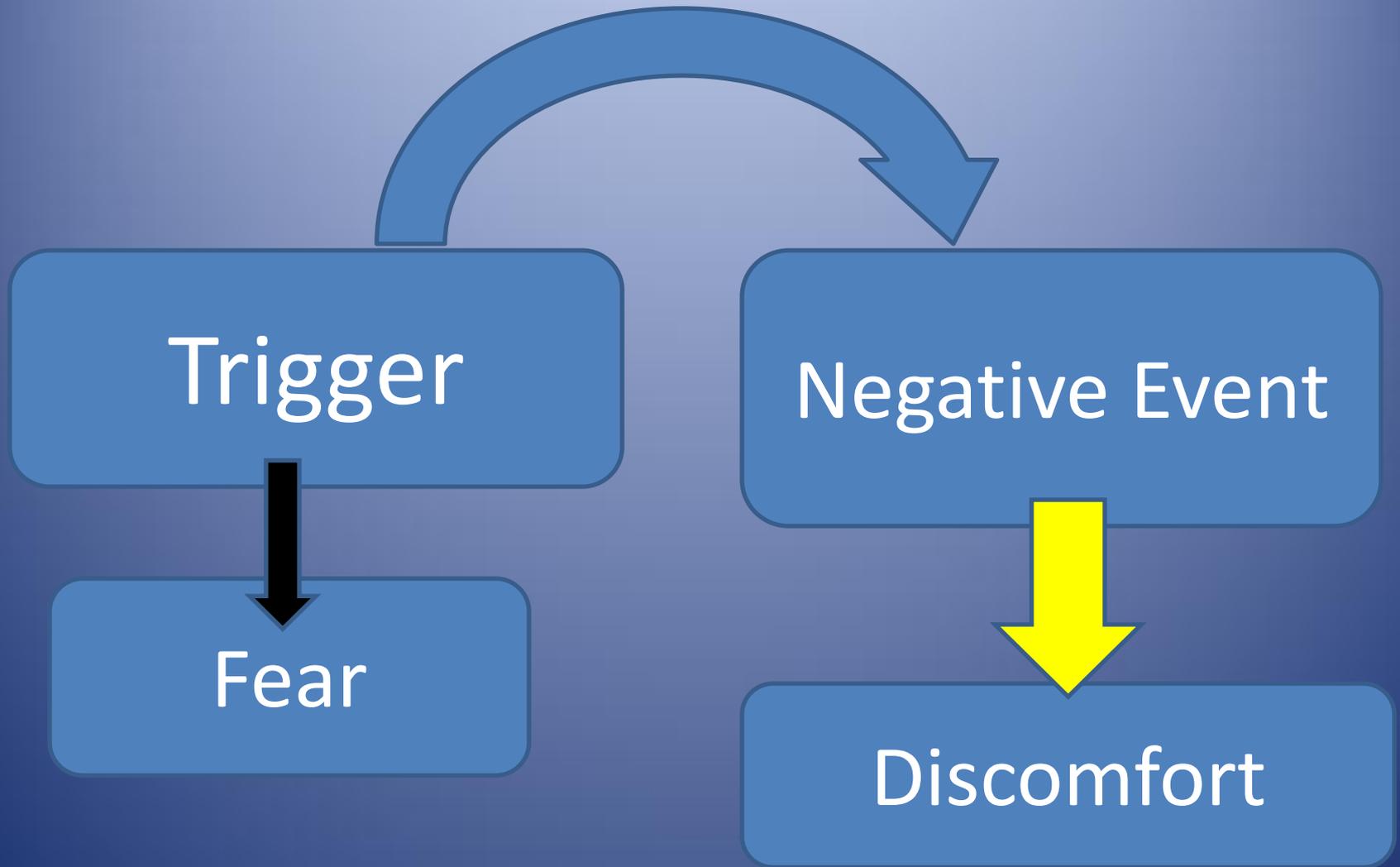
Let's start by addressing the Amygdala

First, we will explain how the amygdala
creates and maintains anxiety responses...

and how these responses
can be changed.

