



Attend. Build. Connect.

**A Semi-Structured Multiphasic
Treatment Manual v1.0**

March 30, 2017

Greetings!

Welcome to this three-day training course on neuroscience-informed cognitive behavioral therapy (nCBT)! We are humbled and excited to begin this journey with you. Although we are not neuroscientists in the traditional sense, we are professional counselors committed to using current scientific advances to inform and shape our craft.

We are excited to learn from the unique experiences and expertise that you bring to this course, and we look forward to learning together as we embark on this journey of meaningful discovery.

This training will follow the course of treatment from start to finish with a fictional client, *John*. On day 1, you will meet John as he begins a course of traditional cognitive behavioral therapy (CBT). We will review core concepts of traditional CBT, as well as neuroscience principles that will help us better understand John's experience and adjust treatment accordingly.

On days 2 and 3, we will explore treatment with John using the nCBT model. We will walk through the treatment model as outlined in this manual. After reviewing core concepts and viewing live demonstrations, you will participate in active, hands-on activities to put these concepts into practice.

Finally, you will notice several references to handouts throughout the manual. All handouts can be found at the end of this manual for easy reproduction and use in your work with clients.

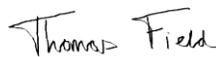
Again, we are thankful for the time you have committed to this course. We know that you all have busy practices and lives, and thus hope you will find this course to be a valuable use of your time. Here's to a great training, and remember, ride the wave!

Sincerely,

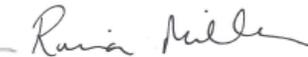
Team Neuro



Dr. Eric Beeson



Dr. Thom Field



Dr. Laura Jones

Dr. Raissa Miller

Table of Contents

Table of Contents.....	3
Introduction to nCBT.....	6
Chapter 1: Theoretical Foundations of nCBT.....	7
Conventional CBT.....	8
The ABCDE Model.....	8
Cognitive Distortions.....	9
Traditional CBT Thought Record.....	10
Common CBT Techniques.....	11
Common Challenges to CBT.....	13
Chapter 2: An Introduction to Neuroscience.....	16
Brain Development.....	16
Hemispheric Asymmetry.....	17
Central Nervous System.....	18
Lobes.....	18
Limbic System.....	18
The Brain in the Palm of Your Hand.....	21
Communication within the Brain.....	22
Two Pathways of Communication.....	22
Neuroplasticity.....	23
Extending from Brain to Body.....	24
Stress and Threat Responses.....	25
Adaptive Functioning of the Brain and Body.....	27
The Adolescent Brain.....	29
Chapter 3: What is nCBT?.....	30
The Waves of the ABCs.....	30
Wave1.....	30
Wave2.....	31
The Treatment Process: Riding the Waves.....	33
A: Attending to Physiological Reactions.....	34
B: Building the Brain from the Bottom Up.....	34

C: Connecting the Bottom to the Top	34
Chapter 4: Phase 1—Attend to the Physiological Reactions	36
Develop Rapport and Assess.....	36
Counselor understanding and allegiance.....	36
Counselor-client trust	37
Conduct intake assessment	38
Listening, observing, and attending to in-session physiological reactions.....	39
Assessing predominant response process and style.....	40
Evaluating your belief in the model (allegiance)	42
Counselor suggestion, salesmanship, and delivery	42
Evaluating the client’s belief in the model (expectancy)	43
Referrals for additional services	44
Conceptualize.....	44
Collaborative goal setting	45
POSERSE Goal Setting	46
Waves of the Counseling Relationship	46
Outcomes Measurement.....	47
Chapter 5: Phase 2—Build the Brain from the Bottom-Up.....	49
Wave1 Interventions.....	49
Affective Modeling.....	50
Supporting Optimal Brain Health and Reducing Neurophysiological Susceptibility.....	50
Sensory-Based Coping.....	52
Mindful Awareness	53
Anchoring.....	54
Systematic Desensitization	56
Biofeedback and Neurofeedback.....	57
Special Considerations	61
Chapter 6: Phase 3—Connect the Bottom to the Top	63
Wave2 Interventions.....	64
Connecting Behaviors and Emotions to Physiological States	64
Self-Acceptance and Compassion	66
Sensory-based Exploration and Imagery	68
Reappraisal.....	69

Exploring Implicit Schema	74
Case Closure.....	77
Chapter 7: Treatment Fidelity.....	79
Phase 1: Attend to Physiological Reactions	79
Phase 2: Build the Brain from the Bottom Up (Wave 1 Interventions)	80
Phase 3: Connect the Bottom to the Top (Wave 2 Interventions)	80
Handouts.....	82

Introduction to nCBT

The development of nCBT began when Thom and Eric were attending the 2013 conference of the Association for Counselor Education and Supervision (ACES). After attending a presentation that attempted to retrofit existing models of counseling with existing neuroscience findings, Thom and Eric began wondering what it would look like to use neuroscience findings to inform the creation of new theory. On the flight home, Eric sketched out his ideas, and the two began to conceptualize how neuroscience would inform their practice of counseling.

The nCBT approach was first presented at the 2014 annual conference of the American Mental Health Counselors Association (AMHCA), which was quickly followed up with additional presentations across the United States. During this time, Thom and Eric began collaborating with Laura to refine nCBT and establish “Team Neuro,” as they like to call themselves. This collaboration brought about a conceptual manuscript published in the *Journal of Mental Health Counseling* in 2015 and a pilot study evaluating the perceived treatment expectancy and credibility of nCBT among a small sample of clinicians and their clients that was also published in the *Journal of Mental Health Counseling* in 2016. During this time, Raissa joined the team, which solidified Team Neuro and created the opportunity to generate this nCBT treatment manual.

nCBT is the product of our attempts to use neuroscience findings to develop new theories of counseling and psychotherapy. Neuroscience is often used to justify what is already being done (e.g., brain changes during conventional CBT), but nCBT uses this knowledge to drive case conceptualization, diagnosis, treatment planning and delivery, as well as outcome evaluation. nCBT is best described as a type of *neurocounseling* that is semi-structured, multiphasic, and progressive. Before moving into the specifics of nCBT, it is important to understand the theoretical and scientific foundations that informed its creation.

Chapter 1: Theoretical Foundations of nCBT

nCBT rests upon the revolutionary work of cognitive behavioral theorists such as Albert Ellis, Aaron Beck, and many others. Since its inception, CBT has been one of the most, if not the most, researched schools of psychotherapy. There are over 6,000 articles and 250 meta-analyses that establish sound empirical support for CBT. Given this empirical support, there are elements of CBT in virtually all modern approaches including, but not limited to, Marsha Linehan's dialectical behavior therapy (DBT), Steven Hayes' Acceptance and Commitment Therapy (ACT), and even Francine Shapiro's eye movement desensitization and reprocessing (EMDR). Specific types of CBT have also emerged including trauma-focused and mindfulness-based CBT.



Alongside the evolution of CBT was a tremendous growth in neuroscience technology and research. Advanced methods of data collection provided a glimpse into the brain offering revolutionary perspectives on the human experience. The “Decade of the Brain” has come and gone, the Human Genome Project is complete, and we are now in a new era of the BRAIN Initiative, a Presidential initiative to enhance Brain Research through Advancing Innovative Neurotechnologies. This initiative has spawned a new era in the research of mental health exemplified by the National Institute of Mental Health’s (NIMH) Research Domain Criteria (RDoC), a project designed to explore the neurobiological underpinnings of the human experience to identify new targets for treatment, detect subgroups, inform treatment selection, and facilitate a more direct link of research to practice

CBT theorists have responded to this growth in neuroscience findings in several ways. Neuroscience has been used to validate the effectiveness of CBT across several

mental health diagnoses, retrofit existing models, and more recently create novel approaches to CBT. With the existing empirical support of traditional CBT and ongoing advances in neuroscience, a new generation of neuroscience-informed practice is upon us, and nCBT represents the next step in the evolution of brain-based counseling and psychotherapy.

Conventional CBT

"[Humankind] is disturbed not by things, but by the views [we] take of them."

- Epictetus

CBT is best described as a group of counseling and psychotherapeutic approaches that align with similar philosophical roots (e.g., Stoicism) and beliefs about the therapeutic process. In short, CBT postulates that a persons' emotional and behavioral experiences are the direct result of the content and structure of thoughts, beliefs, and cognitions about events, as opposed to the events themselves. Events are without meaning until we assign meaning to them by what we think about them. This thought diverged from the dominant school of behaviorism at the time that suggested emotional and behavioral responses were the result of environmental triggers alone and could be adjusted via reinforcement and conditioning. Although CBT includes elements of learning theory, the adjustment of emotional and behavioral responses occurs via an exploration of thoughts, cognitions, schemas, and beliefs, an evaluation of their rationality, and their subsequent reconstruction in a more rational, healthy manner.

Depending on the type of CBT, thoughts are labelled and categorized in many ways. Different theorists classify thoughts based upon their speed (e.g., hold/cold cognitions), pervasiveness (e.g., core beliefs), structure (e.g., schemas), salience (e.g., importance), and valence (e.g., positive/negative). Theorists also debate regarding the origin of thought (e.g., nature vs. nurture) as well as how thoughts grow (e.g., repetition, reinforcement). A key feature of most CBT approaches is the use of functional analyses of events to thoughts and consequences, typically referred to as a *thought record*. Thought records emerged from the seminal work of Albert Ellis' rational emotive behavior therapy (REBT) and Aaron Beck's cognitive therapy (CT). While nCBT integrates concepts from many conventional approaches to CBT, the seminal work of Albert Ellis' REBT serves as the foundation for nCBT.

The ABCDE Model

The crux of REBT rests on the ABC-DE analysis, which is a step-by-step functional analysis of the connection between activating events, beliefs, and consequences. According to REBT, a person encounters an activating event (A), which

activates existing beliefs (B) that cause emotional and behavioral consequences (C). For instance, a person might experience a break-up with their romantic partner that activates a number of cognitive distortions (e.g., I must have a partner to be happy and can't stand being alone) and core irrational ideas (e.g., Conditions under which I live absolutely must always be the way I want them to be, give me almost immediate gratification, and not require me to work too hard to change or improve them; or else it is awful, I can't stand it). These beliefs then lead to emotional distress (e.g., heightened anxiety) and dysfunctional behavior (e.g., unsafe sexual promiscuity).

During the psychotherapy process, counselors and clients engage in a systematic process of psychoeducation, goal-setting and homework, disputation, and restructuring of beliefs to create new emotional and behavioral consequences. For example, if a client's beliefs are determined to be irrational, then the counselor would work with the client to dispute (D) the irrational elements of the thoughts and replace them with more rational thoughts (e.g., Although I grieve this loss, I am OK; whether I am with a romantic partner or not, I commit to develop an ideal relationship with myself), thus leading to new effects (E), such as desirable emotional and behavioral consequences (e.g., less anxiety, more joy, safe sexual encounters).

Cognitive Distortions

As CBT evolved, researchers and theorists classified several categories of common irrational ideas, often referred to as cognitive distortions. Depending on the theorist, these lists can grow as large as 20+, but the typical empirically driven list of cognitive distortions includes:

Cognitive Distortion	Description
Mind Reading	Assuming others are thinking negatively about themselves
Catastrophizing	Negative predictions about the future absent of compelling evidence
All-or-Nothing Thinking	Viewing things as either-or (e.g., good-bad, right-wrong) with minimal levels of grey
Emotional Reasoning	Believing something to be true because if "feels" that way
Labeling	Labeling themselves as some kind of person
Mental Filter	Filter out the positive information while only focusing on the negative
Overgeneralization	Assuming one negative event will lead to more bad things happening
Personalization	Assuming one is the cause of a negative event, even if they are not

Should Statements	Thinking things should or must be a certain way
Minimizing or Disqualifying the Positive	Ignoring positive things that happen
<i>Source.</i> Covin, Dozois, Ogniewicz, & Seeds, 2011	

We have also included an open-access ***Unhelpful Thinking Styles*** handout available from <http://psychologytools.com/> that you might find useful in your practice.

Finally, Dr. Aldo Pucci, creator of Rational Living Therapy created the Rational Thinking Score questionnaire that can be accessed for free at: <http://www.rational-thinking-score.com/>

Conventional CBT follows a similar process of treatment. There is an initial time of psychoeducation followed by activities to elicit thoughts and beliefs, such as thought records and imaginal exposure, as well as practice the new skills being learned. Once thoughts are activated, the counselor and client then evaluate, dispute, and restructure thoughts in hopes of creating more desirable emotional and behavioral experiences. CBT typically includes considerable “homework” and behavioral experiments outside of the counseling session that clients complete, document the process using thought records, and then review at subsequent sessions. In general, conventional CBT is typically more active and directive than other models of counseling and psychotherapy.

Traditional CBT Thought Record

As we mentioned, the thought record is a traditional component to CBT. Let’s take a look at the *Traditional CBT Thought Record* handout that we have synthesized from several examples from REBT, CT, and Rational Living Therapy. Initially, you could use this form in session until the client is familiar with the process, at which point they can begin to complete this form in between sessions. Clients can first focus on simply recording their ABCs and then gradually practice new thoughts and new consequences.

If using *Traditional CBT Thought Record*, you can use these steps as a guide:

1. Identify the A:
 - a. Explore what the client was aware of. This can be people, places, things, situations, etc.
2. Identify the B:
 - a. Explore what the client thinks about their A.
3. Identify the C:
 - a. Explore the emotional and behavioral consequences of B.

4. Identify the client's goals in this situation.
 - a. What would the client prefer to happen in this situation? What would they want to happen if they could go back in time? What do they want to happen next time they encounter a similar situation?
5. Evaluate Rationality and Dispute using Aldo Pucci's Rational Questions:
 - a. Is the client's thinking based on fact? Could they prove it in a court of law? What would a camera show if it was recording the A?
 - b. What cognitive distortions were present?
 - c. Does the client's thinking help accomplish their goals?
 - d. Does the client's thinking help them feel the way they want to?
 - e. Does the client's thinking help them do the things they want to do?
6. Identify the new Bs:
 - a. For each B that does not "pass" the Rational Questions, create a new restructured thought?
 - b. Ensure the new Bs also "pass" the Rational Questions.
7. Identify the new Cs:
 - a. What does the client feel and do when thinking the new Bs?

Although this example used past situations in which the client was aware of, this handout can also be used focusing on current and future events depending upon the needs of the client. Regardless of the A being used, it is imperative to practice the new Bs and ensure the desired Cs are present.

Common CBT Techniques

One of the benefits of CBT is its concreteness in process and skills. The concepts of CBT are easy to operationalize and thus easier to study, which is likely one reason that CBT has so much empirical support. Although not exhaustive, the *Common CBT Techniques* chart lists several commonly used CBT techniques.

Technique	Description
Thought records and diaries	Tracks and analyzes the process of how events activate thoughts that lead to emotional and behavioral consequences.
Experiments	"Tests" new thoughts and behaviors to assess their impact on consequences.
Analogy/Metaphor	Indirectly introduces new ways of thinking and behaving.
Countering	Directly challenges the rationality of thoughts; ranges on a continuum of directiveness and forcefulness
Socratic method	Type of dialogue between client and counselor based on asking and answering

	questions to stimulate critical thinking and to draw out ideas and underlying assumptions.
Camera check of perceptions	Client vies the event as if they were a camera (e.g., What would a camera show in this situation?).
Flooding	Client thinks as many thoughts as possible, regardless of their rationality.
Desensitization	Systematic process of exposure to aversive events while practicing rational thoughts.
Paradox	Counters client statements like “I can’t stop thinking that way” by encouraging an experiment to think those thoughts more.
Letters to self	Client writes letters to self at various points (e.g., past, present, future) to identify current thought patterns as well as desired alternatives.
Acting as if	Client acts as if they already believe new thought patterns.
Classical conditioning	Rewarding stimuli are paired with new thoughts, anchors, etc. to reproduce desired effects.
Operant conditioning	Desired behaviors are reinforced and less desired behaviors are extinguished.
Visualization	Clients visualize themselves in scenarios thinking, acting, and feeling in the desired manner.
Unconditional self-acceptance	Client unconditional accept themselves no matter what.
Thought stopping	Forceful interruption of recurring thought patterns.
Mindfulness	Nonjudgmental noticing of thoughts, feelings, and behaviors.
Progressive muscle relaxation	Client monitors tension and then deliberately induces tension and release to notice the difference.
Bibliotherapy	Assigning books, worksheets, etc. to reinforce CBT concepts.
Downward arrow	Socratic process of exploring underlying components of each thought (e.g., what would that mean, if that were true, what would happen next, etc.)
Pleasurable activity scheduling	Client plans for pleasurable events, recording anticipating effects and then actual effects after performing the events.

Common Challenges to CBT

Despite the empirical support of CBT, there are many common challenges that clinicians face when practicing CBT.

- **Assigning blame:** Clients often hear messages such as “think positively” and “if you just think positively, you wouldn’t be feeling this way.” This is often interpreted as judgement, which leads to self-judgement and can produce a sense of learned helplessness if the attempts to “think positive” do not have the desired results. During CBT, the client might transfer these earlier experiences onto the counselor during disputation and cognitive restructuring leading to a rupture in the therapeutic relationship. Counselors might also experience a countertransference response and project blame onto the clients when the cognitive restructuring does not seem to be working. To address this concern, remember that people think certain ways for a reason, and it is typically not because they just enjoy thinking the way that they do.
- **Mislabeling thoughts as “feelings”:** From a traditional CBT approach, it is important for counselors and clients to accurately label thoughts and feelings. At times, both tend to confuse the two. For instance, a client might say, “I feel like no one loves me,” when in fact this is a thought or perception of an event. It would be more accurate to say, “I think no one loves me,” which then might result in the feeling of sadness. Feelings are typically more difficult to influence; therefore, if thoughts are mislabeled as feelings, then they also become more difficult to change. Try this simple formula: if you can replace feel with think, then it is probably not a feeling (e.g., I feel like nobody loves me or I think nobody loves me).
- **Leaving thoughts incomplete:** Often, counselors work with incomplete thoughts. A client might say, “My wife is going to leave me.” A well-intentional CBT clinician might label this as the cognitive distortion of *fortune telling* or *jumping to conclusion* and proceed with disputation. However, this thought is incomplete. The client might think, “My wife is going to leave me, and that would be great because I have felt too guilty to end it myself.” Be sure to resist presumptions and explore the meaning that each thought holds for the client.
- **Focusing on surface thoughts:** Like incomplete thoughts, we might also focus on surface thoughts (e.g., my wife is going to leave me, and that would be a great thing...) rather than the deeper core beliefs and underlying assumptions (...there always has to be something better than can make my life even more perfect and desirable). Surface thoughts are specific to a singular event whereas

core beliefs transcend events and are pervasive across contexts. Be sure to keep the narrative going until the core beliefs emerge. You will know this either when the client starts to repeat themselves, you notice patterns across contexts, and/or they are associated with life/death. The downward arrow technique can be very helpful to do so.

- **Evaluation of helpfulness without wants/intentions:** What is helpful in one scenario may not be helpful in another; so, it is important that each time we are evaluating thoughts, that we have a clear desired outcome in mind; this aids tremendously in helping clients evaluate their thoughts. If you know what a client wants, then you can evaluate thoughts based upon the effectiveness of getting what they want.
- **Disputing without restructuring:** Often, clients and counselors are good at identifying the irrationality of their thinking. You might hear things like, “I know it is irrational, but I keep thinking it anyway.” Therefore, it is important to work with clients to create alternative thoughts and continue to evaluate the new thoughts with the same degree of evaluation. For instance, how effective are the new thoughts in helping the client attain what they want?
- **Using less helpful replacement thoughts:** As previously noted, it is important to create helpful replacement thoughts. Sometimes, clients create optimistic thoughts (e.g., It will work out...be OK); however, at times, these thoughts are just as unhelpful as the alternative. Ensure that replacement thoughts also pass the “rational questions” and help the client attain the things that they want.
- **Counselor irrationality:** Let’s face it, we all have our own degree of irrationality at times. The core of CBT rests on separating thought into categories of rational and irrational. This creates the classic cognitive distortion of dichotomous thinking that can foster an all-or-nothing mentality rather than a continuum. Evaluating helpfulness or rationality on a continuum provides more options for clients to alter their thoughts, or think differently, rather than just thinking positively or rationally.

CBT is a top-down approach to counseling, which means that counseling relies upon cortical regions of the brain to exert regulatory power over the subcortical regions. This approach assumes that the client has the neural capacity to enact such control; that a client is consciously able to access the beliefs leading to the consequences. Conventional CBT requires the ability to think before acting, and treatment is focused primarily, if not exclusively, on restructuring thoughts once they are brought into

conscious awareness. In our clinical experience, we found that this model, while effective in some cases, had limitations and often led to a new set of challenges (e.g., self-doubt, learned helplessness). Clients would share stories about how their emotional and behavioral consequences often happened long before they were aware of them. Clients said things like:

- “I don’t know what I was thinking; it just happened.”
- “I tried to think positively, but it didn’t work.”
- “It was almost like I blacked out.”
- “It was almost like I was outside of my body.”
- “It just came over me like a wave; there was nothing I could do.”

Little did we know at the time, but these comments were evidence of emerging neuroscience principles that would significantly change the way we viewed these clinical scenarios.

Chapter 2: An Introduction to Neuroscience

Neuroscience findings in recent decades have significantly altered the way we view the human experience. These new conceptualizations have drawn into question longstanding ways of understanding and working with mental health. It is from this new information that nCBT has been developed. The coming sections of this manual will explore some of the foundational and innovative findings in neuroscience and related physiology that have influenced the development of nCBT.

Brain Development

To have a good understanding of how and why the brain functions as it does and how this in turn impacts theories of mental health, we must first look at how the human brain develops. When we think of the development of the human brain both evolutionarily and following conception, one guiding principle is that the brain develops from the inside out and bottom-up, so the brainstem and those structures at the base of the brain and closest to it are the first to develop. These areas, known as the hindbrain, control our most basic functions, such as breathing, heart rate and sleep, which are needed to keep us alive at a very fundamental level. From here, structures in a small center region of the brain, known as the midbrain, begin to form. The last area to develop and specialize is the forebrain, which includes the cerebral cortex (folded, pink outer tissue of the brain) and the subcortical (below the cortex) nuclei and structures just below this area. The subcortical structures of the forebrain primarily function in memory, emotional responding, and threat responses (or the responses needed for us to detect and respond to threat in our environment).

These subcortical regions, which essentially help us learn from and adapt to our environment, become more fine-tuned in their development and function earlier than does the cortex. The cortex is divided into four structurally and functionally distinct areas or lobes and is responsible for a range of functions, including higher order thinking and our ability to distinguish and understand all of our senses. The prefrontal cortex is the very front part of our brains, just behind the forehead, that is the central command center of our brains. Just as the executive of a company regulates all of the affairs of the company, so does the prefrontal cortex. It's involved in important functions such as decision making, judgement, and emotion regulation, and does not fully develop until roughly the age of 25. During one's life course, there are also several key periods of more prominent brain development, most notably prenatally, during infancy and early childhood, and adolescence. Even outside of these periods, however, the brain is continually changing but generating new neurons (brain cells), developing or strengthening connections between neurons, or weakening or extinguishing these

connections. This pathway of development is important in understanding not only developmental perspectives in counseling but also helps to explain what happens when our clients are emotionally or behaviorally triggered or feel intense emotions, particularly threat or fear. We will first examine some of the specific cortical and subcortical structures of our brain and then discuss how the brain and body respond in situations of threat, fear, or pleasure seeking.

Hemispheric Asymmetry

The brain is divided into two hemispheres, the left hemisphere (LH) and the right hemisphere (RH). In most people, the LH controls the right side of the body and the RH controls the left side of the body. Popular science has tended to oversimplify the differences between the two side of the brain, leading to many misuses and applications of laterality. Research in split-brain patients and neuroimaging do support the notion of differences, however, and these differences can impact individuals' functioning and the therapeutic process in significant ways. The LH and RH mediate and/or play different primary roles in brain functioning, most notably the two hemispheres perceive the world in very different ways. The two hemispheres also develop at different times, the RH develops during the first 18-30 months and the LH develops beginning around 24 months. Iain McGilchrist provides a comprehensive review of these differences in *The Master and His Emissary: The Divided Brain and the Making of the Western World*. A summary of typical RH and LH functions is provided in the table below.

LEFT	RIGHT
Sees the parts (text) – focused on details	Sees the whole (context) – focused on overall meaning and patterns
Linguistic - gives words to felt sense	Nonverbal aspects of language communication (e.g., tone and prosody of voice) – felt sense; integrates information from the body
Individuated doing	Relational being
Logical and linear (categorizes perceptions based on prior experience)	Visual/spatial processing (sensations and images)
	Critical role in affect regulation
Factual/semantic memory	Autobiographical memory
Lists	Metaphor

In reviewing the table above, you may note that much of the work of counseling occurs in the realm of the RH, especially in work with individuals who have trauma histories and/or struggle with healthy attachments. Insecurely attached caregiving relationships in early childhood, as well as traumas throughout the lifespan, particularly

impact development of the RH, leading to problems with threat appraisal and emotional regulation. Clients presenting with these concerns have no words to describe their experience and thus LH modalities (e.g., traditional talk therapy) that rely on top-down processes are often ineffective. Counselors instead must rely on the attuned therapeutic relationship focused in the here-and-now experiencing (i.e., authentic right-brain to right-brain connections) and experiential-based approaches to help heal and integrate the RH.

Central Nervous System

Although reviewing the entire brain is outside of the scope for this manual, we wanted to introduce you to a few of the cortical and subcortical regions of the brain that will be helpful to better understanding nCBT and describing the rationale for nCBT to clients. Let's start with discussing some key cortical structures.

Lobes

The cortex of the brain is divided into two hemispheres, the left and right, which are connected by a thick band of fibers known as the corpus callosum. Within each hemisphere, you have four analogous lobes, namely the occipital, parietal, temporal and frontal lobes. The **occipital** lobes are involved in visual processing; the **temporal** lobes govern hearing, smell, aspects of memory, and linguistic comprehension; and the **parietal** lobes support our sense of touch, orientation in space, spatial relationships, and somatosensory processing. As mentioned previously, the **frontal** lobes govern emotional control, self-awareness, motivation, problem solving, judgment and planning, initiation, speech, and social processing. The **prefrontal cortex** in particular helps to regulate the rest of our brains, including subcortical structures of our emotional limbic regions and in that even our autonomic nervous system (i.e., division of our autonomic nervous system that innervates our bodily organs and certain tissues, such as the heart, lungs, stomach, and intestines).

Limbic System

There are also some key structures internal to the cortex that are important to highlight in our discussion of nCBT. Up from the brain stem and toward the center area of the brain is a network of functionally connected brain structures known as the limbic system. Although technically part of the forebrain, this region is more evolutionarily primitive than the cortex and helps us emotionally respond to and stay safe in the world. For simplicity purposes, it can be thought of as the emotional framework of our brains. Some of the key structures in the limbic system are the thalamus, hippocampus, amygdala, cingulate cortex, basal ganglia, and olfactory bulbs.

The **thalamus** serves as the primary relay station of the brain. A common analogy for the thalamus is grand central station. Everything that comes into the brain from the outside world or the brainstem passes through the thalamus and the thalamus steers it in the right direction.

The **hippocampus**, whose name comes from the Greek word for seahorse, is involved in forming (or *consolidating*) long term memories, particularly declarative or explicit (i.e., fact based) memories. Other areas of our brain, such as the amygdala and cerebellum, are more involved in emotional and implicit (e.g., priming, simple classical conditioning, reflexes) memory, a theory founded on work by Larry Squire.

