

Clinical Outcomes in Addiction:

A Large Neurofeedback Case Series

Jay Gunkelman, QEEGT

Curtis Cripe, Ph.D

 **Q-Pro Worldwide**

USA-Russia-Switzerland

A clinical case series is not a controlled study.

It has no randomization, no placebo control, and no control group, just our experience with 30 clients completing therapy

- It does show the incidence of phenotypes across this clinical population
- It does characterize the effects of therapy on this series of client outcomes

Some addiction stats

- 22.5 million Americans needed treatment, only 3.8 million got it
- The cost estimate for illicit drug abuse is estimated at \$181 billion
- If you include healthcare, criminal justice, and lost productivity, the costs exceed \$500 billion.
- For every dollar spent on treatment there is a \$4 to \$7 reduction in the cost.
- With outpatient programs, savings can reach a ratio of 12:1

(National Survey on Drug Use and Health, 2004)

Efficacy

- La Vaque, T.J, Hammond, D. C., Trudeau, D., Monastra, V., Perry, P., & Lehrer, P. (2002). Template for developing guidelines for the evaluation of the clinical efficacy of psychophysiological interventions. *Applied Psychophysiology and Biofeedback*, 27(4), 273-281.

Current efficacy status:

- Sokhadze, T, Cannon, R., & Trudeau, D. (2008). EEG Biofeedback as a Treatment for Substance Use Disorders: Review, Rating of Efficacy, and Recommendations for Further Research. *Applied Psychophysiology and Biofeedback*, 33:1-28
- “Probably efficacious” for the Peniston and the Scott protocols

EEG Phenotypes: The incidence in addiction

Two drive factors underlie the pathophysiology of addictive behaviors:

- CNS Over-arousal (N=21)
- Cingulate (Obsessive-Compulsive)
(N=9)

NF protocols derived from the phenotype, not the addictive behavior

CNS Over-arousal based addiction

- Low voltage fast EEG (N=8) gets SMR and “Alpha-Theta”
- Faster alpha (N=7) gets “Alpha-Theta”
- Beta spindles (N=18) get SMR and “Alpha-Theta”

Cingulate obsession, compulsion based addiction

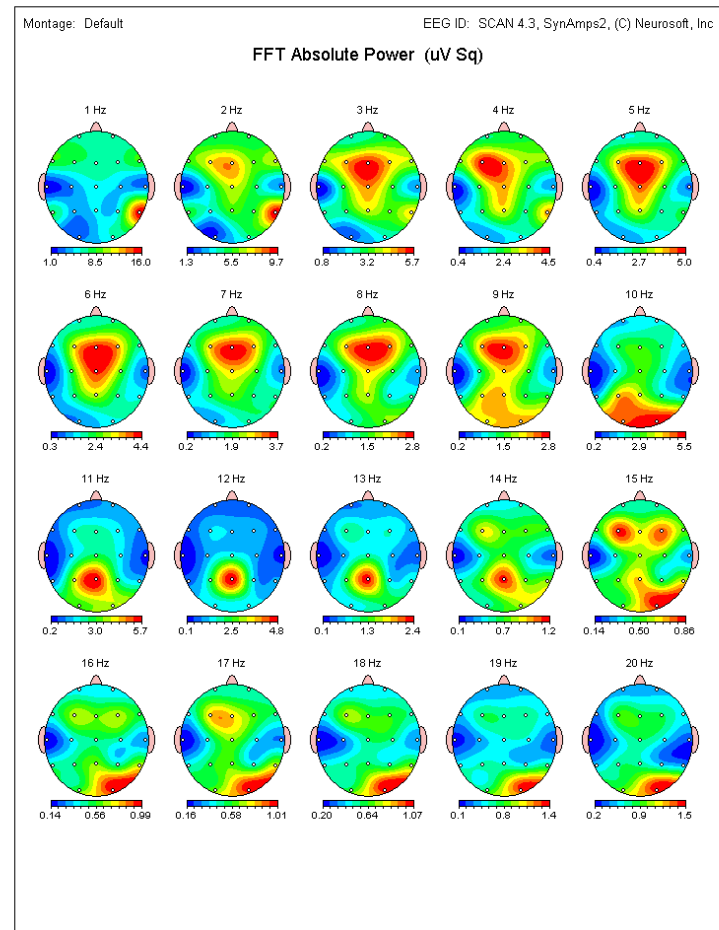
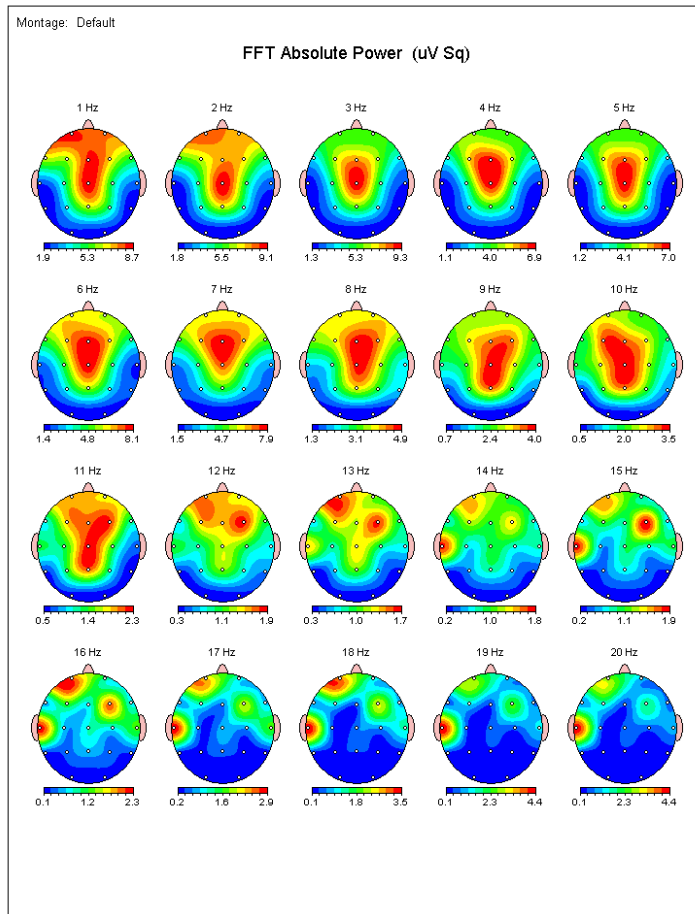
- Fz localized suppression of the divergent pattern
 - Alpha (N=3)
 - Slow (N=2)
 - Beta Spindling (N=4)