How the Amygdala Creates the Anxiety Response

- Some fears are “wired in” to the amygdala
 - Snakes, heights, being watched by others
- Other fears are learned and stored by the amygdala
- The amygdala does not learn the way the cortex learns
- The amygdala learns through experience on the basis of *pairings* (not logic)



Classical Conditioning

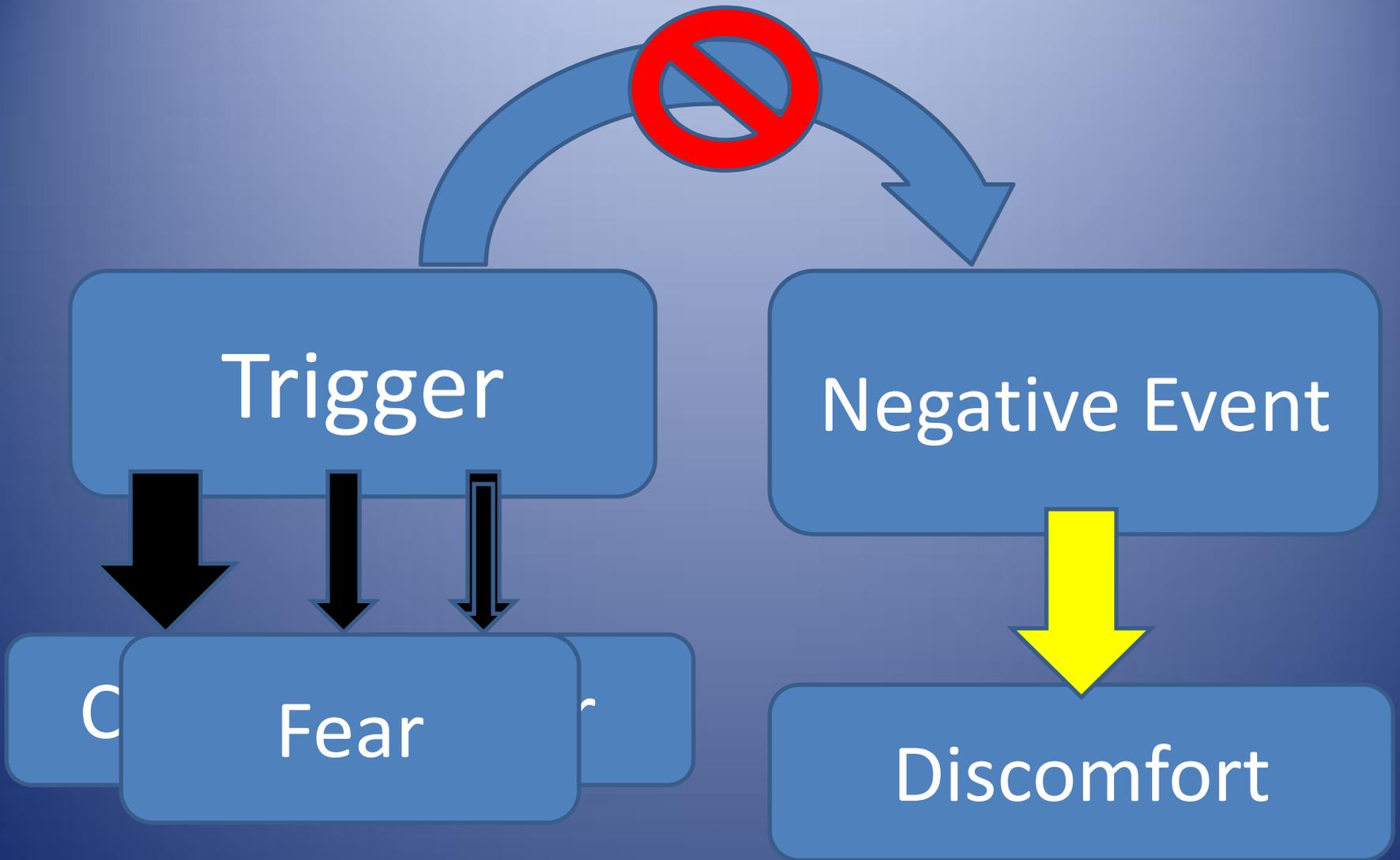
(The Language of the Amygdala)