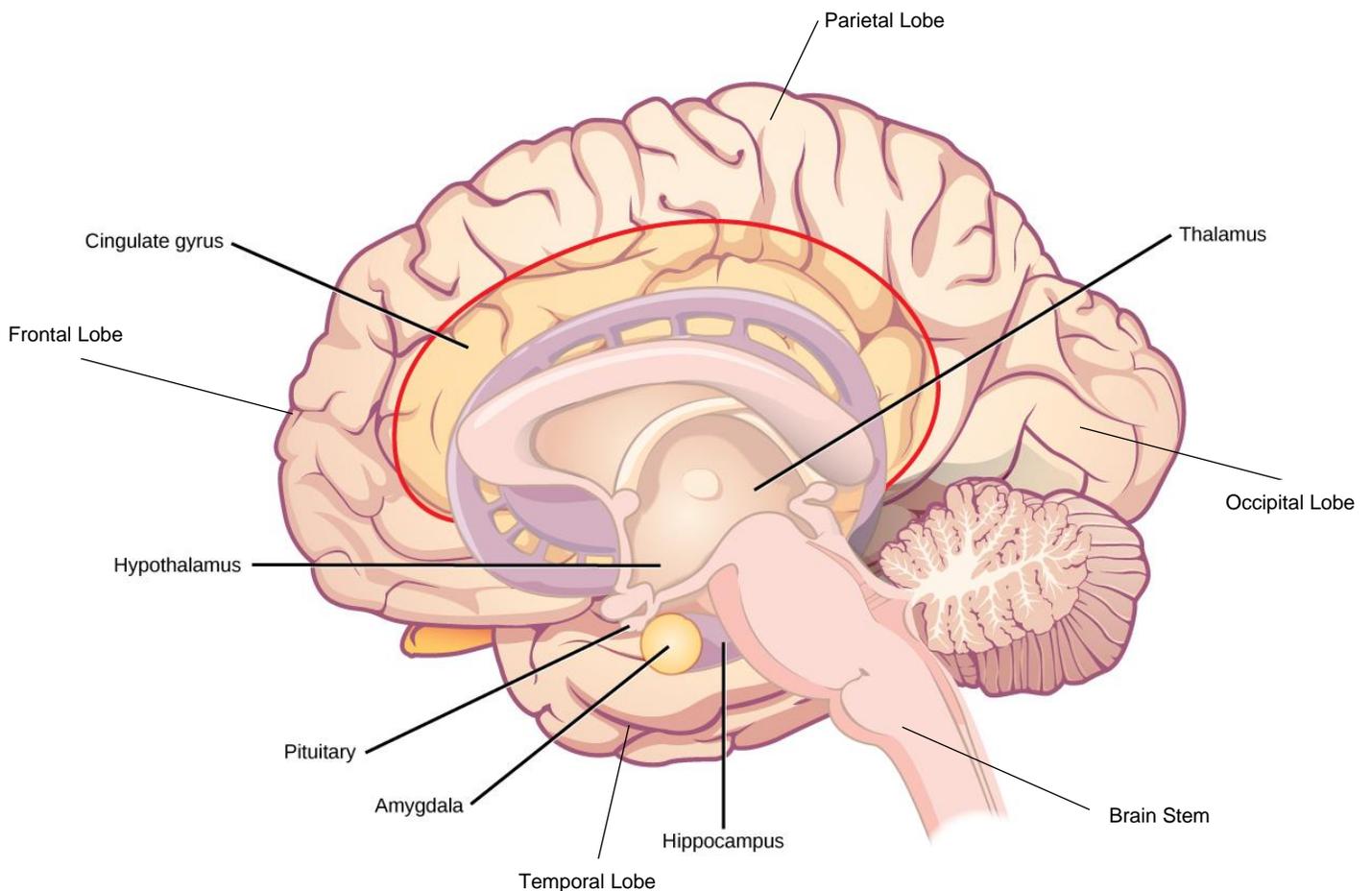
The **amygdala** serves as the threat response center of our brains. The major role of the amygdala is recognizing the significance of stimuli (e.g., facial affect, vocal tone, etc.) and determining if we need a threat response. Although, typically thought of as the nexus for anger and fear, the amygdala instead simply sounds a bodily alarm for anything we feel a sense of threat from our internal or external worlds. It tries to keep us safe and tells our bodies when to gear up into action in order to adapt to our surroundings. The amygdala also supports implicit memory, specifically emotional and classical conditioning. In this way, we can have an emotional memory that can be separate from our concrete memories of situations and of which we are not entirely aware.

The **cingulate cortex** is one of the paralimbic (i.e., adjacent to the limbic system) structures and follows the line of the corpus callosum (or thick band of fibers that connect the two hemispheres of the brain). It is often considered the highway between our emotional and our thinking brains. The cingulate cortex also serves many functions, including roles in learning, memory, emotional processing and regulation, and reward, and is usually considered to comprise two functionally different regions, the anterior (most front part) cingulate cortex (ACC) and posterior (most back part) cingulate cortex (PCC). More is known about the function of the ACC, which plays a role in emotion regulation, empathic responding, and socially driven interactions.

The **basal ganglia** is a coordinated set of subcortical nuclei that function primarily in motivation, implicit learning, working memory, and automatized responses.

Lastly, the **olfactory bulbs**, which govern our sense of smell, are the only sensory input with a direct link to our limbic system. This anatomical organization led Rachel Herz and colleagues at Brown University to determine the “potent” role of smell in our ability to recall emotional memories. Smell is one of the most potent emotional triggers.

Two other structures that are at times included in the limbic system but are more often thought of as functioning independently from it are the hypothalamus and the pituitary gland. The **hypothalamus** is an almond shaped structure in the brain that serves as a connection between our endocrine system, which governs hormone production, and our nervous systems. It is involved in energy metabolism, appetite, thirst, temperature regulation, sleep, stress responses, immune responses, and reproduction. In this way, it helps to keep our bodies in balance and is involved in homeostasis or better yet allostasis, or the continual fluctuations in functioning that help the body and brain respond to not only present changes or challenges, but those that are anticipated in the future as well. The **pituitary gland** is the pea shaped master gland of the body that is directly connected to the hypothalamus. It controls the adrenal and pituitary glands and is very active in sex hormone production and is an essential component in our body's response to stress.



The Brain in the Palm of Your Hand

In an effort to help individuals visualize the basic structures of the brain, Dan Siegel developed a now popular illustration and activity called the Hand Model of the Brain. In this activity, clients are asked to hold up one of their hands, fold in their thumb, and then fold their other four fingers over their thumb. The wrist/palm area is roughly labelled the brainstem, the thumb area the limbic region, and the fingernails folding over the thumb the prefrontal cortex. Dominant functions of each of those broad regions are described below, as well as basic principles of brain development (e.g., bottom-up; back-front). The brainstem is the first structure to develop, beginning in utero. This region mediates states of arousal, temperature, respiration, heart rate, and aspects of the fight-flight-freeze threat response. The processes of this region usually occur without much conscious thought or intentional action. After birth, during infancy and early childhood, limbic region brain structures are the major focus on neural organization and development. Bruce Perry, in writing about The Neurosequential Model of Therapeutics, noted that the limbic region plays an important role in mediating emotion, motivation, and goal-directed behavior, as well as in the integration of memory and the engagement of an attachment system. Finally, the cortex region, specifically the prefrontal cortex region, is the last area of the brain to develop. This region plays a salient role in integrating information from the brainstem and limbic regions, inhibiting these subcortical impulses, and initiating executive functions (e.g., concentration, reasoning, long-term thinking and planning, and so forth). This part of the brain is the slowest to develop and myelinate, often not reaching full maturity until late in the 20s.

Siegel's recorded teaching of the Hand Model of the Brain (http://www.drdansiegel.com/resources/everyday_mindsight_tools/) is a useful option to consider when counselors are less confident of their abilities to describe neuroanatomy but still want to share the information and integrate it into therapeutic discussions. As counselors become more confident in their abilities to explain the Hand Model, they can tailor specific explanations to the unique needs of clients.



Communication within the Brain

The various regions of the brain interact with one another by way of specialized brain cells known as neurons. We have somewhere in the neighborhood of one billion neurons in our brain, all of which connect to about 10,000 others. This means we have over 100,000 trillion synaptic connections (where neurons come together and relay messages in the brain), which are constantly forming, being extinguished, or increasing or weakening in strength based on internal or external experiences. Neurotransmitters or chemical messengers in the brain are transmitted between neurons, and influence the functioning of various areas of the brain and body.

Two Pathways of Communication

Given that the brain developed from the inside out and bottom up, it has the ability to process information and situations in multiple ways. We can either gather direct information from our senses and bodies to interpret and respond to the environment (bottom-up processing) or we can rely on our previous knowledge, expectations, and experiences to dictate how we interpret and respond to our environments (top-down processing). These differing methods of interpreting situation and processing information are controlled by different regions of the brain.

Top-down mechanisms rely on higher cortical areas – our “thinking” brains – to help us to put the information that we have into context and compare it to previous situations. In essence, we think through the situation before we make a judgement and respond.

Bottom- up processing on the other hand relies on more sensory, autonomic, and limbic areas to help us directly experience what we are trying to interpret. It does not rely on previous experience or knowledge.

These differing ways of interpreting and responding to our environment are both beneficial and can influence one another. The way that we think about something can directly impact how we experience it. Conversely, information from our bodies and senses can bias our previous understanding of situations. Also, certain experiences can lead us to rely more on one method of processing than another.

Situations of extreme stress or experiencing physiological triggers, times during which we are not able to optimally engage our prefrontal cortex to regulate our emotions or level of autonomic arousal, we rely more heavily on bottom-up processing, and as such are not consciously thinking through the situation and relying on previous

knowledge and experience before we respond. We simply interpret the environmental cues coming in from our bodies and sense and respond directly to those cues.

Neuroplasticity

For much of the last century, scientists adopted a fatalistic view of neurological growth, believing that no new neural growth can occur once individuals reach a certain age. This “theory of the unchanging brain” has since been abandoned in light of overwhelming evidence that experiences can initiate reorganization and growth in the brain throughout the life span. This process is referred to as *neuroplasticity*, and essentially is all of learning and memory. Counselors benefit from understanding neuroplasticity and then sharing that knowledge with clients to encourage particular behaviors inside and outside of the counseling room that enhance therapeutic growth.

In the 2012 second edition of *The Developing Mind*, Siegel outlined four fundamental ways experiences can change the structure and function of the brain: (1) synaptogenesis, (2) myelinogenesis, (3) neurogenesis, and (4) epigenesis.

Synaptogenesis refers to the creation of new neural connections or the strengthening of existing connections. **Myelinogenesis** is the process in which an insulating sheath is laid down along interconnected axons allowing for quicker neural processing.

Neurogenesis is the term used to describe the differentiation of neural stem cells into fully mature neurons. And finally, **epigenesis** describes the turning off or on of genes based on individuals’ environmental influences. One additional way that the connections can change is by weakening or extinguishing connections. This is exemplified by situations when we *learn* to break repetitive or automatic thoughts, emotions, or behaviors. This experience-dependent nature is a fundamental principle of brain development.

Individuals’ brains are most plastic (i.e., malleable) during early childhood and adolescence. During these sensitive periods in development, internal or external experiences have a disproportionate influence on developing neural pathways and networks. In general, neuroplasticity follows the “use it or lose it” principle. Neural networks that are regularly activated will be strengthened and neural networks that are irregularly activated will be pruned. Experiences with heightened emotional salience and experiences that occur frequently particularly influence neural architecture.

Enriched environments and stimulating lives contribute to increased neuroplasticity, supporting change efforts. Researchers have identified certain activities that enhance neuroplasticity, allowing for greater openness to new learning and reorganization of neural networks. These activities are further described in the Wave 1 handout titled ***Supporting Optimal Brain Health and Preventing Neurophysiological Susceptibility***.

Extending from Brain to Body

The brain is connected to the lower body through the brain stem and spinal cord, and primarily exerts its effects on the body (and vice versa, body on the brain) both directly and indirectly by way of the **autonomic nervous system** (ANS). The ANS regulates organs and tissues of the body such as the heart, lungs, electrodermal activity (sweating palms) and the digestive track. It contains two primary branches, the **sympathetic** (SNS) and **parasympathetic** (PNS) nervous systems. These are functionally complimentary systems, meaning that they lead the various tissue and organs to work in opposing ways, meaning that if it's the SNS' job to speed up that system, then it's the PNS' job to slow down.

For example, activation of the SNS causes our heart rate to increase, speeds up our breathing, dilates our pupils, and slows functioning of our digestive track. The PNS on the other hand slows our heart rate and breathing, constricts our pupils and speeds up our digestive functioning. When not in a state of stress or distress, the body is experiencing a relatively balanced autonomic state, where it moves easily shifts between parasympathetic and sympathetic states to address the body's primary needs in the given moment (e.g., digestion, physical exertion, etc). The SNS is activated primarily by way of catecholamines from the adrenal glands, which sit above the kidneys. The functioning of the PNS, on the other hand, is governed by one of our nerves extending down from our brains (known as cranial nerves), specifically the vagus nerve.

The vagus is also thought to have two divisions, namely the dorsal (toward the top) vagal and ventral (toward the bottom) vagal systems. This stems from a theory by Stephen Porges who stated that the autonomic nervous system developed evolutionarily in such a way as to best support and maintain healthy social interaction. Following this line of thinking, the **ventral vagal** branch governs what Porges called the social engagement system, which represents one's optimal level of autonomic arousal.

For example, if an individual's ventral branch is most engaged, this individual is able to optimally use muscles in the inner ear to parse out human voice from background noise and best notice inflections in human speech that may communicate social connection. Similarly, functioning from this relaxed but engaged state allows an individual to optimally control the larynx and muscles of the face to communicate connection. Conversely, if one is primarily functioning from their dorsal vagal system, they are in an extreme hypoaroused autonomic state represented by dissociative features, numbing, and immobility or a freeze response.

System	Effect on Body	Arousal Level	Associated Response
Sympathetic Nervous System	Increased heart rate; Increased respiration; Dilated Pupils; Decreased digestion; Increased glucose production	Hyperarousal	Fight or Flight
Ventral Vagal Branch of the Parasympathetic Nervous System	Decreased heart rate; decreased respiration; constricted pupils; facilitates digestion; slows glucose production; facilitates social engagement	Optimal Autonomic Arousal	Social Engagement System - Engaged, Rest, Digest, and Relax
Dorsal Vagal Branch of the Parasympathetic Nervous System	Significant decrease in respiration and heart rate; dissociative collapse, immobility	Extreme Hypoarousal	Freeze

Stress and Threat Responses

You will notice in the table above that each of the autonomic states is associated with a particular response of the body. Three of those states, Fight-Flight-Freeze, are commonly thought as responses to threat or stress in the environment. In line with theories by Hans Selye, experiencing mild levels of stress for shorter periods of time can be very adaptive and helpful to our motivation, memory, and performance. Think of the stress of deadlines or the stress that comes with performance. It gears our bodies up for executing the needed action as best we can. Even in situations of extreme life stress, our body's response is highly adaptive by nature.

Think of situations in which you have experienced acute fear. Your sympathetic nervous system kicks into gear, and your heart starts beating faster, you start breathing faster, your body starts producing glucose. Your body is starting to function in the most optimal way possible to ensure your survival. The muscles are engaging ready to work, your body is producing fuel to help feed your muscles and body, etc. There is no energy wasted on unnecessary functions that will not help to keep you alive in that specific moment, such as digestion or reproduction. You are not stopping to carefully think through all possible options, which would engage higher, more evolutionarily recent areas of the brain, such as the frontal and prefrontal cortex. Pausing to think

would waste time from a survival standpoint when split seconds can mean the difference between life and death. The more primitive and instinctual areas of your brain are driving your actions and functioning.

Our response to stress and activation of our SNS follows a two-tiered process, both pathways of which are initiated by the hypothalamus, which receives threat signals from the amygdala.

The first tier is called the **sympathetic-adrenal-medullary** (SAM) axis, which directly activates our sympathetic nervous system. The hypothalamus sends messages to the pituitary gland which then tells the center (medulla) of our adrenal glands to release epinephrine (adrenaline) and norepinephrine. These initiate the sympathetic response.

The second stage of our stress response includes functioning of our **hypothalamic-pituitary-adrenal** (HPA) axis. Again, in this axis, the hypothalamus activates our pituitary gland, which then tells the outside (cortex) of our adrenal glands to release cortisol, one of our primary stress hormones, which regulates glucose in our bodies, helps to fight infection, and increases fat stores. During activation of the HPA axis, our bodies also release endogenous opioids, or essentially pain killers. This makes sense given that if you are running or fighting for your life it would be helpful to not feel the pain of injuries incurred the process.

When fleeing or fighting are not possible alternatives in a threat situation, our dorsal vagal response (our most primitive) system kicks in and we freeze, becoming immobile and dissociating from the experience. Essentially the body cannot sustain the sympathetic response and the system collapses. Again, during such acutely stressful or threatening situations, our frontal and prefrontal cortices, whose job it is to regulate emotions and logically think through situations, become less active. So it can be challenging in these situations, especially when we are unaware of what is causing us to feel unsafe or threatened, to think ourselves out of this adaptive survival response and calm our systems. The sympathetic nervous system is very quick to respond but takes longer to calm.

Under normal stress conditions, when the body again feels safe or free from harm, the adrenal glands send messages up to our hypothalamus, which tell it to stop firing, that the system has enough cortisol and no longer needs the energy and protection. The parasympathetic nervous system then kicks into gear to start calming our system and our frontal and prefrontal cortices begin to function in their optimal regulatory manner. Again, this process is our body's natural allostatic process.

However, if that stress or threat, real or perceived, is significant or pervasive, or if we experience posttraumatic stress, the body remains activated, and continues to release cortisol, epinephrine and norepinephrine. We are in a constant state of hyper or hypo arousal, or perhaps are fluctuating between the two. In such situations, our immune system, autonomic functioning, and emotion regulation capabilities can all become impaired, as we are essentially exhausting our system. It can also affect memory consolidation. Threatening situations can lead to conditioned responses and implicit memories of events, people, or actions, which are outside of our explicit awareness. In such situations, it is difficult to optimally engage our prefrontal cortex to help us to make rationed decisions or judgments of how best to respond. Our higher order thinking brains aren't even aware of why the lower, survival brain is responding. This is the experience of being triggered. Your body starts responding to a cue without their being time to think through it.

If you recall Siegel's Hand Model introduced previously, a component of the Hand Model exercise includes a discussion of "flipping the lid." This metaphor is used to describe what happens in the brain when the prefrontal cortex is unable to inhibit subcortical (e.g., brainstem and limbic) surges due to heightened levels of stress and/or a poorly developed cortex resulting from trauma, substance use, or other conditions. This exercise can be used to help explain part of what happens when clients make progress in cognitive and behaviorally oriented therapies, primarily impacting cortical level processes, and then suddenly regress during times of elevated stress. Encouraging practices that help strengthen the cortex, such as aerobic exercise and mindfulness meditation is essential, as well as teaching strategies for calming physiological arousal (e.g., breath awareness, peripheral biofeedback), in order to help prevent limbic override. However, often, just helping clients visualize what is going on in their brains during such instances of elevated stress can help clients to regulate.

We have also included an open-access ***Fight or Flight*** handout available from <http://psychologytools.com/> that you might find useful in your practice.

Adaptive Functioning of the Brain and Body

As mentioned earlier, the brain is an incredibly adaptive organ. It is useful to consider how client's presenting symptoms and/or behaviors may be serving some conscious or unconscious protective function. Although many internal and external factors influence this adaptive process, the core goal of survival, moving towards perceived pleasure and away from perceived pain, is the most agreed upon and primal way of explaining adaptive behavior. The brain helps individuals accomplish the goal of survival by taking in the world, observing how others survive and get their needs met,

and then using past experiences to predict future outcomes.

The goal is to become better, faster predictors of perceived pleasure gained or threat avoided. As individuals age, thinking, feeling, and acting become more and more automatic and efficient. Neural wiring becomes deeply engrained into habitual ways of interacting with self and the environment. Although this automaticity can be helpful in many situations (e.g., walking, driving, studying), early learning that occurred in toxic, chaotic environments can lead to ways of interacting with self, others, and the world that prove unhelpful later in life. Individuals' early experiences tend to have the greatest impact on the adaptive process, however, events individuals perceive as life threatening can leave a neural imprint that alters what they perceive as necessary for survival.

Another way of framing individuals' adaptive nature towards survival is through the concept of safety. Steven Porges noted that humans have adaptive neurobehavioral systems for both prosocial and defensive behaviors; the degree of safety individuals perceive from the environment greatly influences the type of behavior individuals engage. The nervous system is continually assessing risk and either inhibiting or promoting the protective instincts to fight, flight, or freeze. From this perspective, problematic behaviors result when biology and/or early experiences lead to faulty assessment (e.g., hypervigilance and/or overestimation of risk) or an inability to inhibit and/or activate defense systems when appropriate.

Because survival usually requires some degree of group membership, belonging is a close second to survival in the adaptive process. One of the theories that best explains individual's efforts to belong, and thus survive, within social environments is attachment theory. Attachment theory was developed before contemporary neuroscience; however, neuroscience research supports this social-emotional developmental theory based on evidence that healthy brain development relies on nurturing, predictable, and safe relationships with significant others. Most individuals develop attachments with a few early caregivers along a secure-insecure continuum. These attachment relationships are internalized as aspects of implicit memory, influencing perception, emotions, bodily sensations, and behavioral response patterns. Attachments styles are adaptive in that individuals develop internal and external responses that best help them connect with their caregivers, meeting the innate human need for connectedness and belonging, or cope with the emotional response of those needs not being met.

Researchers found that secure attachments are associated with neural structures promoting emotional regulation, fear modulation, attunement, insight, self-understanding, empathy and morality. Insecure attachments are associated with poor

emotional and social intelligence, executive functioning, and stress modulation.

The fact that our brains are adaptive organs and develop in such a way to get basic survival needs met can be a useful explanation for behavior that otherwise seems confusing or problematic in the present circumstances.

The Adolescent Brain

Adolescents are in a particularly unique stage of brain development. During this time, particularly early adolescence, the limbic regions of the brain are developing at a much faster rate than that of the prefrontal cortex. Keep in mind that the prefrontal cortex or executive control center of the brain is not fully formed until roughly age 25. In this way, their limbic regions are quite responsive to their environments but they do not yet have full capacity of the regulatory areas of their brains to keep the areas of their brains that respond to intense emotions – threat, pleasure, thrill - in check. This explains a lot of the impulsivity, lability, and reactivity typically seen in adolescents. Similarly, to the situations of triggering presented above, they may not always be able to provide “rational” explanations for their emotions or actions. However, this is not meant as an excuse or to say that adolescents are “doomed”. Quite the opposite, this can be seen as a peak time for helping adolescents to learn external means of regulating their emotions and autonomic responding. Such skills will only continue help them as they get into adulthood.

Chapter 3: What is nCBT?

Grounded in the existing empiricism of CBT and emerging neuroscience findings, nCBT was born. nCBT is a semi-structured, multiphasic, and progressive approach to neurocounseling that is grounded in a novel conceptualization process known as the *Waves of the ABCs*, subsequently referred to as the *Waves*. The *Waves* model uses neuroscience evidence regarding the neurobiology of thoughts, emotions, and behaviors to extend the traditional ABC-DE analysis of Albert Ellis' REBT.

The *Waves* consists of two distinct brain processes, named *Wave1* and *Wave2*, that parallel with the top-down and bottom-up processes reviewed previously. Although only two waves are described, it is important to remember the complexity of the human experience cannot be broken down into two waves alone. Like ocean waves, the *Waves* manifest repeatedly, at a very rapid pace, and often outside of an individual's conscious awareness. *Wave1* and *Wave2* are simply used as a snapshot of the information processing that occurs at any given moment resulting in feelings, behaviors, emotions, and thoughts. The *Waves* model guides case conceptualization in nCBT and also serves as foundational neuroeducation to be reviewed with clients (see ***The Waves of the ABCs*** handout). Let's look at the *Waves* in a little more detail.

The Waves of the ABCs

Wave1

During *Wave1*, information is processed very quickly, using the bottom-up processing system to promote efficiency, automaticity, and safety. *Wave1* includes three components: the activating event (A1), brain activity from the bottom-up (B1), and primary consequences throughout the nervous system (C1).

Activating event (A1)

In conventional CBT, activating events are typically referred to as singular concrete external events (e.g., break up, fight with partner); however, for nCBT, activating events are both internal (e.g., stomach pain) and external (e.g., break up). Additionally, activating events can also be enduring socio-cultural factors (e.g., discrimination, racism). Activating events can be people, places, things, situations, or any number of experiences that create sensory stimuli for the brain to interpret. Events may not be noticeable to the client immediately, thus making typical questions from counselors like "What happened?" less helpful. The sensory information created by these activating events is collected and interpreted by the brain from the bottom-up.

Brain from the bottom-up (B1)

The sensory information created by the activating event is immediately evaluated based upon safety and previous experience. If the sensory stimuli are related to existing implicit memories; life, death, or intense pleasure; or learned processes, then energy is redirected to the subcortical structures in the brain to create immediate responses. Given the need for quick responses, the cortical structures of the brain are not needed to respond physiologically, generate emotions, or motivate behavior. Additionally, neurophysiological predispositions and existing functional patterns already in place, often have significant influence in how this information is processed.

Primary consequences throughout the nervous system (C1)

The subcortical (bottom-up) processing results in immediate, primary consequences throughout the nervous system in the form of physiological alterations, emotions, and behaviors. These consequences are the direct result of how the brain processes the information from the activating event. The consequences adaptively follow the way in which the information is processed. For instance, dangerous or threatening interpretations in the subcortical regions might send signals throughout the nervous system to increase heart rate, respiration, and perspiration while promoting a fight or flight response. If associated with intense pleasure, the subcortical regions might promote compulsive behaviors that are reflexive. Given the common life/death associations at this phase of the Waves, the nervous system consequences can feel very intense for the person experiencing them, analogues to a crashing wave. The experience, and resulting thoughts, feelings, and behaviors, may seem exaggerated or unwarranted to someone else

Wave2

Wave1 consequences create new sensory information that begins the rise of Wave2. During Wave2, information is processed less quickly, using the top-down processing system to promote conscious planning, evaluation, decision making, and intentionality. Wave2 includes three components: awareness of Wave1 consequences (A2), brain activity from the top-down (B2), and secondary consequences throughout the nervous system (C2).

Awareness (A2)

The crash of Wave1 is likely to result in an individual's awareness of Wave1 consequences. The person becomes aware of their emotions and how they are behaving, but this is likely after the initial response has occurred. This awareness might

also occur after the Wave1 consequences (C1) have had repercussions in the person's environment (e.g., police are called after aggressive behavior). In short, the person's awareness often comes after they have already responded.

Brain from the top-down (B2)

Aware of the current situation, new sensory input is processed by the top areas (cortical regions) of the brain to consciously evaluate, critique, problem-solve, and plan for a response. Individuals begin to make meaning out of their experience and may label their physiological experiences (i.e., increased heart rate) as feelings (i.e., fear or anger). Clients might reappraise how they are feeling and behaving, as well as the subsequent thoughts that may be present. Clients might begin to self-deprecate (e.g., Oh no, it is happening again!) and/or ruminate on these consequences (e.g., I will never be able to control this). Individuals' abilities and approaches to top-down meaning making of experience are greatly influenced by chronological age and a combination of experiential, environmental, and genetic factors that shape brain development. For example, if the prefrontal cortex is not very well developed due to age or environmental factors (e.g., trauma, exposure to toxins), then executive functioning capabilities needed to make conscious sense of Wave1 may be impaired to some degree.

After the information is processed in the cortical regions, energy is directed back down through the subcortical regions to the brain-stem and throughout the nervous system. Additionally, physiological information from C1 also travels back up the spinal cord to the brain stem, and the rest of the brain. Often, the new information from A2 and the old information from C1 collide in the person's brain, leading to strong defenses or dissonance that further impair the integration of the cortical and subcortical regions of the brain.

Secondary consequences throughout the nervous system (C2)

The cortical (top-down) processing results in slower, secondary consequences throughout the nervous system in the form of more physiological alterations, emotions, and behaviors. The consequences emerge logically depending upon how the information is processed and decisions are made. For instance, self-deprecation during B2 might send signals through the subcortical regions to the nervous system to raise arousal, increase tear production, and manifest in emotional lability. These secondary consequences then begin the process all over again. As this process continues, it becomes more and more difficult to access the initial neurophysiological processes resulting in the primary consequences. Counselors often spend a lot of time focusing on secondary, cortical processes, thus missing the larger, more automatic consequences that often lead to client distress.

The Treatment Process: Riding the Waves

The Waves provides counselors with a model to conceptualize clients' experiences. The counselor might ask:

- What components of Wave1 and Wave2 are illustrated by clients' experiences?
- Is Wave1 or Wave2 more prominent?

Traditional CBT is very helpful and effective during the second wave of client responding (Wave2), when clients can be assisted in reappraising their emotional distress and problematic behavior. These interventions are most useful after the major crisis has passed and physiological arousal regulated, leaving room for clients to reappraise their responses to the situation in a calm, relaxed state. Such interventions are not useful during the initial response phase (Wave1), because of the restricted ability for cortical processing when information is sent quickly and automatically to the nervous system, bypassing the opportunity for conscious thought in the prefrontal cortex.

Clients who experience difficulties regulating their affect or controlling their behavior may have trouble appraising their past actions. Clients may benefit from interventions that address Wave1 consequences before their appraisal of their past actions can be addressed. Clients might also benefit from interventions that assist them with developing awareness, tolerance, and acceptance of Wave1 consequences during future episodes, in addition to interventions that assist them in altering these consequences, rather than the thoughts that traditional CBT says causes them. Although traditional CBT is effective and useful in addressing Wave2 processes, addressing Wave1 processes within a CBT model has the potential to cause harm, promote self-deprecation, and foster learned helplessness.

