Neuroscience Informed Cognitive Behavioral Therapy

Expanding the Application of CBT

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Overview of Today's Session

- Why is a new model of CBT needed?
- nCBT – A New Model of Client Care
- Case Studies
- nCBT Research
- Q & A

nCBT

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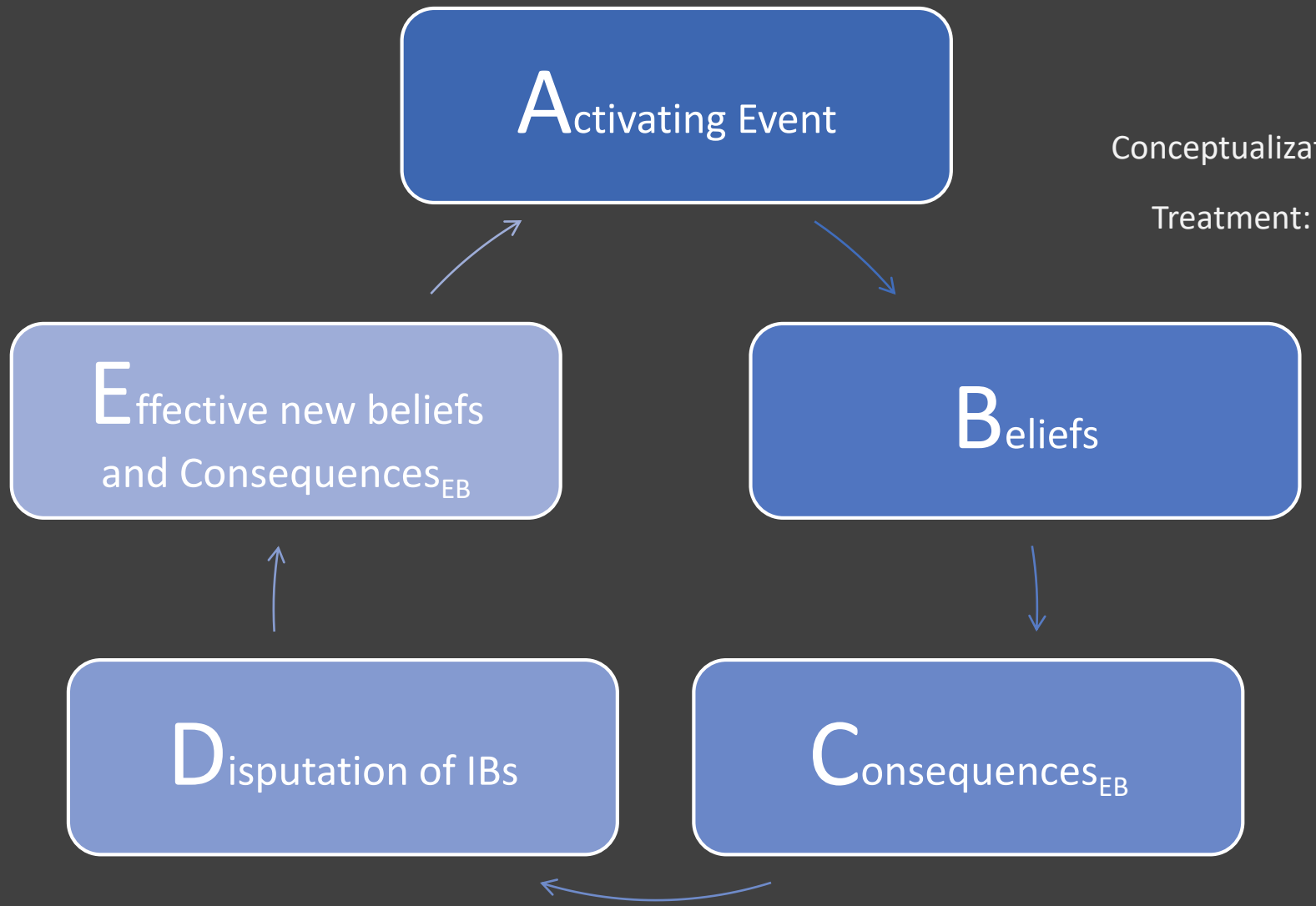

Conceptualization: A + B = $C_{E\ \&\ B}$

Treatment: A + B = C / D → E

Traditional CBTs - Common Processes

- Psychoeducation
- Elicit thoughts, beliefs, etc.
- Evaluate
- Dispute
- Restructure
- Reinforce

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A Case

Lal, a 47 year old client who identifies as cisgender male, is referred to you by his primary care physician following a recent mugging and reported inability to return to work. During the initial interview, you learn that he was mugged on his way home from work and is terrified to walk home again. He reports that he has missed several days of work. When asked to describe his experiences preparing for work, he says, “I don’t know what happens…it’s like I black-out and when I come to I am sweating, can barely breathe, and it feels like my heart is going to beat out of my chest…it all just comes so quickly, it’s like a wave.”

What would traditional CBT say about this client?

How might that approach be challenging with this client?

Problems

- The client claims they have no awareness of their behavior until after the fact (when it is too late)
- There is no specific, noticeable environmental event that seemed to have caused the client's distressed thoughts, feelings, or behaviors
- Traditional cognitive restructuring creates competing memories rather than rewriting the old ones

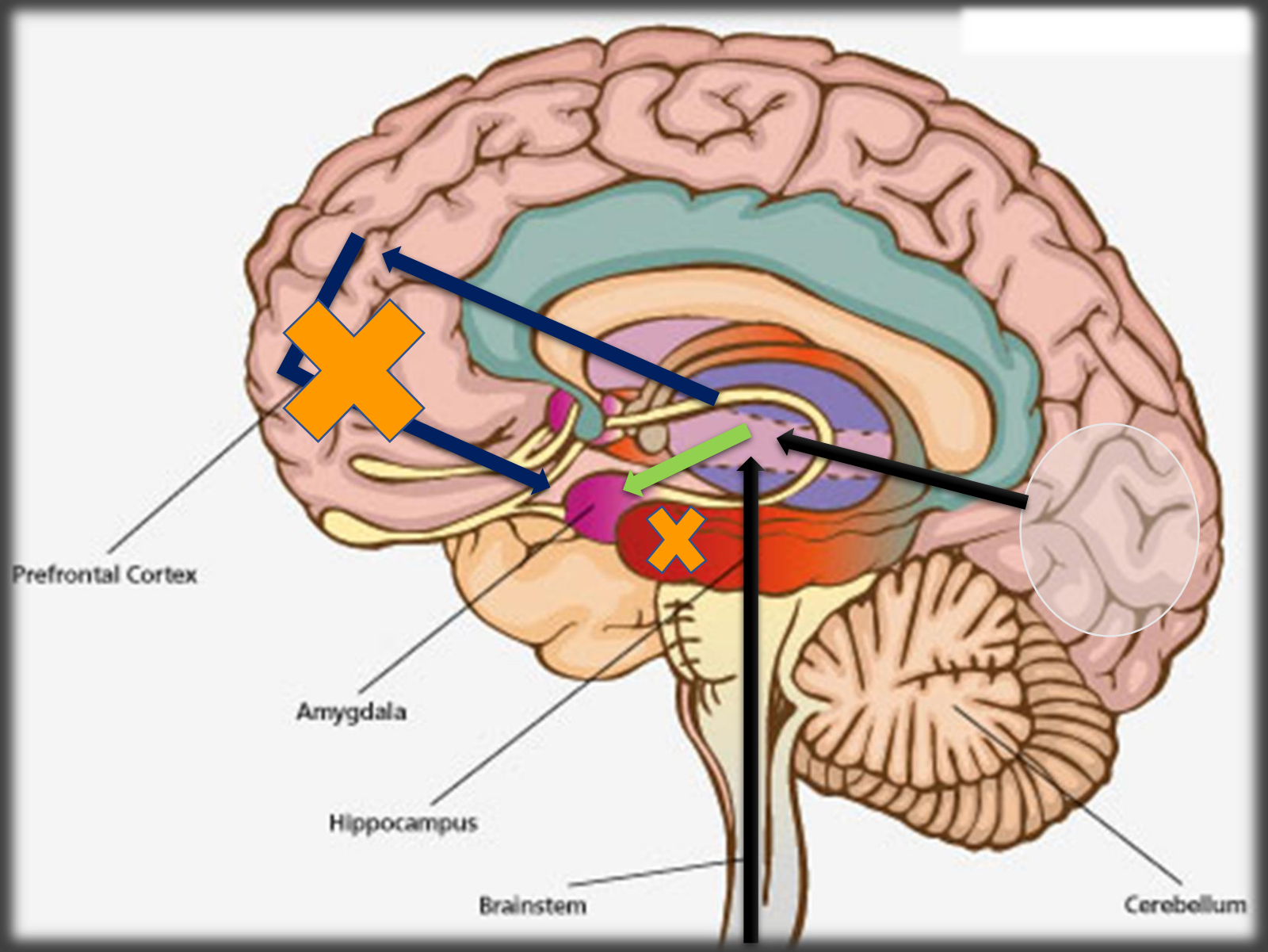
Challenges to Traditional Models

- Assigning blame
- Mislabeling thoughts as “feelings”
- Leaving thoughts incomplete
- Focusing on surface thoughts
- Evaluating helpfulness w/o goals
- Disputing w/o restructuring
- Using irrational replacement thoughts
- Counselor irrationality
- Power struggles