Pre-post qEEG findings

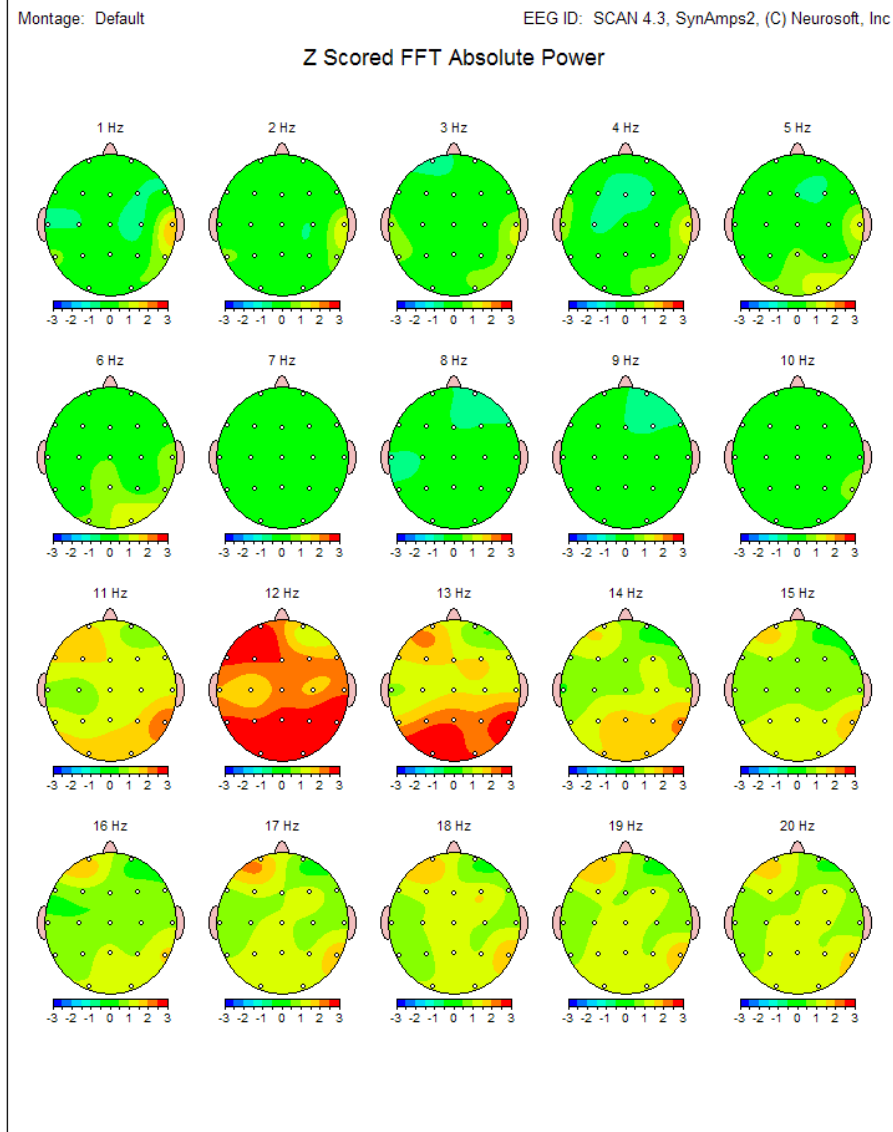
- Similarly to the London Royal College of Medicine study, we find the alpha-theta training decreased the over-arousal patterns
- Similarly to work by Dr Marco Congedo on the anterior cingulate, we see midline EEG improvements, associated with contingent behavioral improvements