Using nCBT to assess the predominate wave and individualize treatment enhances its effectiveness, utility, and accuracy, by providing counselors with a means to address both the explicit consequences that might bring someone into counseling (Wave2) and the implicit waves that might cause them (Wave1). Treatment with nCBT can be conceptualized in three fluid phases: **Attend**—attending to physiological reactions (A), **Build**—building the brain from the bottom up (B), and **Connect**—connecting the bottom to the top (C).

In short: **Attend. Build. Connect.**

Each phase will be briefly reviewed before describing the entire treatment process from start to finish.

A: Attending to Physiological Reactions

The first phase of nCBT includes an intentional focus on clients' physiological reactions. The goal of this phase is to help clients attune to physiological responding and emotional activation, which requires interventions outside of traditional talk therapy.

B: Building the Brain from the Bottom Up

The second phase of nCBT focuses on altering automatic reactions driven by the lower parts of the brain and creating new neuronal pathways/circuits that connect the lower parts of the brain to the top.

It can be challenging to differentiate a Wave1 intervention from a Wave2 intervention. When choosing an intervention, it can help to focus on the outcome rather than the intervention itself. For example, providing psychoeducation about supporting optimal brain health is a rational/conscious discussion (Wave2) that targets physiological changes altering Wave1 processes. As such, the client's tracking of lifestyle changes is a Wave1 intervention, though is delivered through a Wave2 process.

The objective of Wave1 interventions is to assist clients in modifying automatic processes to be the most adaptive in current circumstances. Wave1 interventions aim to (a) balance activation of the sympathetic and parasympathetic branches of the autonomic nervous system, (b) assist clients to "ride the wave" of Wave1 experiences rather than respond reactively or try to stop them, and (c) create new automatic responses. As such, Wave1 interventions target preconscious and implicit processing, with the goal of both learning another automatic Wave1 response, and shifting the allostatic set-point for stress response. Wave1 interventions help clients self-regulate, which develops capacity for later Wave2 interventions.

C: Connecting the Bottom to the Top

The third phase of nCBT focuses on balancing the activity in the lower parts of the brain (e.g., subcortical) with the higher parts of the brain (e.g., cortical). Traditional CBT techniques are helpful during this phase of treatment, but with a new twist. For instance, in traditional CBT, counselors use Socratic dialogue in order to dispute irrational thoughts and create new more rational replacement thoughts. In nCBT, counselors use clients' experiences in the previous two phases of treatment to understand and adjust their physiological experiences and create new meaning. In short, nCBT counselors use the experience to dispute rather than the rational dialogue

of traditional CBT approaches.

Wave1 interventions build capacity for Wave2 interventions. The purpose of Wave2 interventions is to promote top-down regulation, reappraisal, and meaning making through raising conscious, explicit awareness of physiological responding that enhances the functioning of the prefrontal cortex, anterior cingulate cortex, and hippocampus. As such, Wave2 interventions require conscious/rational processing. Self-monitoring plays an essential role in this regard, as it strengthens cortico-limbic connectivity.

Wave1 interventions usually precede Wave2 interventions, even in cases when the client is experiencing symptoms from both a Wave1 and Wave2 process. Wave1 interventions should typically proceed first, since automatic implicit responding (Wave1) will alter appraisal responses (Wave2), making intervention at Wave2 less helpful until Wave1 automatic responding has been altered. For example, when a client with anger outbursts is taught to reappraise their responding after an aggressive episode (Wave2 intervention) it may not prevent further outbursts (Wave1 symptom). Further occurrences of outbursts will in turn generate further shame, hopelessness, and helplessness (Wave2 symptom). Wave2 interventions only proceed first if there is no apparent Wave1 process; although, we contend that there is generally some elements of Wave1 processes contributing to the client's experience.

Before moving on, it is important to reiterated that nCBT is a semi-structured approach, and should not be applied rigidly. Instead, treatment should follow a sound assessment and proceed accordingly.

Chapter 4: Phase 1—Attend to the Physiological Reactions

During the first phase of nCBT, attend to physiological reactions, there are three sequential stages: Develop Rapport, Assess, and Conceptualize.

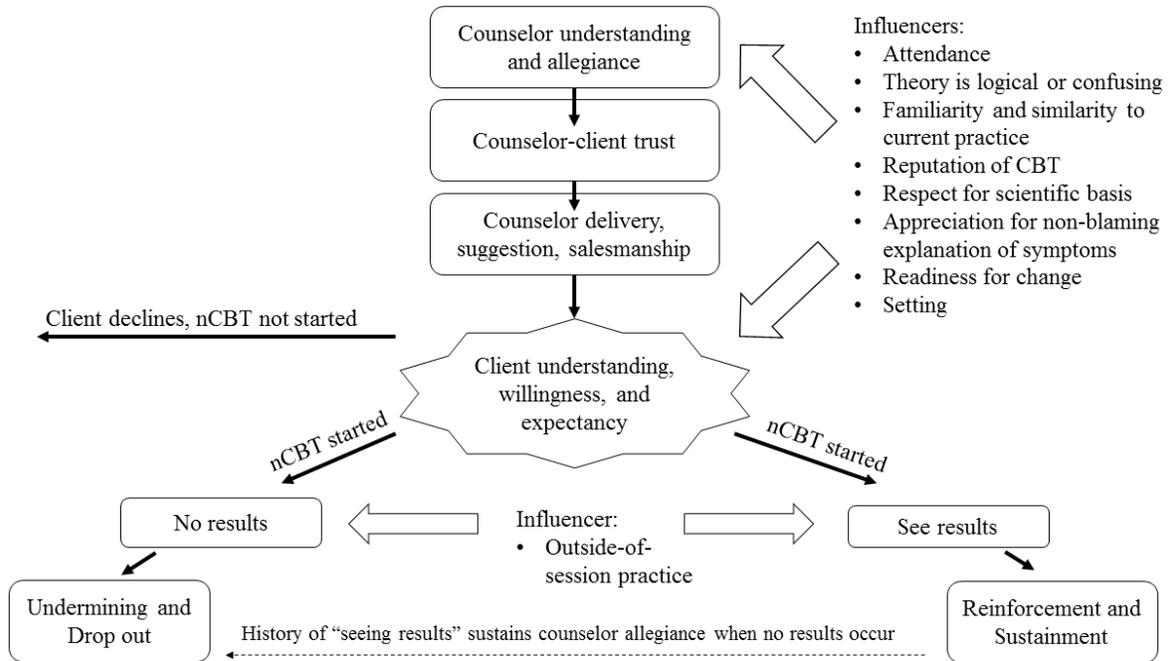
Develop Rapport and Assess

There are ten tasks to accomplish during the Develop Rapport and Assess stages of Phase 1:

1. ensure counselor understanding and allegiance,
2. foster attunement and trust, felt by both counselor and client,
3. conduct intake assessment,
4. listen, observe, and attend to in-session physiological reactions,
5. assess predominant response process and style,
6. provide a rationale for nCBT's usefulness for the client's presenting problem (suggestion and salesmanship),
7. deliver psychoeducation for Wave1 and 2,
8. evaluate counselor belief in the model (allegiance),
9. evaluate client belief in the model (expectancy),
10. provide referrals for additional services, as indicated.

Counselor understanding and allegiance

Our research has indicated that counselors' understanding of nCBT and belief that it will help clients (known as "allegiance") have a strong influence on client understanding of nCBT, willingness to participate in nCBT, and expectancy that nCBT will help them. It is thus crucial that counselors understand the nCBT model and believe it to be effective. When counselors do not understand the nCBT model, their belief in its effectiveness diminishes, and they struggle to communicate the model effectively to clients when providing psychoeducation. Clients then struggle to understand the model themselves, reducing their willingness to participate in nCBT and their expectancy that nCBT will help them. The figure below depicts this process.



nCBT expectancy process model. Reproduced with permission from Field et al. (manuscript submitted for publication).

There are several factors that impact counselor understanding and allegiance, including: attending an nCBT training, perceiving the theory as logical or confusing, having familiarity and similarity with current practices, believing in the reputation of CBT, respecting the scientific basis of neuroscience, appreciating the non-blaming explanation of symptoms, being ready adopt a new model of therapy, and practicing in a setting conducive to nCBT.

Prior to initiating nCBT, test your knowledge and understanding using the **nCBT Post Training Quiz**. Also, assess your overall belief in nCBT's effectiveness using the **Credibility/Expectancy Questionnaire**. If needed, review this manual and your training materials to make sure you fully comprehend the nCBT model before using it with clients.

Counselor-client trust

The trust between the counselor and client is essential to a desirable client outcome for just about every therapeutic modality. In our research, both counselors and clients report that clients' trust in the counselor strongly influenced their willingness to participate in nCBT and belief that change would occur. There are several important strategies that can help to build client trust:

- Validating client experience without trying to change it immediately;
- Informing clients about assessments and interventions, including their rationale;
- Using pre-conversations to facilitate client autonomy in deciding when they are ready for more challenging tasks such as exposure to past traumas;
- Collaboratively defining treatment goals and outside-of-session practice;
- Providing structure in each session with collaborative goal setting for work both in and out of session; and
- Maintaining rapport by eliciting client feedback about their experience in counseling (e.g., Session Rating Scale) and addressing any alliance ruptures that occur.

Conduct intake assessment

During the first session, it is important to conduct an intake assessment to better understand the client's presenting problems. Counselors can use the ***Neurobiopsychosocial History*** form for this purpose. Clients can complete this form prior to the first session or during the first session with the counselor. If counselors prefer to use their existing history form or interview, the following areas should be addressed:

- Identifying information (e.g., age, racial/ethnic identity, gender identity)
- Reason for referral and referral source
- History of chief complaint (e.g., duration, frequency, intensity, context)
- Family history (e.g., early attachments, potential genetic predispositions, trauma)
- Relationship history (e.g., stability, trauma, social engagement, attachment figures)
- Developmental history (e.g., periods of arrestment, early signs of dysregulation)
- Educational history (e.g., highest level, strengths/weaknesses)
- Work history (e.g., current employment, gaps, interests, military)
- Medical history (e.g., current overall perception of health, past/present medical diagnoses and treatment history, current RX, head injuries)
- Substance use (e.g., even caffeine)
- Legal history (e.g., arrests, divorce, charges/convictions)
- Lifestyle Habits and Coping Frameworks (e.g., eating, sleeping, and physical activity patterns, defense styles)
- Previous counseling (e.g., when and why, pros/cons, types of treatment provided)
- Mental Status Examination
- Baseline assessments (e.g., ***DSM 5 Level 1 Cross Cutting Symptom Measure***)

Listening, observing, and attending to in-session physiological reactions

Throughout treatment and especially during the first session, it is important for counselors to listen and observe clients' in-session physiological reactions. During the first few sessions, counselors collect information that is crucial to assessing predominant response process/style and selecting interventions that help their clients become more aware of their physiological processes.

Counselors can help bring clients' attention to their physiological activation by using immediacy, "I have noticed.... Have you also noticed..." and directing them to "sit with" their physiological activation by asking them to observe feelings and sensations in different parts of their body. Clients' physiological activation, and their response to their physiological activation, are crucial pieces of information that help counselors assess predominant response process/style and select interventions. At this point in treatment, refuse the temptation to intervene immediately (unless dysregulation in physiological activity is causing harm), as this early intervention can create a client perception that their physiological responding is inherently "wrong."

Attending to physiology involves being attentive to verbal and nonverbal content, especially cues of physiological activation, relative to (a) the topics discussed, (b) the counselor's verbal and nonverbal behavior, and (c) any other potential antecedents.

Client cues of physiological activation include:

- changes in breath rate, depth, and location;
- changes in vocal tone, including stammering, shakiness, and loud/soft pitch;
- blushing;
- fidgeting and agitation;
- muscle tension or tense posture; and

Counselors can also use their internal physiological response as a clue to their client's physiological experiences. Using self-experience to understand clients' internal states requires counselors to attune to themselves, and differentiate their feelings between what might be their personalized response vs. a mirror of clients' experience. When counselors can accurately differentiate, it can be a powerful tool in understanding clients' possible physiological experiences in the moment.

Assessing predominant response process and style

We all experience Wave1 and Wave2 response processes, described earlier. We also experience response styles, known as:

- approach (moving toward)
- avoid (moving away)
- freeze (motionless)

As with Wave1 and 2, most of us experience all three types of response styles at varying times. These processes and styles are naturally occurring, and only sometimes become problematic.

As depicted in the table below, examples of more desirable “approach” styles include assertively confronting a problem, or reaching out to others for help (“tend-and-befriend”). A more helpful “avoid” style example might be when walking away from a heated situation when agitated and calming down before solving the problem later, and/or stopping thoughts that ruminate on the situation. More helpful “freeze” styles include depersonalization or dissociation during times of traumatic stress. Note that the “freeze” response is typically a final effort to promote survival.

Sometimes, individuals respond to stimuli in the environment in ways that were adaptive in the past, but are less helpful in the current environment. Less helpful response styles can lead to distress, and need to be addressed during counseling. As depicted in the table below, an example of a less helpful “approach” style is combative or aggressive behavior that can be verbal, physical, or both. High-risk sensation seeking is also an example of a less helpful “approach” style. A less desirable “avoid” style might be characterized by social withdrawal and isolation, blocking or minimizing thoughts and feelings rather than accepting and “sitting with” them, emotional numbing, and using substances for the purpose of numbing or forgetting. A less helpful “freeze” style might include feeling stunned by a stimulus or trigger, and being unable to make a decision because of feeling ambivalent, stuck, or conflicted about choices.

Response Style	More Helpful	Less Helpful
Approach (moving toward)	<ul style="list-style-type: none">• Assertively confronting a problem• Reaching out to others for help (“tend-and-befriend”)	<ul style="list-style-type: none">• Combative or aggressive behavior (verbal, physical)• High risk sensation-seeking, such as substance use, gambling,

		unprotected sexual contact, self-injury
Avoid (moving away)	<ul style="list-style-type: none"> • Walking away from a heated situation when agitated and calming down before solving the problem later • Stopping ruminative thoughts 	<ul style="list-style-type: none"> • Social withdrawal and isolation • Blocking or minimizing thoughts and feelings, rather than accepting and sitting-with • Emotional numbing • Substance use for the purpose of numbing or forgetting
Freeze (motionless)	<ul style="list-style-type: none"> • Dissociative responses (derealization, depersonalization) in traumatic situations 	<ul style="list-style-type: none"> • Feeling stunned by a stimulus or trigger • Inability to decide because of feeling ambivalent, stuck, or conflicted about choices

Clients' response process and style can be assessed through self-report, in-session observations, the ***Predominant Response Questionnaire*** (PRQ), and structured questions such as:

“Think back to a recent time when you felt threatened in some way. How did you respond?”

If clients experience less helpful predominant response styles (e.g., combative/aggressive and rarely avoiding or freezing), altering this response style becomes a focus of treatment. Once clients' predominant responses have been identified, treatment should be planned accordingly. For example, if clients experience a predominant Wave1 process, then Wave1 interventions should be the focus of early treatment. If clients experience a predominant Wave2 process, then Wave2 interventions can be the focus of early treatment; although, we recommend that including some Wave1 interventions first will enhance the Wave2 interventions. In doing so, clients can practice acting opposite to predominant response style (e.g., avoid rather than approach, approach rather than avoid) in real-life settings when they become physiologically and emotionally activated (state-dependent learning).

Evaluating your belief in the model (allegiance)

At this point, you have gathered information about clients' presenting concerns, and predominant response style. It can be helpful for you to ask yourself whether you believe nCBT will be helpful with a particular client, or not. This information can inform your rationale for why nCBT will be helpful in addressing the client's problems. It should be noted that another treatment approach may be a better fit. Remember, it is most important that you believe in the intervention yourself (allegiance), as this impacts the overall success of the intervention. In some cases, nCBT may need to be individualized to the needs of the client. This individualized approach is where the fluid nature of nCBT becomes crucial. As long as the principles (or "spirit") of nCBT are maintained, it is acceptable to select different interventions or follow a different treatment sequence than this manual outlines. Directions for treatment fidelity are provided at the end of this manual.

Counselor suggestion, salesmanship, and delivery

Once a foundation of trust has been established counselors can proceed with suggesting nCBT as a treatment approach. Counselors can explain to clients why nCBT could help address their problems, with a clear and concise rationale. It is important for counselors to provide both an explanation for client symptoms, and also to identify a treatment method for addressing those symptoms. Three potential sentence stems that could be useful during this process are:

- "You identified problems with..."
- "...and nCBT helps us understand these problems by..."
- "...which we will address with...."

In the process of explaining why client symptoms are occurring, counselors will provide psychoeducation about **The Waves of the ABCs**. This psychoeducation further develops rapport by giving clients hope and reducing their shame and self-blame for their symptoms. Many clients living in individualistic Western societies tend to attribute ownership and responsibility for dysregulation to the self, believing that they "should" be able to control their responding at all times. In many cases, this control is not possible, as the brain and body have learned adaptive mechanisms for responding automatically. In short, we are not always able to consciously control our response to stimuli in our environment.

When delivering psychoeducation about Wave1 and 2, follow the process below to cover the necessary content.

- First, describe the Wave1 process and its relevance to dysregulation such as trauma, panic attacks, intense anger, and violent episodes. Describe automatic behavior, such as substance use. Briefly describe what happens in the autonomic nervous system with sympathetic activation (e.g., fight-or-flight, release of hormones such as cortisol and epinephrine/adrenaline that prepare us for action). Explain that parasympathetic activation is much slower than sympathetic activation, as hormones can take a while to leave the system when introduced. Consider using analogies that you are familiar with as well as those that align with the client's worldview. One example is the use Dan Siegel's "yes and no" example to explain this (i.e., three loud "no" barks, followed by three soft "yes" whispers, with 2 second intervals between each bark/whisper).
- Second, describe the Wave2 process and the importance of cognitive appraisal to secondary consequences following physiological activation. Thinking negatively about physiological response and the stimulus/situation can engender depression, rumination, obsessions, worry, hopelessness, persistent anger, and resentment. Explain that this process can occur during both sympathetic and parasympathetic activation, and has the potential to perpetuate/prolong sympathetic activation or even to initiate a second sympathetic activation.

Consider using the following handouts to describe Wave1 and 2: ***The Waves of the New ABCs*** and ***How the Brain responds to Threats***.

When providing psychoeducation, it is important to consider your delivery style. Clients are more likely to grasp Wave1 and 2 concepts if you speak in a clear and understandable manner that distills neuroscience information without diluting it. Using visuals can be helpful, such as drawing on a whiteboard or piece of paper. Analogies can be used to help clients understand the Waves. Some examples that we have found useful include surfing, encountering a dangerous animal, rabbit vs. turtle, and computer shortcuts. Hands-on activities can also be useful to help clients understand these concepts, such as the high-road/low-road candy game, which only requires two people though does require adequate space for running in a circle.

Evaluating the client's belief in the model (expectancy)

Once you have described Wave1 and Wave2 of the nCBT model, and have also described intervention approaches for both Waves, inquire about clients' expectancy for change to occur. The ***Credibility/Expectancy Questionnaire*** can be helpful to do so. Our research has found that there are several factors that influence clients' expectancy for change to occur: attending counseling, experiencing the theory of nCBT as logical or confusing, familiarity and similarity to current practice (e.g., mindfulness), reputation of

CBT, respect for scientific basis of neuroscience, appreciation for non-blaming/shaming explanation of symptoms, client readiness for change, and the setting in which the client resides. It is okay to proceed with using nCBT if clients express reservations, so as long as they are willing to give the approach a try and feel comfortable doing so. Many clients develop greater expectancy in nCBT after putting it into practice. If clients are not willing to try nCBT, discuss other treatment options.

Referrals for additional services

All counseling and psychotherapy interventions have limitations and clients may need additional services beyond nCBT. Below are examples of referrals for additional services that should be considered:

- Routine medical exam (consider this if client has not had routine exam in the past few months)
- Specialized medical exam (e.g., thyroid function, allergy testing).
- Evaluation of current/new psychiatric medication
- Substance use treatment/services
- Engagement in support groups
- Family or couples counseling
- Social services (e.g., assistance meeting basic needs: food, housing, employment)
- Dietitian and/or other nutritional support services
- Neurofeedback or biofeedback as part of treatment (if you don't provide this)

Conceptualize

Once rapport has been developed, and clients' presenting symptoms and predominant response process/style have been assessed, the next step in the treatment process is case conceptualization and treatment planning. Using the **Case Conceptualization and Treatment Planning** template, you will address the following areas of case conceptualization:

- Presenting symptoms
- Response process (Wave1, Wave2)
- Response style (approach, avoid, freeze)
- Context of response process and style (core issues, etc.)
- Relevant history
- Treatment approach
- Legal/ethical considerations

You will also address the following areas of diagnosis and treatment planning:

- Symptoms exhibited
- Assessment procedures
- Results of assessments
- DSM-5 diagnosis
- Treatment plan, following the three phases on nCBT

It is important to consider the influence of socio-cultural background on clients' current presentation when conceptualizing the case. For example, some clients may be more reactive to certain stimuli/triggers in their environment based on their history. Clients who experience oppression or marginalization may respond reflexively when they feel their rights have been diminished or ignored. A client may also respond reflexively to perceived threats based on stereotypes and implicit bias. In addition, some activating events are enduring, such as ongoing oppression or marginalization.

Ongoing stimuli/triggers make any connected Wave1 responses difficult to modify. These considerations are important when planning treatment. We advise for cultural issues to be directly discussed with clients, in an empowering fashion that promotes self-understanding of how their cultural background may be influencing their current responding. The ***DSM 5 Cultural Formulation Interview*** can be a nice resource to frame your interviewing style. Advocacy action steps may be required at times, to address persistent ongoing activating events stemming from systemic injustice. Clients may also benefit from self-advocacy training.

Determining treatment goals and outcomes measurement is a crucial aspect of treatment planning. During the process of completing the Case Conceptualization and Treatment Plan, you will concurrently gather information from clients about their goals for treatment through collaborative goal setting. You will also concurrently define progress through the identification of outcome measurements.

Collaborative goal setting

During case conceptualization and treatment planning, counselors will meet with clients to review findings from the initial assessment of response process and style, and present a rationale for the planned flow of treatment. It is also important to process clients' perspective about whether this rationale makes sense, and what adjustments (if any) need to be made to the plan. Most clients will also have specific goals that they wish to work on (e.g., reduce panic attacks, improve an important relationship, recover

from depression, process past trauma, move towards recovery for substance use). These goals should be integrated as part of the treatment plan.

POSERSE Goal Setting

SMART goals are routinely used for goal setting. A SMART goal is defined as a goal that is specific, measurable, attainable, realistic/rewarding, and time-limited. However, this approach is predominately a mechanism for counselor evaluation of goals (i.e., do the treatment goals meet this criteria), rather than a collaborative process to co-construct goals that have meaning for the client. The **POSERSE Goal Setting** template can be used to guide this co-creation of treatment goals and is based on the following principles:

- **Positive:** Is the goal in the positive direction? Does it describe something you want, instead of something you don't want or are trying to avoid?
- **Own part:** Is the goal something you have control and/or influence over?
- **Specific:** Is it specific with a time frame included?
- **Evidence:** What evidence will I have that I have obtained my goal? What will your senses tell you when you have reached your goals?
- **Resources:** What resources do you have and/or need in order to reach the goal?
- **Size:** Is this goal the right size? Is it big enough to motivate and reward you and small enough to achieve?
- **Ecology:** What will the effects of your change be to those around you? How does your environment fit with your goals? Are there any negative implications of this goal? What will you do about them?

Waves of the Counseling Relationship

To foster the development of rapport while establishing collaborative goals, you might find it useful to incorporate the **Waves of the Counseling Relationship** handout. This can be completed during the initial informed consent process and/or periodically during Phase 1 of treatment.

Consider the following steps:

1. Start with an exploration of the client's wants for counseling.
 - a. If you had total control, what would you hope the outcome of our work to be?
 - b. What do you hope to be different?

- c. What do you hope to think, feel, and do differently?
 2. Explore the A1-C1 connection using the counseling relationship as the A1.
 - a. What did you feel physically and emotionally when...
 - i. ...you prepared to come to counseling today?
 - ii. ...you arrived at the office?
 - iii. ...we first met?
 - b. How can this influence what we do during counseling sessions?
3. Explore the A2-B2 connection.
 - a. As we are talking about this, what's going through your mind?
 - b. What do you think about this process?
 - c. What questions are on your mind?
4. Explore the B2-C2 connection.
 - a. As you have been thinking about the counseling process, what have you been feeling physically and emotionally?
 - b. How do you think this will influence what we do during the counseling process?
5. Explore B1.
 - a. Earlier we talked about those initial consequences related to counseling. What was familiar about those consequences (looking for potential implicit associations to previous attachments, object relations, others in their life, etc.)?
 - b. Where do you think those consequences came from?
6. Create new B2
 - a. Given what we have done so far, how does this compare to what you previously thought about counseling?
 - b. What do you think about counseling now?
7. Plan new C2
 - a. How do you want this to influence our work together?

Outcomes Measurement

Defining client progress through outcomes measurement is perhaps one of the most challenging components of treatment planning. For those familiar, the NIMH Research Domain Criteria (RDoC) may be helpful in identifying outcome variables that can be measured at the genetic, molecular, cellular, brain, physiological, behavioral, and self-report levels. Consider the following diagnostic, emotional, behavioral, and physiological variables when identifying outcomes measurement:

- Brain-based variables: EEG readings
- Symptom self-report variables: Criterion symptoms of mental disorders according

to DSM-5; Best assessed through DSM-5 Level 1 and 2 measures, disorder specific severity measures

- Behavioral (e.g., self-injury, suicide attempts, aggressive episodes, substance use, compulsions, panic attacks) and emotional variables (e.g., sadness, anger, shame, anxiety) are best assessed through tracking sheets that capture frequency, duration, and intensity (note PRQ and Experience Tracking tools)
- Physiological variables:
 - Interoception: ***Multidimensional Assessment of Interoceptive Awareness***
 - Heart rate: Pulse oximeter
 - Heart rate variability: Heartmath Inc.
 - Tension: Peripheral skin temperature
- Cognitive variables: Types of Thinking Scale

Chapter 5: Phase 2—Build the Brain from the Bottom-Up

Once rapport and trust have been developed, the initial assessment and case conceptualization have been completed, and treatment goals and outcomes have been identified, the next phase of nCBT includes interventions that focus on Wave1 processes. As noted previously, it can be difficult to differentiate between Wave 1 and Wave 2 interventions; so, when choosing an intervention that addresses Wave1 or 2, it can help to focus on the outcome rather than the intervention itself. For example, providing psychoeducation about supporting optimal brain health is a rational/conscious discussion (Wave2) that targets physiological changes altering Wave1 processes. As such, the client's tracking of lifestyle changes is a Wave1 intervention, though is delivered through a Wave2 process.

Wave 1 interventions are intended to modify automatic processes to be the most adaptive and helpful for clients' current circumstances. Through repetitive practice, these interventions aim to (a) balance activation of the sympathetic and parasympathetic branches of the autonomic nervous system, (b) assist clients to “ride the wave” of Wave1 experiences rather than respond reactively or try to stop them, and (c) create new automatic responses.

As such, Wave1 interventions target preconscious and implicit automatic processing, with the goal of both learning another automatic Wave1 response, and also shifting the allostatic set-point for stress response. Wave1 interventions help clients self-regulate, building bottom-up regulation which develops capacity for later Wave2 interventions.

Wave1 Interventions

The list of potential Wave1 interventions is vast. Many interventions (e.g., elements of EMDR, hypnotherapy, etc.) that you already use could be viewed through the lens of nCBT. For the sake of this manual, we highlight seven Wave1 protocols including:

1. Affective Modeling
2. Supporting Optimal Brain Health and Reducing Neurophysiological Susceptibility
3. Sensory-Based Coping
4. Mindful Awareness
5. Anchoring
6. Systematic Desensitization
7. Biofeedback and Neurofeedback

Affective Modeling

The therapeutic relationship is a crucial Wave1 intervention, and should be considered an essential component of all counseling. Writers from the field of interpersonal neurobiology, such as Daniel Siegel and Allen Schore, have written about the importance of the two-person relational system in helping clients to regulate their physiology and emotions. According to Siegel and Schore, humans are unable to fully regulate their emotions by self-regulation alone, and need healthy attachment relationships to achieve *interactive* regulation. This process begins in early childhood – a research team led by Lenzi found through fMRI scans that emotion regulatory circuits develop according to the mother’s attunement to the infant.

Interactive regulation mostly takes place at a preconscious level. For example, calm, centered counselors can help clients achieve this state even when detecting threats or craving desired stimuli. This affective mirroring requires counselors to work on their own regulation, in order to be a “holding container” for clients’ physiological and emotional response. For example, counselors can practice autonomic nervous system regulation by learning to breathe deeply from the diaphragm throughout the day.