Fear Processing

Top Down
Slow Pathway

Bottom Up
Fast Pathway



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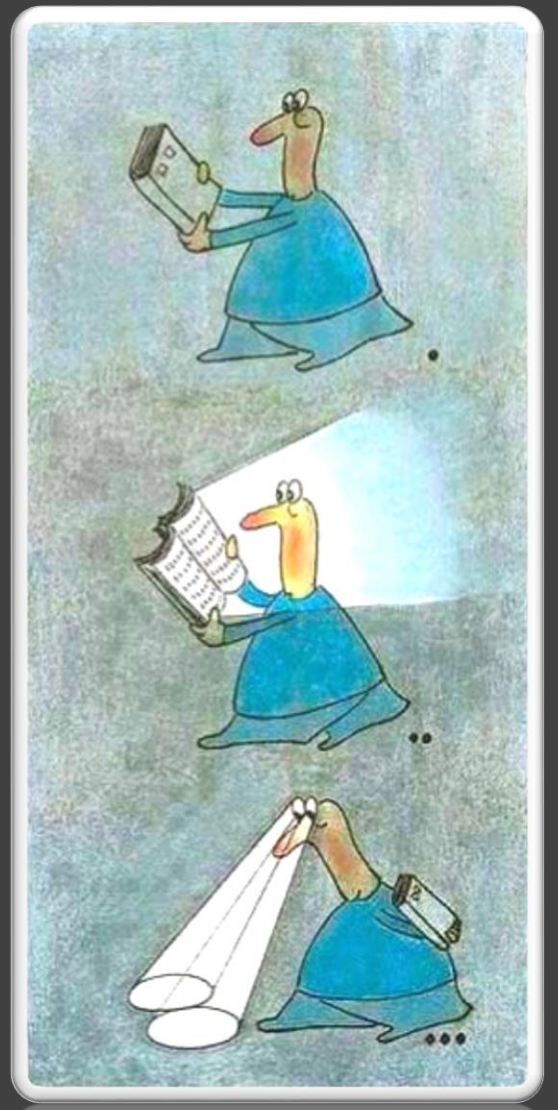
How Understanding of Neuroscience Can Inform Assessment, Case Conceptualization, and Treatment



A Word of Caution

- Neuro-enchantment/realism
- Neuro-informed explanations linked to less perceived warmth, empathy, & belief in psychotherapy
- Neuro-informed explanations linked to more belief in pharmacological TX
- Therapeutic neuroeducation linked to reduced shame, increased coping, increased pain tolerance
- Ongoing philosophical debates
- Increased enthusiasm, with limited standards

(Coutinho et al., 2017; Fernandez-Duque et al., 2015; Haslam & Kvaale, 2015; Lebowitz et al., 2015; Lilienfedl, 2014; Nowack & Radicki, 2018; Weisberg, 2008)

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"A brain did not evolve for rationality, happiness, or accurate perception. Rather, to ensure resources for physiological systems for growth and survival"

- Lisa Feldman Barrett

(Davidson & McEwen, 2012; Siegel, 2012)

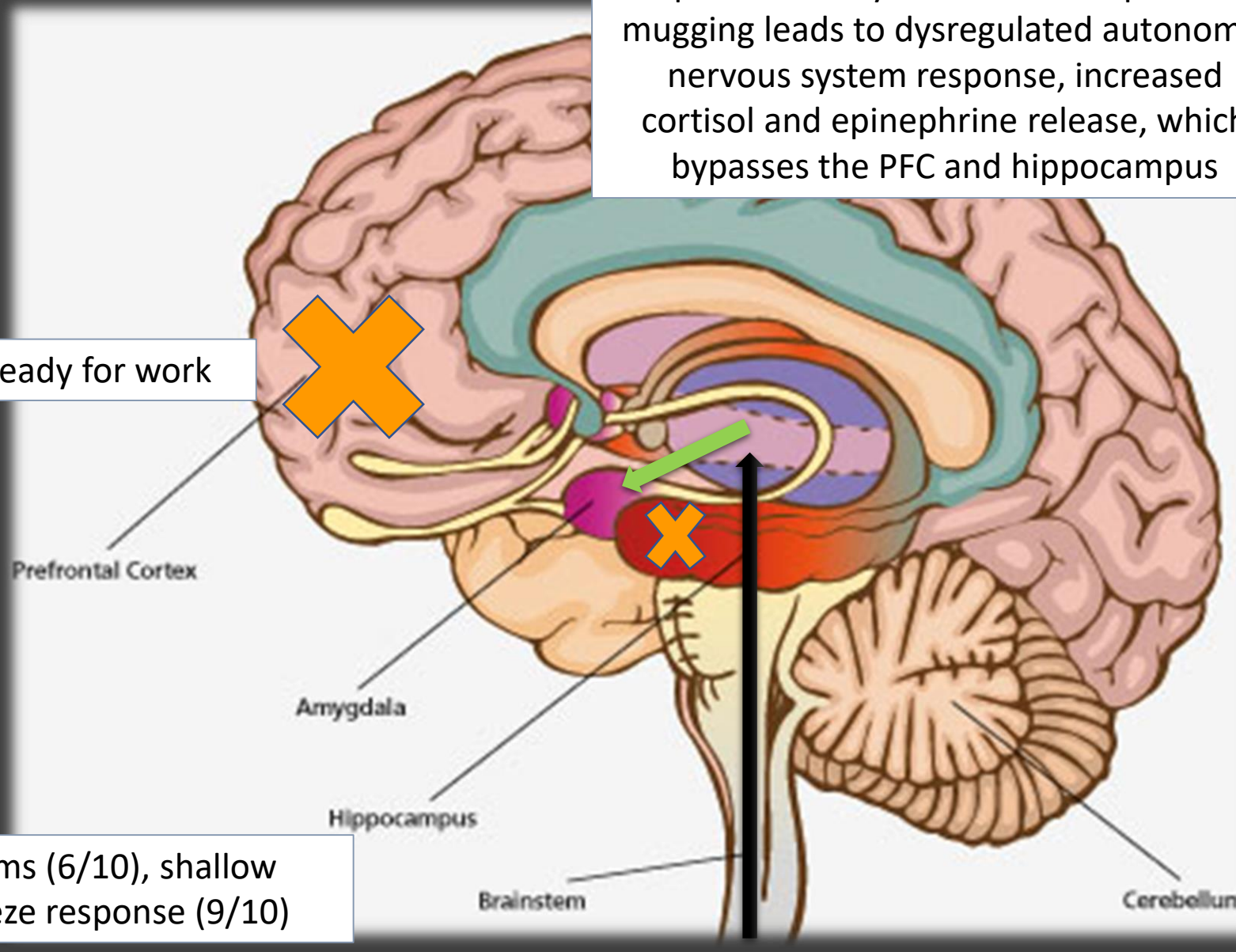
Meta-Principles

- Survival:
  - Move towards (APPROACH) perceived pleasure;
  - Away (AVOID) from perceived danger
- Belonging and connection essential for survival
- Behaviors are purposeful (protective, adaptive)
- Priority given to prediction and efficiency
- Negativity bias (negative experiences are more salient)

