PsychoNeuroPhysiological Assessment within a Multidisciplinary Comprehensive Assessment Program

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“Materials that are included in this course may include interventions and modalities that are beyond the authorized practice of mental health professionals. As a licensed professional, you are responsible for reviewing the scope of practice, including activities that are defined in law as beyond the boundaries of practice in accordance with and in compliance with your profession’s standards.”

PsychoNeuroPhysiological Assessment

1. Bio/Neurofeedback as a Integral Player in Integrative Mental Health
2. From Bio/Neurofeedback training To Psychoneurophysiological Interpretation
3. Comprehensive Assessment Program (CAP)

Integrative Medicine

Defined (1983):
...is healing-oriented medicine that takes account the whole person (body, mind, and spirit), including all aspects of life style; emphasizing the therapeutic relationship and makes use of all appropriate therapies, both conventional and alternative.

“get the patient better” philosophy

Integrative Medicine Points:

- Emphasizing the importance of the relationship between practitioner & patient
- Focusing on the whole person
- Treatment is informed by evidence
- Considering a diverse range of appropriate therapeutic approaches
- Aiming to achieve optimal health and healing

Integrative Medicine

Consortium of Academic Health Centers for Integrative Medicine (2009)

James Lake (2009):

“Because every human being is shaped by unique Social, Cultural, Psychological, Biological & Spiritual factors that determine his or her physical, psychological and spiritual health.”
Integrative Mental Health

INIMH – International Network of Integrative Mental Health (2010)

Integrative Mental Health Points:

- Considering the “whole” person
  - mind/body & interrelated systems
- Emphasizing the therapeutic relationship / alliance
- Examining healthy lifestyle
  - “lifestyle medicine”
  - exercise * diet * sleep * moderation

World Health Organization (WHO) 1948:

“‘Health’ is a state of complete physical, mental, and social well-being, and not merely the absence of disease and infirmity.”

Kaplan, RM., & Bush JW. (1982). Health-related quality of life measurement for evaluation research and policy analysis. Health Psychology (1); 61-80.


PsychoNeuroPhysiological Assessment

Bio/Neurofeedback as a Integral Player in Integrative Mental Health

1. Psychiatric Care
2. Psychotherapy

Tech Notes:

1. Naturopath / Chinese Medicine
2. Biomedicals / EKG
3. Nutraceuticals / Dietary
4. Chiropractic
5. Psycho-Education / Coaching
6. Acupuncture

PsychoNeuroPhysiological Assessment

2. From Bio/Neurofeedback training
   To Psychoneurophysiological Interpretation

   Equipment

3. Comprehensive Assessment Program (CAP)
Overview of Initial Procedures

**Initial Session**
- Brief Interview
- Orientation
- PsychoPhysiological Stress Evaluation
- Mini Brain Map (Clinical Q) Evaluation

**Follow-Up Session**
- Protocol Plan (4 Rs)
- Rehabilitate
- Reintegrate
- Rehabituate
- Resiliency

**Overview of Initial Procedures**

**Overview of Initial Procedures**

**PsychoPhysiological Stress Evaluation**

**Physiological Processes related to “stress & relaxation responses” are measured**

<table>
<thead>
<tr>
<th>Process</th>
<th>Instruments</th>
<th>Common Acronyms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiration</td>
<td>Pneumograph</td>
<td>HR/BVP/HRV</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>Photoplethysmograph</td>
<td>HR</td>
</tr>
<tr>
<td>Peripheral Temperature</td>
<td>Thermistor</td>
<td></td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Electromyograph</td>
<td>EMG</td>
</tr>
<tr>
<td>Skin Conductance</td>
<td>Electrodermograph</td>
<td>GSR</td>
</tr>
<tr>
<td>Peripheral Oxygen Saturation</td>
<td>Pulse Oximeter</td>
<td>SpO2</td>
</tr>
</tbody>
</table>

**PsychoPhysiological Stress Evaluation**

**Physiological Processes related to “stress & relaxation responses” are measured**

<table>
<thead>
<tr>
<th>Process</th>
<th>Stressed</th>
<th>Relaxed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiration</td>
<td>Rapid &amp;/or Shallow</td>
<td>Slow &amp; Even</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>Fast &amp;/or Attenuated</td>
<td>Rhythmic &amp; Prosodic</td>
</tr>
<tr>
<td>Peripheral Temperature</td>
<td>Cold</td>
<td>Warm</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Tense / Tight</td>
<td>Toned / Relaxed</td>
</tr>
<tr>
<td>Skin Conductance</td>
<td>Clamy</td>
<td>Dry</td>
</tr>
</tbody>
</table>

**PsychoPhysiological Stress Evaluation**

**PsychoPhysiological Stress Evaluation**

**Plugged In**

- Beams per Minute BPM

**Fast Fourier Transformation**

**Fast Fourier Transformation**
PsychoPhysiological Stress Evaluation

Rough Estimate of the ANS Autonomic Nervous System

Fast Fourier Transformation

Parasympathetic Tone (PNS)

High Frequency (HF)

Sympathetic Tone

Very Low Frequency (VLF)

Low Frequency (LF)

"Homeostasis"?