The Language of the Amygdala

- Associative Learning: based on pairings
- Experience is required for learning to occur
 - Some “pre-wired” exceptions
- Logic and Lectures don’t promote learning
- The amygdala must be activated for learning to occur
- “Activate to Generate” new connections
- This means one is likely to feel anxiety

The Language of the Amygdala

- Exposure Techniques
 - The best way to change the circuitry in the amygdala, because...
 - The amygdala learns through experience
 - In order for the amygdala to form new memories about the Trigger, specific circuitry in the amygdala must be activated by the Trigger
- *Benefit: Exposure is more tolerable when clients know they're using the language of the amygdala



Impact of Exposure

Benefits of “Language of the Amygdala” Approach: Perspective

- Clients realize an isolated part of their brain is malfunctioning– they aren’t “crazy”
- Clients recognize that multiple perspectives on their anxiety experience are possible
- Clients become capable of having a different relationship to experience of anxiety
- In a manner similar to mindfulness approaches, client is able to “observe” the reaction of the amygdala

Benefits of “Language of the Amygdala” Approach: Enhanced Motivation

- Clients have a clear objective in seeking exposure experiences— Communicating with the amygdala in its own language
- Clients can see the discomfort of exposure in a new light: “Activating to Generate”
 - Activating the amygdala allows client to generate new connections in the brain

The Amygdala's Relationship to the Cortex

- Processes information faster than the cortex and acts on it before cortex can
- Uses information that is less detailed and specific, so fears “generalize”
- Can override the cortex and produce reactions, responses that aren't logical
- Once the amygdala has activated a panic response, the cortex is not very effective in coping

The Amygdala's Relationship to the Cortex (cont.)

- Cannot be directly controlled by the cortex or deliberate thought processes
- Can be influenced by the cortex and respond to “imagined” dangers
- Knowing when amygdala is producing responses and when cortex is initiating the amygdala's response is helpful
 - Help client understand the difference

Cortex-based Approaches

- Best used before the amygdala has activated an anxiety response
- Once the amygdala has been activated, you can't use logic or arguments to stop it
- These approaches focus on preventing the cortex from activating the amygdala

Cortex-based Approaches

- Avoiding the “Anxiety Channel”
 - Thoughts that increase a sense of danger
 - Images that increase a sense of danger
 - Anticipating situations that are not present
 - Remembering events that produced anxiety
 - Worrying
- Change the Channel!!
 - Focus on anything that does not produce anxiety

Cortex-based Approaches

- Challenge Self-Defeating Beliefs that set one up for increased anxiety
 - Expecting perfect or near perfect performance
 - “Should” statements that judge the way things “should” be
 - Catastrophizing: Making a setback into a disaster
 - Concerns about what others might think or how they might respond
- Use Coping Thoughts

Cortex-based Approaches

- Avoid Focusing on, Anticipating or Exaggerating threatening situations
- “Replace, because you can’t erase.”
 - Don’t just tell yourself not to think something— you must replace the thought with something else that prevents it from returning.
- Distraction is beneficial
 - Keep your cortex busy with more pleasant thoughts. Play!

Cognitive Interventions in a “Whole Brain” Approach

- Cognitive interventions are targeting the cortex
- We have the most control over this part of our brain and can impact it if we work at it.
- The interventions don't directly change the amygdala's functioning— once activated, the amygdala cannot be argued with
- They are best used to prevent the cortex from activating the amygdala's alarm response

Summarizing . . .

- Cognitive Interventions target the cortex
 - Logical arguments can impact the cortex
 - Client can have control over what attention is focused on
 - Tendency to engage in anxiety-producing thoughts can be reduced
 - Distraction can be helpful

Summarizing . . .