Lal's Bottom Up Processing

Implicit memory associate with previous mugging leads to dysregulated autonomic nervous system response, increased cortisol and epinephrine release, which bypasses the PFC and hippocampus

Prepares to get ready for work



Increased heart rate (7/10), sweaty palms (6/10), shallow breaths (10/10), anxiety (9/10), and freeze response (9/10)

Lal's Top-Down Processing

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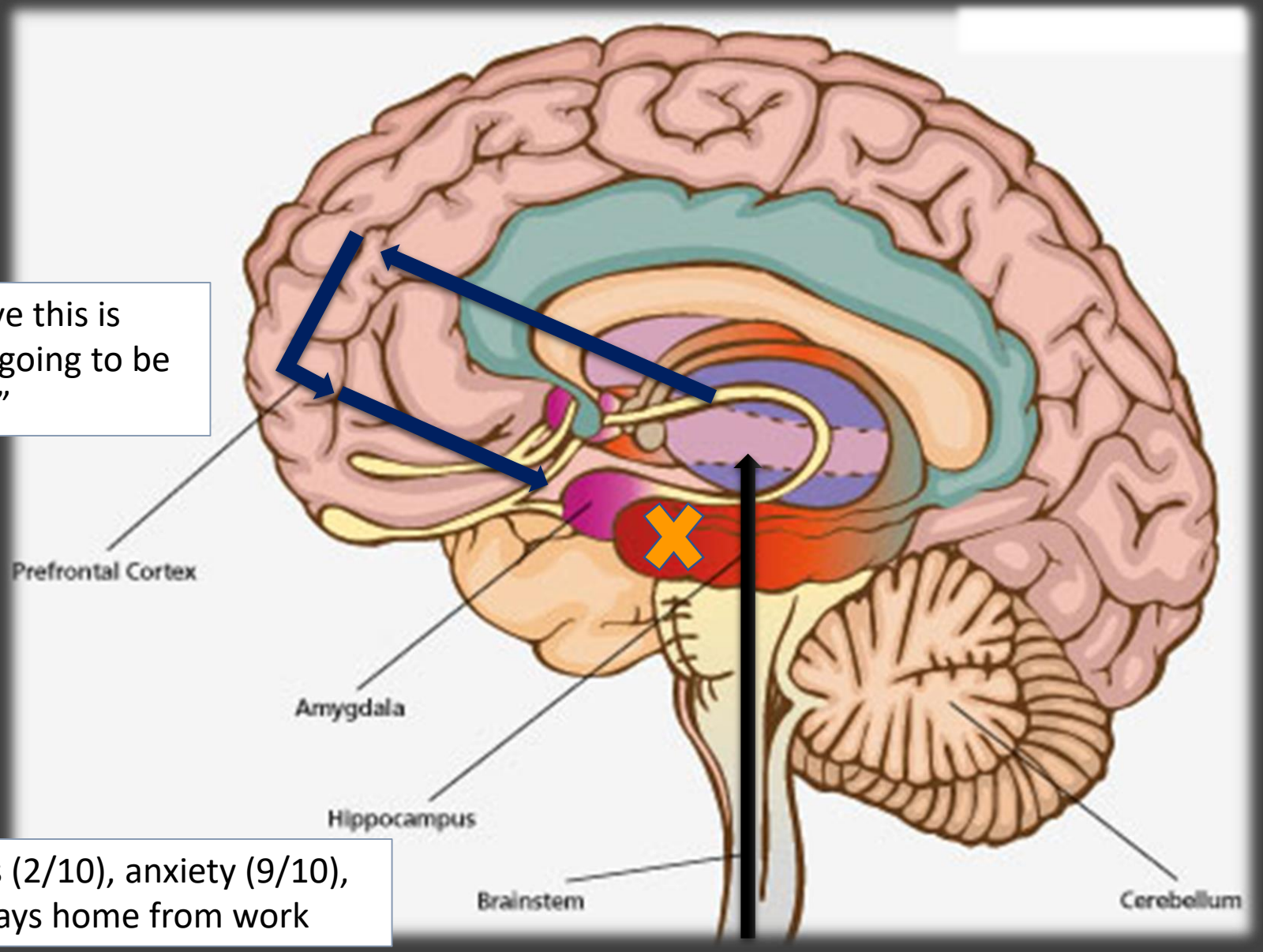
"Oh my gosh, I can't believe this is happening again. I am never going to be able to work again."

Becomes aware of consequences, sending information to the PFC and informed by hippocampus



Increased heart rate (5/10), shallow breaths (2/10), anxiety (9/10), shame/guilt (9/10), tearfulness (9/10), stays home from work


What would you do?

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What would you do?

- What road would you want to be more active? For what reason?
- What if you had to think about what to do?
- What would happen if a counselor came and tried to get you to calm down?
- What if life experiences (e.g., break-ups) became “bears”?
- What would happen if a counselor came and tried to get you to calm down?
- What if counseling becomes the “bear”?

Examples of when the brain might take the high road…

- Adjustment problems
- Excessive rumination
- Some early cognitive distortions
- Intellectualization
- Yes, but…

Examples of when the brain might take the low road…

- Trauma and dissociation
- Panic and anxiety
- Substance use
- Other forms of compulsive behavior and process addictions (cutting, stealing, etc.)
- Learned helplessness
- Intermittent explosions (anger outbursts, “blackouts”)
- Traumatic Brain Injury
- Life/Death Mis-associations

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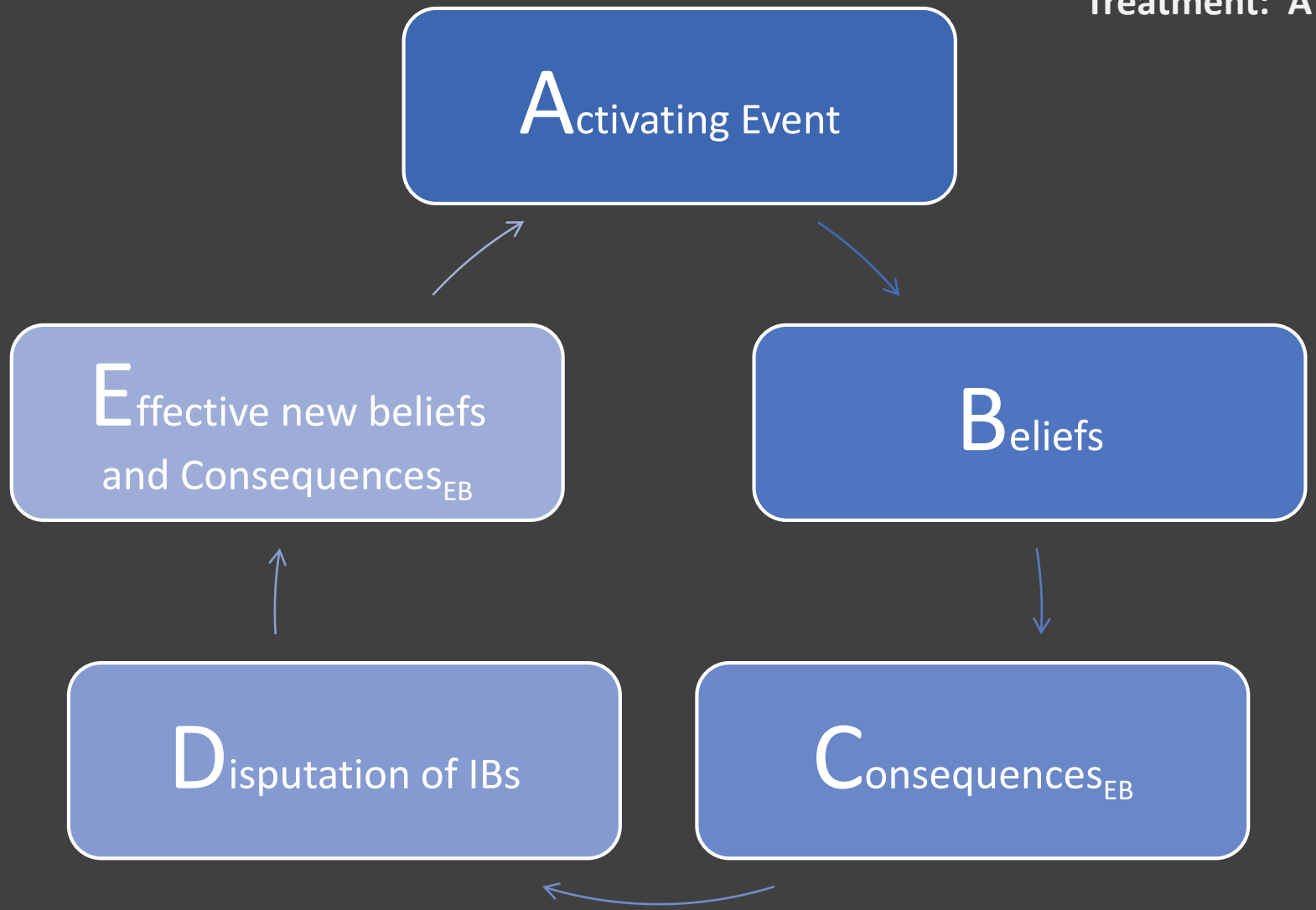
Conceptualization: A + B = $C_{E \& B}$