Samples of qEEG findings: Cingulate slow pattern

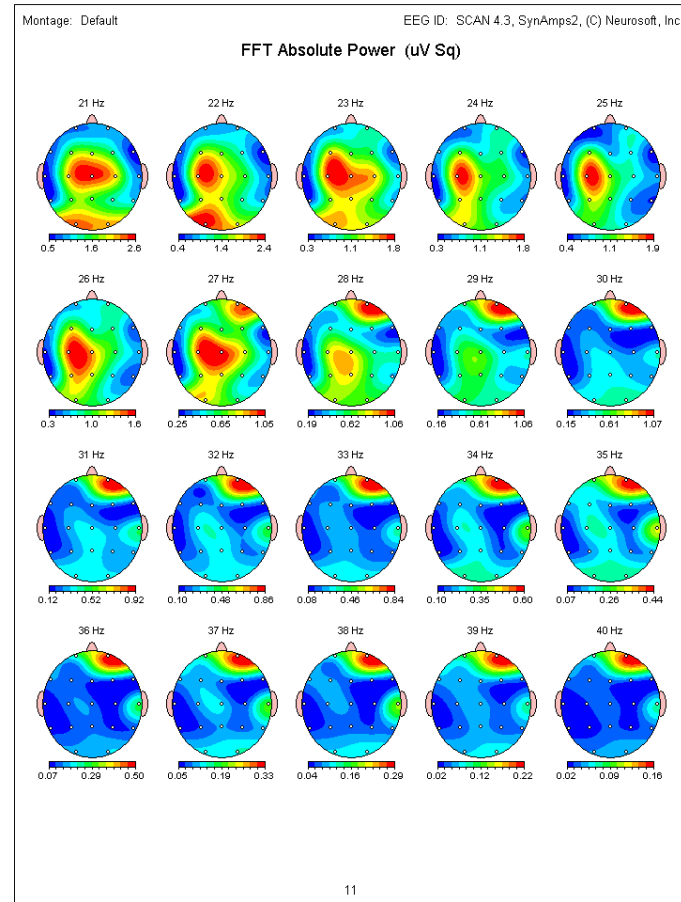
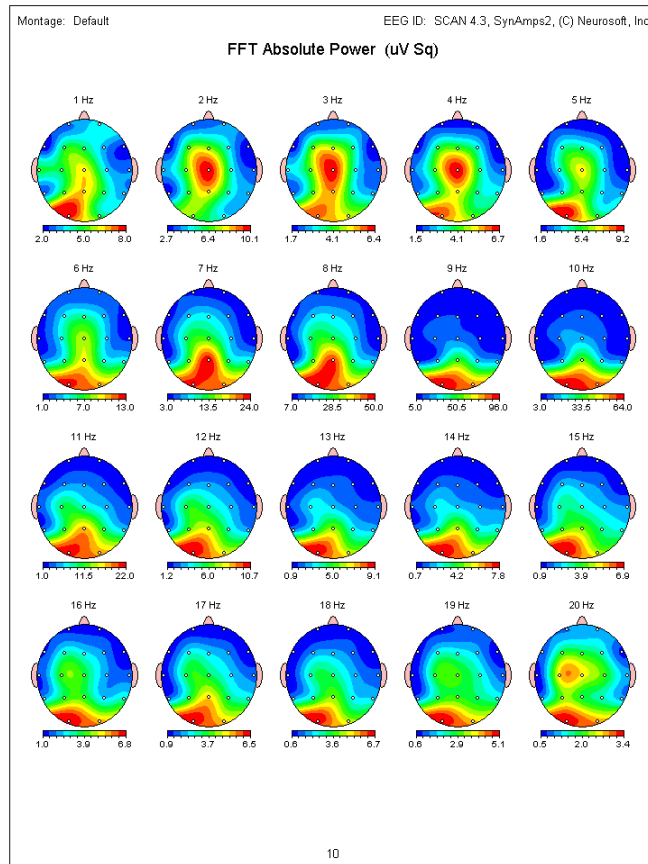
Note the anterior midline slow content in these **two** samples of a “slow cingulate failure mode”.