It is important for counselors to be congruent and genuine. Counselors’ authentic presence can help clients with superficial/incongruent affect to become more self-aware and regulated, such as clients who frequently display non-Duchenne smiles. Along with deep breathing, integrating smiling and laughter throughout the session at appropriate times can also elevate clients’ mood even during difficult situations. Over time, clients will become better able to “sit with” physiological and emotional responding rather than avoiding the experience.

Research consistently shows that the quality of the therapeutic relationship is a much larger predictor of outcomes than counselor variables such as theoretical orientation. Thus, the development of a sound counseling relationship is essential to the practice of nCBT and actually a Wave1 intervention in itself.

Supporting Optimal Brain Health and Reducing Neurophysiological Susceptibility

Core lifestyle habits and wellness behaviors have a strong impact on neurophysiological functioning. Clients with sleep deficits, hunger pangs, lack of exercise, lack of time to process and reflect on life events, chronic toxin exposure, and lack of time connecting with others are more likely to be “on edge” and respond automatically and reflexively to stimuli in their environment. Reviewing and modifying wellness behaviors are crucial components to treatment planning, as prevention is

typically more efficient and effective than intervention. In short, it is better to stop a problem before it starts, than remediate an existing problem. If problems already exist, change will occur more quickly and more easily if individuals engage in behaviors that support positive brain health. Reviewing and modifying lifestyle habits and wellness behaviors is thus useful for all clients, regardless of diagnosis.

Activities that support optimal brain health and reduce neurophysiological susceptibility include:

- Quality sleep
- Physical movement
- Focus time
- Down time
- Time-in
- Connecting time
- Adequate and healthy nutrition
- Avoidance of and/or limiting of exposure to alcohol and/or drugs

Several resources are provided for helping clients to review and modify lifestyle habits and wellness behaviors. On such resources is the ***Supporting Optimal Brain Health and Reducing Neurophysiological Vulnerability Assessment*** worksheet described below:

1. Share the ***Supporting Optimal Brain Health and Reducing Neurophysiological Vulnerability Assessment***.
2. Use this form to identify current strengths and areas of growth for each area.
3. Complete the *Exploration of Current and Future Activities* section to plan lifestyle changes.
4. Inquire about the client's willingness to track lifestyle habits and wellness behaviors. Attend to client's stage of change regarding activities/areas and aim to match appropriately. If willing, recruit client commitment for the coming week.
5. Explain that you will review the tracking sheet every week with the client. For the next session, add to the agenda: "review tracking sheet with client."

When considering recommendations for lifestyle modifications, it is important for counselors to consider any physical and/or environmental factors that may limit engagement in some brain-enhancing activities (e.g., exercise). Furthermore, some changes, such as nutritional supplements, are outside of counselors' scope of practice and are better addressed by referrals. A medical evaluation is often a good first step in towards lifestyle modifications, to ensure the client can fully participate in those goals.

Sensory-Based Coping

In moments of crisis, clients can feel physiologically and emotionally “flooded.” The Waves can crash quickly as hormones such as cortisol and epinephrine (adrenaline) are released through the hypothalamic-pituitary-adrenal (HPA) axis and sympathetic-adrenal-medullary (SAM) axis, respectively. During these moments, clients are more apt to respond automatically without thinking, and may be prone to freeze responses such as dissociation. Certain types of sensory input can alert clients to their physiological and emotional response, and help them stay in the present moment. As such, sensory input can have a grounding effect. Clients can learn to cope through the senses of sight (visual), sound (auditory), touch (tactile), taste (gustatory), and smell (olfactory).

Sensory-based coping strategies are straightforward to teach to clients, and to practice. Technology is generally not required; although it can be helpful for clients to “see” the changes in some objective manner via biological monitoring systems (e.g., galvanic skin response system). When selecting sensory-based strategies to help clients cope moments of crisis, it is important to consider the following five principles:

1. **Portability:** The sensory-based coping strategy should be easily portable, so that it can be taken with clients anywhere and everywhere they go. Gustatory example: chewing gum (taste) is portable, whereas a popsicle may be less portable.
2. **Accessibility:** The sensory-based coping strategy should be easily accessible, so that it can be used in any situation. Touch example: Holding a warm cup of coffee is accessible, whereas receiving hugs is less accessible.
3. **Social acceptability:** The sensory-based coping strategy should be socially acceptable to use in all environments. Hearing and smell example: Listening to the sound of your own breathing is socially acceptable, whereas wearing ear phones or wearing strong fragrances may not be socially acceptable in some situations. In contrast, some people with tinnitus use auditory aids that provide bilateral stimulation throughout the day while also allowing a person to attend to speech and noises in their environment.
4. **Repetition:** The sensory-based coping strategy should be available for repetitive practice throughout the day. Sight example: Looking at a photograph on your smart phone screen saver can be repeated throughout the day, whereas watching the stars at night is only possible in the evening.
5. **Salience:** The sensory information needs to be important/significant to the client. The sensory stimuli need to carry with it much salience in order to be rewarding and counter the strength of future Wave 1 processes. Sound example: Listening to a song associated with a strong emotional event (e.g., wedding) is very salient,

whereas a favorite song of the month, although pleasant, might not carry the same value.

We consider the following examples of sensory-based coping to be exemplary, though not exhaustive. Client preference is the most important factor to consider when identifying a sensory-based coping strategy to practice outside-of-session, and thus counselors may identify any sensory-based coping strategy that meets the four principles above.

- Auditory: Sound of your breathing.
- Tactile: Holding a warm object or beverage. Touching a piece of jewelry. Holding hands. Lightly stroking own thigh.
- Gustatory: Chewing gum
- Visual: Photo on smartphone screen saver. Notice new items/things in environment (15-20 secs)
- Olfactory (Smells): Use of essential oils/nature smells in home, preferred air freshener in car, preferred personal deodorant/spray, smell of coffee/beverages (note: may need several scents established, as smells tend to have limited portability)

Mindful Awareness

Clients need support to “sit with” an experience of physiological/emotional activation, rather than acting immediately such as approaching (move toward; e.g., combative) or avoiding (move away; e.g., isolating). Sitting with an experience at a preconscious level can perhaps best be achieved through repetitive daily mindfulness practice. This practice helps a person develop an awareness of physiological and emotional responding in the present moment without judgement, including interoceptive awareness (or, awareness of feelings inside the body). Counselors may require some additional training to teach mindfulness practices to clients. When helping clients develop mindful awareness, it is most important that clients (a) develop the capacity to be fully attuned to the present moment, and (b) develop an awareness of physiological and emotional feelings in the present moment. If indicated, clients’ current degree of self-reported interoceptive awareness can be assessed using the ***Multidimensional Assessment of Interoceptive Awareness (MAIA)*** scale.

There are several vehicles to developing mindfulness awareness through outside-of-session practice:

- Some clients prefer **sitting in silence** and observing/noticing their feelings in their body. In this regard, consider using the ***Daily Practices in Mindful***

Awareness handout.

- Some clients prefer **listening to guided meditation audio recordings**. In this regard, Dan Siegel's "wheel of awareness" may be a very helpful script for assisting clients to develop interoceptive awareness.
- Other clients might enjoy movement-oriented mindfulness practices (e.g., yoga, walking meditation)

Anchoring

Another strategy to promote new automatic responding is to develop positive triggers, also known as anchoring, grounded in principles of classical conditioning. During classical conditioning, a subject is introduced to an unconditioned stimulus (UCS), typically one that results in a strong biologically based response known as an unconditioned response (UCR). Next, a neutral stimulus (NS) is paired with the UCS, which again leads to the UCR. After several pairings of the NS and UCS resulting in the UCR, the NS begins to produce the same UCR, absent of the UCS. When this happens, the NS is referred to as the conditioned (CS) and the UCR is referred to as the conditioned response (CR).

Here is a recap:

Subject + UCS = UCR

Subject + NS + UCS = UCR

NS → CS and UCS → CR

Subject + CS = CR

In Pavlov's example, a dog was introduced to food (UCS) which resulted in salivation (UCR). The food (UCS) was then paired with a bell (NS) that led to continued salivation (UCR). After several pairings, the bell began to produce the salivation on its own, even when the food was withheld. When this pairing happened, the bell became the CS and the salivation became the CR.

Here is a recap:

Dog + Food (UCS) = Salivation (UCR)

Dog + Bell (NS) + Food (UCS) = Salivation (UCR)

Dog + Bell (CS) = Salivation (CR)

A similar process often happens to our clients when they have an emotionally charged experience tied to a neutral stimulus. When this happens, the neutral stimulus becomes a trigger for the emotionally charged response. For example, a person might be walking

down a street (NS) where they are mugged (UCS) thus producing a fear response (UCR). Given the intense neurophysiological processes involved, the street and mugging need only to be paired one time to result in a conditioned response, which in this case is the fear response. Therefore, the street itself, absent of any mugging, becomes the conditioned stimulus leading to the fear response. According to classical conditioning, the person would experience a conditioned fear response every time they walk on the street, see the street, or think about the street, even when no threats are present.

Here is a recap:

Person + Mugged (UCS) = Fear response (UCR)

Person + Street (NS) + Mugged (UCS) = Fear response (UCR)

Person + Street (CS) = Fear response (CR)

Person + thinking about the street (CS) = Fear response (CR)

Although we often think of triggers causing less desirable states, classical conditioning can also be used to trigger more desirable states, commonly known as anchoring. If clients have already experienced other triggers, then they are more likely to buy-in and respond to this anchoring of more desirable states.

As with all interventions, anchoring begins with a sound therapeutic relationship. The client experiences a desired state in the context of the therapeutic relationship (e.g., safety→ANS balance). The client then pairs the resulting desired state with an anchor, which is typically a kinesthetic gesture (e.g., rubbing the inside of the palm). After enough pairings, the kinesthetic gesture creates the desired state alone, outside of the therapeutic relationship.

Here is a recap:

Person + Therapeutic Relationship (UCS) = Desired state (UCR)

Person + Therapeutic Relationship (UCS) + Anchor (NS) = Desired state (UCR)

Person + Anchor (CS) = Desired state (CR)

The therapeutic relationship serves as the vehicle through which the anchor is created; however, once the anchor is paired with the desirable state, the client can recreate the desired state regardless of the situation. For instance, athletes often use anchors to get “in the zone.” Baseball players have a ritual before stepping up to the plate. Basketball players have a ritual before shooting a foul shot. These rituals serve as anchors for previous experiences in which the athletes performed at an optimal level. Similarly, clients access their personal “zone” using anchors.

Please review the ***Anchoring Desirable States*** handout as you help clients create anchors, but a list of the steps to anchoring are listed below:

1. Work with your client to create a unique anchor. Typically, these anchors are kinesthetic (e.g., a gesture like touching one finger to another), but other neutral anchors such as words can be used. Anchors need to be something that can be easily performed and novel, meaning they wouldn't experience it otherwise
2. Assist your client to enter their desired state, highlighting the importance of sensory experience to make this as real and intense as possible.
3. This response will typically peak in about 90 seconds, but just before the peak (no matter how long), instruct the client to use the anchor.
4. Repeat this process until the anchor is conditioned to the desired state.
5. Test to ensure the anchor produces the desired state
6. Encourage continued use of anchors.
7. Once client's experience the benefits of one anchor, consider building additional anchors for additional states.

Systematic Desensitization

Our response styles (approach, avoid, frozen) are difficult to un-learn because they are often automatic and likely served a very important survival function when first encoded. Modification of a response style requires both repetitive practice and state-dependent learning. In his research on conflict among couples, Gottman found that couples were far more successful in learning new responses during conflict when they practiced during actual conflicts (i.e., in vivo exposure), rather than practicing in non-conflict situations.

When clients experience problematic responses styles, they often need to practice acting opposite to their typical automatic behavior. Clients can learn to approach avoided situations, avoid approached situations, and generate movement instead of freezing. Systematic desensitization is a method for ensuring that a client practices acting opposite to automatic responding in environments that foster state-dependent learning (i.e., in vivo exposure) to ensure generalization. Clients slowly begin practicing their new response style in increasingly challenging situations, and practice repeatedly until they demonstrate a new automatic response style.

Systematic desensitization is fairly straightforward to use, and does not require technology or equipment. Before using systematic desensitization, clients need to give consent, and have the choice to not participate if they are not ready. Without client consent, the intervention could create a rupture in the therapeutic alliance and could even be traumatizing. It is important for clients to understand that once systematic

desensitization begins, it is important to keep “pushing through” until the procedure has been completed. If clients stops before completion, systematic desensitization may have detrimental effects on reinforcing unwanted response styles.

Clients will need coping strategies for handling exposure situations, and some clients can benefit from learning new sensory-based coping strategies. Once these coping strategies have been identified and practiced, a typical systematic desensitization procedure contains the following three principles:

1. **Gradual progression.** Collaboratively create an exposure hierarchy together. Begin with small “risks” (short amount of time, relatively comfortable risks) and graduate to longer amounts of time and less comfortable risks.
2. **State-dependent learning.** Practice needs to occur in outside-of-session “real life” contexts (in vivo exposure).
3. **Repetitive practice.** New response styles can be only become automatic with daily, outside-of-session practice.

Advances in trauma treatment by researchers such as Joe LeDoux and Danielle Schiller have introduced the concept of a reconsolidation window to the extinction process inherent in systematic desensitization and exposure work. After the memory is activated by brief remembering (not re-experiencing), clients experience optimal plasticity starting after about 10 minutes from activation. Prior to the 10 minutes, clients do something else (Wave1 skills such as deep-breathing) before altering the existing memory (rather than creating a new one). After about 10-20 minutes, Wave2 interventions (discussed in the next chapter) can commence with a focus on creating new emotional and meaning based experiences.

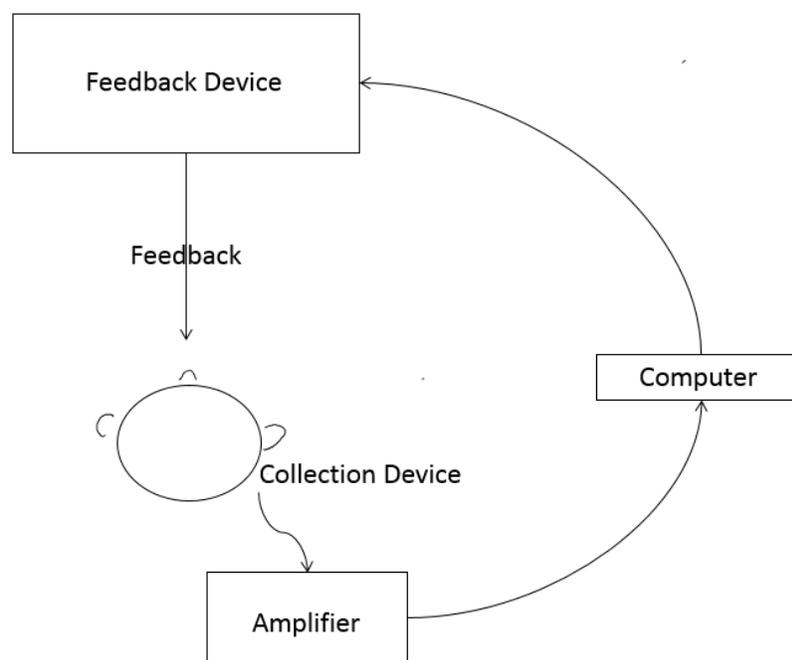
In addition to gaining client consent before initiating systematic desensitization, there are a few additional ethical considerations when using systematic desensitization. First, clients should not attempt exposure without the counselor’s support. This is particularly true for trauma experiences. Second, some environments will never be appropriate for exposure activities, such as being yelled at.

Biofeedback and Neurofeedback

Most of us have thermostats in our homes that we use to maintain an optimal temperature. We identify an optimal temperature, set the thermostat, and the thermostat monitors the temperature while adjusting to maintain the optimal temperature. When the temperature gets too high, the cool air turns on. When the temperature gets too low, the heat turns on. Our bodies act in a very similar way. When something in our environment is “too hot,” our body responds to “cool it down.”

When something in our environment is “too cold,” our body responds to “heat it up.” This *temperature* serves as a metaphor for our body’s autonomic nervous system functioning.

Biofeedback is a process that helps individuals adjust their temperature, their autonomic nervous system processes. Biofeedback uses various forms of technology to monitor less conscious physiological processes (brainwaves, heart function, breathing, muscle activity, and skin temperature). The technology provides feedback to the person, who then learns to adjust these automatic processes with voluntary control. In many ways, biofeedback assists individuals to automatically access new states while readjusting their internal thermostats to a new set point.



During biofeedback, a technological collection device is connected to the person (e.g., scalp, finger, earlobe) to collect data that is indirectly related to various physiological processes (e.g., muscle contraction, vasoconstriction, sweat gland activity, respiration). This data typically passes through an amplifier that boosts and filters the signal into a computer program. The computer program is designed to monitor and interpret the data based upon a set protocol. These protocols are typically designed to either increase or decrease the physiological process that is related to the data being collected. When the person’s physiological processes are moving in the desired direction per the protocol, then the program signals the feedback device (e.g., computer monitor) to provide the person with a reward (e.g., auditory or visual stimuli). When the

person receives the desired feedback, they learn to recreate the physiological state that caused the rewards. With ongoing practice, the person becomes able to alter physiological processes automatically. Achieving a state of smooth performance (e.g., sympathetic/parasympathetic activation) can protect against reactivity by lowering our allostatic "set point." If a person's resting "set point" is high, then any small stressor could push someone into dysregulation. Through biofeedback, the set point is lowered, creating more physiological resiliency that can promote psychological and behavioral resiliency.

There are several types of biofeedback modalities including, but not limited to, the following:

- Electromyography (EMG): Measures the electric activity released when skeletal muscles contract. People typically work to keep this electrical activity under 2 microvolts. In general, less muscle tension equals more relaxation.
- Skin temperature: Measures the temperature of the fingers and toes, which is related to the constriction and dilation of blood vessels. Increased dilation results in more blood flow that is related to higher temperature and a sense of relaxation. Increased constriction (or reduced dilation) results in less blood flow that is related to lower temperature and a sense of arousal. In general, higher temperatures equal more relaxation (about 90-95° F for fingers and 90° F for feet).
- Galvanic skin response (GSR): Measures skin conductance related to electrically conductive salts produced by sweat glands on the skin. When sweat glands produce more sweat, there is more conductance on the skin. When sweat glands produce less sweat, there is less conductance. In general, lower skin conductance equals more relaxation.
- Electroencephalography (EEG; also known as neurofeedback or NFB): Measures electrical activity on the scalp that is correlated with electrical activity in various regions of the brain. Electrodes are placed at various locations on the scalp using an internationally recognized system referred to as the 10-20 system. The impact of brain wave changes is dependent on several factors including location, frequency, amplitude, and communication. Therefore, training is typically individualized by comparing the client's resting state EEG to a normative database.
- Hemoencephalography (HEG): Measures the amount of light reflected back to a

headband that is correlated with blood oxygenation and flow in the brain.

- Respiration: Measures the rate and depth of respirations. Typically, about six breathes per minute is considered optimal. Additionally, measures of CO2 levels during exhalation can also be used as an important physiological marker.
- Heart Rate Variability: Measures inter-heart beat variations as well as coherence of heart rate rhythms.

Technology-Based biofeedback

Biofeedback and neurofeedback are more technical interventions that often require advanced training to implement with clients. A wide variety of biofeedback devices and software exist. A popular product is HeartMath's EmWave Pro. The product includes a stress and well-being survey, alongside heart-rate variability assessment. The latter assessment analyzes mean heart rate, mean interbeat interval, mean heart rate range between peak and valley of the heart rhythm wave, standard deviation, and normalized coherence score. Through the use of this device, a client can adjust their mean heart rate, interbeat interval, heart rate range, and even coherence.

We recommend that counselors using this equipment receive training in its implementation before attempting to use the equipment with clients. If you are interested in practicing technology-based biofeedback, it is essential to receive additional training and potentially certification from the Biofeedback Certification International Alliance (BCIA). The cost of training as well as technology to conduct biofeedback can be prohibitive to some counselors.

Technology-Free biofeedback

Some counselors (e.g., Dr. Jamie Crockett) have begun to conceptualize non-technological forms of biofeedback. Technology-free forms of biofeedback may be more feasible for clients to practice outside-of-session, as they do not require the client to purchase at-home equipment. An example of a technology-free intervention is teaching a client to reduce their breath counts to 4-5 per minute while noticing the subsequent physiological response (i.e., internal feedback). Controlling respiration helps to increase the depth of the client's breath, by holding the inhale, exhale, and pause for longer. With repetitive practice, this intervention may help the client to achieve consistent states of autonomic nervous system regulation.

Neurofeedback

Neurofeedback is a type of biofeedback that aims to modify patterns in the brain. These modifications can result in improved emotional regulation and cognitive performance. Although the specific mechanisms of change are yet unknown, the leading theory focuses on use of operant and classical conditioning to reward brain states. In neurofeedback, a client is rewarded for achieving an optimal state of activation and connectivity for certain brain waves. Over time, clients' brains learn to recognize this optimal state of activation, outside of conscious awareness. Researchers have found evidence to support the effectiveness of neurofeedback with clients experiencing symptoms of developmental trauma, ADHD, OCD, PTSD, depression, anxiety, and many other diagnoses.

The most effective neurofeedback is individualized to the client's presenting neurological dysregulation. Although some standard protocols exist (e.g., Alpha-Theta training), neurofeedback should be database-guided through comparison to a normative database and client self-report.

Neurofeedback has perhaps the most limited feasibility for everyday practitioners of all the Wave1 interventions. It requires highly specialized technology such as EEG. Technology-free interventions are not available at this time, and equipment (hardware, software) can be prohibitively expensive (\$5-25K). Fortunately, this cost is not passed on directly to the client as the client does not purchase out-of-session practice kits when receiving neurofeedback treatment. Specialized training is required, and is typically more rigorous. Excellent trainings exist (e.g., Stress Therapy Solutions, STENS, etc.), and we recommend that counselors seek trainings that are approved by the Biofeedback Certification International Alliance (BCIA).

Special Considerations

When providing Wave1 interventions, we recommend counselors be aware of special considerations pertinent to the following issues:

1. Risk of harm to self or others
2. Panic attacks
3. Adolescents

Risk of harm to self or others. Some clients will present a risk of harm to themselves, such as suicidal ideation or genuinely life-threatening self-injurious behavior. Other clients will present a risk of harm to others, such as threats of violence.

When either of these two scenarios occurs, follow the protocol below.

1. Assist the client to self-regulate to the extent possible. Your intentional calm presence will be especially helpful.
2. Conduct a risk assessment and follow a protocol for taking action. This assessment takes priority over Wave1 or 2 interventions. Developing a safety plan for contingencies (if...then...) could be useful. Behavioral contracts are not research-based, and should be avoided.
3. Ensure the safety of the client and those in the client's community. Consider informing any identifiable victim and local law enforcement if indicated (note Tarasoff case law).
4. The client should have contact information for crisis services. nCBT does not require 24 hour phone availability.

Panic attacks. Some Wave1 coping techniques are not indicated for panic attacks. For example, biofeedback techniques that require clients to count their breath could be detrimental. We also recommend that counselors use caution when teaching interoceptive awareness to clients with illness anxiety/hypochondria.

Adolescents. When working with adolescent clients, it is important to recognize that because of adolescent brain development, Wave1 processes may be pronounced. As a result, Wave1 interventions may have even more relevance to treatment. At the same time, adolescents may resist formal techniques such as mindfulness or biofeedback, which should be honored. The delivery of psychoeducation material needs to be engaging, and we also recommend using hands-on activity and games when teaching adolescents about Wave1 and 2 processing. Finally, family dynamics and interactions often play a crucial role in the adolescent's Wave1 automatic responding. Family counseling may be indicated to change unhelpful dynamics and interactions that stimulate/trigger the adolescent's Wave1 process. It should also be noted that nCBT, in its current iteration, has only been practiced with adults and adolescents.

Chapter 6: Phase 3—Connect the Bottom to the Top

Prior to the third phase of treatment, clients have made significant progress in learning to regulate bottom-up input from the limbic system. Blood flow has increased to the prefrontal cortex and higher-order thinking, decision making, planning, etc. can take place. Counselors proceed to the third phase once the following criteria have been met:

1. Physiological arousal has been attended to.
2. Physiological arousal has been regulated to some degree; although, this will be an ongoing process throughout treatment.
3. A new capacity for top-down regulation is developed.

The third phase of treatment with the Waves focuses on balancing the activity in the lower parts of the brain (e.g., subcortical) with the top parts of the brain (e.g., cortical). Clients develop conscious awareness and acceptance of their physiological reactions, and appraise how they attribute meaning to them. The purpose of Wave2 interventions are to promote top-down regulation, reappraisal, and meaning making through raising conscious, explicit awareness of physiological responding that enhances the functioning of the PFC, ACC, and hippocampus.

As such, Wave2 interventions require conscious/rational processing. Self-monitoring plays an essential role in this regard, as it strengthens cortico-limbic connectivity. This third phase of nCBT builds upon the empirical basis of traditional CBT techniques from REBT, CT, ACT, and DBT, with some important alterations to ground these techniques in neuroscience findings. For instance, in traditional CBT, counselors use Socratic dialogue to dispute irrational thoughts. In nCBT, counselors use clients' experiences in the previous two phases of treatment to understand and adjust their physiological experiences and create new meaning out of this experience. In short, the nCBT counselor uses the experience to dispute rather than the rational dialogue of traditional CBT approaches.

Wave1 interventions build capacity for Wave2 interventions, and therefore usually precede Wave2 interventions, even in cases when the client is experiencing symptoms from both a Wave1 and Wave2 process. Wave1 interventions should typically proceed first, given that automatic implicit responding (Wave1) will alter appraisal responses (Wave2), making intervention at Wave2 less helpful until Wave1 automatic responding has been altered. For example, when clients with outbursts of anger are taught to reappraise their responding after an aggressive episode (Wave2 intervention) it may not prevent further outbursts (Wave1 symptom). Further

occurrences of outbursts will in turn generate further shame, hopelessness, and helplessness (Wave2 symptom). Wave2 interventions only proceed first if there is no apparent Wave1 process; although, we contend that there is generally some form of Wave1 process apparent in clients' experiences.

Wave2 Interventions

The list of potential Wave2 interventions is vast. Many interventions (e.g., cognitive restructuring) that you already use could be viewed through the lens of nCBT. For the sake of this manual, we highlight five Wave2 protocols including:

1. Connecting Behaviors and Emotions to Physiological States
2. Self-Acceptance and Compassion
3. Sensory-based Exploration and Imagery
4. Reappraisal
5. Exploring Implicit Schema

Connecting Behaviors and Emotions to Physiological States

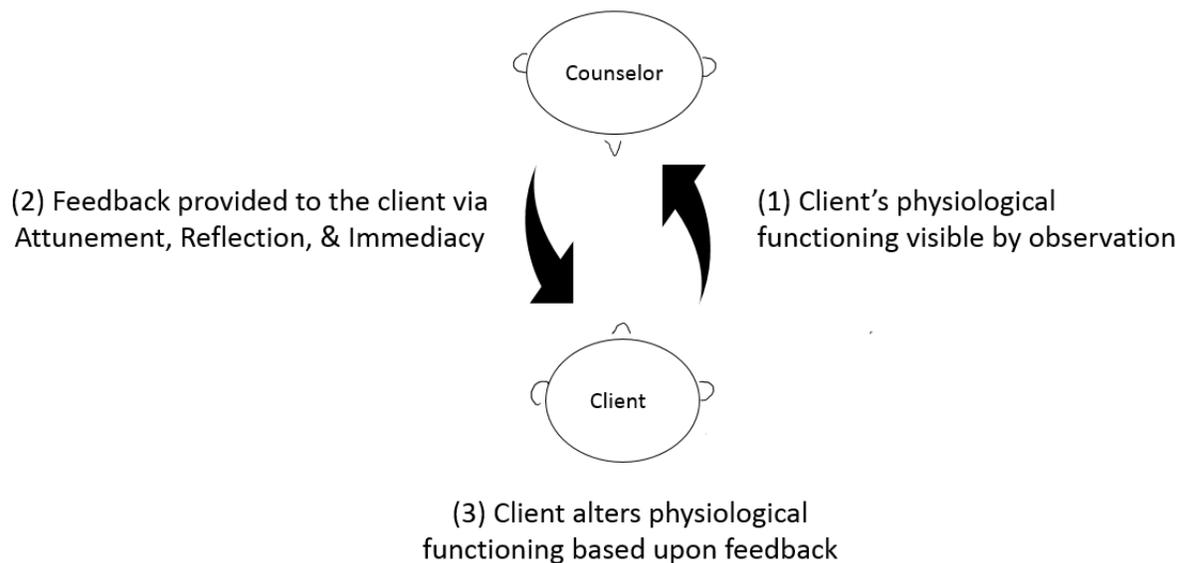
Self-monitoring is essential for self-regulation. Awareness of and attunement to physiological responding can facilitate acceptance of clients' bodily responses as normal and expected (see ***Self-Acceptance and Compassion*** intervention). This reduces the potential for negative self-attributions.