Treatment: A + B = C / D → E



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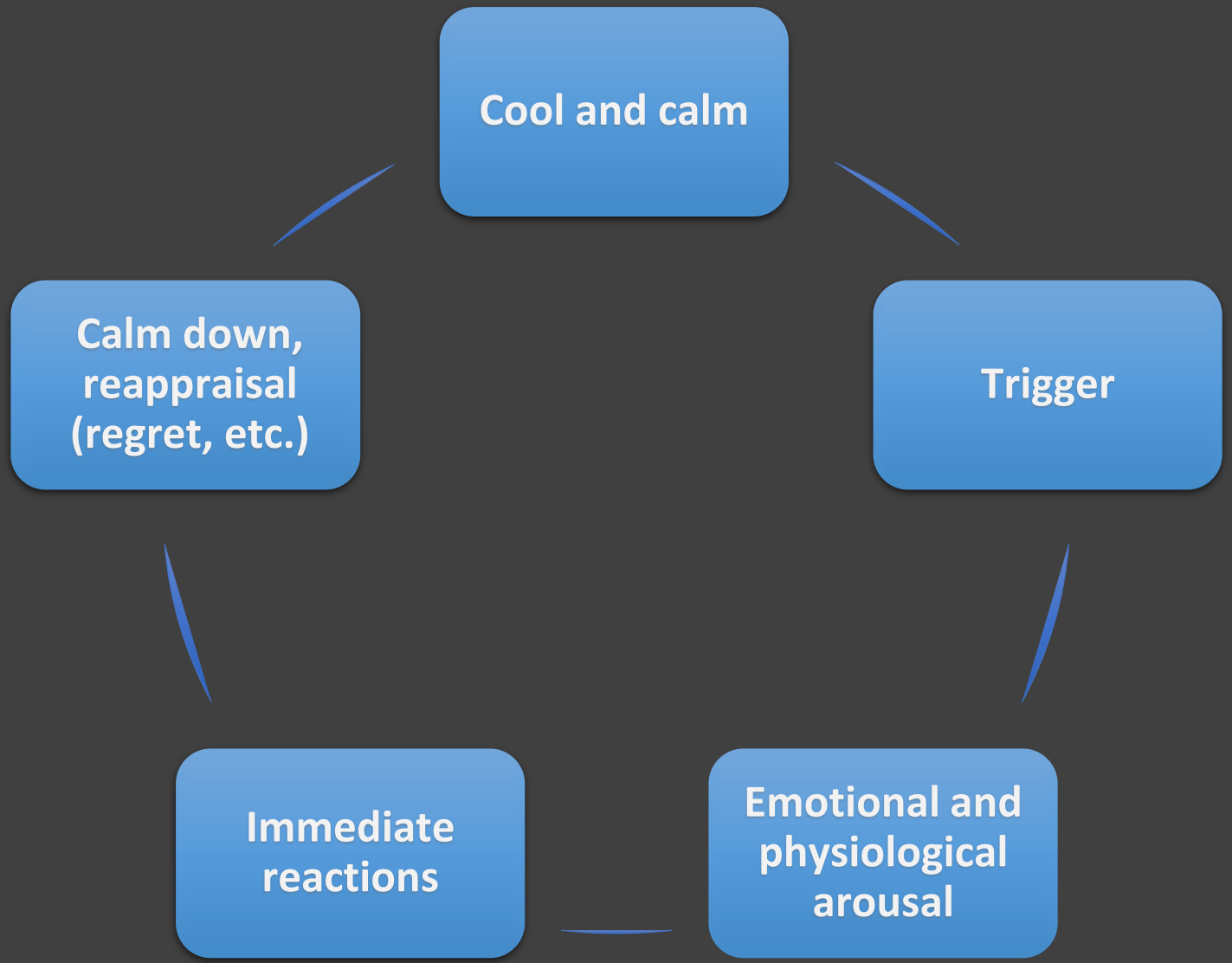

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So what does this mean?

- Activating events are not always apparent
- Beliefs are not necessary for Consequences
- Cognitive distortions might actually be dysregulated cognitive processing
- Consequences can occur before a person is cognizant
- Some cognitive processes may be more amenable to change than others
- Traditional counseling with the low-road may actually be more harmful

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Integrating Neuroscience Into CBT

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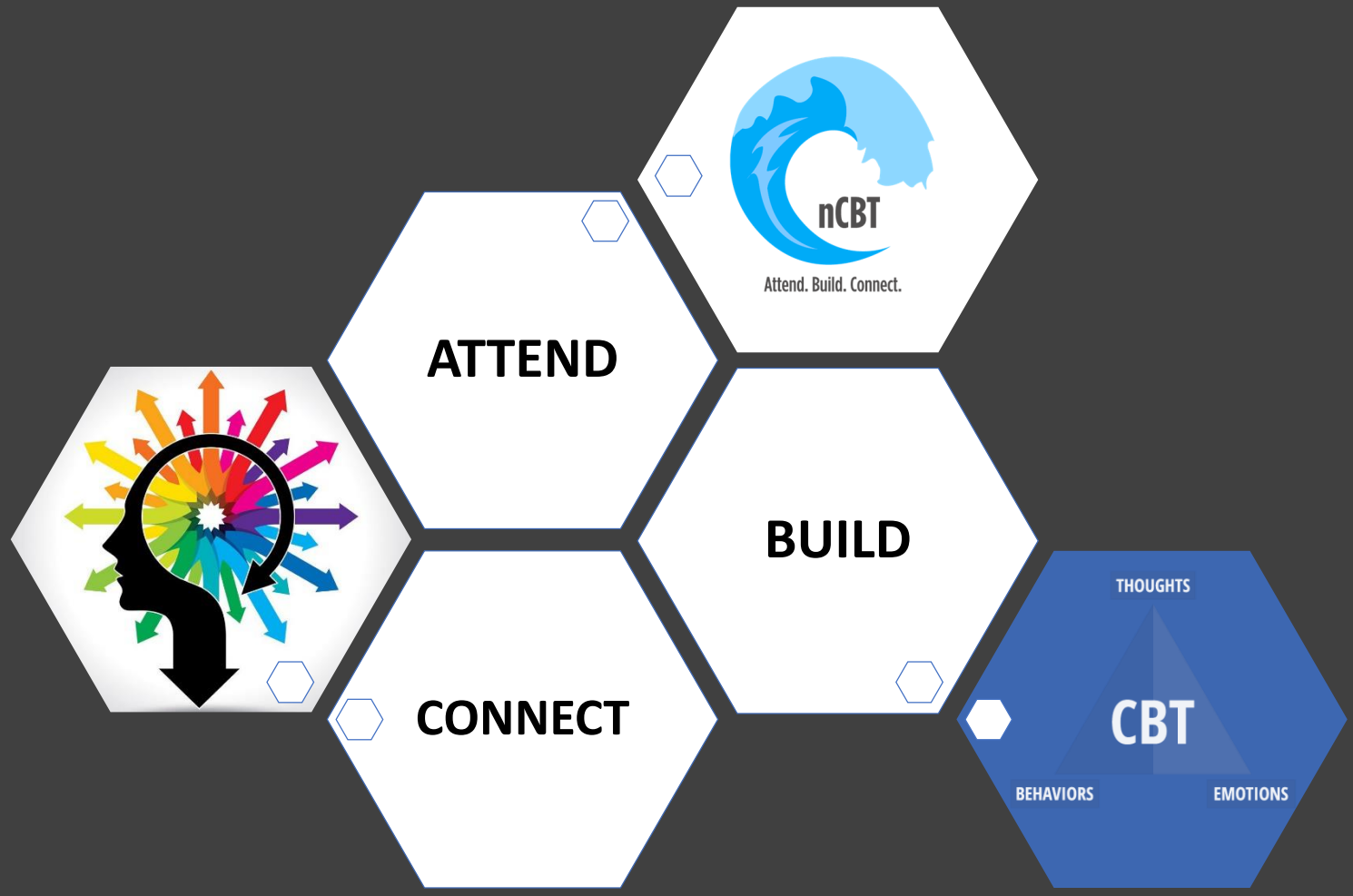
Who likes to surf?

