Phase 2: Build the Brain from the Bottom Up

Flow of Treatment

- Phase 1: Attend to Physiological Reactions
  - Develop rapport, assess, and conceptualize
- **Phase 2: Build the Brain from the Bottom-Up**
  - Wave1 interventions
  - Special considerations
- Phase 3: Connect the Bottom to the Top
  - Wave2 interventions
  - Case closure

Phase 2: Build the Brain from the Bottom-Up

- **Wave1 Interventions**
- Special Considerations

Wave1 Interventions

- Affective Modeling
- Supporting Optimal Brain Health and Reducing Neurophysiological Susceptibility
- Sensory-based Coping
- Mindful Awareness
- Anchoring
- Systematic Desensitization
- Biofeedback and Neurofeedback

Introduction to Wave1 Interventions

- Goal is to re-learn another automatic Wave1 response and shift set-point for stress response
  - Balance ANS; target implicit processing
  - "ride the wave" of Wave1 experiences rather than respond reactively or try to stop them,
  - activate the parasympathetic branch of autonomic nervous system to achieve a smooth recovery
  - develop *capacity* for Wave2 interventions (e.g., top-down meaning-making and re-appraisal)

Affective Modeling

- Rationale:
  - Therapeutic relationship is a regulatory tool (interactive regulation; Schore, 2012)
  - A calm, centered counselor can help the client achieve this state even when detecting threats or craving desired stimuli
  - Affective mirroring can occur at a preconscious and conscious level (two-person psychology)
  - Importance of counselors' facial expressions and voice prosody (Porges)

Affective Modeling

- Directions:
  - Counselor self-regulation → "holding container"
  - Counselors can practice self-regulatory skills and attend to facial expressions and vocals
  - Example: ongoing parasympathetic activation by learning to breathe deeply from the diaphragm throughout the day

Affective Modeling

- Integrate smiling and laughter at appropriate times, along with deep breathing
- Over time, the client will become better able to "sit with" physiological and emotional responding rather than avoiding the experience.

Supporting Optimal Brain Health and Reducing Susceptibility

- Rationale:
  - Core lifestyle habits have a strong impact on neurophysiological functioning
  - Prevention is more efficient and effective than intervention (stop a problem before it starts)
  - If problems already exist, change will occur more quickly and more easily if individuals engage in behaviors that support positive brain health
- Utility:
  - Useful for all clients, regardless of diagnosis
  - Some clients may have physical or environmental factors that limit engagement in some brain-enhancing activities

Supporting Optimal Brain Health and Reducing Susceptibility

- Activities 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

Supporting Optimal Brain Health and Reducing Susceptibility

- Directions:
  - Share the "Supporting Optimal Brain Heath and Reducing Neurophysiological Vulnerability" information sheet.
  - Identify current strengths and areas of growth in each area, using the Assessment form.
  - Complete the "Exploration of Current and Future Activities" worksheet, to plan changes to lifestyle habits.
  - Inquire about client's willingness to track lifestyle habits.
  - If willing, recruit client commitment for coming week. Explain you will review this sheet every week with the client.
  - Add to next session's agenda, "review tracking sheet"

Supporting Optimal Brain Health and Reducing Susceptibility

- Attend to client's stage of change regarding activities/areas and aim to match appropriately.

Stage of Change	Intervention Focus
Pre-contemplation	Raising awareness Exploring values and meaning Sharing factual information
Contemplation	Developing discrepancy and dissonance between physiology and thoughts/actions Strengthening self-efficacy Eliciting reasons for change
Preparation, Action, Maintenance	Identify strategies Troubleshoot barriers

Roleplay

- Roleplay (5 minutes):
- Review handout and complete the "Exploration of Current and Future Activities" worksheet
- Discuss with partner
  - What activity/activities do you already do well?
  - What activity/activities would you like to improve?
  - How do you plan to incorporate more of these activities in your day to day life?
  - What barriers do you think might get in your way? How can you overcome these barriers?

Sensory-based Coping

- Rationale:
  - In moments of crisis and physiological activation, sensory input can alert clients to physiological response and help them stay in the present moment (grounding effect)

Sensory-based Coping

- Directions:
  - Identify positive sensory-based experiences (e.g., snapping a band across one's wrist isn't typically a pleasant sensation)
  - When selecting sensory-based strategies, consider the following four principles:

Sensory-based Coping

- Principle 1: Portability

- Should be easily portable, so that it can be taken with the client everywhere they go.
  - Taste example: chewing gum (taste) is portable, whereas a popsicle may be less portable.

Sensory-based Coping

- Principle 2: Accessibility

- Should be easily accessible, so that it can be used in any situation.
  - Touch example: Holding a warm cup of coffee is fairly accessible, whereas receiving hugs is less accessible.

Sensory-based Coping

- Principle 3: Social Acceptability
- Should be socially acceptable to use in all environments.
  - Listening to the sound of your own breathing vs. wearing ear phones
  - Be cautious of strong fragrances
  - Auditory aids for tinnitus provide bilateral stimulation throughout the day while also allowing a person to attend to speech/noise

Sensory-based Coping

- Principle 4: Repetition

- Should be available for repetitive practice throughout the day.
  - Sight example: Looking at a photograph on your smart phone screen saver vs. watching stars at night

Sensory-based Coping

- Principle 5: Salience

- How important/significant is the sensory stimuli?
- The sensory stimuli should be rewarding and counter the strength of future Wave1 processes.

