

The Mind Reset: A Case Study in Lasting Change

Identifying Information:

Client, A.H., is a teenage male who presented for evaluation and neurofeedback treatment planning in early 2023 after transitioning to a new home with his uncle at age 15.

Presenting Concerns:

At intake, the client reported a longstanding history of difficulty with attention and focus, lack of motivation, low energy, and symptoms consistent with depression and OCD. He described challenges with emotional regulation, reactivity, and cognitive flexibility. Concerns included impulsivity, distractibility, disrupted sleep patterns, and intrusive or obsessive thinking. Despite these symptoms, the client was highly motivated to begin neurofeedback in hope that it would help him to manage symptoms, particularly OCD and ADD.

Family & Social Context:

Prior to treatment, the client had experienced a difficult upbringing and multiple changes in living environments. At the time of intake, he was residing with his uncle in a supportive home environment. The uncle expressed a strong commitment to the clients' care and well-being. Family psychiatric history and early psychosocial background included instability, contributing to chronic stress and emotional reactivity.

Psychiatric and Medical History

Client presented with a clinically significant mental health history including symptoms of ADHD, depression, OCD, low motivation, and emotional dysregulation. Reports at intake highlighted chronic focus difficulties, compulsive thinking patterns, low energy, and a tendency toward impulsive and reactive behaviors.

He experienced early childhood adversity and was placed in the care of a new guardian at age 15, marking a pivotal transition point in his emotional and behavioral development. Client displayed functional impairments in emotional regulation, communication, and executive functioning.

Medical records indicate:

- Diagnosed attention difficulties and compulsive behaviors
- History of poor sleep and energy regulation
- Ongoing symptoms that interfere with focus, mood, and day-to-day behavioral control

This clinical profile was consistent with a pattern of early developmental trauma contributing to persistent cognitive and emotional symptoms, making him an ideal candidate for qEEG-guided neurofeedback intervention.

Quantitative EEG (qEEG) Assessment – Baseline

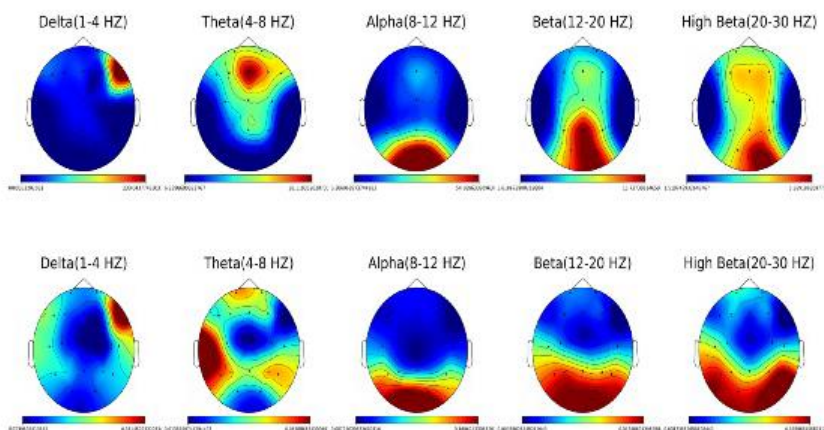
Key Findings:

1. **Elevated Slow-Wave Activity:** Marked delta and theta excess, especially in the frontal and central regions. This pattern is associated with sluggish cognitive tempo, emotional flooding, low energy, and diminished executive functioning.
2. **High-Beta Excess (20–40 Hz):** Pronounced in frontal and temporal areas, consistent with hyperarousal, agitation, impulsivity, and difficulty downregulating from stress or stimulation.
3. **Reduced Alpha Activity:** Indicating reduced resting calm and difficulty accessing relaxed, regulated states—common in individuals with trauma and anxiety.
4. **Midline Irregularities:** Suggestive of impaired mood regulation and impulse control, particularly affecting emotional pacing and self-monitoring.
5. **Posterior Hypoactivation:** Reflects weak integration of sensory-regulated calm states, which may underlie issues with sleep, sensory overwhelm, or grounding.