There are two self-monitoring interventions that can help clients connect behaviors and emotions to physiological states: observing and making meaning of physiological responding, and counting pulse. Each of these interventions requires in-session practice first, before outside-of-session practice is attempted. The worksheet, ***Connecting Behaviors and Emotions to Physiological States*** can be a useful tool to compliment the interventions below. Counselors should provide guidance by completing this worksheet with clients in-session, before asking clients to practice the worksheet outside-of-session.

Observing and making meaning of physiological feelings

Often, clients are not consciously aware of their physiological responding. Counselors may need to provide feedback about physiological responding and guide clients in observing their physiological feelings. Once clients begins to self-monitor, they can begin to process their meaning making and appraisal of their physiological and emotional responding.

Counselors are skilled in the delivery of basic microskills including observation, reflection, and immediacy, what Dr. Jamie Crockett describes through a biofeedback paradigm. These skills can help clients become more aware of their physiological functioning. For instance, clients display several correlates of physiological functioning (e.g., breath rate and type, flushed skin, etc.) that are readily observable to the counselor. Counselors collect this information using observation and provide feedback based upon clients' physiological functioning. This feedback is provided using microskills such as reflections and immediacy. This feedback assists clients to regulate their physiological functioning.



Counselors can help clients self-monitor through effective feedback and training, following the steps below:

1. Observe the client's (and your own) physiological responding. The skills outlined in Phase 1: Attend to Physiological Reactions are particularly helpful in this regard.
2. When you observe a physiological response/reaction, bring this observation to the client's attention and ask "have you also noticed..." This approach assists a client to become more aware of their physiological responding.
3. Next, ask the client to "sit with" their physiological reaction. Direct the client to observe feelings and sensations in different parts of their body.
4. Ask the client what it was like to observe these physiological feelings.
5. Assist the client to make meaning of the feelings, by asking: "if your body could talk, what would it say?" and "I wonder what might be going on, that your body

responded this way?” The latter question is important, because it helps the client connect physiological states to behaviors, emotions, and stimuli/triggers.

6. Inquire about any socio-cultural influences on perceptions about physiological feelings. Ask questions such as, “how might your understanding of these feelings be linked to your cultural heritage?” This questioning helps a client understand how their own cultural background can influence how they make meaning of physiological feelings.
7. Eventually, inquire into the client’s willingness to practice observing physiological feelings outside of session.

Counting pulse

In some situations, counting one’s pulse can be a helpful tool for becoming aware of when physiological flooding occurs and when the body has returned to homeostasis. Counting helps clients to consciously decide to avoid making decisions until regulated. Counting pulse is itself a distraction from a stimulus/antecedent, and the time taken for counting pulse helps give the body time to return to homeostasis. Follow the directions below when helping a client to count their pulse and self-monitor. These directions are also available on the **“How the Brain Responds to Threats”** psychoeducational sheet.

- Using a timer, place your index and middle finger onto the wrist of your other arm or your neck. Count your pulse for 60 seconds.
- Usually, a heart rate above 80 beats per minute for adults (BPM) indicates that epinephrine (adrenaline) has been released into your system, causing you to feel ready for action. You are at-risk of reacting automatically!
- Walk away from the situation and wait until your heart rate is less than +20 BPM over your average resting heart rate.

As with observing and making meaning of physiological feelings, clients should eventually continue the practice of counting their pulse outside-of-session. Again, the **Connecting Behaviors and Emotions to Physiological States** worksheet can be useful for this purpose.

Self-Acceptance and Compassion

Once clients begin to connect behaviors and emotions to physiological states, they become better able to self-monitor their physiological responding. During this process, they also appraise how they make meaning of physiological arousal. Becoming aware of physiological arousal needs to be paired with acceptance and appreciation for these experiences. This process assists a person to become

“embodied” and to “sit with” an experience rather than act, i.e., approach (move toward) or avoid (move away). Without developing self-acceptance and compassion, clients may resist self-monitoring because they may find their physiological and emotional responding to be abhorrent or a reminder of upsetting past events. Because physiological responding can be difficult to change, clients are often faced with the choice to either embrace their current experience with compassion and “ride the wave,” or else reject the current experience out of shame or disgust. Self-acceptance and compassion help protect against shame-based responses.

Once clients become aware of their physiological responding in the present moment, assist them in attempting to accept their physiological and emotional responses in the present moment with self-compassion. Because physiological responding to potential threats can often be influenced by past traumas, clients may want to initially reject their body’s responses. Self-compassion allows clients to appreciate how the body is protecting them, has learned from past experiences, and knows exactly what it is doing! Sample prompts to facilitate this process include:

- Your body knows exactly what it needs to be doing right now. What words of gratitude could you share with different parts of your body?
- Your brain and body has learned to respond this way through past experiences. What words of understanding and compassion could you share with yourself and your body?

With time, it is hoped that clients will arrive at a place of acceptance and compassion about their body’s responding, without rejecting this response or developing negative self-attributions (e.g., self-blaming, self-shaming). An example of a self-acceptance and compassion statement might sound like:

What happened to me in the past was horrible, and my body remembers to protect me and make sure this doesn’t happen to me again. My body is doing what it is supposed to be doing.

As with the connecting behaviors and emotions to physiological states intervention, clients should eventually continue the practice of self-acceptance and compassion outside-of-session. Finally, it is important to mention that some clients like to listen to self-compassion and loving kindness mediations outside-of-session, to develop self-compassion. A wealth of audio recordings are available online for this purpose. Great examples can be found on the website of Kristin Neff, the originator of self-compassion training: <http://self-compassion.org/category/exercises/>

Sensory-based Exploration and Imagery

Our senses are what we use to collect information about the world. Activating events create sensory stimuli that our brain interprets from the bottom-up and top-down. Smells might trigger a traumatic response, sounds might cue substance use, and taste might activate a learned aversion. Some might call these negative triggers. However, these same senses can also be used to lock-in desirable states. A sight can remind us of a previous pleasurable experience, a touch can return to a time of previous peak performance, and a smell can promote a sense of relaxation. In a way, our senses can also be used as positive triggers; however, to avoid dichotomous labels, we will say more desirable triggers. To explore these potential positive triggers, that can be used to lock-in or anchor desirable states, you can use the ***Sensory-Based Exploration and Imagery*** worksheet.

1. Assist the client in the exploration of their favorite sights, sounds, touches, tastes, and smells. At first, keep this process very open; everything is on the table.
2. Once the client has listed several favorites in each category, you can begin to explore each and the related memories, associations, etc. that they have. It is common that some of these same sensory experiences might have less desirable associations (e.g., a favorite smell might be marijuana, a favorite song might be related to substance use, etc.), so be mindful of the potential and prepared to process as needed.
3. Next, encourage the client to create a story either verbally, through writing, or some other expressive means that includes as many of the favorites as possible. In the past, we have used the *happy place* scene from the movie "Happy Gilmore" as an example for how he used this happy place to calm physiological arousal and accomplish his goals.
4. The client's happy place can then be used in imagery exercises moving forward.

Another use of the *Sensory-Based Exploration and Imagery* list is to identify sensory-based coping strategies. In order to do so, the sensory experiences need to be evaluated based on the following criteria that are described earlier, in the sensory-based coping section (Wave1 Interventions).

1. Portability
2. Accessibility
3. Social acceptability
4. Repetition
5. Salience

Reappraisal

Some clients develop less helpful self-appraisals and cognitive distortions in response to current and past events. These less helpful thoughts can generate subsequent emotional distress and perpetuate/stimulate physiological activation. Counselors can help clients reappraise current and past experiences, to reduce ongoing dysregulation and distress. Many counselors are well-versed in cognitive restructuring techniques. Teaching clients to counter less-helpful self-appraisals and cognitive distortions does not require additional technology or training; however, counselors should understand the different approaches toward modifying the appraisal of past events in the nCBT model compared to traditional CBT models.

In many ways, traditional CBT creates competing thoughts that must be substantially reinforced in order to benefit clients. We have learned from advances in trauma treatment that merely creating a new memory does not stop the old one from emerging in times of stress, triggers, etc. In nCBT, reappraisal differs from traditional CBT in several ways, in that nCBT:

- Uses experience to dispute, as opposed to logic.
- Creates entirely new cognitions grounded in the client's experience during the previous phases of treatment.
- Reappraises past events grounded in physiological experiences.
- Increases focus on sociocultural variables and enduring activating events.

Using experience as disputation.

Traditional CBT models ask for clients to identify (a) a situation that caused distress, (b) their cognitions/beliefs that occurred as a result of the situation, (c) emotions and behaviors connected with the cognitions/beliefs, (d) alternative or replacement cognitions/beliefs, (f) and evidence for/against alternative cognitions/beliefs, (g) the emotional and behavioral outcomes of different cognitions/beliefs. The nCBT model takes a different approach to disputing thoughts, by using current and past experience as disputation.

As Wave1 skills are integrated, clients begin to establish new cognitions based upon their use and effectiveness. For example, at the beginning of treatment, clients might say, "I have no control, it just happens." At this stage, they may develop a less-helpful self-appraisal based on feeling a lack of self-control. This self-appraisal may change and shift as they begin attending to and regulating their physiological response during phases 1 and 2. Developing a sense of self-efficacy, they might now create new cognitions such as:

There are certainly things outside of my control, and my body is going to respond how my body is going to respond. But now, I can notice those responses and regulate them according to what I want to happen.

In this case, counselors help clients create new cognitions based upon experience, rather than logical debates about the rationality of the prior cognitions, known as the Socratic method. Instead, experience is used as the disputation technique. New cognitions can be created about the emotional experience, and compared to old cognitions in order to solidify their meaning and benefits. As clients become more attuned to their physiological responding and develop self-acceptance and compassion, counselors can help them process any new cognitions that emerge from this attunement and self-acceptance. New cognitions and beliefs may also emerge about the client's personhood. Examples of cognitions/beliefs about personhood might include,

I can ride the wave of my experiences without acting on them all the time.

Daily Thought Records

Virtually every form of traditional CBT includes a daily thought record in which clients keep track of their activating events, beliefs, and consequences. In nCBT, we provide several **nCBT Daily Thought Records** (see Handouts section) that can be used for this purpose. These thought records begin with clients assessing the consequences of wave 1 (C1) instead of the activating event, which is a change from traditional CBT. These handouts can be used in session to enhance clients' ability to become more aware of their physiological processes while beginning to make meaning of them. This handout can also be completed outside-of-sessions and reviewed at follow-up sessions.

When using the daily thought records, consider the following steps.

1. Explore the client's wave 1 consequences (C1).
 - a. What did your body feel like? What did you feel emotionally? What did you notice? How intense was this?
2. Explore the immediate awareness (A2).
 - a. When did you notice this? What were you immediately aware of? What did you see, hear, touch, taste, smell, think, and/or do? How intensely?
3. Explore the brain from the top-down (B2).
 - a. What went through your mind? What did you immediately think about this process? What did you think a little later? What distortions did you

notice? How much did you believe them?

4. Explore the wave 2 consequences (C2).
 - a. What did your body feel like? What did you feel emotionally? What did you how? How intense was this?

When reviewing this process, it is important for clients to practice Wave1 skills. After Wave1 skills are enacted and clients are regulated, counselors might begin to use traditional CBT techniques to explore the helpfulness of B2 in terms of client goals and continue with cognitive restructuring and the creation of new, more helpful thought patterns.

Reappraising past events

Once the brain is built from the bottom-up, it is time to connect the bottom (limbic structures) to the top (prefrontal cortex). One strategy to do so is to reappraise past events. Traditional CBT focuses on this step first, but nCBT completes this step after clients have achieved bottom-up regulation. nCBT provides several worksheets that can help with this process. As you practice, feel free to recreate these forms in any manner that aligns with clients' worldview and needs. For instance, you might use artwork, pictures, whiteboards, etc. instead of the worksheets provided. Either way, the following protocol can be used.

Step 1: Begin with the ***Reappraising Past Events Wave2*** handout.

- Process the C1-A2 connection.
 - What did you first become aware of? This includes the consequences of Wave1. For example, what did the client become aware of in their body, what feeling words do they use, and what behaviors were present?
 - When did you become aware of the C1?
 - How long did it take you to become aware of the C1?
- Process B2.
 - When you became aware, what went through you mind?
 - What did you think about in general? ...about what you were aware of? ...yourself, others, and the future?
 - Typically, this will lead to some beliefs about their diminished self-efficacy and/or perceived helplessness (e.g., "I can't control it").
 - You also might begin to uncover some life/death associations (e.g., "If this continues, my life is over").
- Process C2.
 - After B2, what did you experience in your body? What did you do? What feeling would you call this?

Step 2: Move to the **Reappraising Past Events Wave1** handout.

- Explore A1.
 - What started this whole process? Be sure to explore both episodic and enduring activating events.
 - What happened, what did you see, hear, touch, taste and smell?
- Explore B1.
 - What did A1 remind you of? What was familiar about A1? How was A1 related to your safety? How was A1 related to increasing pleasure or avoiding pain?
- Process the B1-C1 connection.
 - Based upon B1, what did you experience in your body? What did you do? What feeling would you call this?
 - How did B1 influence C1?

After clients have had some success in bottom-up regulation, you might also find it useful to reappraise several old experiences using the **Reappraising Old Experiences Thought Record** handout. In order to do so, you can follow these steps:

1. Encourage the client to list old experiences in their life that led to consequences that they found less desirable.
 - a. What events stand out as important?
 - b. What do you remember about those events? What did you see, hear, touch, taste, and/or smell?
 - c. What were your emotional, physiological, and behavioral consequences?
2. Encourage the client to list their new beliefs about the old experiences/consequences.
 - a. What do you think about the old events/consequences now?
 - b. What did you used to think?
 - c. How have these beliefs changed?
3. Encourage the client to list and lock-in their new emotional consequences.
 - a. As you reflect, what do you notice about your body?
 - b. What do you feel now?
 - c. Encourage the client to feel this in the moment and exaggerate this response as much as possible until it has reached its maximum intensity.
 - d. Encourage client to send this rejuvenating feeling throughout their entire body and lock-in this experience using sensory cues (e.g., thumb touching pinky).
4. Encourage the client to list their new behavioral consequences and plan for the future?

- a. What are you doing now?
- b. What will you do moving forward?

Guidelines for reappraisal

When helping clients reappraise thoughts, resist the urge to use dichotomous labels such as positive and negative thinking. Instead, encourage the use of continua in evaluating progress. Instead of clients thinking *positively*, encourage thinking *differently*. Help them to evaluate whether or not their current cognitions/beliefs help them achieve their goals. A few further guidelines are important to consider when assisting clients to reappraise:

1. Thoroughly explore the clients' wants, wishes, values, and desires, what some would call their goals. This step is important because it will be used to assess the effectiveness of the process.
2. Evaluate the helpfulness of thoughts rather than their rationality. For instance, "how helpful are these new ways of thinking towards getting the things that are important to you?"
3. Ensure cultural competency when exploring wants, wishes, desires, etc.
4. Explore various aspects of helpfulness including the following:
 - a. Salience: how present/important is the thought to you at this moment?
 - b. Valence: how attractive is the thought?
 - c. Breadth: what and how many areas of life does this thought appear and affect?
 - d. Flexibility: how willing are you to consider alternatives?
 - e. Density: how often do you think about and/or act upon this thought?
 - f. Strength: how strongly do you believe this thought?
 - g. Comfort: how comfortable is this thought to you?
5. Help clients think of things that they want instead of their "problems."
6. Use a stages of change and successive approximations approach to restructuring. For instance, instead of going from an "irrational" to "rational" thought, consider moving from a less helpful to more helpful thought. Think about restructuring in successive approximations of the eventual, ultimately desirable thought. For instance, instead of moving from "I can't do it" to "I can do it," consider moving from "I can't do it...to I might be able to do it...to I can do it."
7. If clients have trouble creating the new thoughts from experience, then you can think about altering aspects of the thoughts rather than the content of the thought itself. For instance, you can change the characteristics of the thought (e.g., color, volume, pitch, source, tone, etc.). For example, clients that use

metaphors to describe their experiences (e.g., it's like I keep running into a brick wall) can alter the object they are running into (e.g., it's like I running into a fence), thus promoting cognitive flexibility and the development of a new stimuli to integrate and make meaning of.

8. Reappraise past events. Once clients have the capacity to regulate, they can now revisit old events, perpetual events, etc. in order to reappraise them.
9. Whereas it is important to reappraise old events using nCBT, counselors should ensure that clients also appraising new experiences that are occurring during counseling.
10. Some activating events are perpetually present, such as ongoing oppression or marginalization. When reappraising past events with clients, we advise for cultural issues to be directly discussed in an inquisitive fashion that allow clients to come to their own understanding of how their cultural background may be influencing their current responding.

Exploring Implicit Schema

Most negative self-appraisals and cognitive distortions have deeper roots. In Beck's cognitive theory, automatic thoughts are generated by implicit schema. Cognitive restructuring is often most successful when clients begin to explore deeper underlying beliefs about themselves and the world around them. Exploring these schematic thoughts requires fairly advanced counseling skill and comfort with depth work. It is user-friendly for most counselors who possess the requisite skills, as no technology is required and outside-of-session practice is not indicated. In nCBT, there are two techniques that help clients go deeper and explore implicit schema: downward arrow and free association.

Downward arrow

Throughout nCBT, you might find it helpful to use the ***nCBT Downward Arrow*** handout. In traditional CBT, this technique is used to explore core cognitions and challenge each one along the way. In nCBT, this technique is used to find the core meaning, value, and significance of any experience. The approach can be used with any stimuli, event, experience, etc. Several questions can help facilitate this process:

- What does that mean to you?
- What's important/significant about...?
- What's that like?
- What would that do?
- What would that help you accomplish?
- What would that mean?

- What would you do with that?
- What would happen next?

Although these questions are helpful, it is important that counseling doesn't turn into an inquisition. Therefore, be sure to infuse other counseling microskills (e.g., reflections and door openers) during this process. Below is an example of what this might look like in a counseling session:

Client: I wish I had more money.
 Counselor: What would it mean to you to have more money?
 Client: It would be amazing, I would be secure.
 Counselor: Security seems important to you. What would security do for you?
 Client: I would finally be able to stop worrying about things.
 Counselor: ...and what's important to you about not worrying about things?
 Client: It would mean the world, I would be able to accomplish the things that I have wanted to, but haven't had the time or confidence to do.
 Counselor: You would have more time for other things.
 Client: I would take care of myself...my family...and be able to really live...I would be secure and have freedom.
 Counselor: What would that security and freedom mean to you?
 Client: I don't know...I've never had it before. I can only imagine that it would help me feel the way I want to feel and do the things I want to do.
 Counselor: What would be significant about those feelings and things?
 Client: I think I would truly be happy...and be able to contribute to others in my life.
 Counselor: Contributing to others in your life sounds important.
 Client: I would have connections...I have never really been able to keep connections before because I have either worried about them leaving me or had to work so hard to meet the basic needs. Friendship, companionship, and intimacy was never a priority.
 Counselor: What would those connections mean to you?
 Client: Peace, comfort, hope, and happiness...something I never thought I would have.
 Counselor: And what will you do with that peace, comfort, hope, and happiness...
 Client: Finally live...be free.

What did you notice about this example?

Even though the conversation started with money, we quickly learned that it wasn't really about money at all, but it was about the peace, security, and freedom that this

money will bring about in order for this client to finally live. Typically you will continue the downward arrow until you hear repetition of concepts and/or arrive at some life/death association. In this case, money meant living an actualized life, but on the other side of this is that without the money, the client experiences the absence of life, or death. Counselors utilizing a traditional CBT approach might try to dispute this reliance on money, whereas nCBT would use this life/death association with money to empathize and help the client understand their reactions to events related to money that others might see as exaggerated or irrational. The ultimate outcome is greater awareness of what matters most to the client and their meaning-making process, rather than modification of schema. This awareness can help clients operate from values that bring their life the most meaning, and to understand why they respond automatically when those values are not lived.

Remember, the downward arrow can be used with any activating event, experience, situation, topic, etc.

Free association

As with downward arrow, counselors listen closely for a topic that is clearly emotionally-laden or produces a physiological response in the client. Once the topic has been identified, counselors will ask clients to identify words associated with the topic. Counselors will continue to select emotionally-laden word responses until they hear a repetition of concepts and/or clients arrive at some life/death association. Below is an example of what this approach might look like in a counseling session:

Counselor: You have been feeling sick this week, and that is clearly on your mind. I wonder if you'd be willing to explore the meaning of feeling sick with me? I have a feeling that feeling sick is bringing up deeper issues for you.

Client: Sure, we can give it a try. I've been sick for the past few weeks actually, and can't seem to shake it.

Counselor: I'm going to say a word, and I want you to respond with the first words that come to mind. I'll then select one of those words, and we'll start the process again.

Client: OK.

Counselor: Sick.

Client: Ummm... slow, tired, not functional, not myself.

Counselor: Not functional.

Client: OK... [tears up] vulnerable, dependent, alone.

Counselor: Alone.

Client: [In tears] it brings up that my partner died a year ago. He was sick for

several months before he died, and never came back from it. I felt so alone then, as now.

Counselor: So in your mind, sickness reminds you of grief, the fear of death, and isolation.

Client: Yes, that's right. And I wasn't aware of that before. That may be why I have had such a hard time recovering from this sickness. My fears and stress might be making the sickness worse.

Counselor: It's certainly possible.

Client: So what do I do with this now?

Counselor: It also seems to me that you are still grieving your partner's death, and miss the closeness you had with them. I think we could probably spend some time revisiting your memories, thoughts, and feelings about your partner. We could also focus on your social engagement, to help you feel more connected with others and less isolated. What do you think?

Client: I'd love that.

By connecting the bottom to the top, we assist clients in developing self-awareness of deeper underlying issues that are contributing to current problems. This self-understanding must be paired with self-acceptance and compassion – in the example above, the counselor should intervene if the client berates themselves for “still being stuck in the past.” Importantly, it is not enough for clients to develop self-awareness alone. Counselors should use this information to identify what matters most to clients about the topic, identify goals based on their meaning making, and assist clients in achieving those goals. In the example above, the counselor identifies reminiscing about the deceased partner and enhancing social engagement as potential goals, based on the client's responses to the free association exercise.

Case Closure

As nCBT treatment begins to reach a conclusion, it is important to take at least one session to review treatment progress, consolidate gains, plan for generalization, and arrange a future follow-up session if indicated. In our experience, it can take several sessions to fully explore how clients have made meaning of their treatment gains and experiences in counseling. It is also important for counselors to inform clients several sessions in advance when case closure is expected to occur, so the client has the opportunity to prepare for this and share any feelings they have about their counseling experience. Counselors should not wait to inform clients about case closure until the final session.

Several questions can be helpful to explore with the client during the final

sessions, outlined below. Consider using the ***Waves of Case Closure*** handout to guide this discussion with the client.

1. As we talk about ending counseling (A1), what are you noticing about your body and feeling (C1)?
2. Now that you are aware of this (A1), what do you think about this (B2)?
3. What are you noticing about your body and feeling (C2)?
4. Where is this coming from...what is familiar about this (B2)?
5. What does this mean to you?
6. What do you want to do next?

Chapter 7: Treatment Fidelity

It is important for counselors to follow the principles of this manual in a flexible manner. The following components are required for treatment fidelity to be established. The bullets below each criterion are examples of how the criterion can be met.

Phase 1: Attend to Physiological Reactions

Counselor develops rapport and trust with client.

- Collaborating to set agenda
- Explaining that nCBT will be helpful in addressing the client's problems, with a rationale
- Engaging in basic microskills (active listening, reflection, summarizing), core conditions (empathic skills, warmth, concern, positive regard, and genuineness), confidence
- Providing psychoeducation on Wave1 and 2
- Collaboratively identifying outside-of-session practice
- Initiating pre-conversations for readiness to address issues/abreactions
- Closing a session with a summary
- Eliciting client feedback and addressing any alliance ruptures
- Pacing and efficient use of time

Counselor assesses physiological reactions, predominant response, and treatment expectancy.

- Conducting a thorough neurobiopsychosocial assessment
- Attending to in-session physiological reactions
- Appraising out-of-session physiological reactions
- Assessing predominate response
- Inquiring about client motivation and expectancy for change to occur
- Providing appropriate referrals for adjunctive or alternative treatments

Counselor conceptualizes client case and forms collaborative treatment goals.

- Conceptualizing case, with consideration for predominant response style
- Discussing client's preferences, beliefs, and values
- Collaborating on goal identification
- Identifying behavioral, physiological, emotional, cognitive variables for outcome measurement

Phase 2: Build the Brain from the Bottom Up (Wave 1 Interventions)

Counselor addresses lifestyle habits that support optimal brain health and prevent neurophysiological vulnerability.

- Reviewing “Supporting Optimal Brain Health and Preventing Neurophysiological Vulnerability” handout
- Collaboratively completing the “Exploration of Current and Future Activities” worksheet
- Reviewing clients’ weekly responses on “Activity Tracking Sheet” in subsequent sessions

Counselor and client collaboratively identify daily practice that assists with achieving preconscious emotional and physiological self-regulation.

- Engaging in affective modeling and interactive regulation
- Collaboratively identifying sensory-based coping strategies (auditory, visual, olfactory, gustatory, tactile), to assist with grounding and coping during physiological arousal, using established guidelines for selecting sensory-based coping strategies
- Collaboratively identifying daily mindfulness practices
- Leading exercises in conditioned anchoring
- Collaboratively defining exposure hierarchy, choosing the first exposure task, and assessing readiness
- Integrating biofeedback and/or neurofeedback protocols
- Identifying real-life situations for safely practicing daily exercises that facilitate state-dependent learning
- Inquiring about outside-of-session practice at each session

Phase 3: Connect the Bottom to the Top (Wave 2 Interventions)

Counselor assists clients in becoming aware and attuned of their responding, to connect behaviors and emotions to their physiological state, and to develop self-acceptance and compassion.

- Assisting clients to self-monitor through providing feedback about physiological responding
- Observing physiological responses in session and asking clients if they have also noticed their responses
- Processing with client, “if your body could talk, what would it say?”
- Counting pulse exercise
- Using “Connecting Behaviors and Emotions to Physiological States” worksheet

- Using sensory-based exploration
- Leading body scan
- Initiating self-compassion meditation: 1. "Sit with" an experience rather than approach (move toward) or avoid (move away), 2. Words of gratitude, understanding, and compassion for different parts of your body?

Counselor assists clients in reappraising past events and exploring implicit schema that generate further emotional, physiological, and behavioral consequences.

- Engaging in reappraisal, following established guidelines
- Using experience as disputation
- Using thought records
- Exploring implicit schema through downward arrow and/or free association exercises. Follows directions and protocol when using these techniques. Identifying deeper meaning/values, and helps client develop goals to live out these values.

Handouts

Unhelpful Thinking Styles

Traditional CBT Thought Record

Supporting Optimal Brain Health and Reducing Neurophysiological Vulnerability Assessment

Fight or Flight

The Waves of the ABCs

Neurobiopsychosocial History

Predominant Response Questionnaire

How the Brain Responds to Threats

Case Conceptualization and Treatment Planning

POSERSE Goal Setting

Experience Tracking Sheet

Waves of the Counseling Relationship

Supporting Optimal Brain Health and Reducing Neurophysiological Vulnerability

Exploration of Current and Future Activities

Activity Tracking Sheet

Daily Practices in Mindful Awareness

Anchoring Desirable States

Connecting Behaviors and Emotions to Physiological States

Sensory-Based Exploration and Imagery

nCBT Daily Thought Records (all versions)

Reappraising Old Experiences Thought Record

Reappraising Past Events Wave2

Reappraising Past Events Wave1

Downward Arrow

Waves of Case Closure

Unhelpful Thinking Styles

All or nothing thinking



Sometimes called 'black and white thinking'

If I'm not perfect I have failed

Either I do it right or not at all

Over-generalising



Seeing a pattern based upon a single event, or being overly broad in the conclusions we draw

Mental filter



Only paying attention to certain types of evidence.

Noticing our failures but not seeing our successes

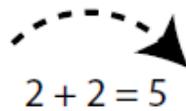
Disqualifying the positive



Discounting the good things that have happened or that you have done for some reason or another

That doesn't count

Jumping to conclusions



There are two key types of jumping to conclusions:

- **Mind reading** (imagining we know what others are thinking)
- **Fortune telling** (predicting the future)

Magnification (catastrophising) & minimisation



Blowing things out of proportion (catastrophising), or inappropriately shrinking something to make it seem less important

Emotional reasoning



Assuming that because we feel a certain way that we think must be true.