A little SNS in relation to A lot of PNS

HF/HF ratio

Biofeedback – Heart Rate Variability (HRV)

Attenuated HRV or "reduction" in resting-state HRV, associated with:

1. Depression
2. Alcohol Dependence
3. Cardiovascular risk and mortality
4. Diabetic neuropathy
5. Anxiety (specifically, worry and panic)
6. PTSD

Evidenced-based efficacy in symptoms related to:

1. Depression
2. PTSD
3. Anxiety
4. Stress-Related Illnesses (i.e., Heart Disease, COPD, Fibromyalgia, Asthma, chronic pain)

Make yourself comfortable and we will begin in a couple of minutes.
COLOR WORDS STRESSOR
Next, you will see a series of words written in different colors. Don't say the word, name the color that the word is written.

BLUE
RED
YELLOW
GREEN
ORANGE

RECOVERY
Thank you. Now sit comfortably and we will begin again in a couple minutes.

TALK STRESSOR
Now, talk about a stressful event that happened to you. Describe how you felt and what you were thinking.
Overview of Initial Procedures

Mini Brain Map

Rationale (2013):
1. Time: ADC > 120 patients
2. Scope: Staff training (BCN / BCB)
3. Appropriateness: Clinical population > General population (EEG norms)

Swingle's Clinical Q Assessment

Swingle's Clinical Q Assessment

Paul Swingle (2014):
Clinical versus Normative qEEG Databases:
The normative database qEEG provides very useful and important information. Discriminations based on the normative databases are simply statistically blind to many of the important neurological features associated with the clinical condition of clients. Clinical databases, such as that used in the Clinical Q, are far more efficient for identifying manifested predispositions and experiential factors that are fundamental to the efficient neurotherapeutic treatment of our clients. Clinical databases are also far more efficient at identifying conditions that require therapies other than neurotherapy.

Brainwave Patterns are unique to NeuroAnatomical Structures

- Clinical Database >700 patients
- Synchronization (Harmony)
  - Cognitive flexibility
  - Impulse control
  - Natural alerting / calming responses
- Imbalanced brainwave relationships
  - ADD / ADHD / Focus Fatigue
  - Memory / Hx Learning Issues
  - Mood instability
  - Non-restorative sleep / Burnout
  - Trauma signature
  - OCD tendencies

QuickQ EEG Assessment
Part A

Attach:
1) EEG Ground to Fz
2) EEG 1-Reference to Left Mastoid Process or Ear (Black 1)
3) EEG 2-Reference to Right Mastoid Process or Ear (Black 2)
4) EEG 1-Active to O1 (Red 1)
5) EEG 2-Active to Cz (Red 2)
6) Switch the NeuroX10 on
7) Click the START Protocol button

This protocol is based on Basic Neurotherapy: The Clinician's Guide by Paul Swingle, Ph.D.
PsychoNeuroPhysiological Assessment

1. From Bio/Neurofeedback training
   To Psychoneurophysiological Interpretation
   • Why we do it
     - Physiological responses to stress are excellent indicators of psychophysiological representation of psychological factors related to various states of Anxiety, Depression, & Resiliency
     - Using Brodmann Areas and Clinical Q provides subjective & meaningful interpretation to patients’ overall profile
   • Therapeutically
     - Assists in guiding protocols
   • Conceptually
     - Adds meaningful dimension to overall comprehensive patient profiling

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Comprehensive Assessment Program (CAP)

• 5-day (+)
  • Intensive assessment & evaluation
  • 12+ professional clinical consultations
  • Yielding treatment recommendations and referrals
  • Clients:
    - Professional Board Referrals
    - Treatment Non-Responders
    - Diagnostic Clarification
    - Second Opinion
  • Consultations / Evaluations
    - Medical/Psychiatric Stabilization if necessary
    - Psychiatric Evaluation(s)
    - Psychological Assessment
    - Medical Evaluation(s)
    - PsychoNeuroPhysiological Evaluation
    - Naturopathic Consultation
    - Psychotherapeutic Consultation & Process
    - Medication Management

3. Comprehensive Assessment Program (CAP)

   • What it is & How it works
   • Bio/Neurofeedback’s role in CAP

   Illustrated thru 2 Case Studies
Case Study #1

- 22-year-old male
- Failure to Launch
- Daily Cannabis use
- History of Bullying
- Diagnostic clarification for:
  - Depression
  - Bipolar
  - Anxiety
  - ADHD

Mental Clarity / Memory / Attention
May experience problems with attention and/or focus
May have had a history of attentional and/or focus problems
May get fatigued when reading or problem solving
May experience Foggy Thinking
May have Memory issues
Query for Deficits in Memory or Information Assimilation

Cognitive Flexibility
May be open minded

Body / Physical Health
May be unable to Sit Still or Quiet the Body
Query for Headaches or Chronic Pain
May be fidgety or unable to sit still

Stress
Presents as Calm under Stress

Sleep
May have Problems Falling Asleep
Quality of Sleep may be Problematic

Anxiety / Worry
May have Racing Thoughts or Chatty Mind
May feel Anxious
Has difficulty Quieting the Mind
May feel overly stimulated or have excess energy
Brain likely to have Excessive Chatter
May have symptoms consistent with Anxiety