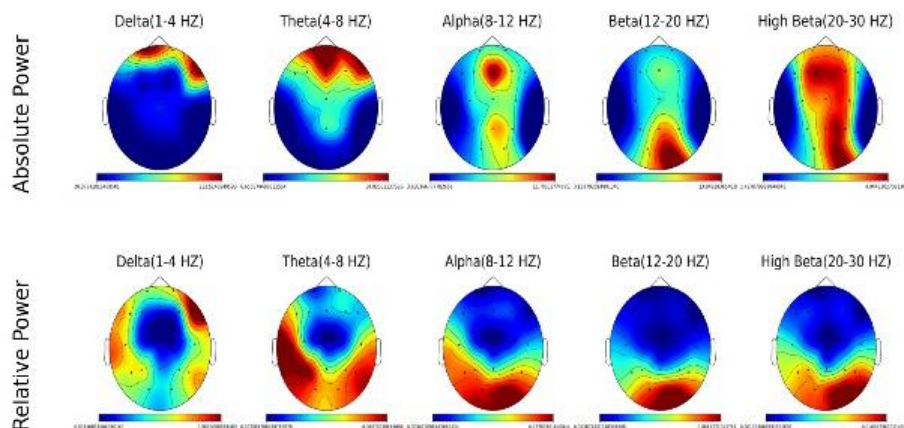
Connectivity Concerns: Dysregulation was observed across cortical regions, pointing to inefficient communication between emotion-processing and executive control networks.

Clinical Implications: These findings align with the client’s reported symptoms of ADD, depression, OCD, emotional dysregulation, and sleep issues.

Eyes-opened Condition



Eyes-Closed Condition



Eyes-closed condition

Impression: Low delta, theta, and alpha.
Elevated beta and high beta, in right frontal and temporal regions

Relative Power: Low slow-wave activity (delta/theta) and alpha; excessive fast-wave activity (beta/high beta)

Theta/beta Ratio (At Cz, Expected < 3.0):
2.1

Asymmetry present at F3>F4: Yes

Asymmetry present at F7>F8: Yes

Asymmetry present at P4>P3: Yes

Alpha/beta Ratio (At Pz, Expected 8-12):
2.5

Posterior Dominant Rhythm (At Pz): 10.2

Peak Alpha Site: P3

Notes: Mu rhythm at C3/C4. Aberrant coherence in posterior, right frontal regions consistent with emotional dysregulation

Eyes-opened condition

Impression: Similar to eyes-closed: low delta, theta, and alpha; high beta persists in right frontal and temporal lobes

Relative Power: Decreased slow-wave power (delta/theta), reduced alpha, elevated beta/high beta

