

Regulate the CNS, Increase Resilience & Enhance Consciousness with Neurofeedback

Presented by Jan Yordy, www.WaterlooBrainConnections.com 519-747-7747

Introductory Information about the Brain

- Brains are biologically primed to evolve from the primitive to the higher levels of thinking
- We start off reactive & have to learn to regulate our emotions
- Our right hemisphere (subconscious, nonverbal & holistic) develops before the left hemisphere
- It is between ages 2 & 3 that we start to grow neural connections from the right to the left hemisphere
- Self regulation develops when the cortex is in charge not the reactive/primitive part of the brain
- Before then the parent/caregiver acts as the external brain
- Brains can be compromised at any age because of stress and trauma
- Experience (trauma) shapes the brain by growing the connections
- Neurons which fire together wire together
- The more stress in your life the less you can attend and focus
- Over time brain processing can become compromised
- Your brain can develop highly reactive patterns as a result of trauma

Triune Brain Theory

- In 1950's neurologist, Dr. Paul MacLean proposed that we had 3 brains instead of 1
- The 3 brains operate like 3 interconnected biological computers
- Called Reptilian Brain, Limbic System & the Neo Cortex
- Most primitive is Reptilian or Dinosaur Brain
- The Feeling part is Limbic System or Emotional Brain
- Most advanced is Neo Cortex or Thinking Brain
- What the client experiences from conception on determines the efficiency of neural connections
- The quality of attachment relationship determines whether the client can think or remains stuck in fear states
- Because of Fight, Flight or Freeze the client can have few efficient connections up to thinking brain

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Amygdala Hijack

- Amygdala specializes in threat detection, fear conditioning & harm avoidance on rt side of the brain
- 1st three years of life the hippocampus is not developed enough to act as fear regulator
- Amygdala can constantly signal danger
- If stress reactions increase, the ability to regulate emotions decreases
- Leads to unhealthy coping strategies & a small window of tolerance
- Negative behaviors = lower, survival brain is in charge

Stephen Porges Polyvagal Theory

- Vagus Nerve originates in brainstem & is longest nerve of body connecting to all organs
- Is a three part, hierarchical system which takes care of automatic functions like heart rate, digestion, body temperature & survival & stress responses
- Works below conscious mind - Up to 90% of signals go from body to brain
- Ventral Vagal: relaxation & social engagement
- Sympathetic: mobilization = fight or flight
- Dorsal Vagal: immobilization = freeze response
- ANS explains our nervous system's response to stress & danger
- Vagus Nerve originates in brainstem & is longest nerve of body connecting to all organs

Neuroception: Am I Safe or Am I in Danger?

- Depending on our perception, ANS transforms and activates different systems in the body
- It becomes the filter through which you experience your world - sights, sounds, smells, tastes, & sensory info
- Green Zone – Parasympathetic State for connection, heart rate slows, digestion is activated, relaxed vocal state, you hear better & engage with others easily
- Yellow Zone – Sympathetic State, Fight or Flight, heart rate increases, pain tolerance goes up, breathing is faster & hearing tunes into low or high frequencies better

Neuroception: Am I safe or Am I in Danger? Red Zone:

- The Red Zone – Parasympathetic State in Freeze
- Perceive life threat so believe you are going to die. Response is to numb self or dissociate, don't feel emotions

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- Heart rate slows, blood pressure drops, flat face & voice, immune response drops, poor connections socially
- Healthy individuals can bounce between the green and yellow zone without getting stuck
- Trauma can cause clients to get stuck in the Red Zone or a maladaptive stress response between fear and frozen
- Much harder to do emotional healing when clients are stuck in the Red Zone

Brain Wiring Influences Trauma Processing

- Self sustaining problematic behaviours are largely out of conscious awareness
- Triggers to previous trauma can send client into reactive patterns before they can consciously respond from the logical, rational thinking mind (PFC)
- Neural connections which are repeated frequently especially if they have a strong emotional component, become wired for efficiency
- Old coping strategies and traumas influence the way clients perceive the world, relationships and their sense of self
- These unconscious patterns and behaviors cause clients to close their Window of Tolerance making it incredibly difficult to process traumas until they have increased feelings of safety and coping resources