Fast alpha



Beta spindle



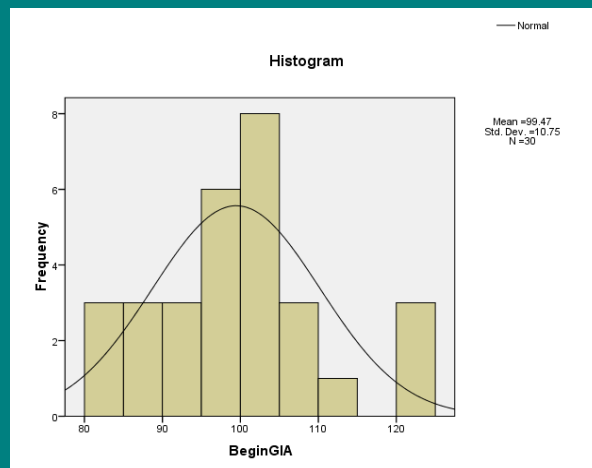
Treatment was based on a holistic clinical model, and was more than just NF

- This mimics expected outcomes from real therapeutic environments and is not a controlled experiment.
- No claim of efficacy is made for NF based on this work alone (though the current white paper assigns the efficacy of “Probably efficacious” to Peniston)
- Outcomes include more than merely having clients with sobriety/abstinence and watching qEEG patterns change... people’s lives are changed when the underlying patterns are addressed