Theta/beta Ratio (At Cz, Expected < or = EC): 2.1

Asymmetry present at F3>F4: No

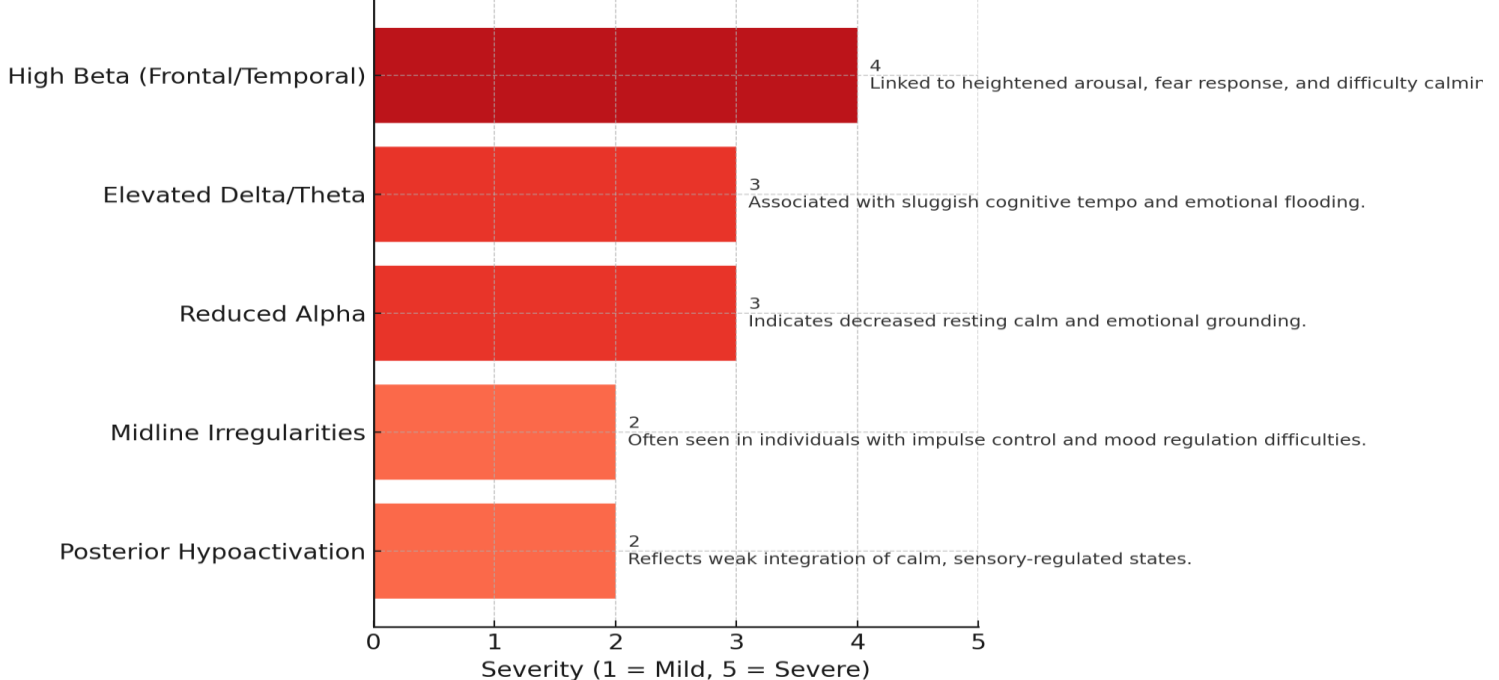
Asymmetry present at F7>F8: Yes

Asymmetry present at P4>P3: Yes

Notes: Persistent hyperconnectivity between frontal and limbic regions; signs of overarousal and reduced top-down regulation.

Baseline Brainwave Deviations – Prior to Neurofeedback

qEEG Deviations – A.H.'s Assessment Summary



Neurofeedback Intervention

Total Sessions: 40

Protocol Selection: qEEG-guided and individualized to normalize dysregulated brain networks.

Phase 1 – Midline Regulation (20 sessions)

- **Sites:** Cz, Fz (2-channel)
- **Inhibit:** 2–9 Hz (Delta/Theta) & 20–40 Hz (High Beta)
- **Reward:** 13–18 Hz (Low Beta/SMR)
Objective: Suppress excessive slow-wave (delta/theta) and fast-wave (high beta) activity contributing to impulsivity and anxiety, while promoting calm, focused attention through SMR enhancement.

Reported Subjective Changes:

- Noticeable calming of thought processes
 - Improved frustration tolerance
 - Enhanced concentration and emotional self-monitoring
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Phase 2 – Hemispheric Balance (20 sessions)

- **Site:** C3, C4 (2-channel)
- **Inhibit:** 2–9 Hz (Delta/Theta) & 19–40 Hz (High Beta)
- **Reward:** 13–17 Hz (Beta)
Objective: Enhance left-right cortical balance to support attentional control and social-emotional regulation. Reduce impulsivity and emotional reactivity while improving verbal fluency and cognitive stability.