Understanding Brainwave Frequencies

- Frequency is a measurement of wave oscillations per second
- 1 hertz is a big, slow wave
- 40 hz is a small fast wave
- Our brain is divided into different categories of function to help us understand the brain & what it is doing
- Frequency = energy level

Frequencies of Energy

- .5 - 2 hz Delta Waves - slow frequency, restorative sleep state, deep subconscious state
- 3 - 5 hz Delta & Low Theta - emotional reactivity, (trauma, pain, unslept), hypnotic state, dissociative or trance state, brain fog, subconscious mode
- 6 - 7 hz High Theta Waves – dream state, brain isn't constrained by logic, more coherence in brain so it can be a healing state, “Aha” moments
- 8 - 13 hz Alpha Waves - light meditative state, feeling of well-being, inner world more real than outer world, focused relaxation

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- 14 hz. Quieting frequency, stillness, inner & outer awareness at the same time. Called SMR (Sensory Motor Frequency) Used to help regain a sense of calm, balance
- 15 - 32 hz. Beta Waves - brain is active & conscious Attention is on outer environment & info from 5 senses
- 22 to 38 hz. High Beta Waves – brain can become stuck in severe anxiety/stress mode, incoherence, scanning for danger
- 40 - 100 hz. Gama Waves - peak perception, expanded levels of consciousness & coherence which can produce ecstasy, euphoria, & bliss states

4 kinds of Change Processes for the Brain

- **Extrinsic Constraint** – something external forces the change like drugs, stressful relationships patterns, violence & abuse, addictions
- **Chaotic Perturbation** – change without any pattern to learn from. You don't know the outcome until you are finished
- **Entrain & Migrate** – pushes the brain to make changes that someone external determined. Can be synchronization through entrainment. Most traditional Neurofeedback is this type
- **Synchronization through Chaos** – this is NeurOptimal Neurofeedback

Comparison of Two Types of Neurofeedback

Traditional Linear:

- Based on a medical model of treatment which is driven by diagnosis
- May require QEEG (Quantitative Electroencephalogram) which is a summation of electrical activity in brain
- Many believe an expert is required to “fix” a brain problem which has been diagnosed
- Protocols are developed which pushes the brain to function in a predetermined way.
- New protocols may be needed each time you hook up the brain
- Instructs the brain what to do through augmenting (increasing) and inhibiting frequencies
- Pushes the conscious mind to work hard to bring about change when it perceives the feedback
- May use targets which creates side effects by unbalancing key frequency patterns
- Requires extensive training to understand how to create protocols which may change the brain

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- Can require a number of treatments including repeating the QEEG which leads to more cost
- Quality of the outcome depends heavily on the practitioner's training and expertise

Nonlinear, NeuroOptimal Neurofeedback:

- It is a non-medical model which doesn't require a diagnosis
- The training is working across the whole brain, consciously & subconsciously to function more optimally in an integrated way
- Uses auditory feedback in real time to mirror back to the brain what it is doing.
- It is dynamical training so as the brain changes, it connects more flexibly & resiliently
- When the nervous system understands what it is doing, it can choose to make lasting changes

The Expertise is in the Software

- Fully automated, brain training system so no special expertise is required to operate it to achieve positive results
- It is safe, non – invasive & when your brain is trained enough, it holds onto positive gains
- Is a calming and relaxing process for the nervous system since no conscious effort is needed
- NeuroOptimal is cost effective especially when using a rental system in your own home
- It is especially helpful with trauma clients to regulate their nervous system & get them ready to process the trauma

NeuroOptimal Stabilizes Brain Activity

- NeuroOptimal calms the brain & helps everyone to be present in this moment
- When you are in the present moment, you have access to all of the gifts of CNS instead of being stuck in past or stressed about the future
- Every brain can get stuck repeating the same thoughts, beliefs, behaviors or emotions over and over
- In the brain the neuropathways which are repeated frequently become wired for efficiency
- This can be training the brain to be calm or anxious
- The brain has the inherent ability to self correct when given the proper electrical information in real time

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NeuroOptimal Contributes to Greater Client Stability