- Exposure Exercises target the amygdala
 - Using the “language of the amygdala” can change the amygdala
 - Knowing the power of exposure can motivate clients
 - New pairings with the trigger will get the amygdala’s attention
 - “Activate to Generate”
 - The amygdala learns through experience

Other Factors . . .

- The amygdala is also affected by other factors that are important to know
 - While the cortex can't directly reverse the amygdala's activation of the sympathetic nervous system, **relaxation strategies** and **exercise** can
 - Lack of sleep can destabilize the amygdala, and **adequate sleep** has a positive effect

Medications

- How do medications fit into this picture?
- Three questions about medications:
 - How do they affect the anxiety response?
 - How do they affect the exposure process?
 - How do they affect the amygdala's learning?
 - How do they affect cognitive interventions?
 - How do they affect the cortex's learning?

Medication:

- Examples:
- How do they affect the anxiety response?
- How do they affect learning in the amygdala?
- How do they affect learning in the cortex?

SSRIs

- Zoloft (sertraline), Lexapro (escitalopram oxalate), Prozac (fluoxetine)
- Little immediate effect on anxiety response.
- Neurons are eventually stimulated to modify circuits
- May facilitate activation and new learning

**Remember : You Need to Activate to
Generate New Circuitry**

Medication:

- Examples:
- How do they affect the anxiety response?
- How do they affect learning in the amygdala?
- How do they affect learning in the cortex?

Benzodiazepines

- E.g., Valium (diazepam), Xanax (alprazolam), Klonopin (clonazepam)
- Reduce amygdala responding; decrease anxiety immediately
- Prevent activation, so they impair new learning
- Preserve the current state of the circuitry

Remember: You Need to Activate to Generate New Circuitry

Medication Summary

- Medications that reduce the likelihood that the amygdala will be activated
 - Reduce anxious responding
 - Reduce the likelihood that new connections will develop
 - Impair learning
- Medications that facilitate learning are likely to benefit both cortex- and amygdala-based approaches

Communicating Key Concepts to Adults

- Identifying the symptoms generated by the amygdala
 - “My amygdala is doing it again.”
- The amygdala as a sensitive alarm system
- Conceptualizing anxiety response as “getting the attention of the amygdala”
 - “Activate to generate” new connections
 - You can’t make tea with cold water

Communicating Key Concepts to Adults (cont.)

- “Teaching” the amygdala
- The amygdala learns through experience
- When you feel fear go down during exposure, the amygdala is paying attention
- An organic process that needs tending
 - Slow, gradual process of learning
 - Maintaining a path through the forest
- Breathing, Exercise directly affect amygdala

Communicating Key Concepts to Adults (cont.)

- Recognize when your thoughts are trying to explain the amygdala's responses
 - The explanation is not the cause of the responses
- Thoughts - Replace because you can't erase
- Change the channel
 - Don't stay on the Anxiety Channel
- Use medications that facilitate learning
 - Avoid medications that put the amygdala to sleep

Communicating Key Concepts to Children

- Models of brain and concrete illustrations
- The amygdala as a “caveman”
 - Fight-flight-freeze response was (and can be) useful
 - Doesn’t have language
- The cortex as a “professor”
 - Comes up with its own explanations
- Who is the better ringmaster at the circus?
 - In emergencies? Other situations?

Communicating Key Concepts to Children (cont.)

- Coloring/Drawing to illustrate
- Train the amygdala like you would a puppy
 - Can you talk to a puppy? You have to show it!
- Don't scare your amygdala!
 - It lives in your brain with your thoughts
- Anxiety changes when you train the amygdala
 - Use a car or plane on a scale to reflect changes in anxiety (How much anxiety did you have at first?)

Communicating Key Concepts to Children (cont.)

- Change the channel!
- Exercise
 - Like hitting the reset button on amygdala
 - The amygdala thinks you can run away
- Relaxation/Breathing
 - Relaxes the amygdala
- Sleep
 - When you don't get enough sleep, the amygdala gets crabby

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