Sensory-based Coping

- Examples:
  - Auditory: Sound of your breathing.
  - Tactile: Holding a warm object or beverage. Touching a piece of jewelry. Hold hands. Lightly stroke 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, 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

- Rationale:
  - Clients need support to "sit with" an experience rather than act, i.e., approach (move toward) or avoid (move away)
  - Can perhaps best be achieved through repetitive daily mindfulness practice at the beginning of the day.

Mindful Awareness

- Directions:
  - Clients need to:
  - (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, use the MAIA scale.

Mindful Awareness

- Eventually, move to state-dependent learning
- Daily mindfulness practice **at the beginning of each day**
- Consider using, "Daily Practices in Mindful Awareness"

Mindful Awareness

- Directions for outside-of-session use:
  - Some clients prefer sitting in silence and observing/noticing their feelings in their body.
  - Some clients prefer listening to guided meditation audio recordings.
    - In this regard, Dan Siegel's "wheel of awareness" may be a very helpful script.

Roleplay

- Roleplay (5 mins):
  - "Daily Practices in Mindful Awareness" handout
    (Body scan and interoceptive awareness)

Anchoring

- Rationale: Classical conditioning and “pairing”
  - Dog + Food (UCS) = Salivation (UCR)
  - Dog + Bell (NS) + Food (UCS) = Salivation (UCR)
  - Dog + Bell (CS) = Salivation (CR)

Anchoring

- Similar process: person walking down a street (NS) where they are mugged (UCS) produces a fear responses (UCR).
  - Because of intensity of response, only one occasion is required for pairing to occur.
  - The street itself, absent of any mugging, becomes the CS → fear response.
  - Person may experience a conditioned fear responses every time they walk, see, or think about the street, *even when no threats are present*.

Anchoring

- 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)

Anchoring

- Anchoring begins with a strong therapeutic relationship.
  - Client experiences a desired state in the context of the therapy relationship (e.g., safety/ANS balance).
  - Client then pairs 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.

Anchoring

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

Anchoring

- 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.

Anchoring

- Using the "Anchoring Desirable States" handout:
  - Create a unique anchor. Should be easily performed and novel, meaning the client wouldn't experience it otherwise.
  - Assist client to enter desired state, using sensory experience to make this as real and intense as possible.
  - Response will typically peak in about 90 seconds
  - Just before the peak, instruct the client to use the anchor.
  - Repeat until the anchor is conditioned to the desired state.
  - Test to ensure the anchor produces the desired state.

Roleplay

- Roleplay (5 mins):
  - "Anchoring desirable states" handout

Systematic Desensitization

- Rationale:
  - Response styles (approach, avoid, frozen) are difficult to un-learn because they are often automatic.
  - Modification requires
    - repetitive practice
    - state-dependent learning (in vivo exposure).
  - Clients can learn to "act opposite"
    - approach avoided situations, avoid approached situations, and generate movement instead of freezing

Systematic Desensitization

- Feasibility:
  - Usually, technology is not required and procedures are straightforward to implement
  - The client needs to give consent
  - Choice to opt out if client is not ready
  - This avoids ruptures in the therapeutic alliance, and potential traumatization