I feel embarrassed so I must be an idiot

should must

Using critical words like 'should', 'must', or 'ought' can make us feel guilty, or like we have already failed

If we apply 'shoulds' to other people the result is often frustration

Labelling



Assigning labels to ourselves or other people

*I'm a loser
I'm completely useless
They're such an idiot*

Personalisation

"this is my fault"

Blaming yourself or taking responsibility for something that wasn't completely your fault. Conversely, blaming other people for something that was your fault.

<p style="text-align: center;"><u>A</u></p> <p style="text-align: center;">What I am/was aware of</p>	<p style="text-align: center;"><u>B</u></p> <p style="text-align: center;">What I think/thought about it</p>	<ul style="list-style-type: none"> • What is my goal in this situation? 	<p style="text-align: center;"><u>New Bs</u></p>
		<ul style="list-style-type: none"> • Is my thinking based on fact? (Could I prove it in a court of law? What would a camera show?) <p>Which cognitive distortion (s) might be present?</p>	<ul style="list-style-type: none"> • Does my new thoughts “pass” the rational questions?
	<p style="text-align: center;"><u>C</u></p> <p style="text-align: center;">How I feel/felt and What I do/did</p>	<ul style="list-style-type: none"> • All or nothing, dichotomous thinking • Mental filter • Jumping to conclusions • Emotional reasoning • Labelling • Overgeneralizing • Disqualifying the positive • Magnification, catastrophizing or minimization • Irrational shouds, oughts, and musts • Personalization 	<p style="text-align: center;"><u>New Cs</u></p> <p style="text-align: center;">How I will feel and act thinking the new thought</p>
		<ul style="list-style-type: none"> • Does my thinking help me to achieve my goals? • Does my thinking help me feel the way I want to feel? 	



Supporting Optimal Brain Health and Preventing Neurophysiological Susceptibility Assessment

The brain needs certain “essential nutrients” to function optimally. This questionnaire is intended to assess current engagement in activities that impact brain health so that you can know your baseline, identify areas for change, and measure progress over time. There are no right or wrong answers.

Never: not ever true

Occasionally/Yearly: More than never, but less than 12 times a year

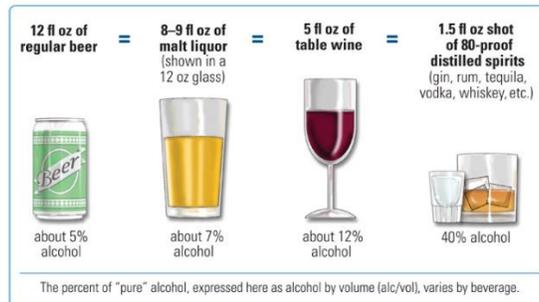
Sometimes/Monthly: More than 12 times a year but not necessarily a weekly basis

Usually/Weekly: Not every day, but multiple days a week

Always: Every day

	Never	Occasionally (Yearly)	Sometimes (Monthly)	Usually (Weekly)	Always (Daily)
I sleep 7-9 hours per night					
I have trouble falling or staying asleep					
I wake up feeling rested					
I engage in 30-45 minutes of moderate or greater intensity aerobic exercise					
I engage in strength training exercises					
I practice yoga, tai-chi, or dance					
I engage in mindfulness practice(s)					
I check in with my internal thoughts, feelings, and sensations					
I engage in focused, goal-oriented tasks					
I engage in non-goal directed activities (e.g., day dreaming, listening to music, doodling)					

	Never	Occasionally (Yearly)	Sometimes (Monthly)	Usually (Weekly)	Always (Daily)
I engage in exploratory, spontaneous, and unstructured activities					
I spend time in nature and/or connecting with animals					
I meaningfully connect with family members or friends					
I participate in community events that benefit others					
I eat healthy, balanced meals					
I limit simple sugar intake					
I avoid allergy-inducing foods (when relevant)					
I smoke cigarettes or cigars or am exposed to second hand smoke					
I ingest non-prescribed medications or other illegal drugs					
I drink 3 or more alcoholic beverages (see diagram below)					



Fight Or Flight Response

When faced with a life-threatening danger it often makes sense to run away or, if that is not possible, to fight. The *fight or flight response* is an *automatic* survival mechanism which prepares the body to take these actions. All of the body sensations produced are happening for good reasons – to prepare your body to run away or fight – but may be experienced as uncomfortable when you do not know why they are happening.

Thoughts racing

Quicker thinking helps us to evaluate danger and make rapid decisions. It can be very difficult to concentrate on anything apart from the danger (or escape routes) when the fight or flight response is active

Changes to vision

Vision can become acute so that more attention can be paid to danger. You might notice 'tunnel vision', or vision becoming 'sharper'

Dry mouth

The mouth is part of the digestive system. Digestion shuts down during dangerous situations as energy is diverted towards the muscles

Heart beats faster

A faster heart beat feeds more blood to the muscles and enhances your ability to run away or fight

Nausea and 'butterflies' in the stomach

Blood is diverted away from the digestive system which can lead to feelings of nausea or 'butterflies'

Hands get cold

Blood vessels in the skin contract to force blood towards major muscle groups

Muscles tense

Muscles all over the body tense in order to get you ready to run away or fight. Muscles may also shake or tremble, particularly if you stay still, as a way of staying 'ready for action'

If we don't exercise (e.g. run away or fight) to use up the extra oxygen then we can quickly start to feel dizzy or lightheaded

Dizzy or lightheaded

Breathing becomes quicker and shallower

Quicker breathing takes in more oxygen to power the muscles. This makes the body more able to fight or run away

Adrenal glands release adrenaline

The adrenaline quickly signals other parts of the body to get ready to respond to danger

Bladder urgency

Muscles in the bladder sometimes relax in response to extreme stress

Palms become sweaty

When in danger the body sweats to keep cool. A cool machine is an efficient machine, so sweating makes the body more likely to survive a dangerous event

“I don’t know what happened,
it came like a wave”

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

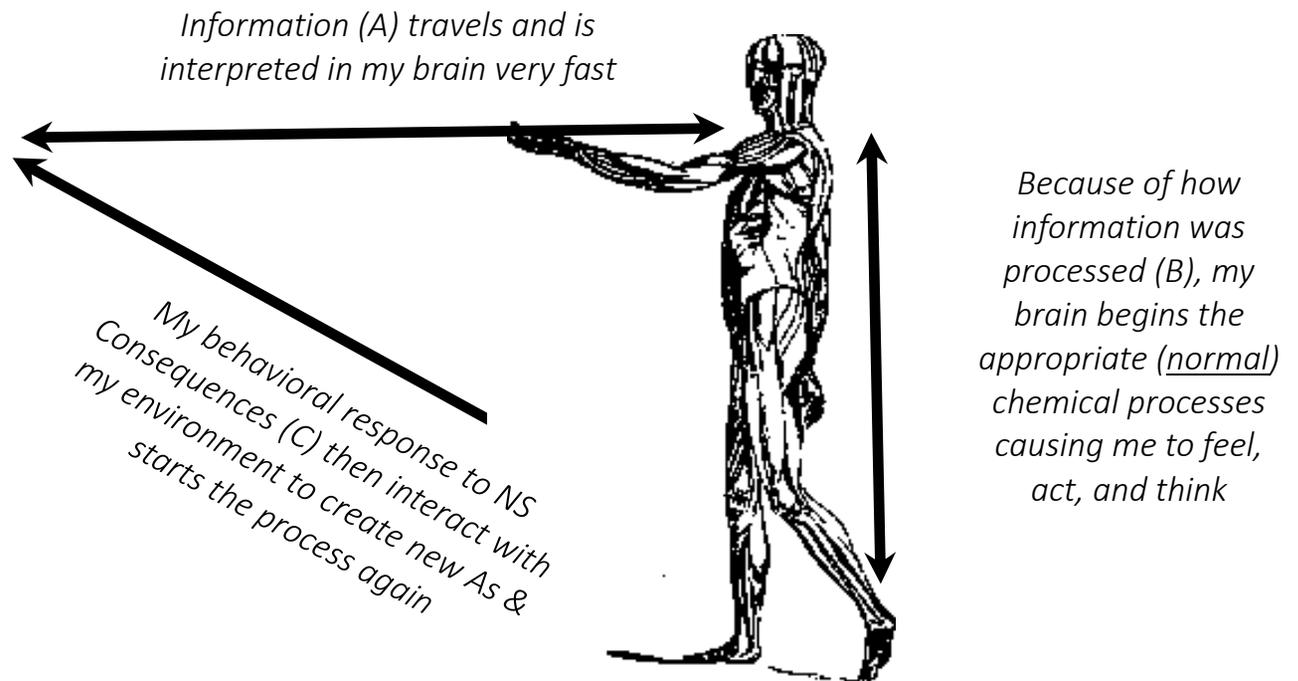
B2: Brain from the Top-Down—
My brain collects more information and begins to make
sense of it while I begin to make decisions about it

* (Brain processing exists w/in the context of various factors including implicit associations, existing schema, primary modes, brain development & activity, and genetic and epigenetic dispositions)

A1: Activating Event—
Something happens

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

*(Events and awareness exist w/in the context of various sociocultural variables including social injustice, gender roles, family of origin, etc.)



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

*(Consequences exist w/in the context of physical development and physiological functioning)



Attend. Build. Connect.



Neurobiopsychosocial History

Name:

DOB:

Date:

Information provided by:

A. Reason for seeking services:

Referred by:

Concerns, from the referral source's perspective:

Concerns, from your perspective (if different):

Concerns, from the perspective of others:

B. Family history:

Your parents' relationship with each other:

Your relationship with each parent growing up (list three adjectives that describe the nature of the relationship):

Your relationship with each parent, as of today (list three adjectives that describe the nature of the relationship):

Your parents' problems with physical health, substance use, or mental health:

I am the oldest child middle child youngest child only child

Your relationship with your siblings (list three adjectives that describe the nature of the relationship):

Other important family members to you:

C. Cultural background: I belong/self-identify with the following cultural groups:

_____ race/ethnicity _____ gender

_____ sexual orientation _____ religion

_____ (include any others here)

D. Symptoms:

During the past two weeks, mark an “X” in the appropriate column for how much (or how often) you been bothered by the following problems.

Problem	None (not at all)	Slight (rare, a day or two)	Mild (several days)	Moderate (more than half the days)	Severe (nearly every day)
Little interest or pleasure in doing things?					
Feeling down, depressed, or hopeless?					
Feeling more irritated, grouchy, or angry than usual?					
Sleeping less than usual, but still have a lot of energy?					
Starting lots more projects than usual or doing more risky things than usual?					
Feeling nervous, anxious, frightened, worried, or on edge?					
Feeling panic or being frightened?					
Avoiding situations that make you anxious?					
Unexplained aches and pains (e.g., head, back, joints, abdomen, legs)?					
Feeling that your illnesses are not being taken seriously enough?					
Thoughts of actually hurting yourself?					
Hearing things other people couldn't hear, such as voices even when no one was around?					
Feeling that someone could hear your thoughts, or that you could hear what another person was thinking?					
Problems with sleep that affected your sleep quality over all?					
Problems with memory (e.g., learning new information) or with location (e.g., finding your way home)?					
Unpleasant thoughts, urges, or images that repeatedly enter your mind?					
Feeling driven to perform certain behaviors or					

mental acts over and over again?					
Feeling detached or distant from yourself, your body, your physical surroundings, or your memories?					
Not knowing who you really are or what you want out of life?					
Not feeling close to other people or enjoying your relationships with them?					
Drinking at least 4 drinks of any kind of alcohol in a single day?					
Using any of the following medicines without a doctor's prescription, in greater amounts or longer than prescribed: painkillers (like Vicodin), stimulants (like Adderall), sedatives (like Ambien or Valium)?					
Using drugs like marijuana, cocaine or crack, club drugs like ecstasy, hallucinogens like LSD, heroin, inhalants or solvents like glue, or methamphetamine (speed)?					

Table taken from DSM-5 Level 1 Cross-Cutting Symptom Measure.

Eating patterns (e.g., detail typical eating frequency, amount, self-reported eating too much, not enough, feeling out of control while eating, feeling guilt after eating, etc.):

Physical activity (e.g., amount and type of physical movement in an average day):

E. Coping strategies:

How do you usually cope with these symptoms?

Which people in your life support you?

F. History of medical conditions and treatment:

Provider	Date	Diagnosis	Treatment	Results

G. History of mental health treatment (counseling and/or medication):

Provider	Date	Diagnosis	Treatment	Results

H. Developmental history:

- Prenatal issues
- Developmental delays
- Parental divorce
- Grief/loss _____

Any other notable details about developmental history:

Experiences of abuse:

Your age at the time	Kind of abuse*	Approximate dates when abuse occurred	By whom?	Whom did you tell?	Effect of telling?

* i.e., physical abuse, sexual abuse, psychological abuse, neglect

Neurological Dysregulation Risk Assessment

Name: _____ Age: _____ Date: _____

Current Problem, Symptom, or Complaint: _____

Please read each potential source of neurological dysregulation and indicate whether or not it may be a risk factor for you or your child.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Genetic Influences: Grandparents, parents, or siblings with mental health or learning disorders (including attention-deficit/hyperactivity disorder), posttraumatic stress disorder, depression, generalized anxiety disorder, substance abuse, personality or other severe psychological disorders (bipolar or schizophrenia).
<input type="checkbox"/> Yes <input type="checkbox"/> No	Prenatal Exposure: Maternal distress, psychotropic medication use, alcohol or substance abuse, nicotine use, or possible exposure to environmental toxins including genetically modified foods, pesticides, petrochemicals, xenestrogens in plastics, heavy metals (lead/mercury), and fluoride, bromine, and chlorine in water.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Birth Complications: Forceps or vacuum delivery, oxygen loss, head injury, premature birth, difficult or prolonged labor, obstructed umbilical cord, or fetal distress.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Disease and High Fever: Sustained fever above 104 degrees due to bacterial infection, influenza, strep, meningitis, encephalitis, Reye's Syndrome, PANDAS, or other infections or disease processes.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Current Diagnosis: Of mental health, physical health, alcohol abuse, or learning disorder.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Poor Diet and Inadequate Exercise: Diet high in processed food; preservatives; simple carbohydrates (sugar and flour); genetically modified foods; foods treated with herbicides; pesticides, and hormones; low daily water intake, high caffeine intake; and lack of adequate physical exercise (20 minutes, 7 times a week).
<input type="checkbox"/> Yes <input type="checkbox"/> No	Emotionally Suppressive Psychosocial Environment: Being raised or currently living in poverty; domestic violence; physical, emotional, or sexual abuse; alcoholic or mentally unstable family environment; emotional trauma; neglect; institutionalization; and inadequate maternal emotional availability or attachment.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Mild to Severe Brain Injury: Experienced one or more blows to the head from a sports injury, fall, or auto accident (with or without loss of consciousness), or episodes of open head injury, coma, or stroke.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Prolonged Life Distress: Most commonly due to worry about money, work, economy, family responsibilities, relationships, personal safety, and/or health causing sustained periods of anxiety, irritability, anger, fatigue, lack of interest, low motivation or energy, nervousness, and/or physical aches and pains.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Stress-Related Disease: Includes heart disease, kidney disease, hypertension, obesity, diabetes, stroke, hormonal, and/or immunological disorders.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Prolonged Medication Use, Substance Use, or Other Addictions: Including legal or illegal drug use, substance abuse, or addiction (alcohol, drugs, nicotine, caffeine, medication, gambling, sex, spending, etc.) and overuse of screen technologies (cell phones, video games, television, computers, Internet, etc.).
<input type="checkbox"/> Yes <input type="checkbox"/> No	Seizure Disorders: Caused by birth complications, stroke, head trauma, infection, high fever, oxygen deprivation, and/or genetic disorders and includes epilepsy, pseudoseizures, or epileptiform seizures.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Chronic Pain: Related to accidents, injury, or a disease process. Including back pain, headache and migraine pain, neck pain, facial pain, and fibromyalgia.

I. Current living situation:

Current partner:

Length of relationship:

People living in the home:

Relationship	Name	Age	Occupation	Any problems?

Own home Rent house Rent apartment Financial Stressors

Moves:

Location	Year	Reason for move

J. Occupational/Educational History:

Top 3 occupational/educational problems or issues:

- 1.
- 2.
- 3.

If still in K-12 grades:

repeated a grade suspended expelled moved schools
 advanced/gifted classes special education/disability services IEP 504 plan

If completed K-12 schooling: highest education level completed

High School: currently attending dropped out completed/graduated GED
Undergraduate: currently attending dropped out completed/graduated

Degree: _____ College: _____

Graduate: currently attending dropped out completed/graduated

Degree: _____ College: _____

What are your occupational or educational goals?

[If adolescent] Post-high school goals:

[If adult] Career goals:

Work history:

Position	Company	Dates	Reason for leaving

K. Legal history:

Current/pending legal charges:

Past legal charges:

Convictions: misdemeanor felony

Incarceration record:

Conviction	Year	Length of sentence



Predominant Response Questionnaire (PRQ)

When reflecting **on the past week**, rate the following items. For intensity, rate yourself on a scale of 0 to 10, with “0” being “very low intensity” and 10 being “very high intensity.”

1. I have been physiologically flooded. My heartbeat and breath rate increased. I became shaky or sweaty. It came on like a wave. My blood felt like it was boiling!

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intensely flooded have you felt this week, on a 0 to 10 scale? _____

2. I have been reactive. I have acted rashly without thinking. I have been unable to control my impulses to act.

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense has your reactivity been this week, on a 0 to 10 scale? _____

3. I have ruminated on past and future events. My thoughts have been “stuck” on one topic. I have struggled to switch my attention. I have been unable to be fully “present.”

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intensely ruminative have you felt this week, on a 0 to 10 scale? _____

4. I have thought negatively about myself, others, and/or the world around me. I have misread events because I expected the worst. I have ignored positive things that have happened, and instead have focused on the negative.

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense was your negative thinking this week, on a 0 to 10 scale? _____

5. I have engaged in sensation-seeking, such as drug use, gambling, casual sex, self-injury.

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense has your ambivalence been this week, on a 0 to 10 scale? _____

6. I have been combative or aggressive (verbally, or physically).

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense has your ambivalence been this week, on a 0 to 10 scale? _____

7. When I have been distressed, I have reached out to others.

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense has your ambivalence been this week, on a 0 to 10 scale? _____

8. I have withdrawn from others and isolated myself.

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense has your ambivalence been this week, on a 0 to 10 scale? _____

9. I have attempted to avoid or minimize (rather than accept and appreciate) my thoughts and feelings.

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense has your ambivalence been this week, on a 0 to 10 scale? _____

10. I have felt so stunned by an event, or felt so conflicted/mixed about a situation, that I was unable to make a decision. I felt frozen or stuck.

Frequency: How often this past week? _____ times

Duration: How long did it last? _____ minutes per occasion, on average

Intensity: How intense has your ambivalence been this week, on a 0 to 10 scale? _____

For clinician:

Review the client's self-report of their responses this past week. Appraise information about frequency, duration, and intensity to determine whether the client is experiencing a problematic Wave1, Wave2, or Wave1 and 2 response process. Then, assess whether the client seems to have an approach (move toward), avoid (move away), frozen (motionless) or combination response style.

Wave1 process: Q1, Q2

Wave2 process: Q3, Q4

Approach style: Q5, Q6, Q7

Avoid style: Q8, Q9

Frozen style: Q10



How the Brain Responds to Threats

Sometimes, “thinking before acting” is a near impossible task. When we feel triggered and begin to feel flooded by emotions, it may seem too late to prevent ourselves from acting on impulses. In such moments, we may not become aware of what we were thinking or feeling in that moment until after we have already acted. Later, when we calm down or regulate, we may have thoughts such as, “I don’t know what I was thinking (or feeling, or doing),” or even “I can’t remember what happened.” Understanding how the brain responds to stress and threats helps us understand why it may be difficult to think through a situation before responding or acting.

The brain is an amazing organ, capable of memorizing details from our recent or distant past and making decisions based on what we have learned from those memories. For example, some people or events “remind us” of others from our past. This “reminiscence” can activate our emotional memory systems in the brain and can trigger feelings, such as fear, excitement, joy, sadness, anxiety, and anger. Underlying these feelings, our memories can also trigger physiological (body-based) responses, such as racing heartbeat, shallow breathing, sweaty palms, dizziness, upset stomach, muscle tension, and tearfulness, to name a few. We can become emotionally distressed when a person, place, or situation in our environment preconsciously reminds us of a perceived threat/danger in the past, activating our emotional memory system and causing us to react as if the threat were present in real time, even if it is not.

The Cycle of Regret

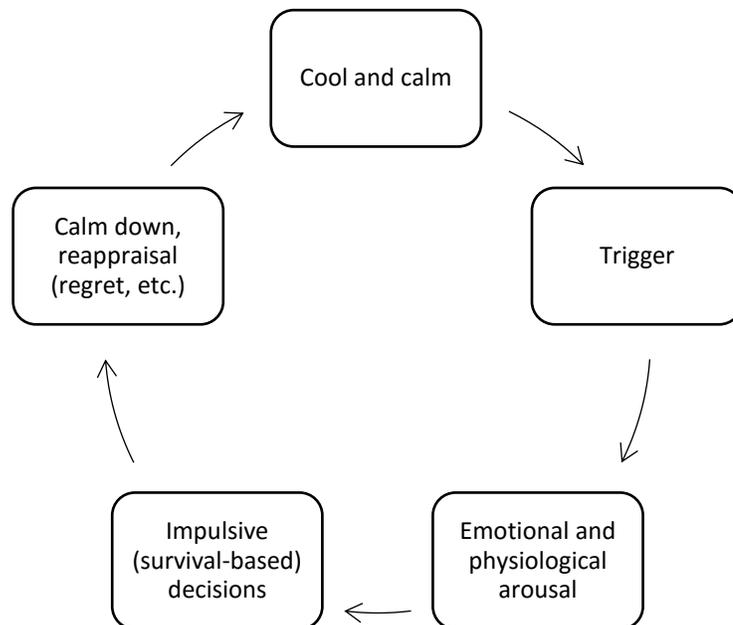


Figure 1. The cycle of regret.

The diagram above in Figure 1 depicts the “cycle of regret” that many of us experience. At the beginning of the cycle, we feel cool and calm until a trigger or perceived threat appears in our environment. In response, we become upset and emotional as the body releases “stress hormones” such as adrenaline and cortisol into our system.

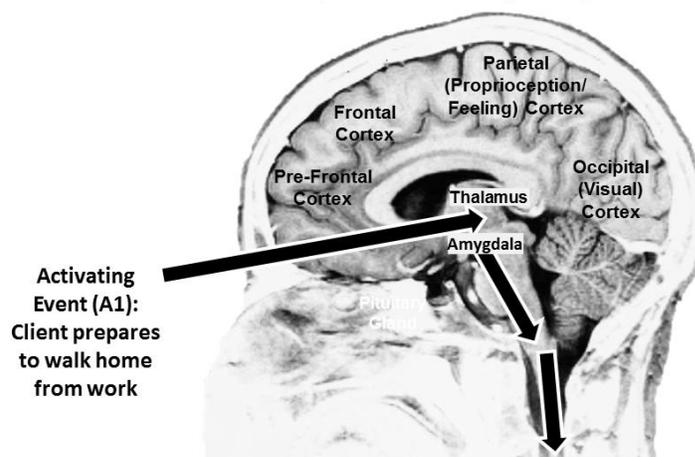
Sensing a threat, the brain and body prepares for action – either to attack (“fight”), or leave the situation and avoid (“flight”). In cases when the body is overwhelmed by stress, and fighting or fleeing no longer do not seem possible, the body may feel unable to choose between those impulses (“freeze”). When the brain begins to process information more quickly, we tend to react automatically to attack or avoid before the rational part of the brain has a chance to evaluate the options available to us. After all, this is a natural, survival based response. Thinking through our options when we are truly in a life or death situation, would likely spell certain death. Yet when the threat is not valid, but we react automatically, those reactions are not helpful to the situation and even harmful. Sometimes it is not until after these behavioral choices are made, that we can calm down and evaluate our decisions. Having acted in ways that were unhelpful or harmful can often lead us to feeling embarrassed, regretful, or even ashamed, even if those reactions were intended to keep us safe. Unless we learn to interrupt this cycle, we risk having it repeat and experiencing the same negative consequences the next time a similar trigger enters our environment.

Wave1 and Wave2

The following is an example of how the brain adapts to stress and threat in its environment. One evening, a person walks home from work and is mugged unexpectedly. After that incident, their brain learns to become acutely sensitive to threats in their environment. Every day following the mugging incident, the act of preparing for their walk home causes the person to become physiologically “triggered,” with epinephrine (adrenaline) and cortisol production causing an increase in heart rate, sweaty palms, shallow breath, anxiety, and feeling “frozen” as if they cannot walk (*Wave1*). The person becomes aware of their physiological, emotional, and behavioral response, developing beliefs about this (“I can’t believe this is happening again,” “I should be able to do this”). As a result of these beliefs, the person can feel shameful and become tearful (*Wave2*). The diagrams below depict this process in the brain.

Wave 1

Brain from the Bottom-Up (B1): Implicit memory association with antecedent (mugging) leads to increased cortisol and adrenaline production that bypasses pre-frontal cortex

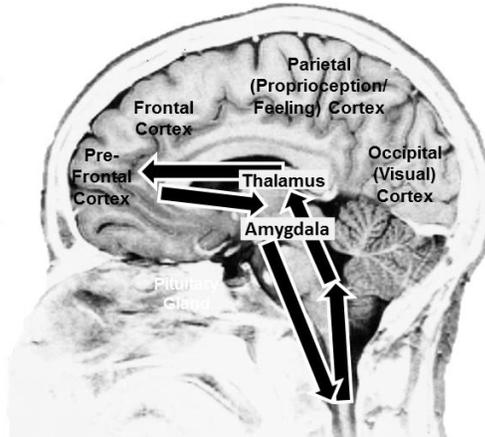


Consequences throughout the nervous system (C1): Increased heart rate, sweaty palms, shallow breath, emotional response (anxiety), urges to act (freeze response)

Wave 2

Awareness (A2) message sent from Limbic Area to Neocortex regarding physiological response and/or behavior

Brain from the Top-Down (B2; Neocortex): Beliefs about physiological response, behavior, or stimulus/ antecedent ("I can't believe this is happening again")



Consequences throughout the Nervous System and Limbic System (C2): Secondary emotions such as shame, secondary physiological response such as tearful

Why Does the Brain Work this Way?

As mentioned above, the brain is a complex organ capable of recalling events and details without our consciously awareness. The brain protects us by responding instinctively to perceived threats in our environment. It is theorized that the brain's sensitivity to perceived threats was initially a survival strategy to protect humans from danger in their environment. For example, early humans needed to attack or avoid a wild animal approaching them to protect themselves from danger. Today, this survival mechanism continues to protect us from being hurt or injured by our environment or others. Again, the brain's quick response to threats is therefore *adaptive*. However, in the modern world, this sensitivity to perceived threat can be *maladaptive*, meaning that a person can perceive threat (e.g., environmental trigger, etc.) when none is present, resulting in unnecessary and perhaps undesired emotional distress and unwanted behaviors.

The brain adapts when learning new behaviors, too. When we learn something new for the first time, we tend to concentrate better and are more aware of ourselves and our reactions. Over time, some behavioral responses can become "automatic." For example, a person who has been driving for ten years might have little awareness of the specific behaviors involved with driving a car such as moving foot pedals, checking side mirrors, and indicating to turn, because they "do it all the time." Automatic responses can lead to behaving without complete awareness, or "acting without thinking." Examples include becoming verbally or physically aggressive when feeling threatened or afraid, biting nails when stressed, and becoming stuck or "frozen" when feeling anxious about making a decision.

What Can I Do About It?