Interpersonal Skills
May be Impatient or Easily Agitated/Frustrated

Parietal / Sensory Motor Strip
General Functions (Brodmann 1-3)
1. Sensory Info Integration
2. Spatial / Body Awareness
3. Attention / Concentration
4. Speech / Language
EEG Characteristics
1. Theta/Beta change < 15% 91%
2. Alpha Recovery < 25% 42%
   1. Foggy Thinking
   2. Inability to sit still
   3. Attentional Challenges
   4. Focus / Comprehension
   5. Chronic Pain / Headache

Frontal Lobes
Right Hemisphere
1. Synthesizes
2. Social Cues
3. Emotion Expression
EEG Characteristics
1. Relative Synchronous w/ Beta: Left > Right
   1. Clarity
   2. Decision Making
   3. Mood Stability

Left Hemisphere
1. Analyzes
2. Logic
3. Sequential
EEG Characteristics
1. Left Beta 15% > Right 21%
   1. Increased Arousal
   2. Excessive Chatter
   3. Negative Mentation
Case Study #1

**Case History**

- **Patient:** Carter S.
- **Age:** 64
- **Gender:** Male

**Assessment**

- **Score on CESD-R:** 10
- **Score on K10:** 6

**Diagnosis**

- **Major Depressive Episode:** Likely.
- **Bipolar Screen:** Negative.

**Symptom Groups**

- **Cluster C:** Anxiety
- **Cluster D:** Depression
- **Cluster E:** Somatoform

**Key Findings**

- ** major depression:**
- ** major anxiety:**

**Mood Disturbance**

- **Suicidal Ideation:**
- **Appetite:**

**Secondary Findings**

- **ADHD Scale:**
- **BAADS Results:**

**Conclusion**

- **Diagnosis:** Major Depressive Episode
- **Recommendation:** Further psychiatric evaluation.

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10/30/2018

Case Study #2

31 year-old female
On leave from graduate school
History of domestic abuse
Poly-substance use
Diagnostic clarification for:
- Depression
- Bipolar
- Anxiety

Mental Clarity / Memory / Attention
May experience Short Term Memory issues
May have Poor Retention of Information
Able to focus
Able to comprehend what is read
May get fatigued when reading or problem solving

Cognitive Flexibility
Has been regarded as 'Stubborn' by others
May tend to be Perfectionistic, or experience symptoms consistent with Obsessive/Compulsive Tendencies
May Persevere OR Hyper-Focus on tasks

Stress
May be Emotionally Volatile or has Anger Management Problems

Sleep
Quality of Sleep may be Problematic
May experience Fitful Sleep, especially Sleep Onset Insomnia

Trauma
Inquire about Traumatic Emotional Stress

Anxiety / Worry
May have Racing Thoughts or Chattery Mind
May feel Anxious
Has difficulty Quieting the Mind
May have symptoms consistent with Anxiety

Interpersonal Skills
May be Impatient or Easily Agitated/Frustrated
May be Emotionally Impulsive or have Knee-Jerk responses
May be Emotionally Restricted or 'Flat'
Tendency toward being Oppositional, Defiant and Socially Aggressive

Frontal Lobes
General Functions (Brodmann 8-12)
1. Thinking
2. Planning
3. Impulse Control
4. Attention / Focus
5. Initiative / Learning / Memory

EEG Characteristics L>R @ 15% Variance
1. Theta: Right > Left > 18%
   - Emotional Instability
2. Alpha: Right > Left > 25%
   - Oppositional / Defiant

Anterior Cingulate
General Functions (Brodmann 23-33)
1. Attentional Shifting
2. Mental Flexibility
3. Adaptability
4. Emotion Regulation

EEG Characteristics (Fz, AFz, FCz)
1. Gamma/Beta ratio > 0.5
2. Case #1: G/B = 0.73
   - Perseverative Tendencies
   - Rigid / Stubborn Temperament
   - OCD tendencies or Perfectionism
   - Hot Cingulate

Parietal / Occipital
General Functions
1. Sensory Info Integration
2. Spatial / Body Awareness
3. Creative Thought
4. Visual Processing & Perception

EEG Characteristics (Oz, O1)
1. Theta/Beta ratio > 2.0
2. Anxious Manifestations:
   - Noisy Mind Chatter
   - Sleep Onset Insomnia
   - Caiming only via Substances
   - Distraction
   - Physiological Burn-Out

Parietal / Occipital
General Functions
1. Sensory Info Integration
2. Spatial / Body Awareness
3. Creative Thought
4. Visual Processing & Perception

EEG Characteristics
1. Responsive/Flexible Alpha
2. Alpha Burst EO-ECG (>50%)
Case Study #2

**Emotional Conditions**

**Psychological Symptoms**

In Summary

1. Bio/Neurofeedback as a Integral Player in Integrative Mental Health
2. From Bio/Neurofeedback Training To Psychoneurophysiological Interpretation
3. Comprehensive Assessment Program (CAP)
Thank you

Mr. Osborne, may I be excused? My brain is full.