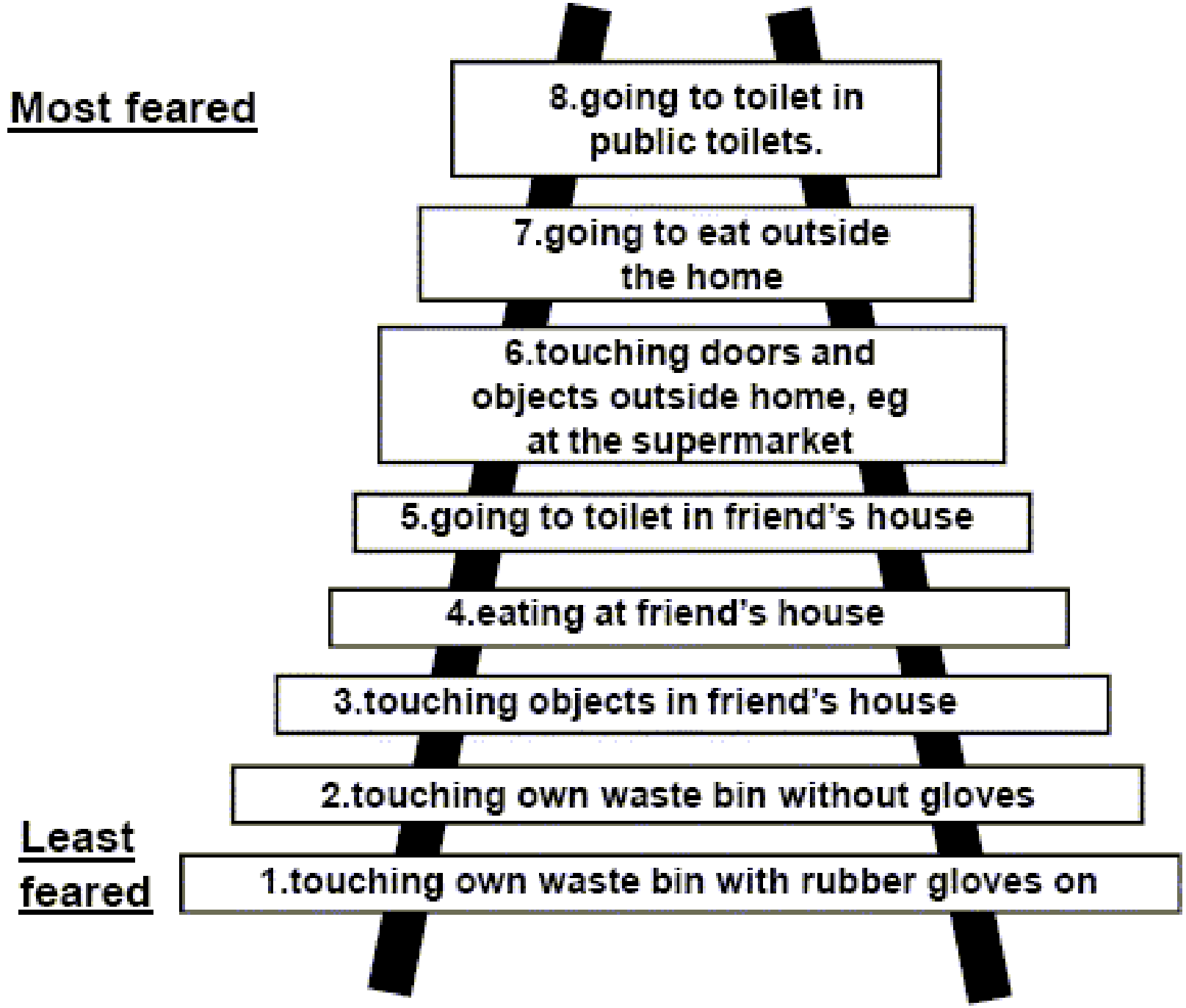
Systematic Desensitization

- Client must understand:
  - Once systematic desensitization begins, it is important to keep "pushing through" until the procedure has been completed.
  - If the client stops before completion, systematic desensitization may have detrimental effects on reinforcing unwanted response styles.

Systematic Desensitization

- Systematic desensitization has three important components:

- 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



nCBT
Attend. Build. Connect.

Systematic Desensitization

- 2. State-dependent learning: practice needs to occur in outside-of-session “real life” contexts (in vivo exposure)

- 3. Repetitive practice is crucial to building automaticity

Systematic Desensitization

- Important Notes:
  - Clients should have coping techniques before attempting exposure activities
  - Clients should not attempt exposure without the counselor's support
    - particularly true for trauma experiences
  - Some environments will never be appropriate for exposure activities, such as being yelled at
    - Siegel "yes and no" example

Roleplay

- Roleplay (5 minutes)
  - Collaboratively define exposure hierarchy and first task

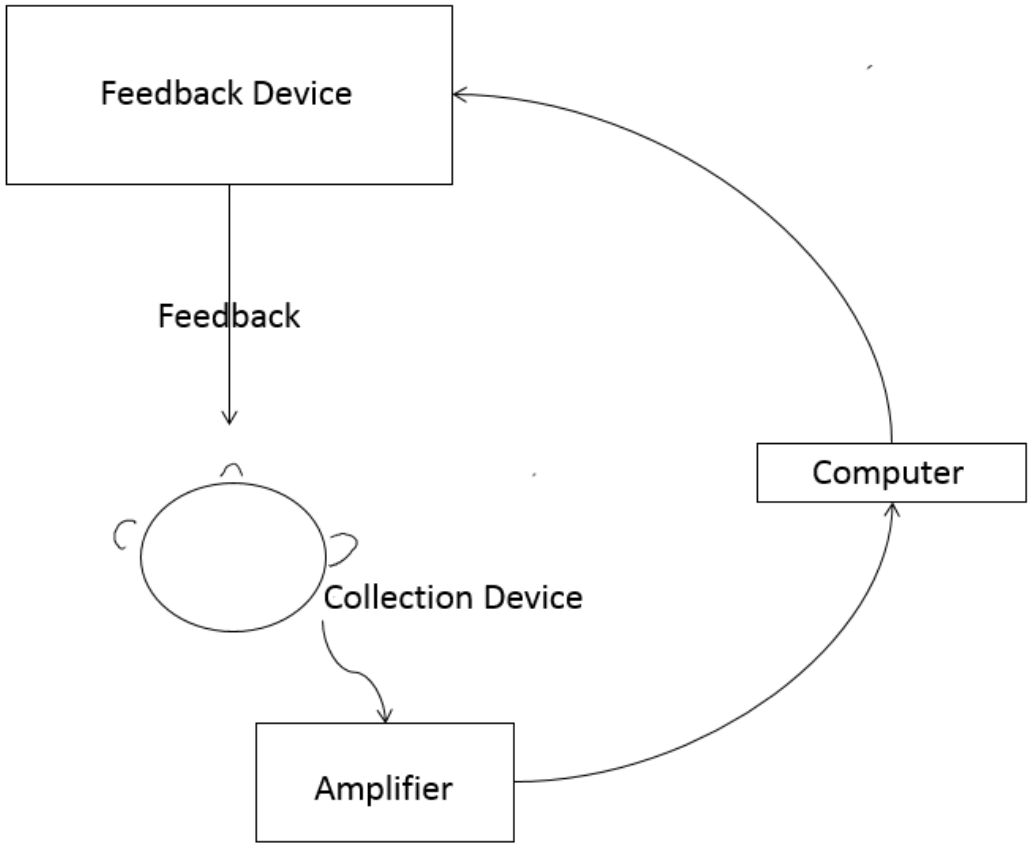
Biofeedback and Neurofeedback

- Rationale:
  - Thermostat and optimal temperature analogy for autonomic nervous system
  - Biofeedback helps clients adjust their "temperature," their physiological processes.
  - Clients monitor less conscious physiological processes (brainwaves, heart function, breathing, muscle activity, and skin temperature).