Getting in touch with our physical responding helps us to develop an awareness of when we are feeling threatened in our environment ("triggers"), slow down responses, calm our physiological responding, and acknowledge our thoughts and feelings in the moment without immediately acting on them. The skills below help us to reduce the potential for acting on emotionally-driven survival impulses:

Wave1 Strategies

1. **Supporting optimal brain health and preventing neurophysiological susceptibility.** Certain life style habits reinforce the brain and body's optimal ability to cope with threats and stressors in an adaptive manner. Areas of focus include sleep time, physical time, focus time, down time, time-in, play time, connection time, adequate and healthy nutrition. Use the handout on supporting optimal brain health and preventing neurophysiological susceptibility to learn more about each area, track current practices, and plan for the integration of these activities into daily life.
2. **Sensory-based coping.** Identify a pleasant sensation that you can easily experience in daily life. Hold a warm drink, stroke your hand lightly with your forefinger, feel the sun or wind on your skin, chew gum. These help you to become more aware of your sensory input and how your body feels in this moment.
3. **Mindfulness practice.** Breathe in deeply. Pay attention to your breath. Noticing how you feel inside of your body. Observe three new things around you. Try to hear three new things in your environment.
4. **Anchoring.** Pair a pleasurable experience with a physical anchor, and practice until you experience the same sensation/feelings even outside of the original experience.
5. **Systematic desensitization.** The experience of gradually exposing yourself to situations when you would normally become triggered and overwhelmed can be helpful in training yourself to not automatically respond. If you have experienced trauma, it may be especially important to proceed very slowly with this practice and work in conjunction with a mental health provider.
6. **Neurofeedback and biofeedback.** This is a more technical intervention that involves training your brain and body to operate in a more relaxed and aware state through feedback about your brain and body's current responding.

Wave2 Strategies

1. **Connecting behaviors and feelings to physiological states.** Ask yourself, "if my body could talk, what would it say and why?" Listen to the relationship between body and emotion/behavior, to understand our reactions.
2. **Counting your pulse.** Using a timer, count your pulse for 60 seconds by placing your index and middle finger onto the wrist of your other arm or your neck. Usually, an adult heart rate (HR) above 80 beats per minute (BPM) indicates that epinephrine (adrenaline) has been released, causing you to feel ready for action. You are at-risk of reacting automatically! Leave the situation and wait until your HR is less than +20 BPM over your resting HR.
3. **Self-acceptance and compassion.** Accept your current physical and emotional experiences without judgment. Your body knows what it is doing! Be kind to yourself in light of past events. Ride the wave.
4. **Reappraising past events.** Ask yourself what you have learned from that experience. Consider your current experiences as a way to challenge your past thinking about the situation.



Case Conceptualization and Treatment Plan

Counselor: Counselor Name

Client: Client Name

Part I. Case Conceptualization

Case Description

Client Name is a age year-old marital status/sexual orientation sex of racial/ethnic/religious/educational/etc. background. He/She was referred for type of service by Name. The presenting concerns were list concerns. From the client's perspective, he/she was referred to counseling services because list client problems from their perspective.

Presenting Symptoms

Client name is experiencing list criterion symptoms which started time of onset and occur frequency. Duration and intensity information (if available). Client Name exhibits these symptoms in his/her relationships with names or relationship of individual(s), and in the following environments: list environments/situations. These symptoms cause distress in terms of impact on well-being and impairment in terms of describe activities of daily living, relationship strain/conflict, and/or developmental lags. These symptoms best fit the profile of list diagnoses, with primary first.

Further and/or ongoing assessment will be necessary in order to rule out diagnosis. This diagnosis should be considered because list symptoms that could be attributable to this disorder. This diagnosis cannot be ruled out at this time because provide explanation.

Response Process and Style

Wave1. Client name's symptoms can be understood through examining their response style to immediate threats or rewards detected in their environment. When the client initially senses a threat or reward within their environment, the sympathetic branch of their autonomic system is quickly activated before conscious awareness occurs, resulting in experiences of list symptoms: emotional, physiological, behavioral. During these moments, the client:

- [seeks further stimulation],
- [approaches the stimulus to attack and be combative],
- [approaches others to ask for help and support],
- [avoids the stimulus by withdrawing from the situation and from others],
- [avoids thoughts, feelings, and physiological reactions associated with the stimulus],
- [freezes up and feels unable to make decisions].

Eventually, Client name becomes conscious of these consequences, and they begin to appraise their response. The client's self-appraisal of their response often consists of list cognitive processes here, including cognitive distortions such as intellectualizing. These self-appraisals result in further experiences of list symptoms: emotional, physiological, behavioral.

Wave2. Client name's symptoms can also be understood through examining their response style when immediate threats or rewards are not detected in their environment. Client name tends to ruminate and overthink about past and future events, including list cognitive processes here, including cognitive distortions such as intellectualizing. They are also prone to negative appraisals of themselves and their situation. These ruminations and self-appraisals result in experiences of list symptoms: emotional, physiological, behavioral.

The client's predominant response process appears to be a Wave1, Wave2, or combination process. The client's predominant response style appears to be an approach, avoid, freeze, or combination style.

Context of Response Process and Style

It is hypothesized that the client is experiencing these symptoms and response styles because of unresolved core issues that are causing and/or perpetuating dysfunction. These core issues are insert core issues here. Once initial symptoms have been resolved, it would greatly help this client long-term to resolve these issues by indicate actions the client will need to take to resolve these issues. Once resolved, it is anticipated that the client will have a reduced likelihood of recidivism of symptoms listed above.

Additional information that is important to keep in mind to best understand Client Name is additional information that clarifies what makes this person's presentation unique. Client Name lives with description of housing situation. The cultures that seem to be most contributing to his/her current experience are describe family, child care and other relevant cultures. These cultures impact the client's mental health by describe impact of cultural variables on symptoms; especially consider oppression/marginalization experiences in Wave1 processes, and cultural interpretations of physiological/emotional responses for Wave2 processes. The strengths that seem most relevant to his/her current development are describe strengths.

In order to place Client Name's symptoms in context, it is important to note that there is a family history of list family history of mental health and substance use disorders. Furthermore, he/she [and his/her family?] has/have been experiencing significant stress in terms of list stressors which is/are likely contributing to his/her difficulties.

Treatment Approach

Regarding treatment needs, Client Name currently seems to meet the criteria for outpatient/inpatient/partial treatment/aftercare (as appropriate) service level on the continuum of care. The theoretical approach that this client would most benefit from is neuroscience-informed

cognitive-behavior therapy. This approach is likely to be successful because nCBT directly addresses list presenting symptoms and/or response styles. Following the nCBT model, the counselor will attend to physiological reactions initially, to develop a rapport and trust, assess predominant response style, form goals collaboratively, work through any alliance ruptures, provide psychoeducation about Wave1 and 2, and evaluate client belief in the nCBT model. Outcomes measurements will be used to track progress. Next, the client will receive Wave1 interventions to build the brain from the bottom-up through repetitive daily practice that facilitates state-dependent learning. Wave1 interventions that may be especially useful include list Wave1 interventions, which directly target symptoms of list symptoms. The client will then connect bottom-up processing to top-down processing through becoming more aware and accepting of emotional and physiological activation. Wave 2 interventions that may be especially useful include list Wave2 interventions, which directly target symptoms of list symptoms.

Legal and Ethical Concerns

Some potential legal and ethical concerns that may arise in this case include describe here; consider how these might impact the counseling relationship. The basics of confidentiality, informed consent, disclosure of services provided, and fee arrangements will need to be addressed from the outset. In addition, I will use consultation and supervision to describe how this could be useful for legal/ethical issues.

It is hoped that with increased support Client Name distress will diminish so that his/her list positive qualities and strengths can lead her/him along the path of optimal development.

PART II. ASSESSMENT PROCEDURES AND RESULTS

Symptoms Exhibited

1. Symptom (as many as needed)
2. Symptom (as many as needed)
3. Symptom (as many as needed)
4. Symptom (as many as needed)

Assessment Procedures

1. Brain-Based Measurement [if used]
2. Physiological Measurement [if used]
3. Predominant Response Style Questionnaire
4. Multidimensional Assessment of Interoceptive Awareness (if used)
5. Types of Thinking Scale (if used)
6. DSM-5 PROMIS Level 1 Symptom Checklist (if used)
7. Mental Status Examination (if used)

Results of Assessments

Brain-Based Measurement. The client completed an EEG protocol that measured brain activity at insert here sites. The client's assessment indicated insert here. Treatment targets include insert here.

Physiological Measurement. The client completed a protocol that measured breath rate, heart rate, heart rate variability, peripheral skin temperature. The client's assessment indicated insert here. Treatment targets include blank.

Predominant Response Style. The client completed the Predominant Response Style Questionnaire at the time of the session number. The client indicated a problematic Wave1 process was frequently/infrequently experienced, described as enter here. This process occurred with enter here frequency and enter here intensity. The client indicated a problematic Wave2 process was frequently/infrequently experienced, described as enter here. This process occurred with enter here frequency and enter here intensity. The client's response process appears to be a predominant Wave1, Wave2, or combined Wave1 and 2 process. The client's predominant response style appears to be an approach, avoid, ambivalent response style, defined as [approach] moving toward the stimulus, in either a sensation-seeking or combative/aggressive manner, [avoid] moving away from the stimulus, associated with social withdrawal or attempting to minimize thoughts and feelings, [ambivalent] feeling stunned or conflicted/mixed about moving toward or away from the stimulus, resulting in inability to make a decision.

Interoceptive Awareness. The client completed the Multidimensional Assessment of Interoceptive Awareness assessment at session number session. Interoceptive awareness is defined as an attunement to physiological sensations and feelings within the body. Their scores indicated enter here. The client's level of interoceptive awareness is/is not a focus of treatment.

Cognitive Distortions Scale. The client completed the Cognitive Distortions Scale assessment at session number session. Notable cognitive distortions included enter here. The client's cognitive processes are/are not a focus of treatment.

DSM-5 PROMIS Level 2 Symptom Checklists. The client completed DSM-5 symptom checklists that assess anger, anxiety, depression, inattention, mania, obsessive-compulsiveness, panic, posttraumatic stress, separation anxiety, sleep disturbance, social anxiety, somatic symptoms, substance use at session number session. Their scores indicated a symptoms associated with disorder. Especially notable symptoms included enter here.

Mental Status Examination. Affect was full/broad, flat/blunted, congruent, incongruent, mood was euthymic, dysthymic, depressed, euphoric, labile. Form of thought was logical, circumstantial, tangential, loose associations, flight of ideas, [if indicated] with distractible, preoccupied, or ruminative attention, and [if indicated] latent speed of thought or racing speed of thought. Consciousness was alert or impaired, and oriented/disoriented to time, place, person,

and situation, [if indicated] with dissociative episodes. Memory was intact, impaired with retrograde amnesia, impaired with anterograde amnesia. Motor was relaxed, restless, hypoactive, hyperactive, agitated, catatonic, apathetic. Speech was regular rate and rhythm, laconic, pressured, disorganized, monotone. Interpersonal issues observed include [if indicated] aloof, avoidant, contempt, defensiveness, dismissiveness, defiance, guardedness, hypervigilance, suggestibility [or “no interpersonal issues observed”]. Intrapersonal issues observed include [if indicated] conceitedness, grandiosity, intropunitive tendency, splitting, catastrophizing [or “no intrapersonal issues observed”]. Indications of psychosis include [if indicated] auditory, gustatory, olfactory, tactile, visual hallucinations [if indicated] bizarre, control, erotomatic, grandeur, infidelity, persecution, reference delusion. Appearance was well groomed, immaculate, disheveled, unkempt, underdressed, overdressed.

DSM-5 Dimensional Diagnosis

<i>Code</i>	<i>Disorder</i>
DSM-5 Code	Primary Diagnosis(Primary)
DSM-5 Code	Additional Diagnosis (repeat as needed)
(DSM-5 Z-Code or T-Code)	Situational Issue (repeat as needed)
R/O DSM-5 Code	Rule-out diagnosis (repeat as needed)

PART III. TREATMENT PLAN

Provide a brief treatment plan for this case.

First Goal (A):	Increase/Decrease symptom
Intervention A:	Attend to physiological reactions initially, to develop a rapport and trust, assess predominant response style, form goals collaboratively, work through any alliance ruptures, provide psychoeducation about Wave1 and 2, and evaluate client belief in the nCBT model.
Expected Result:	Describe anticipated result(s) of intervention
Measured By:	Name or describe how you will measure goal achievement/improvement (frequency counts, time duration, intensity scaling, psych tests, etc.), Credibility/Expectancy Questionnaire
Achieved By:	List date, or "Evaluate after X sessions," etc.
Second Goal (B):	Increase/Decrease symptom
Intervention B:	Build the brain from the bottom-up through repetitive daily practice that facilitates state-dependent learning.

<p>Expected Result: Measured By:</p>	<p>Wave1 interventions include List Wave1 interventions. Describe result(s), using concrete numbers Name or describe how you will measure goal achievement/improvement (frequency counts, time duration, intensity scaling, psych tests); This is often the same as your measurement from Intervention A List date, or "Evaluate after X sessions," etc.</p>
<p>Achieved By:</p>	
<p>Third Goal (C): Intervention C:</p>	<p>Increase/Decrease symptom Connect bottom-up processing to top-down processing through becoming more aware and accepting of emotional and physiological activation. Wave 2 interventions include list Wave2 interventions.</p>
<p>Expected Result: Measured By:</p>	<p>Describe result(s), using concrete numbers Name or describe how you will measure goal achievement/improvement (frequency counts, time duration, intensity scaling, psych tests); This is often the same as your measurement from Intervention A List date, or "Evaluate after X sessions," etc.</p>
<p>Achieved By:</p>	
<p>Closing Goal (D):</p>	<p>Conclude treatment by reinforcing Describe a gain to consolidate/generalize from Goals A, B, and C; do not introduce a brand new goal here</p>
<p>Intervention C:</p>	<p>Describe intervention</p>
<p>Expected Result:</p>	<p>Describe result(s), using concrete numbers</p>
<p>Measured By:</p>	<p>Repeat measurements from Interventions A, B, and C</p>
<p>Achieved By:</p>	<p>List date, or "Evaluate after X sessions," etc.</p>



POSERSE Goal Setting

What do you want? What is important, really important to you?

A direction is important, but goals can sometimes lead to additional stress and errors; therefore, let's think about what it is that you just want instead...

Consider these questions as you think about what you want:

1. **Positive direction:** Is the goal in the positive direction? Does it describe something you want, instead of something you don't want or are trying to avoid?
 - **I want to live a life of recovery** instead of I don't want to do drugs anymore.
2. **Own part:** Is the goal something you have control and/or influence over?
 - **I want to monitor my physiological responses during arguments with my partner** instead of I want my partner to stop nagging me.
3. **Specific:** Is what you want clear? Is it specific with a time frame included? When do you want to get the things that are important to you?
 - **I want to increase my quality of life rating by 2 points in the next 6 months** instead of I want to get better.
4. **Evidence:** What evidence will you have that you have gotten what you want? What will your senses tell you when you have got it?
 - **The tension in my chest will be significantly reduced and my coherence score will be consistently above a 1.75** instead of I'll just know it.
5. **Resources:** What resources do you have and/or need to reach the goal?
6. **Size:** Is this goal the right size? Is it big enough to motivate and reward you and small enough to achieve?
7. **Ecology:** What will the effects of your change be to those around you? How does your environment fit with your desires? Are there any negative implications of you getting these wants? What will you do about them?



Experience Tracking Sheet

(Client takes sheet home, and brings to each session)

Client: _____

Week Beginning: _____

Examples of experiences that could be tracked: anger outbursts, dissociative episodes, emotional flooding, panic attacks, self-injury, substance use or process addictions.

Experience	Sun	Mon	Tue	Wed	Thur	Fri	Sat
<i>Example: Anger outbursts</i>							
<i>Frequency (per day)</i>	0	0	1	0	1	1	0
<i>Duration (in minutes)</i>			10		25	5	
<i>Intensity (0-10)</i>			6		3	9	

Experience	Sun	Mon	Tue	Wed	Thur	Fri	Sat
1.							
<i>Frequency (per day)</i>							
<i>Duration (in minutes)</i>							
<i>Intensity (0-10)</i>							

Notes for Experience 1:

Experience	Sun	Mon	Tue	Wed	Thur	Fri	Sat
2.							
<i>Frequency (per day)</i>							
<i>Duration (in minutes)</i>							
<i>Intensity (0-10)</i>							

Notes for Experience 2:



Waves of the Counseling Relationship

When thinking about coming to counseling, what did you notice in your body and feel?

When we first met, what did you notice in your body and feel?

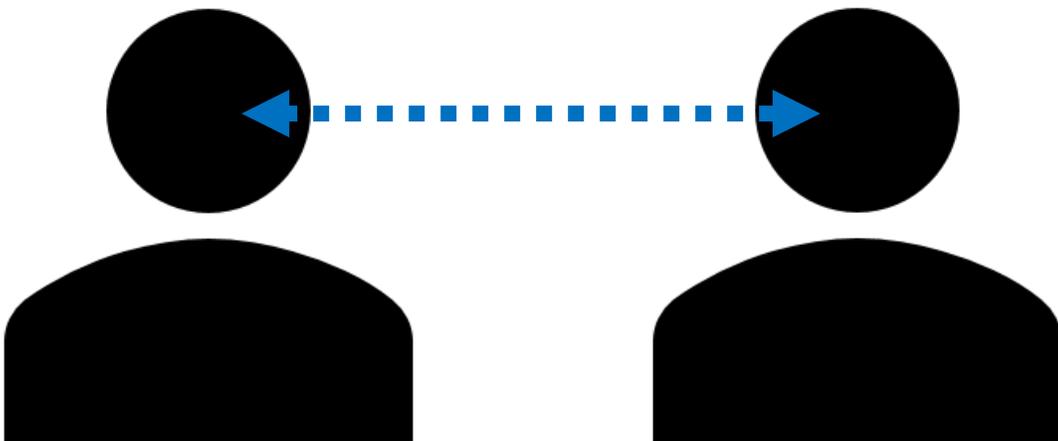
As we are talking about the counseling process, what are you noticing in your body and feeling?

What does this remind you of? What's familiar about this?

How does what we have done so far compare to what you thought about counseling?

What do you think about counseling now?

How can this influence our work together?





Supporting Optimal Brain Health and Preventing Neurophysiological Susceptibility

The brain needs certain “essential nutrients” to function optimally. Listed below are eight areas that can contribute to enhanced neuroplasticity (i.e., the brain’s ability to change in response to experience) and the prevention of mental distress (i.e., neurophysiological susceptibility).

Unhealthy lifestyle habits can cause impairment in the following ways:

- Difficulty concentrating and inattention; forgetfulness and lack of recall
- Fatigue and low energy; sadness and low mood
- Irritability and anger proneness
- Anxiety and rumination/worry
- Susceptibility to cravings

The following core lifestyle habits can help us achieve optimal performance and functioning:

Lifestyle Habit	Components
Sleep time	<ul style="list-style-type: none"> • Hours per night (most adults need 7-9 hours) • Reduced frequency of disturbances/wakeups • Feeling rested at wake-up, reaching deep sleep (Stage 4)
Physical Time	<ul style="list-style-type: none"> • Aerobic exercise • Reduced stationary/immobile time • Connection to body through yoga, tai-chi, dance, etc.
Focus Time	<ul style="list-style-type: none"> • Deep immersion in a single, goal-oriented task
Down Time	<ul style="list-style-type: none"> • Day dreaming, mind wandering, time without a task focus • Intentionally having no intention (“diffuse mode”)
Time-In	<ul style="list-style-type: none"> • Tuning into yourself in the here-and-now • Mindful awareness and acceptance • Focusing on what is going inside of you may be distressing –thoughts, emotions, sensations that you have been intentionally avoiding.
Play Time	<ul style="list-style-type: none"> • Doing something new for the first time • Exploratory, spontaneous, fun, and unstructured
Connecting Time	<ul style="list-style-type: none"> • Engagement in healthy relationships • Time in nature, time with animals • Participation in community events that benefit others
Nutrition	<ul style="list-style-type: none"> • Healthy intake of daily calories, regular frequency of meals • Balanced food groups, meeting nutritional needs • Avoiding allergic foods, limiting simple sugar intake
Toxin exposure and drug use	<ul style="list-style-type: none"> • Reducing exposure to lead and other toxins in environment • Reducing use, intoxication, and withdrawal of substances that include prescribed and non-prescribed medication

Core Lifestyle Habits

Sleep time: Most adults need an average of 7-9 hours of sleep. Young children and adolescents often need more sleep, depending on age. It is important to note that biological changes in the body's internal "circadian clock" occur during puberty (e.g., melatonin is released approximately two hours later) resulting in adolescents' biological preference for a later bed time and need to sleep later in the morning.

A number of factors can impact a person's ability to achieve restful sleep. Common factors include psychological stressors (e.g., relationship difficulties, work worries, etc.), medical conditions (e.g., sleep apnea, restless leg syndrome), chronic pain, poor sleep hygiene (e.g., too much caffeine during the day, screen time before going to bed), and environment (e.g., insufficient exposure to natural light), and certain medications and/or substances (e.g., alcohol and drugs). Although medications can be used in treating sleep disorders, research also supports the efficacy of counseling interventions and adjunctive approaches (e.g., neurofeedback). There are also a number of helpful tracking devices available (e.g., Beddit Sleep Tracker) and resource websites (e.g., www.sleepeducation.org) individuals can access and utilize on their own.

Sleep directly impacts the body and mind. Insufficient sleep can result in a *weakened immune system* (i.e., you get sick easier), *heightened emotionality* (e.g., increased irritability, increased emotional sensitivity), and *problems with thinking* (e.g., cloudy mind, trouble focusing). Sleep deprivation can also result in *slower gross motor responding* (e.g., sleep deprivation causes many traffic accidents). Sleep is also a time when your *memories are consolidated*, so if individuals are trying to learn new information or skills, sleep is critical.

Physical time: Humans are not made to be sedentary creatures. There is not currently a consensus on the specific type and frequency of physical time, however, general guidelines suggest somewhere between 30 and 60 minutes of aerobic exercise (e.g., walking, running, cycling, etc.) 3-5 times per week at a moderate to intense pace (e.g., 50 to 85% maximum heart rate -- meaning if you can talk on the phone easily while doing it, it is not intense enough). Resistance training (e.g., traditional weight training, Cross Fit, High Intensity Interval Training – HIIT) is important as well. Physical movement lowers the risk of a number of medical conditions, including heart disease, obesity, diabetes, and cancer, as well as supports optimal mental functioning. For example, research increasingly supports exercise as an effective treatment for mild to moderate depression.

Individuals' can experience a lot of barriers to engaging in regular physical time, including negative beliefs about self and about exercise resulting in low motivation (e.g., "People will laugh at me." "I can't stand feeling out of breath." "I don't have the time."), environment (e.g., living in a place that is too hot/too cold, living in a dangerous neighborhood), and physical conditions and/or disabilities. Counseling can provide a supportive environment to work through some of the negative beliefs and increase motivation. Community resources can also provide

access to safe and affordable exercise facilities and support. It can also be important to remember that physical movement does not have to take place as part of a formal exercise program or at a gym. It can just be a matter of taking the steps at work instead of the elevator!

Physical activity impacts parts of the brain that are responsible for *emotional regulation and cognitive functioning*. As heart rate increases, more blood, oxygen, hormones, and neurochemicals circulate through the body. Exercise supports the growth of new brain cells and can enhance brain-derived neurotrophic factor (BDNF), important for the production of helpful neurochemicals. Aerobic exercise in particular has been shown to *strengthen your middle prefrontal cortex* that play an important role in 9 very important functions – body regulation, attuned communication, emotional balance, fear modulation, flexibility of response, insight, empathy, morality, and intuition. Research on HIIT exercise is showing similar positive outcomes on the mind.

Focus time: Focus time is about managing your attention to focus entirely on a single goal-oriented task – exerting self-control to block out interferences. Some people have jobs that require regular focus time, whereas other people have to create focus time as part of their leisure activities and/or hobbies.

Focus time supports the prefrontal cortex of the brain, often referred to as the CEO of the brain because of its role in executive functioning (e.g., alerting, orienting, focusing). Strengthening this part of the brain is crucial for inhibiting lower subcortical impulses. Focus time can also result in a sense of mastery and completion that supports feelings of self-efficacy and self-worth.

Down time: Down time is best described as intentionally having no intention. It is the opposite of focus time in which you have a goal directed activity. Examples of down time include day dreaming, listening to music, reading a book (fiction!), doodling, or checking Facebook. Down time allows the brain to go into “diffuse mode.” In diffuse mode, the brain is not inactive, rather different parts of the brain become more active. Diffuse mode can lead to increased insight and improved decision making. Individuals are often able to think of creative solutions to difficult problems are down time.

Time-in: Time-in is about intentionally tuning into yourself in the here-and-now. The terms reflection and mindfulness – being present to your moment to moment experience in a way that is open, curious, and accepting – are associated with this activity. Regular practice of time-in strengthens the inhibitory functions of your prefrontal cortex resulting in better emotional regulation and attention.

Researchers vary on how much “time-in” is necessary to experience the positive effects. Recommendations range from 5-8 minutes/day to 25+ minutes/day. The best idea is usually to start slow and gradually increase time-in practice over time. Focusing on what is going inside of you may be distressing – perhaps there are thoughts, emotions, sensations that you have been intentionally avoiding. Unfortunately, these things do not go away by avoiding them, in fact, they can get louder or come out in other ways that can be harmful to you or to others. Often people are not aware of the negative impacts of their avoidance, which can be even more

problematic. It may be helpful to have a close friend nearby or a counselor to sit with when you are first practicing time-in, especially if you fall into this “avoider” category.

Play time: When is the last time you did something for the first time? Play time is when you get out of your day to day routine and expose your brain to something new (i.e., novelty). In order to qualify as “play” an activity should be exploratory, spontaneous, fun, and unstructured. Initial research indicates increases in BDNF, essential for growth and maintenance of brain cells, during or immediately after play time. Play time also appears to activate the substantia nigra/ventral tegmental area of the brain (SN/VTA), two dopaminergic areas of the brain (i.g., part of the brain’s “reward system” – dopamine is released).

Connecting time: Connection time is about being known and experienced by another – feeling seen and safe. Humans have an innate need for connection – both to other people and to the world around them (e.g., animals, nature). Included within connecting time is spirituality, defined in this context as awareness of and connection to something bigger than self. Engagement in healthy relationships improves both physical and mental health. The mechanism for this increased health is most likely related to the impact of healthy relationships on the stress response system. Connection is believed to help soothe and balance the autonomic nervous system (ANS), resulting in less hyperarousal. Although the stress response can play an important and adaptive role, frequent or prolonged activation of the stress response system can impair thinking, mood, and physical well-being.

Nutrition: Lack of healthy nutrition can lead to poor cognitive functioning, increased mood swings, and contribute to the development of a number of medical conditions (e.g., diabetes, heart disease, sleep disorders, etc.). Although the types and amounts of food that are best for their bodies can vary, a diet rich in vegetables, fruits, lean meats, and whole grains has the most wide-spread scientific support. Highly processed foods and foods high in sugars tend to have the most consistent negative impact on mental functioning.

Exploration of Current and Future Activities

In the chart below, note details related to current activities in each area, as well goals for future continuation or improvement in each area. Although it might seem a little overwhelming to incorporate all these areas into daily life, many of the areas can be combined. For example, individuals can do something that requires movement (physical time -- e.g., walk, play tag) with people you are care about (connecting time). It may also be helpful to just focus on one or two areas at a time.

Activity	Examples	Current	Future
Focus Time	<ul style="list-style-type: none"> -Making a new food recipe -Studying for an exam 		
Play Time	<ul style="list-style-type: none"> -Playing fetch with a dog -Play-wrestle - Exploring a new hiking trail 		
Connecting Time	<ul style="list-style-type: none"> -Go to lunch with a friend -Be in nature -Spiritual reflection 		
Physical Time	<ul style="list-style-type: none"> -Play basketball -Take the stairs at work 		

Time In	-Meditation -Mindful breathing		
Down Time	-Day dreaming -Listening to music		
Sleep Time	-# of hours/night -Quality -naps		
Nutrition	- type of food/drink - timing and frequency of eating/drinking		

Activity Tracking Sheet

Listed below are each of the eight areas, plus an additional areas related to exposure to toxins (such as alcohol or drugs). In order to gain a better sense of your wellness in each area, track behaviors over the course of one week.

Focus Time

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Minutes and/or hours per day (note activities)							

Play Time

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Minutes and/or hours per day (note activities)							

Connecting Time

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Time spent in spiritual practice							
Participation in community events (Y/N)							
Time spent in nature and/or with an animal							
Quality time spent with another person(s)							

Physical Time

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Steps per day							

Aerobic exercise of moderate or greater intensity (minutes)							
Strength training (minutes)							
Yoga, tai-chi, dance, etc. (minutes)							
Stationary/immobile time per day							

Time in

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Formal mindfulness practice (minutes) (note type)							
Informal "checking in" with internal thoughts, feelings, and sensations (Y/N)							

Down Time

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Minutes and/or hours per day (note activities)							

Sleep Time

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Hours per night (note sleep and wake times)							
Number of wakeups							
Feel rested at wake-up (Y/N)							

Diet and Nutrition

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Calories per day							
Frequency of meals							

Food groups eaten*							
Meeting nutritional needs (Y/N)							
Avoid allergic foods (Y/N)							
Limit simple sugar intake (Y/N)							

* C = carbohydrates, FA = fats, FR = fruits, P = protein, V = vegetables.