- What comes to mind when you think of a wave?
- How about surfing?

Core Tenants



What is nCBT?

- A type of neuro-informed counseling in Phase II of NIH intervention development
- Built upon the existing evidence base of CBT & emerging neuroscience findings
- First presented at AMHCA 2014 (Beeson & Field)
- First published in 2015 (Field, Beeson, & Jones)
- Piloted in 2016 (Field, Beeson, Jones, & Miller)
- First treatment manual created in March 2017
- Piloted in Japanese school setting
- Currently creating a treatment fidelity checklist (Miller, Field, Beeson, & Jones, *Under review*)

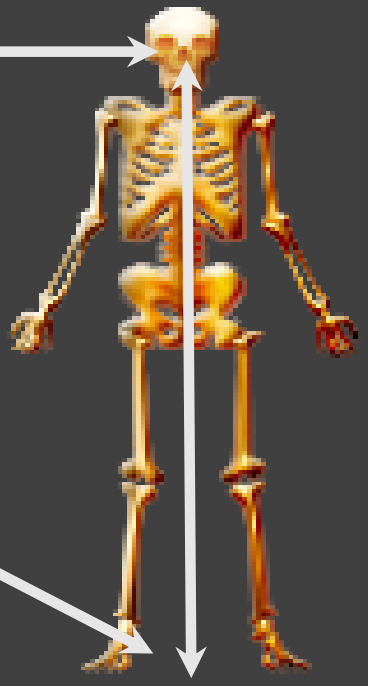
A1: Activating Event—
Something happens

A2: Awareness—
I become aware of what my body is doing

B1: Brain from the Bottom-Up—
My brain makes sense of it w/o me knowing it

B2: Brain from the Top-Down—
My brain collects more information and begins to make sense of it while I begin to make decisions about it

Information (A) travels and is interpreted in my brain very fast



Because of how information was processed (B), my brain begins the adaptive chemical processes causing me to act quickly (fight-flight-freeze; seek pleasure)

My behavioral response to NS Consequences (C) then interact with my environment to create new As & starts the process again

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C1: Consequence (Nervous System)—
My body does what my brain tells it to do

C2: Consequences (Nervous System)—
My body does what I, via my brain, tells it to do

The Waves of the ABCs

The New ABCs

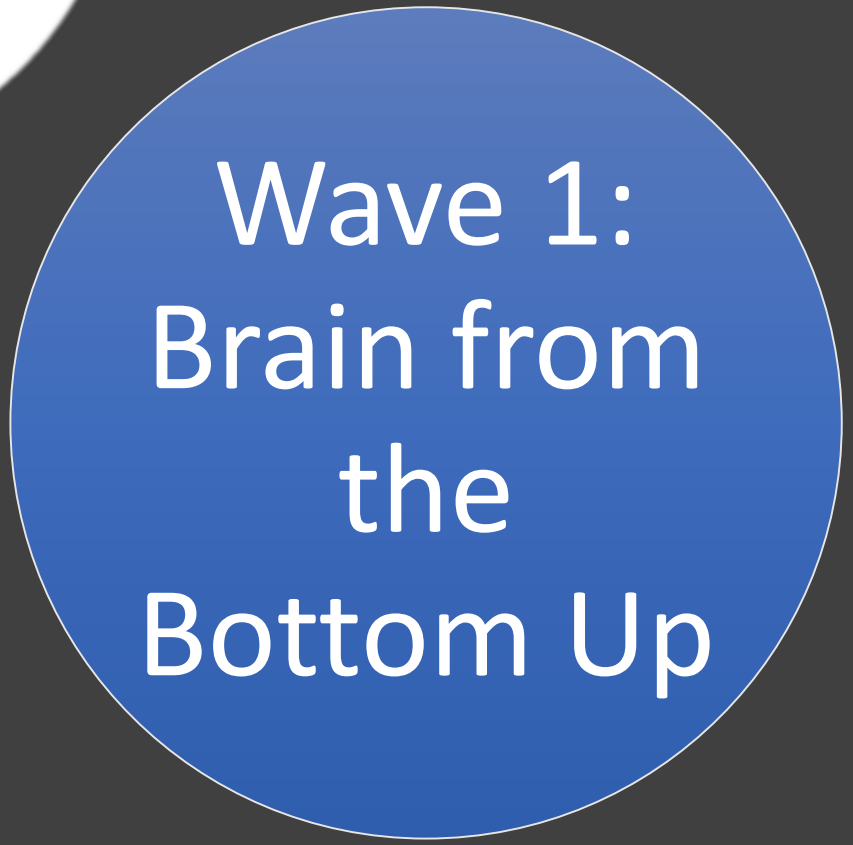
<u>Something</u> happens…

Sensory input

Episodic (e.g., epigenetic mechanisms, people, places, things, situations, emotions, etc.)

Enduring (e.g., racism, oppression, etc.)

The New ABCs



…My <u>brain</u> makes sense of what happens…

Low-Road, Bottom-Up Processing

Parallel scanning (past oriented)

Genetic Expression/Suppression

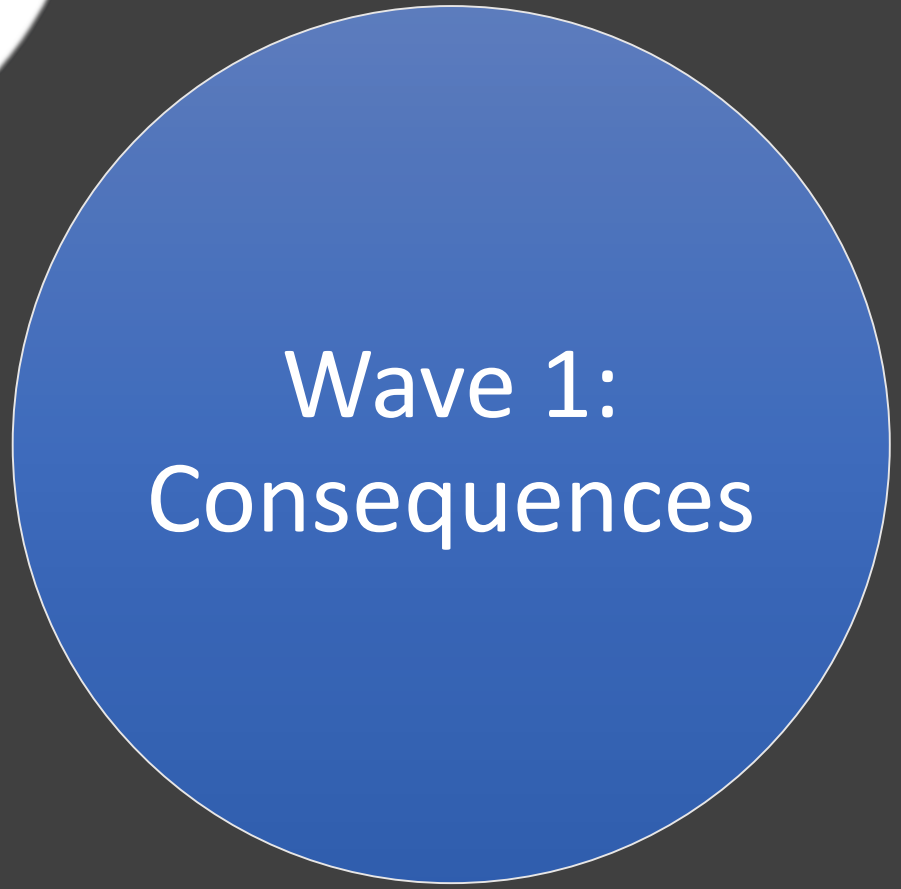
Automatic Cognitive and Neurological Interactions/Reactions