Biofeedback and Neurofeedback

- Feedback is provided to the client,
- Who then learns to adjust these automatic processes with voluntary control
- Over time, physiology (“thermostat”) is readjusted to a new set point.

Biofeedback and Neurofeedback



Biofeedback and Neurofeedback

- Biofeedback modalities:
  - Electromyography (EMG)
  - Skin temperature
  - Galvanic skin response
  - Electroencephalography (EEG) – known as neurofeedback
  - Hemoencephalography (HEG)
  - Respiration
  - Heart rate variability

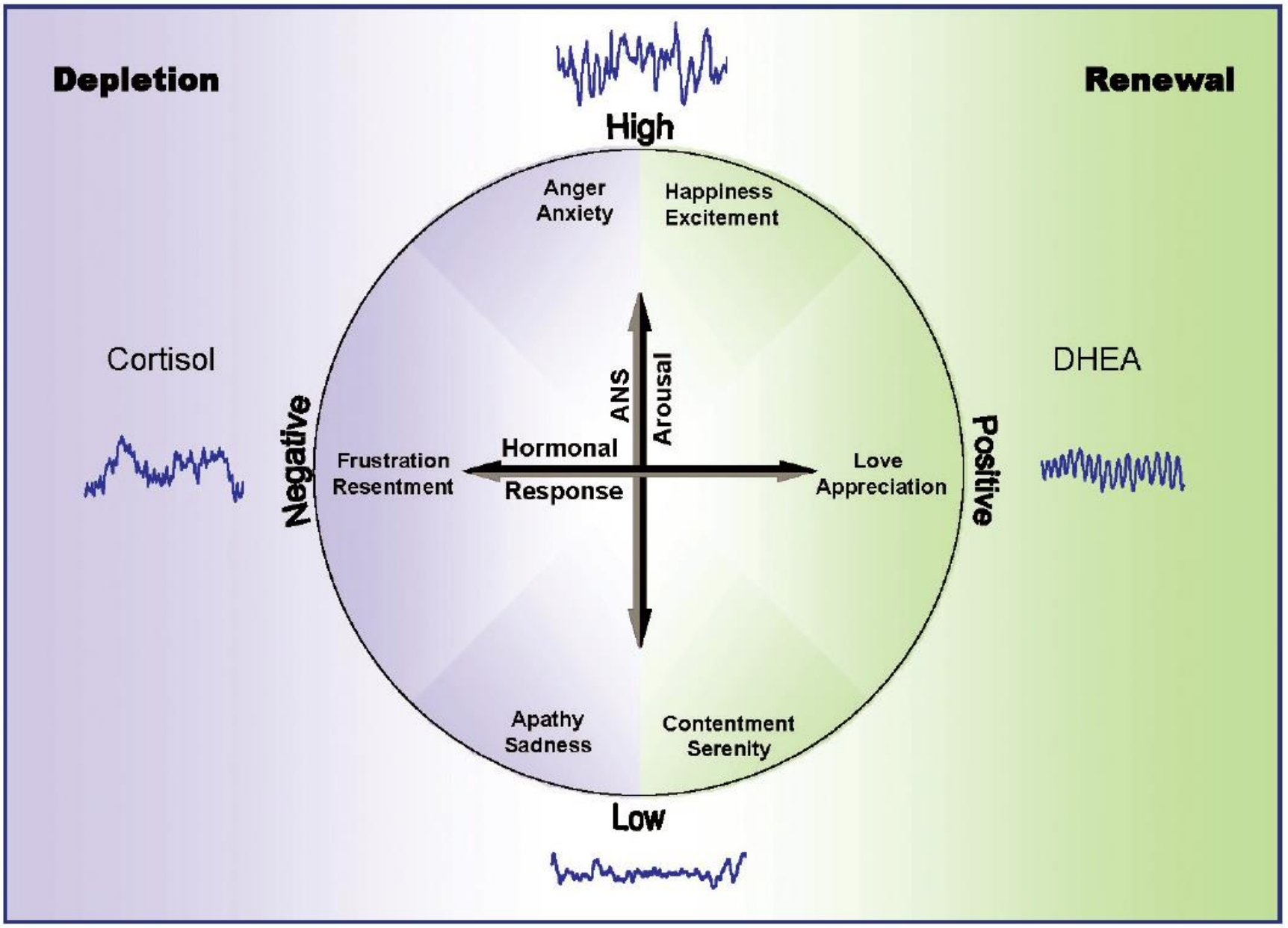
Biofeedback and Neurofeedback

- Feasibility:
  - Some technology-free interventions exist, though
  - Many interventions require equipment (hardware, software)
  - Technology-based interventions may require client to purchase equipment for outside-of-session practice
  - May require training for counselors, particularly for technologically-based interventions