Toxin Exposure and Drug Use

Exposure to toxins in past week (list) _____

Substances used in past week (list) _____

	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Substance 1: Amount used							
Substance 2: Amount used							
Intoxication (Y/N)							
Withdrawal side effects (Y/N)							
Driving while using (Y/N)							



Daily Practices in Mindful Awareness

Part 1: Awareness of Breath and Heartbeat

Sit in a comfortable chair. Sit in silence.

Sit straight up, with your feet touching the floor and your back squarely against the chair.

Close your eyes, and begin noticing and observing your breath and heartbeat.

Take a slow deep breath in, pause for three heartbeats, exhale slowly, pause for three heartbeats.

Repeat until you reach a state of focused attention on your breath and heartbeat. Your body should feel relaxed, not tense.

Part 2: Awareness of Sensations in the Body

Continuing the breath rhythm from before, now also focus on any immediate physical sensations and feelings you notice. Observe them without judging them.

For example, “my heart rate feels steady,” “my stomach feels hungry,” or “my low back aches,” or “my body feels tired,” or “my body feels ready for the day”

Continue to keep the breath rhythm from before. Begin to notice sensations that were not immediate, starting with your toes, ankles, calves, thighs.

Now notice sensations in your abdomen and chest.

Notice sensations in your shoulders, neck, back.

Notice sensations in your arms, wrists, hands.

Notice sensations in your face and head.

Now notice sensations inside your body, starting with your sinus, mouth, and ears.

Notice sensations inside your chest: your heart and lungs.

Notice sensations in your other organs, including your kidneys, intestines, bladder, liver.

Return to focusing attention on your breath and heartbeat, following the same rhythm as above.



Anchoring Desirable States

Are you ready to lock-in a desirable experience?

Picture and imagine that you are on a boat, anywhere that you would like to be, experiencing anything you would like to experience.

Now, imagine that you have arrived at the perfect place and would like to stay there.

What would you do?

To hold that perfect place, you will lower your “anchor” to remain in that perfect place.



For this skill, we will “anchor” your desirable states of being.

1. Select a gesture that you would not normally do.
2. Enter your desired state. See what you see, hear what you hear, touch what you touch, smell what you smell, and feel what you feel.
3. Send this rejuvenating energy throughout your entire body, and just before you reach the peak of the intensity of this experience, use your gesture.
4. Repeat steps 2 and 3 as many times as necessary.
5. Wait a little while.
6. Perform the gesture.
7. Notice your reactions.



Connecting Behaviors and Emotions to Physiological States

Instructions: Use this worksheet whenever you feel a physiological or emotional reaction. Remember to record your pulse in parts 1, 2, and 3. You will need a drawing implement (pencil, pen, marker) to shade in tension areas on the human figure drawing in parts A and C. Bring worksheets into your next appointment for review with your counselor.

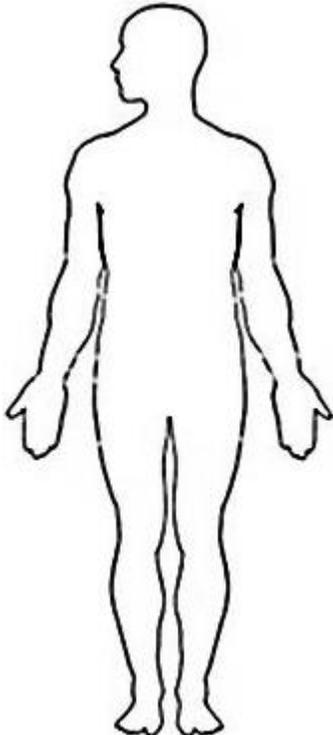
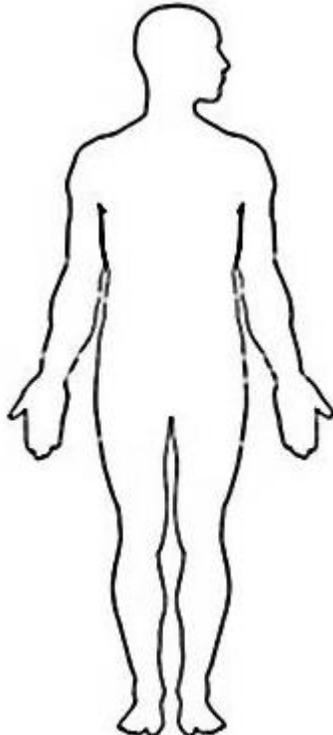
Client Name: _____

Date: _____

Counselor Name: _____

Date Reviewed: _____

General description of situation:

Part 1: Reaction	Part 2: Response	Part 3: Reappraisal	
	Action Urges/Strength 0-5	<i>Potential threats in environment:</i>	
	<i>Fight response (attack/defend)</i>		<i>Thoughts about my acceptance and coping with my physiological and emotional reaction:</i>
	<i>Flight response (leave/use substance)</i>		
	<i>Freeze response (paralysis)</i>		
	Coping Strategies used: ✓		
	Counting pulse		
	Mindfulness and grounding		
	Muscle relaxation		
	Sensory stimulation		
	Positive sensory experience: ✓		
Hearing:			
Vision:			
Sight:			
Smell:			
Sound:			
Movement:			
Acceptance of reactions: ✓	<i>Memories triggered (if any):</i>		
Physiological			
Emotional	Color in the <i>new</i> physiological tension or energy you experience in the relevant part of your body. Examples: racing heartbeat, shallow breath, muscle tension		
<i>If my body could talk, it would say....</i>			
Color in the physiological tension or energy you experience in the relevant part of your body. Examples: racing heartbeat, shallow breath, muscle tension	Heart-rate after coping*: _____ BPM Time reading taken: _____	Current heart rate*: _____ BPM Time reading taken: _____	

* *How to take a Heart Rate Reading:* place your index and middle finger onto the wrist of your other arm. Find a pulse. Record the number of times you feel a pulse in 60 seconds.



Sensory-based Exploration

What do I do with this? Our senses collect tremendous information about our world and ourselves. Use this exercise to explore your favorites in each of these sensory categories. For example, what are your favorite things to look at, listen to, touch, taste, and smell? Be as specific as possible. If your favorite sight is a “sunset,” list where you would be watching that sunset. If your favorite sound is “music,” list your favorite bands, songs, etc.

Sight (what are your favorite things to look at, see, etc.?)	Sound (what are your favorite things to hear, listen to, etc.?)	Touch (what are your favorite things to touch, feel with your body, etc.?)	Taste (what are your favorite things to taste, eat, drink, etc.?)	Smell (what are your favorite things to smell?)
<p><i>Example:</i> sunset in Maui</p>	<p><i>Example:</i> Blind Melon’s “Change”</p>	<p><i>Example:</i> taking off my socks at the end of the day and immediately getting under the covers</p>	<p><i>Example:</i> strawberries</p>	<p><i>Example:</i> fresh cut grass</p>



Daily Thought Record, version 1

Consequences	Awareness	Beliefs	Consequences
What did your body feel like? What did you emotionally feel? What did you do? How intensely?	What were you immediately aware of? What did you see, hear, touch, taste, smell, think &/or do? How intensely?	What went through your mind? What did you immediately think about this process? What did you think a little later? What distortions did you notice? How much did you believe them?	What did your body feel like? What did you emotionally feel? What did you do? How intensely?
			



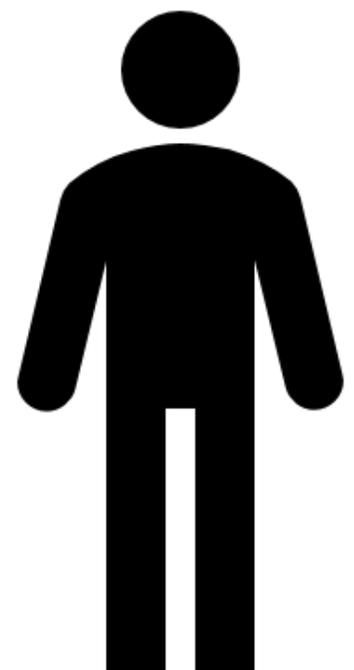
Daily Thought Record, version 2

STEP 4: What did your body feel like? What did you emotionally feel? What did you do? How intensely?

STEP 3: What went through your mind? What did you immediately think about this process? What did you think a little later? What distortions did you notice? How much did you believe them?

STEP 2: When did you notice this? What were you immediately aware of? What did you see, hear, touch, taste, smell, think &/or do? How intensely?

STEP 1: What did your body feel like? What did you emotionally feel? What did you do? How intensely?





Wants?
 What do you want to feel, think, and/or do? Where do you have the most control?
 What options do you have?

Activating Event		Consequences	
<i>Trigger:</i> What did you see, hear, touch, feel, taste, & smell? What were you doing?	<i>Coping:</i> What can you do to see, hear, touch, feel taste, &/or do something else?	What did your body feel like? What did you emotionally feel? What did you do? How intense was each experience?	What can you do to help your body and emotions feel differently?

Awareness		Beliefs		Consequences	
What were you immediately aware of? What did you see, hear, touch, feel taste, & smell next?		What went through your mind? What did you immediately think about this process? What did you think a little later? What distortions did you notice? How much do you believe them?		What did your body feel like? What did you emotionally feel? What did you do? How intense was each experience?	
What can you do when you become aware of these things?		Do these make sense, help you get what you want, or feel the way you want? If not, what new things do you want to run through your mind? What do you want to think about this process? What new patterns of thought might be helpful? How much do you believe them?		When you do these things, what do you expect to feel and do differently? How intense will each experience be?	

What are you going to do?



Thought Record: Reappraising Past Events

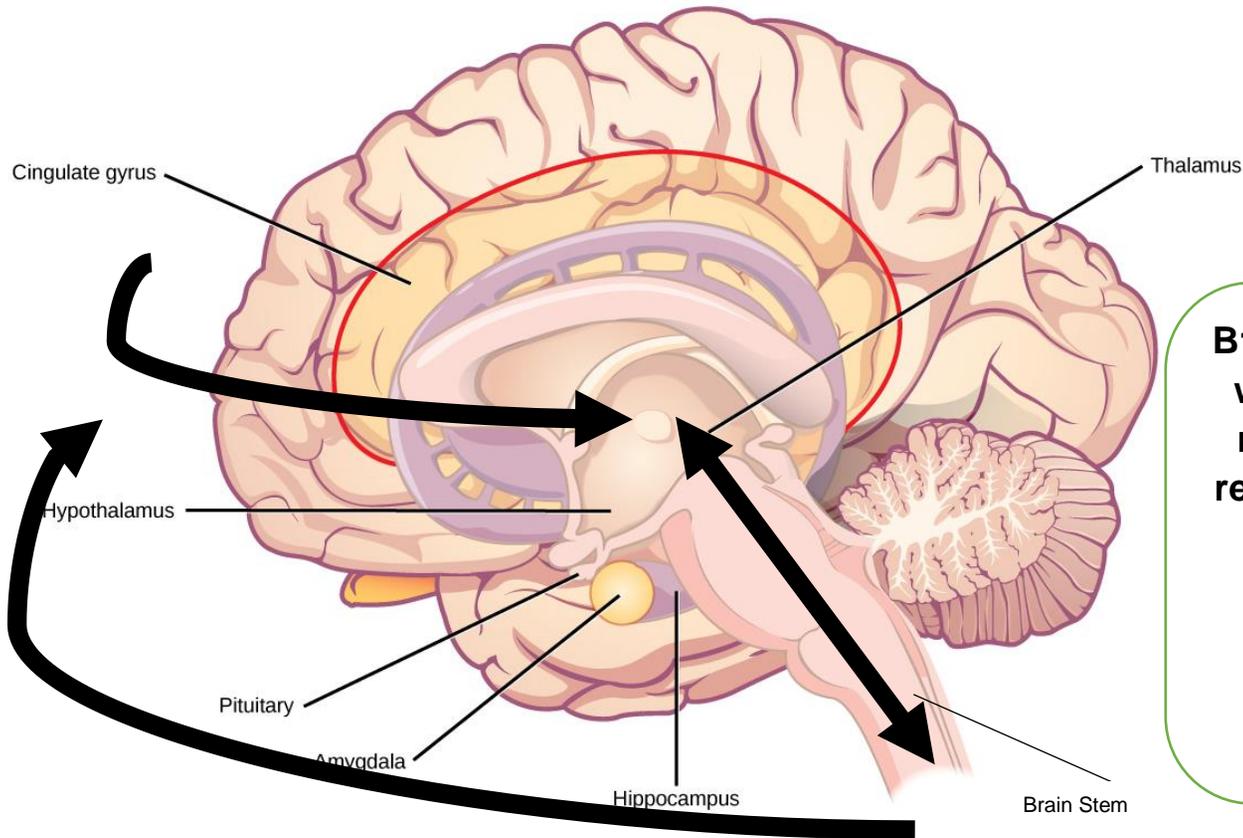
Old Experiences		New Beliefs		Consequences	
What events stand out to you?		Looking back, what do you think about this experience now?		As you reflect, what do you feel like now?	
What do you remember about the event?					
What did you see, hear, smell, touch, and taste?		How have your beliefs about this experience changed?		What are/will you do moving forward?	
What were you feeling? What did your body feel like?					
What did you do?					

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

Reappraising Past Events: Wave1



Attend. Build. Connect.



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?

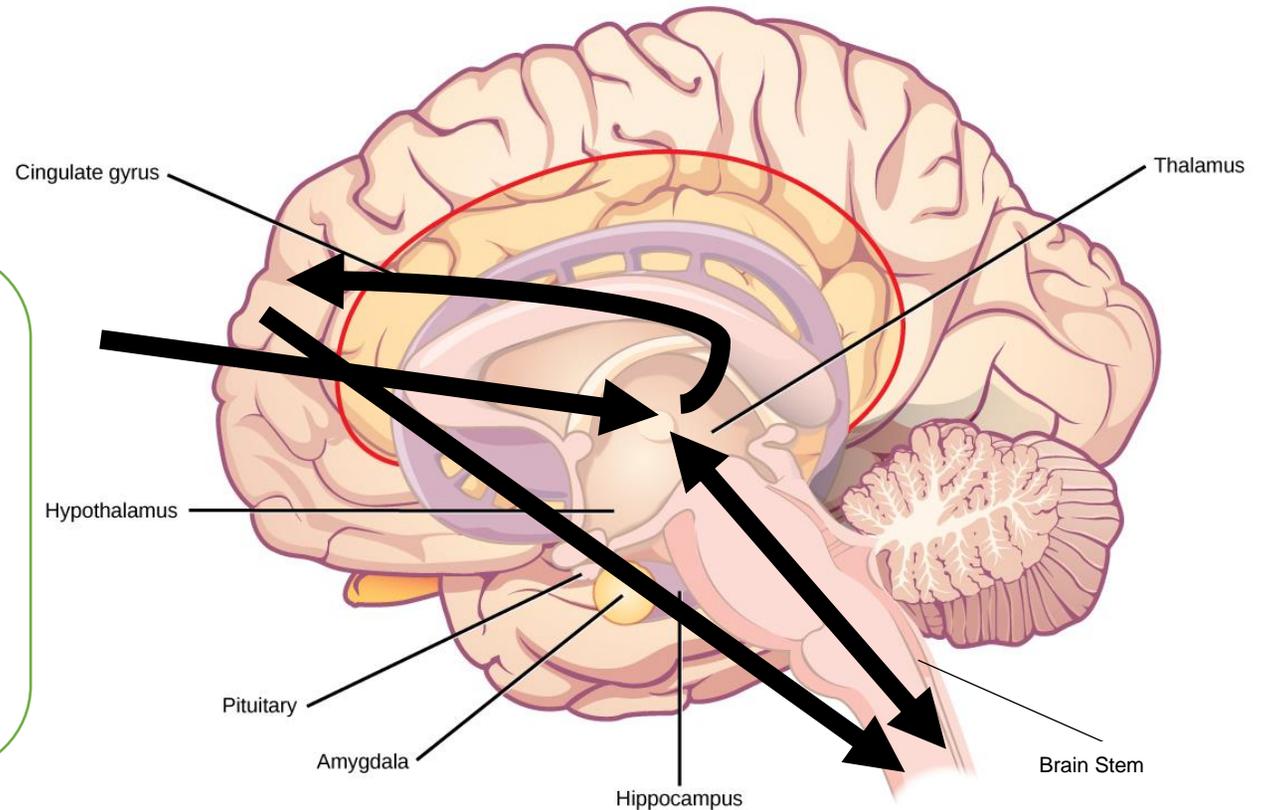


Attend. Build. Connect.

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?



Downward Arrow

What does that mean to you?

What's important/significant about...?

What's that like?

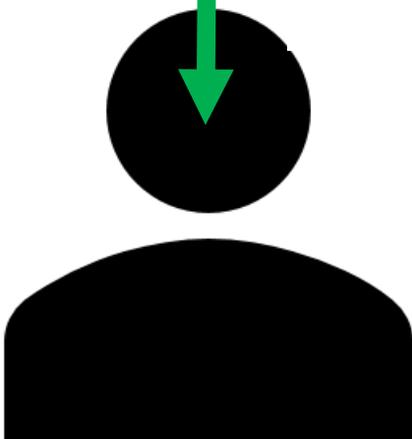
What would that do?

What would that help you accomplish?

What would that mean?

What would you do with that?

What would happen next?





Waves of Case Closure

As we talk about case closure, what are you noticing?

What are you thinking about this?

What are you noticing?

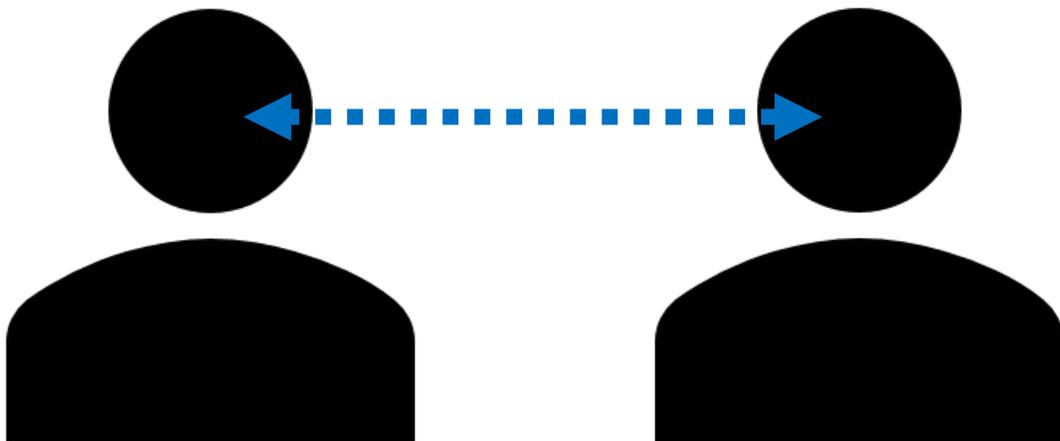
What is familiar?

What does this mean to you?

What has stood out to you about this process?

What does that mean for you moving forward?

What's next?



References

- Ahn, H., & Wampold, B. E. (2001). Where, oh where, are the specific ingredients? A meta-analysis of component studies in counseling and psychotherapy. *Journal of Counseling Psychology, 48*, 251–257. doi:10.1037//O022-OI67.48.3.251
- Anderson, T., Lunnén, K. M., & Ogles, B. M. (2010). Putting models and techniques in context. In B. L. Duncan, S. D. Miller, B. E. Wampold, & M. A. Hubble (Eds.), *The heart and soul of change: Delivering what works in therapy* (pp. 143–166). Washington, DC: American Psychological Association.
- Barsaglini, A., Sartori, G., Benetti, S., Pettersson-Yeo, W., & Mechelli, A. (2014). The effects of psychotherapy on brain function: A systematic and critical review. *Progress in Neurobiology, 114*, 1–14. doi:10.1016/j.pneurobio.2013.10.006
- Beck, A. T. (1967). *Depression: Causes and treatment*. Philadelphia, PA: University of Pennsylvania Press.
- Beck, A. T., & Haigh, E. A. P. (2014). Advances in cognitive theory and therapy: The generic cognitive model. *Annual Review of Clinical Psychology, 10*, 1–24. doi:10.1146/annkurev-clinpsy-032813-153734.
- Brefczynski-Lewis, J. A., Lutz A., Schaefer H. S., Levinson, B. D., & Davidson, R. J. (2007). Neural correlates of attentional expertise in long-term meditation practitioners. *Proceedings of the National Academy of Sciences in America, 104*, 11483–11488. doi:10.1073/pnas.0606552104
- Cannon, W. B. (1914). The emergency function of the adrenal medulla in pain and the major emotions. *American Journal of Physiology, 33*, 356–393.
- Clark, D. A., & Beck, A. T. (2010). Cognitive theory and therapy of anxiety and depression: Convergence with neurobiological findings. *Trends in Cognitive Sciences, 14*, 418–424. doi:10.1016/j.tics.2010.06.007
- Covin R, Dozois DJA, Ogniewicz A, Seeds PM (2011) Measuring cognitive errors: Initial development of the Cognitive Distortions Scale (CDS). *International Journal of Cognitive Therapy, 4*, 297–322. Available: <http://guilfordjournals.com/doi/abs/10.1521/ijct.2011.4.3.297>.
- David, D. (2003). Rational emotive behavior therapy (REBT): The view of a cognitive psychologist. In W. Dryden (Ed.), *Rational emotive behavior therapy: Theoretical developments* (pp. 130–159). New York, NY: Brunner-Routledge.
- David, D., Szentagotai, A., Eva, K., & Macavei, B. (2005). A synopsis of rational-emotive behavior therapy (REBT); Fundamental and applied research. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 23*(3), 175–221. doi:10.1007/s10942-005-0011-0
- Davidson, R. J., & McEwen, B. (2012). Social influences on neuroplasticity: Stress and interventions to promote well-being. *Nature Neuroscience, 15*, 689-695.
- DeSilvestri, C. (1989). Clinical models in RET: An advanced model of the organization of

- emotional and behavioral disorders. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 7, 51–58. doi:10.1007/BF01246503
- Devilly, G. J., & Borkovec, T. D. (2000). Psychometric properties of the credibility/expectancy questionnaire. *Journal of Behavior Therapy and Experimental Psychiatry*, 31, 73–86. doi: 10.1016/S0005-7916(00)00012-4
- DiGiuseppe, R. (1986). The implications of the philosophy of science for rational-emotive theory and therapy. *Psychotherapy*, 23, 634–639. doi:10.1037/h0085668
- Dryden, W. (1984). Rational-emotive therapy and cognitive therapy: A critical comparison. In M. A. Reda & M. J. Mahoney (Eds.), *Cognitive psychotherapies: Recent developments in theory, research, and practice* (pp. 81–99). Cambridge, MA: Balinger.
- Ellis, A. (1957). Rational psychotherapy and individual psychology. *Journal of Individual Psychology*, 13, 38–44.
- Ellis, A. (1962). *Reason and emotion in psychotherapy*. New York, NY: Stuart.
- Ellis, A. (1994). *Reason and emotion in psychotherapy: Revised and updated*. New York, NY: Birch Lane Press.
- Farb, N. A. S., Anderson, A. K., & Segal, Z. V. (2012). The mindful brain and emotion regulation in mood disorders. *Canadian Journal of Psychiatry*, 57, 70–77.
- Field, T. A., Beeson, E. T., & Jones, L. K. (2015). The new ABCs: A practitioner's guide to neuroscience-informed cognitive-behavior therapy. *Journal of Mental Health Counseling*, 37(3), 206–220. doi: 10.17744.mehc.37.3.02
- Field, T. A., Beeson, E. T., & Jones, L. K. (2016). Neuroscience-informed cognitive-behavior therapy in clinical practice: A preliminary study. *Journal of Mental Health Counseling*, 38(2), 139–154. doi: 10.17744.mehc.38.2.05
- Field, T. A., Farnsworth, E. B., & Nielsen, S. K. (2011). *Do counselors use evidenced-based treatments? Results from a national pilot survey*. Unpublished manuscript.
- Hays, S. C., Strosahl, K. D., & Wilson, K. G. (2003). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York, NY: Guilford.
- Kahneman, D. (2011). *Thinking fast and slow*. New York, NY: Farrar, Straus, and Giroux.
- Klein, J. A., & Jones, T. A. (2008). Principles of experience dependent neural plasticity: Implications for rehabilitation after brain damage. *Journal of Speech, Language, and Hearing Research*, 51, S225–S239.
- Kolb, B., & Whishaw, I. Q. (2011). *An introduction to brain and behavior*. New York, NY: Worth Publishers.
- Linden, D. E. J. (2006). How psychotherapy changes the brain: The contributions of functional neuroimaging. *Molecular Psychiatry*, 11, 528–538. doi:10.1038/sj.mp.4001816
- Linden, D. E. J. (2008). Brain imaging and psychotherapy: Methodological considerations and practical implications. *European Archive of Psychiatry and Clinical Neuroscience*, 258(5), 71–75. doi:10.1007/s00406-008-5023-1.
- Linehan, M. M. (1993). *Cognitive-behavior therapy of borderline personality disorder*. New York, NY: Guilford.

- Makinson, R.A., & Young, S. (2012). Cognitive behavioral therapy and the treatment of posttraumatic stress disorder: Where counseling and neuroscience meet. *Journal of Counseling & Development, 90*, 131–140. doi:10.1111/j.1556-6676.2012.00017.x
- Maultsby, M. C. (1984). *Rational behavior therapy*. Englewood Cliffs, NJ: Prentice-Hall.
- Mehling, W. E., Price, C., Daubenmier, J. J., Acree, M., Bartmess, E., & Stewart, A. The Multidimensional Assessment of Interoceptive Awareness (MAIA). *PLOS ONE, 7*(11), 1-22. doi:10.1371/journal.pone.0048230
- Miller, R. M. (2016). Neuroeducation: Integrating brain-based psychoeducation into clinical practice. *Journal of Mental Health Counseling, 38*, 103-115.
- Miller, E. K., & Cohen, J. D. (2001). An integrative theory of prefrontal cortex function. *Annual Review of Neuroscience, 24*, 167–202. doi:10.1146/annurev.neuro.24.1.167
- Perry, B. D. (2009). Examining child maltreatment through a neurodevelopmental lens: Clinical applications of the neurosequential model of therapeutics. *Journal of Loss and Trauma, 14*, 240-255. doi:10.1080/15325020903004350
- Porges, S. W. (2001). The polyvagal theory: Phylogenetic substrates of a social nervous system. *International Journal of Psychophysiology, 42*, 123–146. doi:10.1016/s0167-8760(01)00162-3
- Porges, S. W. (2011). *The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication, and self-regulation*. New York, NY: W. W. Norton
- Raio, C. M., Orederu, T. A., Palazzolo, L., Shurick, A. A., & Phelps, E. A. (2013). Cognitive emotion regulation fails the stress test. *PNAS, 110*(37), 15139-15144. doi:10.1073/pnas.1305706110
- Rock, D., Siegel, D. J., Poelmans, S. A. Y., & Payne, J. (2012). The healthy mind platter. *NeuroLeadership Journal, 4*, 1-23. Retrieved from <https://neuroleadership.com/research/journal/>
- Schore, A. N. (2012). *The science of the art of psychotherapy*. New York, NY: Norton.
- Selye, H. (1936). A syndrome produced by diverse nocuous agents. *Nature, 138*, 32.
- Siegel, D. J. (2007). Mindfulness training and neural integration. *Journal of Social, Cognitive, and Affective Neuroscience, 2*, 259–263. doi:10.1093/scan/nsm034
- Siegel, D. J. (2012). *The developing mind: How relationships and the brain interact to shape who we are*. New York, NY: The Guilford Press.
- Siegel, D. J. (2012). *Pocket guide to interpersonal neurobiology: An integrative handbook of the mind*. New York, NY: W. W. Norton & Company.
- Siegle, G. J., Ghinassi, F., & Thase, M. E. (2007). Neurobiological therapies in the 21st century: Summary of an emerging field and an extended example of cognitive control training for depression. *Cognitive Therapy Research, 31*, 235-262. doi:10.1007/s10608-006-9118-6.
- Society of Clinical Psychology. (2014). *Psychological treatments*. Retrieved from <http://www.div12.org/PsychologicalTreatments/treatments.html>
- Wampold, B. E., Minami, T., Baskin, T. W., & Tierney, S. C. (2002). A meta-(re)analysis of the

effects of cognitive therapy versus “other therapies” for depression. *Journal of Affective Disorders*, 68,159–165.

Wampold, B. E., Mondin, G. W., Moody, M., Stich, F., Benson, K., & Ahn, H. (1997). A meta-analysis of outcome studies comparing bona-fide psychotherapies: Empirically, “all must have prizes.” *Psychological Bulletin*, 122, 203–215.