Implicit Memories

Conditioned Reactions

Defense Mechanisms

The New ABCs



…My <u>body</u> does to what my brain tells it to do…

Amygdala initiates an appropriate (normal) response causing emotional and behavioral consequences through the NS

Primary Emotions

Survival Skills

Impulsive and Reflexive Behaviors,

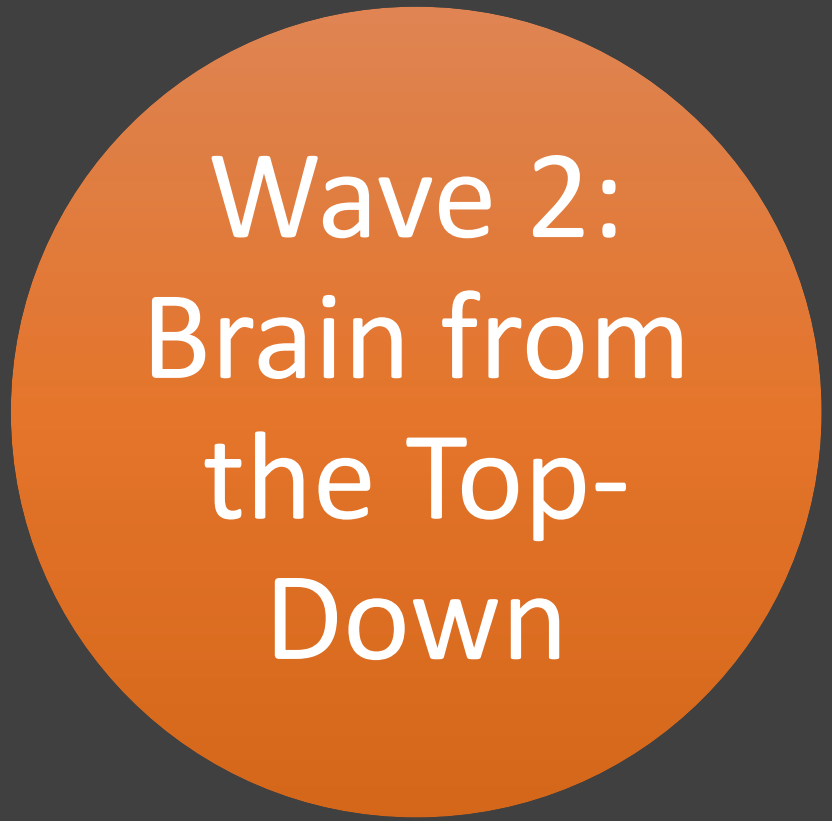
Pleasure/Sensation Seeking,

Sympathetic response

The New ABCs


Wave 2:
Awareness
I become aware of what my body is doing…
More sensory input starts the cycle over again
More people, places, things, etc. & the previous emotional and behavioral consequences

The New ABCs



…What did I just do…why did I do that?…

High Road, Top-Down Processing

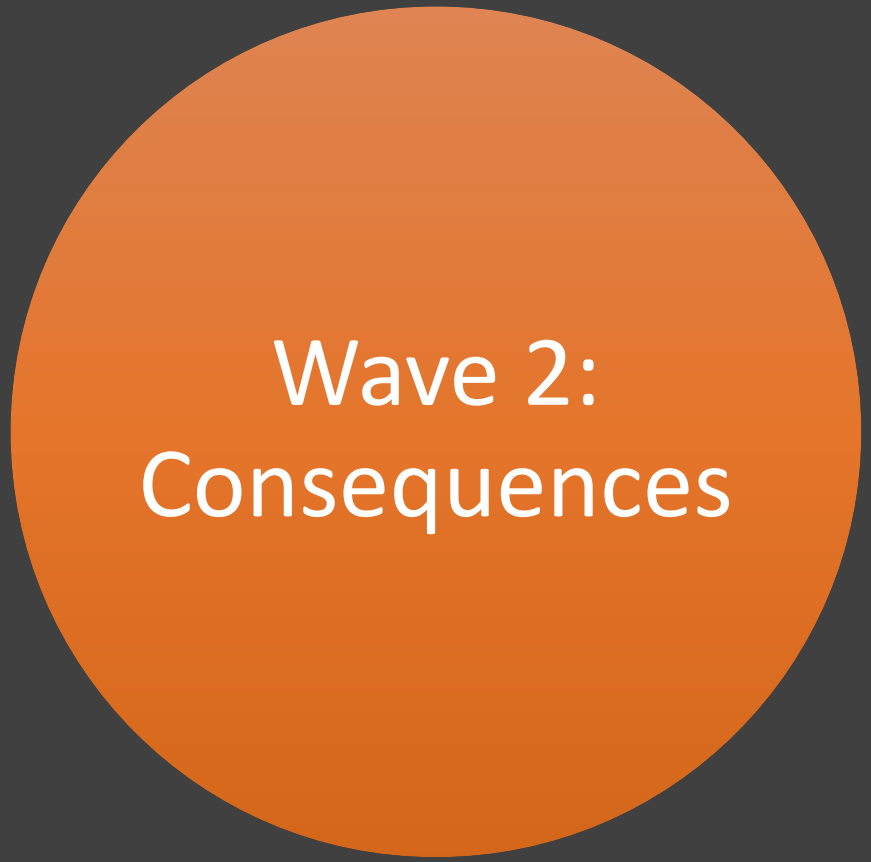
Serial Scanning (future oriented),

Thinking about Thinking (Meta-cognition),

Explicit Thoughts and Memories,

Appraisals, Decision-making, Problem-solving, Intentional Processing

The New ABCs



…Well, I better do something…

Prefrontal cortex initiates decision making and modulates more emotional and behavioral consequences through the NS

Emotional Regulation,

Secondary Emotions,

Declarative Descriptions,

Coping Skills

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What is nCBT?

- Semi-structured
- Begins with Case Conceptualization using the Waves of the new ABCs model
- Multiphasic and progressive treatment
  - Phase 1: Attend to Physiological Reactions
    - Develop rapport, assess, and conceptualize
  - Phase 2: Build the Brain from the Bottom-Up
    - Wave1 interventions
  - Phase 3: Connect the Bottom to the Top
    - Wave2 interventions
    - More traditional CBT

What is nCBT?

The Old ABCs

A + B = CE & B

The New ABCs

Wave 1: A1 + B1 = C1P, E, & B

Wave 2: A2 + B2 = C2P, E, & B

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From Macro to Micro

- ABCs of the entire Counseling Process
- ABCs of the Single Session
- ABCs of Interventions

nCBT – Wave 1

Attend to and assess the physiological reactions

- Interventions outside of traditional talk therapy
- Observe in-session nonverbals/physiological arousal
- Attend to physiological reactions/Physiological monitoring
- Promote interoceptive awareness
- Encourage client noticing
- Assess response process and style (moving towards, moving away, motionless)
- Psychoeducation about the *Waves*

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nCBT – Wave 1

Attend – What to assess?

- Expectations of counseling (is counseling a bear?)
- Expanded BIOpsychosocial assessment across units of analysis
- Therapeutic Lifestyle Changes and Healthy Mind Platter
- ANS Functioning (e.g., Breath rate and type, galvanic skin response, heart rate coherence, skin temperature, qEEG)
- Affect body mapping
- Interoceptive awareness
- Existing psychometric tools and outcome measures

New Immediacy

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nCBT - Wave 1

Build the brain from the bottom-up

- Goal is to re-learn another automatic Wave1 response and shift set-point for stress response
- Bottom-up skills
- Balance ANS
- Target implicit processing
- “Ride the wave” of Wave1 experiences rather than respond reactively or try to stop them
- Activate the parasympathetic branch of autonomic nervous system to achieve a smooth recovery
- Develop capacity for Wave2 interventions (e.g., top-down meaning-making and re-appraisal)

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nCBT - Wave 1

Build the brain – Bottom Up Principles

- Physical and emotional safety (common factors)
- Build approach patterns
- Shift forced forgetting (avoidance) to narratives of survival
- Temporally contextualize (happened then, not happening now)
- Introduce mindfulness and pace controllable incongruence
- Provide empowerment and support to solution oriented changes
- Assess need for adjunctive therapies
- Psychoeducation about medication, supports, approach behaviors, and other wellness oriented behavior changes