Biofeedback and Neurofeedback

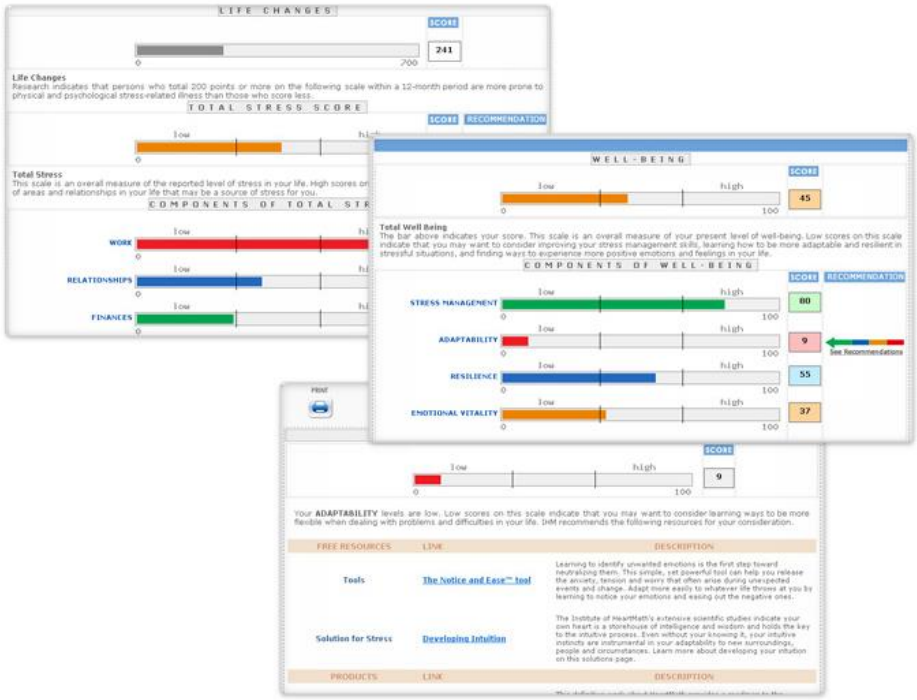
- Technology-free interventions:
  - Breath counts per minute (attempt to breathe 4-5 times in a minute)

- Technology-based interventions:
  - HeartMath EmWave Pro



HeartMath®

- Stress and well-being survey https://www.heartmath.org/resources/stress-and-well-being-survey/
- 72 Questions
- Takes 7-10 mins



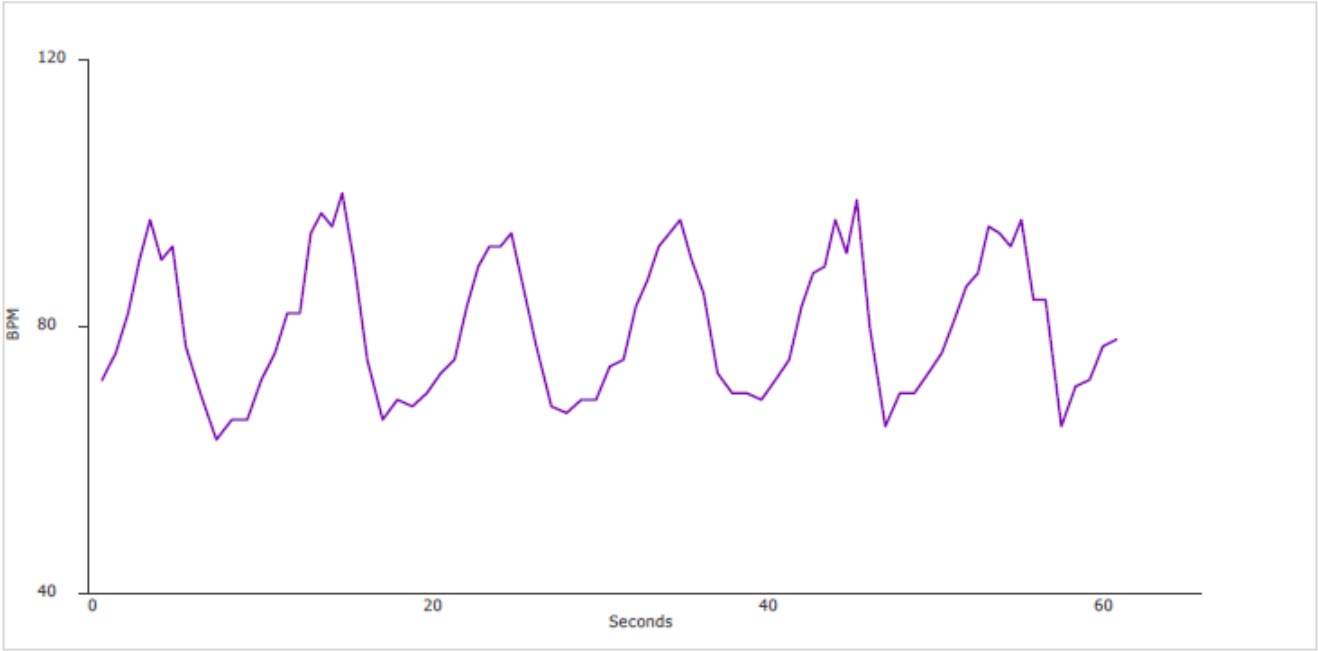
HeartMath®

- Breathing assessments with emWave Pro Plus ($299-500)
- 1 min. deep breathing
- HRV Assessment
  - Mean Heart Rate
  - Mean Inter Beat Interval
  - Mean Heart Rate Range
  - SDNN (Standard Deviation)
  - RMSSD
  - Normalized Coherence