- Deeper awareness of self
- Increased focus and attention
- Stability of moods & emotions
- Clearer decision making & clarity of thought
- Enhanced coping abilities & stability in life
- Ability to process better without being overwhelmed
- Clients feel more resilient so are better able to do the necessary processing to release trauma

Window of Tolerance and NeuroOptimal

- When you calm and regulate the CNS you wire your client's brain to be able to tolerate their emotions more effectively
- Old, unhealthy coping strategies seem to melt away
- Better more restful sleep may result in a decrease in sleep disturbances or nightmares
- Relationship patterns become healthier and life begins to flow more easily
- Clients become more accepting of self and release shame-based perceptions which dominated them before
- Clients make better choices because they are able to connect to thinking brain instead of reacting from primitive brain
- Energy sessions flow easily and clients process more deeply as their Window of Tolerance is expanded


How NeuroOptimal Regulates the CNS

- The client's sense of safety and ability to calm the Sympathetic Nervous System is increased
- The client's ability to up-regulate the Parasympathetic Nervous System is increased so not triggered to feel numb or dissociated
- Thinking becomes clearer & less problematic
- Present awareness is restored
- Negative thoughts and emotions are calmed, suicidal thoughts decrease
- CNS is better able to regulate the emotions
- Client is less triggered by negative sensory stimuli which reminds them of the traumas

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- Better able to notice their negative coping strategies such as triggers for addictions and dissociation



NEUROPTIMAL® VS THE REST
NEUROPTIMAL® WAS CREATED FROM A FUNDAMENTALLY DIFFERENT VIEWPOINT THAN WERE OTHER SYSTEMS. UNDERSTANDING THESE DIFFERENCES WILL HELP YOU KNOW WHETHER NEUROPTIMAL® IS THE CHOICE FOR YOU.

| OTHER SYSTEMS | VS | NEUROPTIMAL® |
|--|----|--|
| Focus is on treatment | | Focus is on improving brain resilience and flexibility because this naturally leads to a reduction in problems/issues. |
| Requires diagnosis | | No diagnosis is necessary because training helps your brain find its own best solution. |
| Requires practitioner skill | | Expertise is built into the system. No skills are necessary. |
| Potential side effects | | No known unwanted side effects. |
| Requires effort on behalf of client to consciously train the mind | | Requires no effort or special discipline. Client simply relaxes. |
| Invasive; pushes brain in a specific direction to achieve correction | | 100% non-invasive. Let's the brain "decide" which corrections work best. |

NeurOptimal® brain training works with the central nervous system — your brain — by targeting shifts in the brain's activity that can undermine optimal brain function.

To understand the practical applications of NeurOptimal® it may be useful to first understand certain complexities of the brain and a little about how it functions. The brain is the most complex **dynamical structure** known within the universe. It is able to process massive amounts of information, develop responses and apply these responses for increased efficiency and mastery. Fortunately, consciousness is self-regulated, such that processes not requiring our immediate attention take place outside of our awareness, within the subconscious. This leaves our conscious mind unencumbered to deal with important immediate stimuli that require awareness and focused attention.

In learning behavior, a network of supporting neural interconnectivity is established. With repetition, the neural connections are strengthened and more easily activated. Eventually the behavior can become a primary and unconscious response. The brain's on-going ability to create

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new pathways and interconnections is essential for learning and adaptability. These features of the dynamical brain have profound implications for day-to-day living.

For Example: If we repeat behavior often enough, it develops a self-organizing dynamic that then drives the behavior. Self-sustaining problematic behaviors are largely unconscious – conscious and may be as simple as obsolete coping strategies or as extreme as serious psychological and emotional conditions. Once established they influence the way we perceive the world, our relationship with it and our sense of self.

Behavioral dynamics are like a car rolling down a hill. If you jump in front just as it starts to move, it is a lot easier to stop than if it has developed momentum. When behavior has an unconscious component, we are unaware of the activation and the build-up of the dynamical intensity. By the time it reaches awareness the behavior is usually difficult to control because it is supported by powerful unconscious forces and has gained considerable “momentum”.

When conscious or unconscious processing efficiency becomes compromised through the stress of modern living, information overload, trauma, or other influences, loss of performance and suffering arises. The body systems it regulates are affected, processing and integration of life experience becomes inefficient, and the additional burden placed on the conscious mind results in loss of awareness and performance in the world. Consequently, problematic behaviors, ill health, and dependencies arise.