(Rossouw, 2014)

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nCBT – Wave 2

Connect the bottom to the top

- Top-down skills
- Promote top-down regulation and meaning making, increasing functioning in the PFC, ACC, and hippocampus
- Works at the level of conscious (explicit) awareness
- Goal of modifying appraisal and re-appraisal (meaning making) processes
- Strengthens cortico-limbic connectivity

nCBT – Wave 2

Connect the bottom to the top – Traditional CBT w/a new focus

- Using experience to dispute rather than the Socratic method
- Creating new cognitions about:
  - The emotional experience
  - Collaboration with emotions (new relationship)
  - Capacity and agency to change
- Compare new cognitions to the old to solidify meaning

nCBT – Wave 2

- Wave1 interventions usually precede Wave2 interventions
- Even in cases when the client is experiencing symptoms from both a Wave1 and Wave2 process
- Automatic implicit responding (Wave1) will alter appraisal responses (Wave2),
- Making intervention at Wave2 less helpful

nCBT – Wave 2

Example:

- A client with anger outbursts (Wave1 symptom)
- Can be taught to develop re-appraise their past responding (Wave2 intervention)
- But this will not prevent further outbursts (Wave1 symptom),
- And further occurrences of outbursts (Wave1 symptom) will in turn generate further shame, hopelessness, and helplessness (Wave2 symptom)

nCBT – **Reappraisal**

- nCBT re-appraisal differs from traditional CBT in several ways:
  - Uses experience to dispute more than logic.
  - Creates entirely new cognitions grounded in the client's experience during the previous phases of treatment.
  - Reappraises past events grounded in physiological experiences (edits existing memory).
  - Increases focus on sociocultural variables and enduring activating events.

nCBT – Reappraisal

- Thoroughly explore wants, wishes, values, and desires (i.e., goals)
- Evaluate the helpfulness of thoughts rather than their rationality
- Pay attention to cultural meaning of wants, wishes, desires
- Help clients imagine desires instead of their “problems.”
- Use a stage of change and successive approximations approach to restructuring
- Reframe color, size, source, etc. as well as content

A1: What happened? What did you see, hear, touch, taste, and/or smell?

Reappraising Past Events: Wave1

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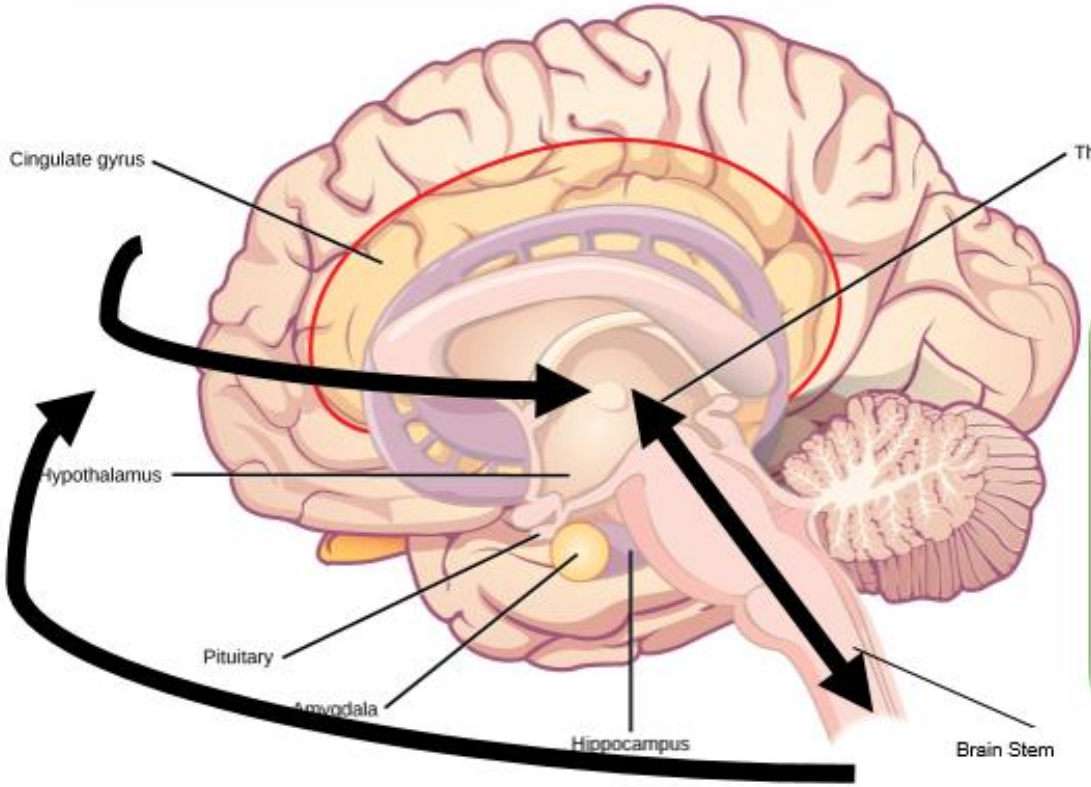

B1: What did A1 remind you of? What was familiar about A1? How was A1 related to your safety? How was A1 related to your pleasure? How was A1 related to avoiding pain?

C1: What did you experience in your body? What did you do? What feeling would you call this?

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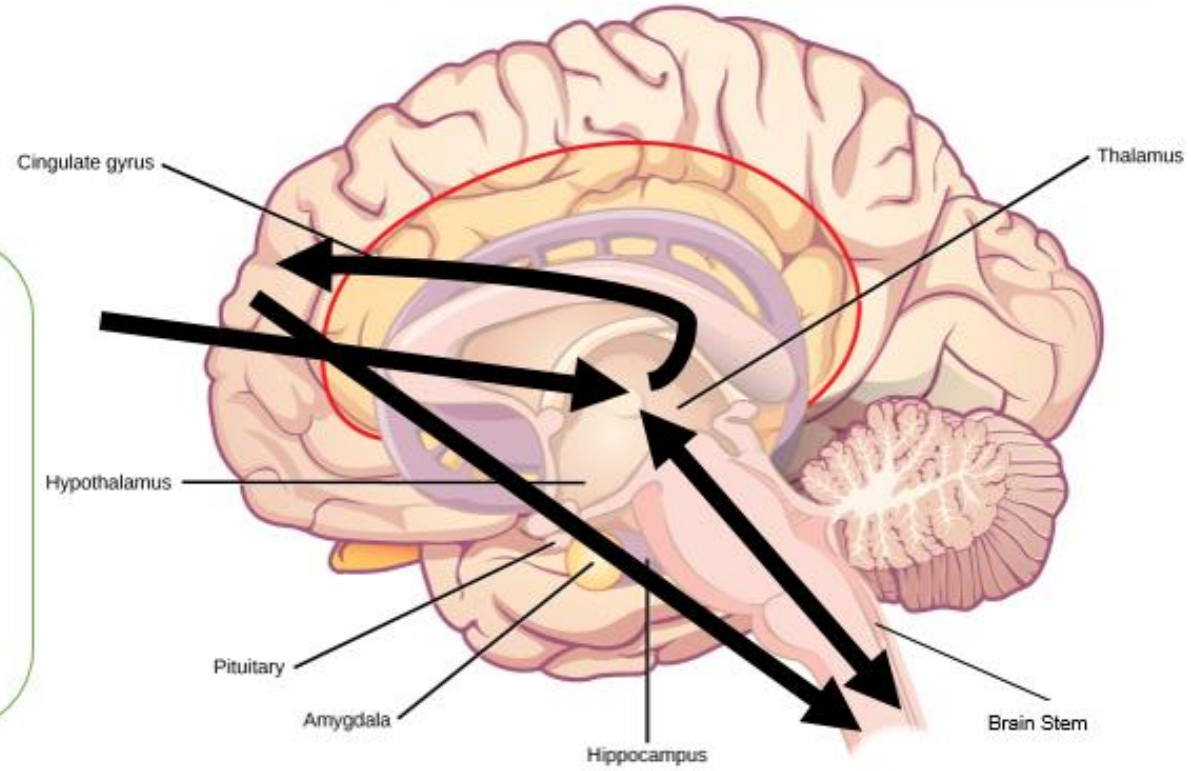
Reappraising Past Events: Wave2

B2: What went through your mind? What did you think about? The event? Self? Others? Future?