1-Minute HRV Deep Breathing Assessment

Name	Alicia Beeson	Date	Saturday, May 21, 2016 9:57:08 PM
Gender	Female	Duration	1:00 Minute
Age	25		

HRV



MEASURE	YOUR VALUE	REFERENCE RANGE†	UNITS
Mean Heart Rate (BPM)	81.2	59.1 - 108.5	Beats Per Mnute (BPM)
Mean Inter Beat Interval (RR)	750.7	553.0 - 1015.2	Milliseconds (ms)
Mean Heart Rate Range (MHRR)	30.8	10.2 - 44.2	Beats Per Mnute (BPM)
SDNN	95.9	39.4 - 159.6	Milliseconds (ms)
RMSSD	62.1	22.9 - 160.7	Milliseconds (ms)
Normalized Coherence	92.0	50.0 - 100.0	Percent

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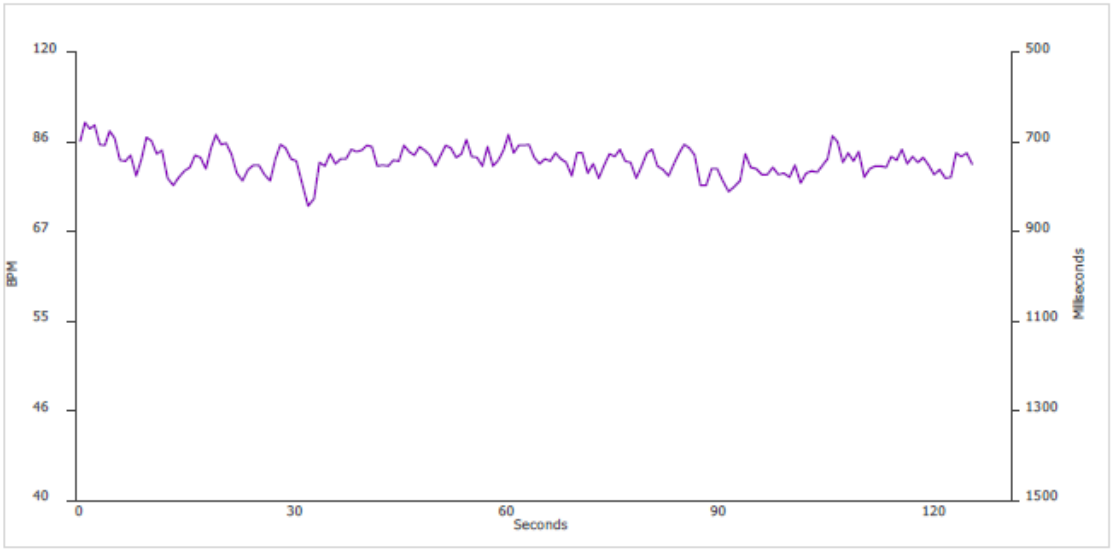
HRV Assessment

Name	Alicia Beeson	Date	Saturday, May 21, 2016 9:59:41 PM
Gender	Female	Duration	2:04 Minute
Age	25		

HRV



MEASURE	YOUR VALUE	LOG	UNITS
Duration	02:04 (2.1)		Mn:Sec (minutes)
Number of RR Intervals	166		
Mean Heart Rate	81.1		Beats Per Minute (BPM)
Mean Inter Beat Interval	741.4		Milliseconds (ms)
SDNN	30.7		Milliseconds (ms)
RMSSD	26.2	3.3	Milliseconds (ms)
Total Power	195.2	5.3	milliseconds-squared/Hz
Very Low Frequency	58.1	4.1	milliseconds-squared/Hz
Low Frequency	63.6	4.2	milliseconds-squared/Hz
High Frequency	73.5	4.3	milliseconds-squared/Hz
Low Frequency/High Frequency ratio	0.9	-0.1	milliseconds-squared/Hz
Normalized Coherence	29.9		Percent

nCBT
Attend. Build. Connect.

Biofeedback and Neurofeedback

- Roleplay (60 seconds)
  - Breath counts
- Roleplay (5 minutes)
  - HeartMath simulation