Reported Subjective Changes:

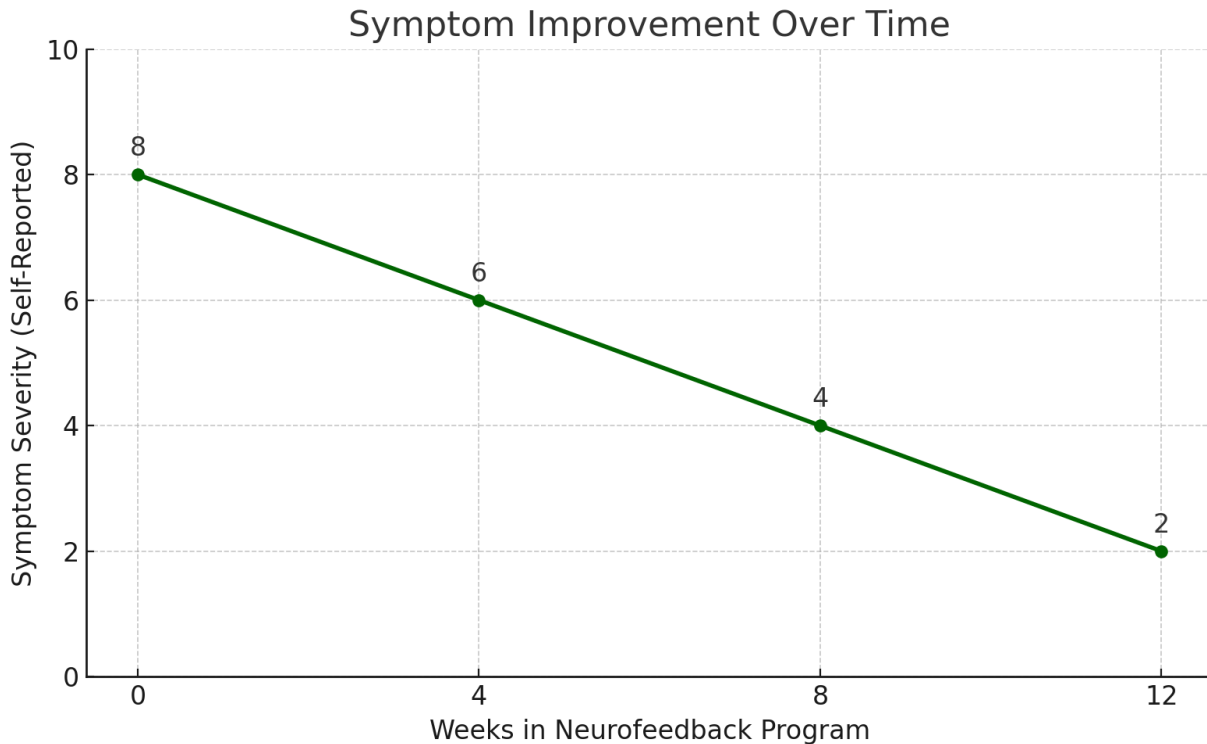
- Improved verbal processing and mental clarity
 - Decreased physical impulsivity
 - More thoughtful, deliberate responses in moments of conflict
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Post-Intervention qEEG Findings

Observed Clinical Changes:

- Consistently calm
- Clearer communication, especially in emotional conversations

- Improved impulse control with cognitive flexibility
- Improved resting state and emotional pacing



Clinical Outcomes

At conclusion of his neurofeedback program, the client demonstrated:

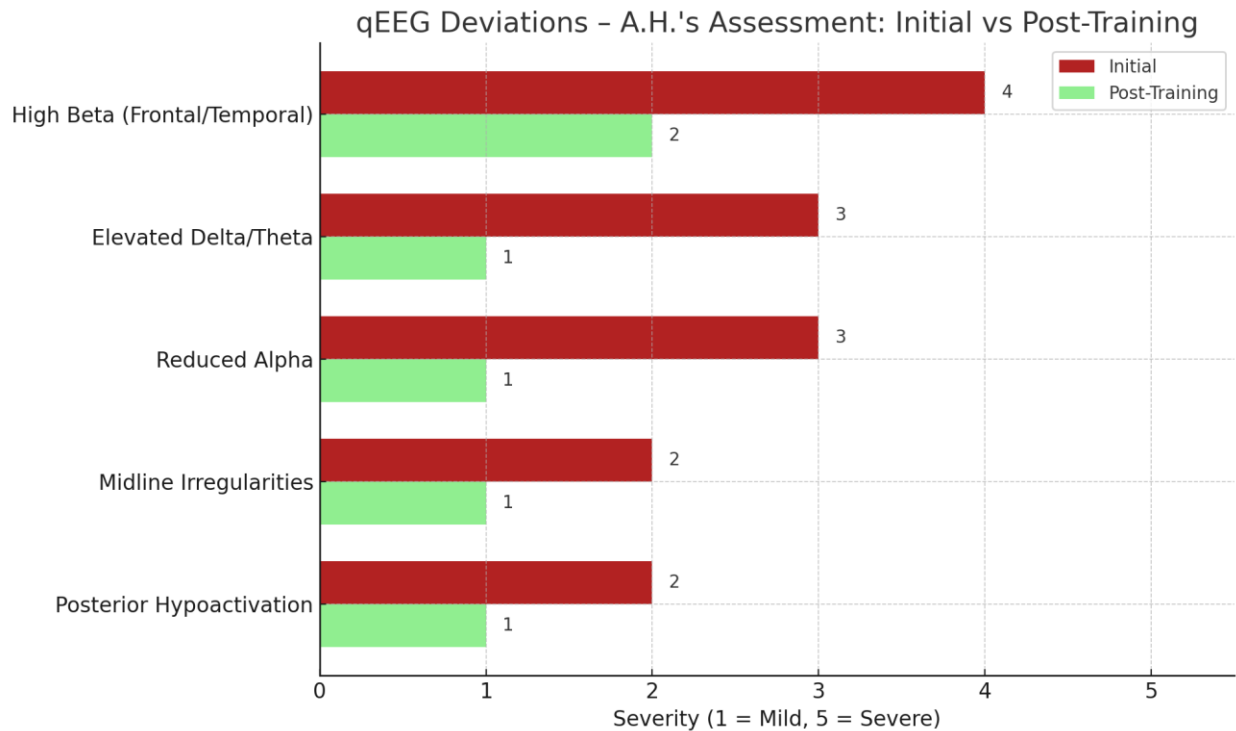
- Improved calm thought process
- Reduced frustration
- Enhanced ability to self-monitor emotions and communicate clearly
- Improved impulse control and deliberate decision-making in emotionally elevated situations
- Improved focus, verbal processing, and sleep regulation
- Reduced physical impulsivity and emotional reactivity

These outcomes were supported by objective qEEG improvements and reinforced by family feedback describing A.H. as “far less reactive, more reasoned and logical,” with greater emotional control in both daily and high-stress environments

Baseline Brainwave Deviations – Post Neurofeedback

This chart illustrates the reduction in key brainwave deviations observed in A.H.’s qEEG assessment from the beginning to the end of neurofeedback training. Each pair of bars shows the initial severity (red) and post-training improvement (green) across specific

neurophysiological markers associated with emotional regulation, cognitive clarity, and nervous system balance.



Conclusion

This case demonstrates the transformative impact of **qEEG-guided neurofeedback** in promoting emotional recalibration and cognitive stability in adolescents with trauma histories and executive function challenges. In under a year of consistent, targeted training at MindGym, A.H. progressed from a state of impulsivity, anxiety, and emotional dysregulation to greater calm, communication, and self-control.

Customized protocols addressing midline and hemispheric imbalances resulted in measurable improvements in verbal processing, emotional pacing, impulse control, and daily functioning. A.H.'s journey reflects the powerful role neurofeedback can play in supporting youth facing complex developmental and emotional hurdles—restoring agency, clarity, and hope for a more empowered future.