People using neurofeedback have experienced relief from a vast array of psychological, emotional and medical symptoms.

The NeurOptimal® System is not based on a classical neurofeedback approach which is Newtonian in nature. NeurOptimal is a non-linear, dynamic system based on quantum science. It is about synchronization through chaos. The system looks for turbulence & instability in the Central Nervous System and signals it to the client through the auditory channel. It does not push or pull the brain to perform in set ways. It is easy to use and is free from side – effects. Since the system has FDA approval for relaxation and is not a medical device, you do not target based on diagnosis.

NeurOptimal® is assisting the brain and CNS to operate according to its own natural potential.

The recovery, performance, or transformational path with NeurOptimal® varies from person to person. This is because NeurOptimal® is assisting the brain and central nervous system (CNS) to operate according to its own natural potential rather than forcing any predetermined path toward any predetermined outcome. Considering that everyone is starting from a different position with a unique history this is particularly relevant. Apart from the natural ease and flow, the change process can be talked about globally in five general overlapping and interactive aspects.

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1 Stabilizing of the Central Nervous System: During this process people begin to feel deeply relaxed, mind quieting between sessions, sleep improvements, decrease in reactivity, and generally, feeling more settled.

2 Beginning of deep unconscious processing: Further improvements in the above benefits and stability, occasional vivid dreaming for some, life begins to feel easier, energy begins to increase, alertness increases, increased endurance, mood stability, noticeable improvements in psyche and response times.

3 Improved processing: Improved stability and efficiency along with freeing up of psychological energy brings increases in attention, focus, mind / body and eye / hand coordination, adaptability and flexibility, increased awareness, increased presence, easier and faster decision making, more creative, better response times, increased intuition, improved access to higher resources, coping significantly better without being overwhelmed. Significant shifts can occur seamlessly with increased adaptability and flexibility such that you may feel like you have always been this way. Increased awareness leads to objective observation of own and others behavior, along with environmental dynamics in general. As a result of developing mindfulness, the developmental and transformational processes are receiving uncontaminated feedback for further enhancement of outcomes.

4 Smooth traveling: Carrying the benefits easily from session to session, finding that the old 'you' is getting harder to recall as you settle into the emergence of increased capacity, better functioning, and a stronger positive sense of self. Life experience is now driving the growth and transformational process, and confidence develops as you become familiar with this growing sense of self control.

5 Into the future: Once your Central Nervous System is functioning according to its inherent design and capacity, the gains will continue to unfold independently of NeurOptimal®. Most people are happy with this level of improvement and stop training. Others briefly dip in and out of the NeurOptimal® process over time, for additional benefits or for assistance with periods of unhealthy stress.

Some suggestions for neurofeedback use are:

- **Wellness enhancement**
- **Stress reduction**
- **Facilitate return of veterans into home and work life**
- **Academic and job enhancement**
- **Athletic and sports training**

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- **Optimizing your intelligence with improved brain function**
- **Preparation for testing: improved focus, attention and retention, reduction of test anxiety**
- **As part of an anti-aging program**
- **Enhancing creativity and awareness**
- **Personal and spiritual development**
- **Enriching partner, family and work relationships**
- **Group training in retreat settings**

The developers of NeurOptimal are Valdeane and Susan Brown of Zengar Institute Inc.

They are clinical psychologists who have over forty years in the neurofeedback community. Together they developed the unique, industry- leading, state-of-the-art NeurOptimal NFB system. Their system is designed to work directly with the dynamical self-organizing conscious and unconscious processes of your brain, facilitating optimal functioning. The system dances micro-second by micro-second with your brain offering it the information it needs to REORGANIZE ITSELF. The NeurOptimal system has FDA approval for relaxation and is not considered a medical device.

Resources for Neurofeedback, Energy & the Brain

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To learn more about NeuroOptimal® you can visit their web site at www.neurooptimal.com There is a wealth of information there.

If you have any questions you are welcome to contact Jan Yordy at yordy@waterloobrainconnections.com or at 519-747-7747 Jan is a NeuroOptimal Advanced Trainer, Representative and Facilitator.