Biofeedback and Neurofeedback

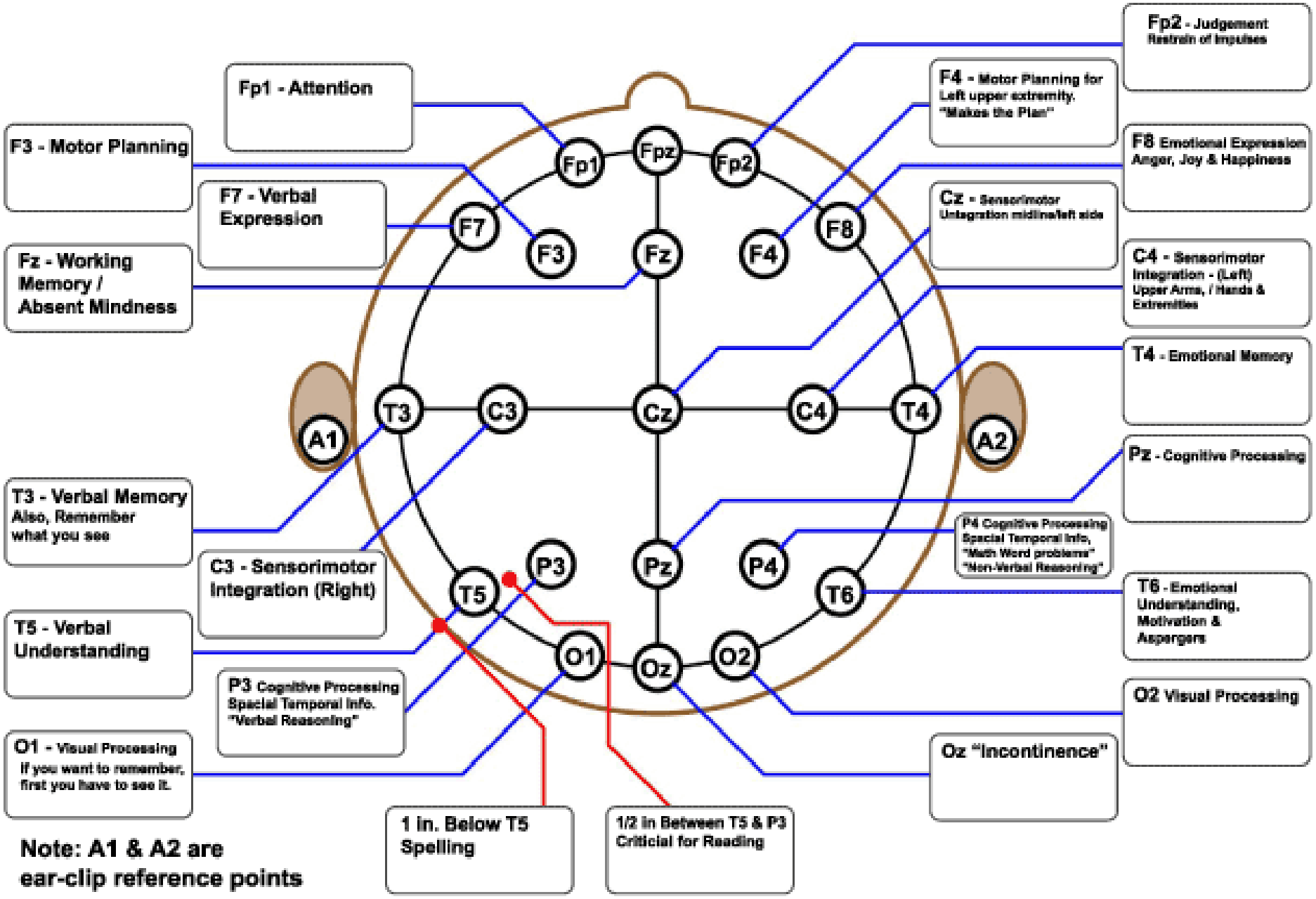
- In neurofeedback,
  - Clients' emotional regulation capabilities and cognitive performance can be improved
  - Client's brain is rewarded for achieving an optimal state of activation and connectivity for certain brain waves
  - Over time, the client learns to recognize this optimal state of activation, pre-consciously
  - Used for ADHD, OCD, depression, trauma, among others

Biofeedback and Neurofeedback

- Neurofeedback feasibility:
  - Requires highly specialized technology such as EEG
  - Training is therefore required and is more rigorous
  - Technology-free interventions are not available
  - Equipment (hardware, software) can be prohibitively expensive ($5-25K)
  - Client does not purchase out-of-session practice kits