A2: What did you notice? When did you become aware of C1? How long did it take to notice C1?



C2: What did you experience in your body? What did you do? What feeling would you call this?

Benefits of a New Approach

- Instead of clients feeling that their thinking is “distorted” and must change….
- Clients understand the way their brain works and learn to have acceptance around the adaptive nature of their reactions
- Resulting in more self-compassion and less shame/blame/guilt/shoulding etc.

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Case Study

Maria is a 28 y/o who identifies herself as a white female. She was referred to counseling by her probation officer after her 2nd arrest for possession of heroin. She reported a continued desire to stop using heroin but without much success. Her used has resulted in numerous consequences including a divorce, the loss of custody of his child, and a recent diagnosis of hepatitis-C. She reported that before she even realizes she is awake, she has already licked the residue off the mirror lying next to his bed. She says, "I don't even think about it…it's like automatic." During the clinical interview, you learn that her use of substances began when she was 11 years old and has continued to escalate over the years. She reported that her early use of substances resulted in increased popularity, money, and status amongst her peers but slowly evolved to destroy everything in her life.

Case Study

Abdul is a 26 y/o college student who identifies himself as a male from Saudi Arabia. He referred himself to the college counseling center after his GPA dropped to a 3.2 last semester. During the clinical interview, Abdul's thoughts raced with preoccupations about the consequences of his academic performance with statements like, "I just don't know what will happen if I don't get my grades up…what if I fail out of school…what if my family disowns me…what if I am never able to graduate." In addition to his concerns regarding his GPA, Abdul also mentioned recent isolation from his friends, insomnia, diminished energy, and a sense of hopelessness.

Research

- 2015-16: Multiphase mixed methods study
  - Counselor and client perceptions of credibility and improvement expectancy
  - Factors that influenced ongoing use of nCBT vs. dropout

- 2017: Treatment manual and fidelity scale
  - Adherence to the protocol during video recorded mock sessions following a 3-day training
  - Knowledge, skills, and interoceptive awareness of trainees

Results

Counselor and Client Ratings of n-CBT Credibility and Improvement Expectancy (CEQ)

	0 months		3 months		6 months		F or t (within)	p
	M	SD	M	SD	M	SD		
Counselor	7.62	1.57	7.23	1.95	7.42	0.42	.14	.87
Client	6.79	0.75	7.07	0.27			0.77	.46

Note. Counselor preparedness ratings (0-10) at 0 month interval: *M* = 7.40, *SD* = 1.01.

Relationship Between Counselor and Client Ratings of n-CBT Credibility and Improvement Expectancy (CEQ)

	0 months (r)	3 months (r)
Counselor-Client M	.19	.63

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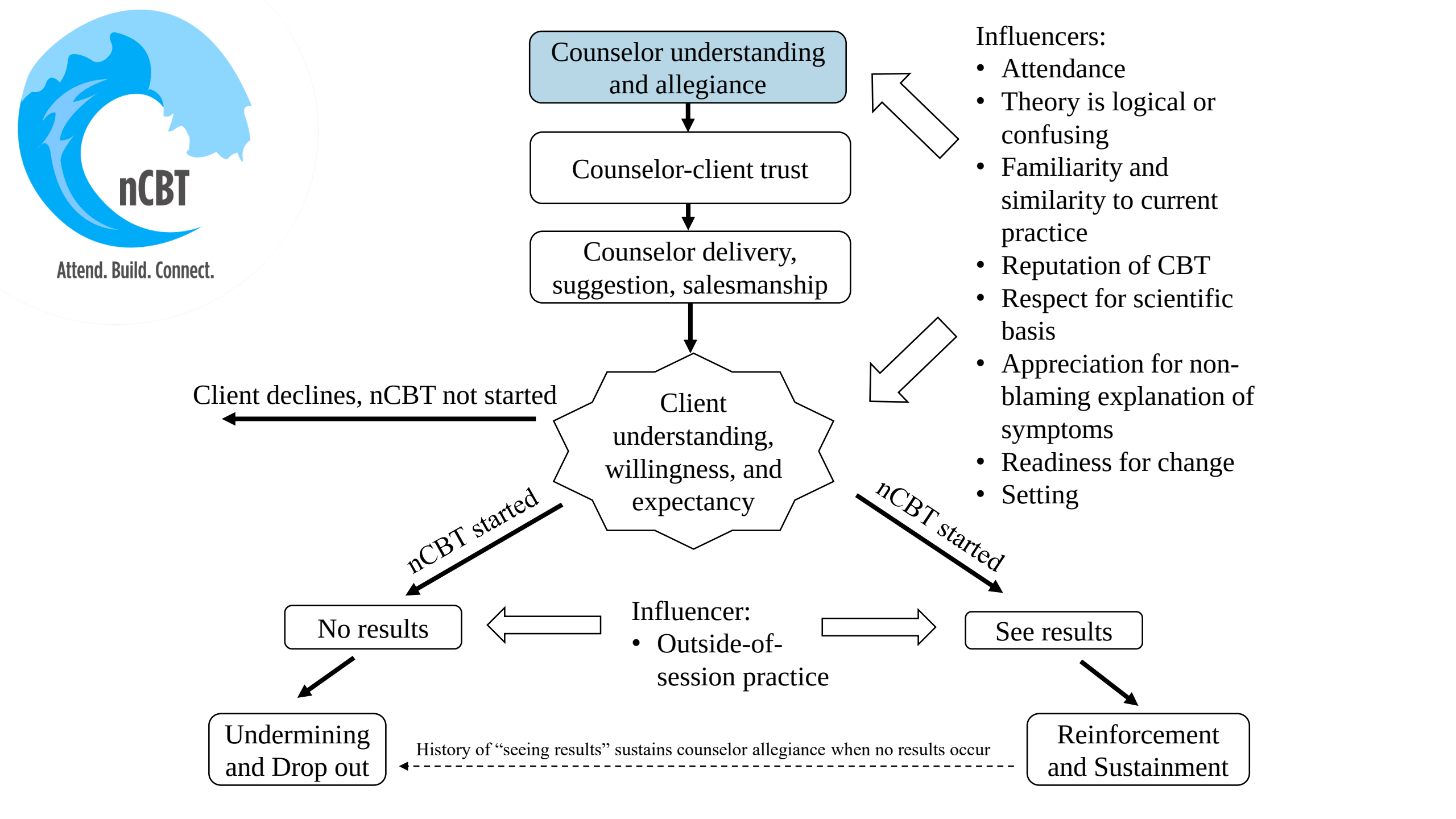
Table 1. Counselor Use of n-CBT with Mental Disorders

Disorder	Predicted Use (0 months)				Actual Use (3 months)			
	Likely		Unlikely		Used		Refrained	
	n	%	n	%	n	%	n	%
Anxiety, unspecified	23	95.8			4	44.4		
Depression, unspecified	23	95.8			3	33.3		
Anxiety, generalized	22	91.7			3	33.3		
Anxiety, social	20	83.3			3	33.3		
Panic	20	83.3			3	33.3		
Posttraumatic stress	20	83.3			3	33.3		
Depression, major	19	79.2			4	44.4		
Obsessive-compulsive	18	75.0			1	11.1		
Adjustment	15	62.5						
Substance use	15	62.5	1	4.2	3	33.3		
Anxiety, separation	14	58.3						
Persistent depressive	12	50.0			1	11.1		
Bipolar	12	50.0	2	8.3	2	22.2		
Chronic pain	12	50.0	2	8.3				
Insomnia	12	50.0	2	8.3				
Borderline personality	12	50.0	5	20.8	2	22.2	2	22.2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Counselor understanding and allegiance
Counselor-client trust
Counselor delivery, suggestion, salesmanship
Influencers:
• Attendance
• Theory is logical or confusing
• Familiarity and similarity to current practice
• Reputation of CBT
• Respect for scientific basis
• Appreciation for non-blaming explanation of symptoms
• Readiness for change
• Setting
Client declines, nCBT not started
Client understanding, willingness, and expectancy
nCBT started
nCBT started
No results
Influencer:
• Outside-of-session practice
See results
Undermining and Drop out
History of "seeing results" sustains counselor allegiance when no results occur
Reinforcement and Sustainment

Questions?

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https://www.n-cbt.com/