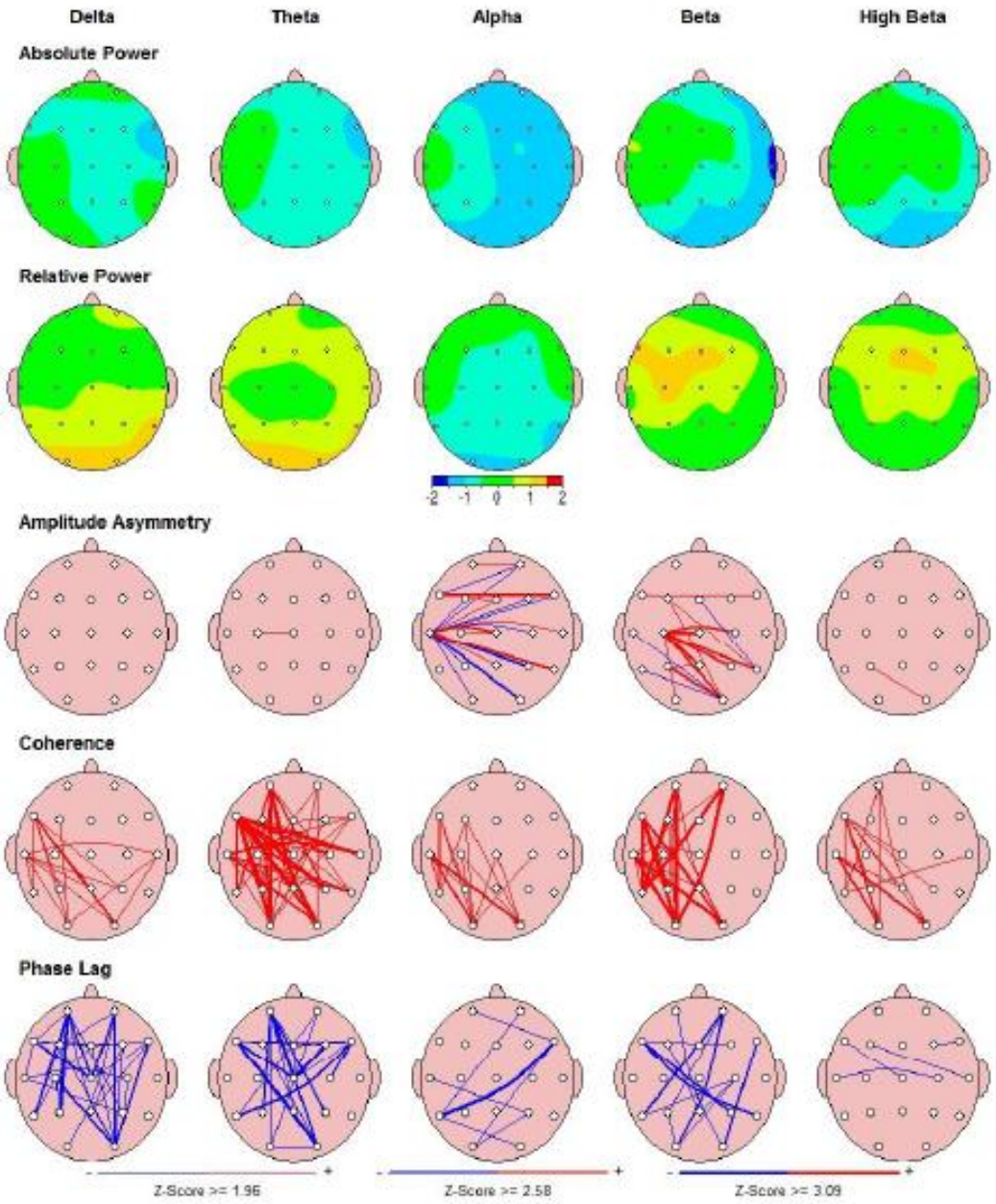
Biofeedback and Neurofeedback

- Directions:
  - While some standard protocols exist (Alpha-Theta, SMR, for example),
  - NFB should be database-guided through comparison to a normative database and client self-report
  - Thus, neurofeedback needs to be individualized
  - Learning neurofeedback is beyond the scope of this training
  - Excellent trainings exist (e.g., Stress Therapy Solutions, STENS, etc.). Make sure training is BCIA approved


Fp1 - Attention
F3 - Motor Planning
F7 - Verbal Expression
Fz - Working Memory / Absent Mindness
T3 - Verbal Memory
Also, Remember what you see
C3 - Sensorimotor Integration (Right)
T5 - Verbal Understanding
P3 Cognitive Processing Special Temporal Info. "Verbal Reasoning"
O1 - Visual Processing
If you want to remember, first you have to see it.
Note: A1 & A2 are ear-clip reference points
1 in. Below T5 Spelling
1/2 in Between T5 & P3 Criticial for Reading
Oz "Incontinence"
O2 Visual Processing
T6 - Emotional Understanding, Motivation & Aspergers
P4 Cognitive Processing Special Temporal Info, "Math Word problems" "Non-Verbal Reasoning"
Pz - Cognitive Processing
T4 - Emotional Memory
C4 - Sensorimotor Integration - (Left) Upper Arms, / Hands & Extremities
Cz - Sensorimotor Integration midline/left side
F8 Emotional Expression Anger, Joy & Happiness
F4 - Motor Planning for Left upper extremity. "Makes the Plan"
Fp2 - Judgement Restrain of Impulses
Fp1
Fpz
Fp2
F7
F3
Fz
F4
F8
A1
T3
C3
Cz
C4
T4
A2
T5
P3
Pz
P4
T6
O1
Oz
O2

Montage: LinkEars

Z Scored FFT Summary Information



Phase 2: Build the Brain from the Bottom-Up

- Wave1 Intervention Protocols
- **Special Considerations**

Special Considerations

- Overview
  - Risk of harm to self or others
  - Panic attacks
  - Adolescents

Risk of Harm to Self or Others

- Assist the client to self-regulate. Be a calm presence
- Conduct a risk assessment and follow a protocol for taking action (takes priority over interventions)
  - Safety planning (if…then…) could be useful. Behavioral contracts are not research-based
- Ensure the safety of the client and those in the client's community. Consider informing any identifiable victim and law enforcement if indicated (Tarasoff case law).
- nCBT does not require 24 hour phone availability; client should have contact info for crisis services

Panic Attacks

- Some Wave1 coping techniques are not indicated for panic attacks
  - E.g., biofeedback techniques requiring the client to count their breath
- Also be careful with interoceptive awareness and illness anxiety/hypochondria

Adolescents

- Because of adolescent brain development, Wave1 processes may be pronounced
- Adolescents may resist formal techniques; this should be honored
- Delivery of psychoeducation material needs to be engaging: hands-on activity, games
- Family counseling may be indicated to change dynamics and interactions that trigger the adolescent's Wave1 process.

So much to know!