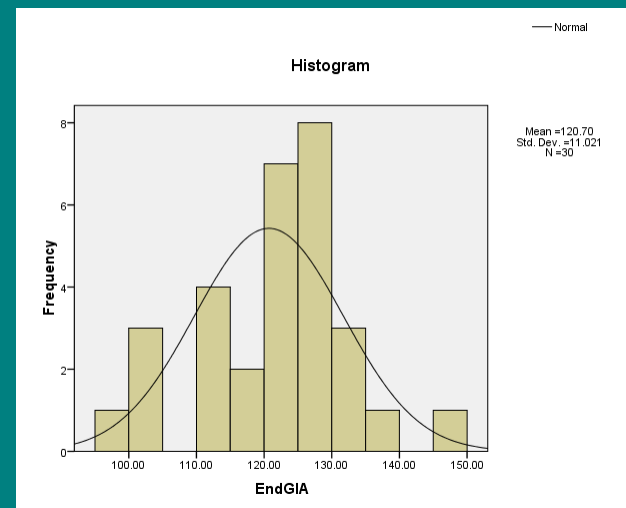
General Intellectual Abilities

IQ score as measured by Woodcock Johnson III

Pre
Mean=99



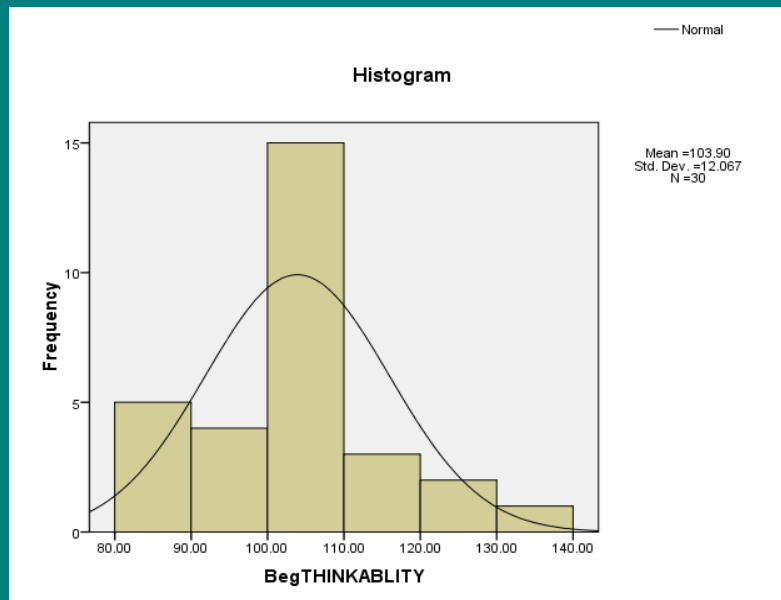
Post
Mean=120



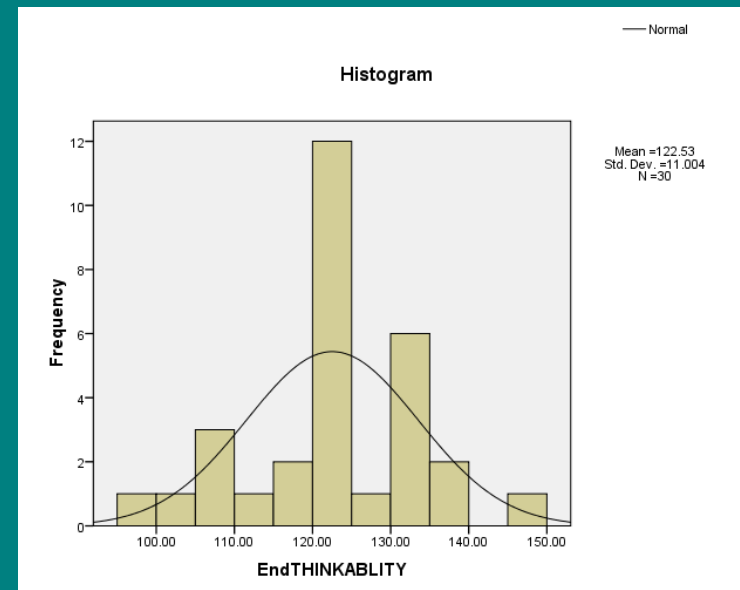
Thinking Ability

measures thinking processes used when short term memory information cannot be processed automatically.

Pre
Mean= 103



Post
Mean= 122

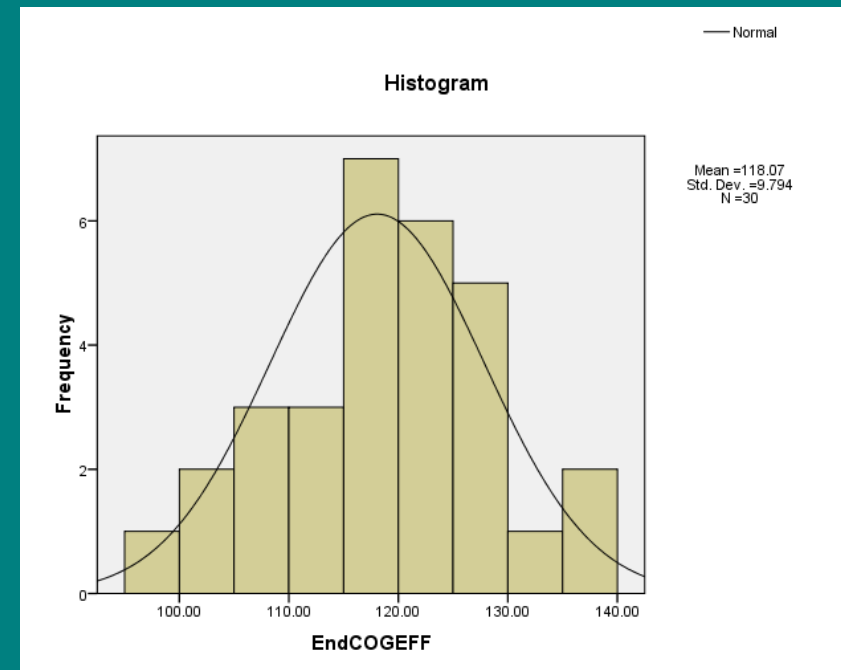
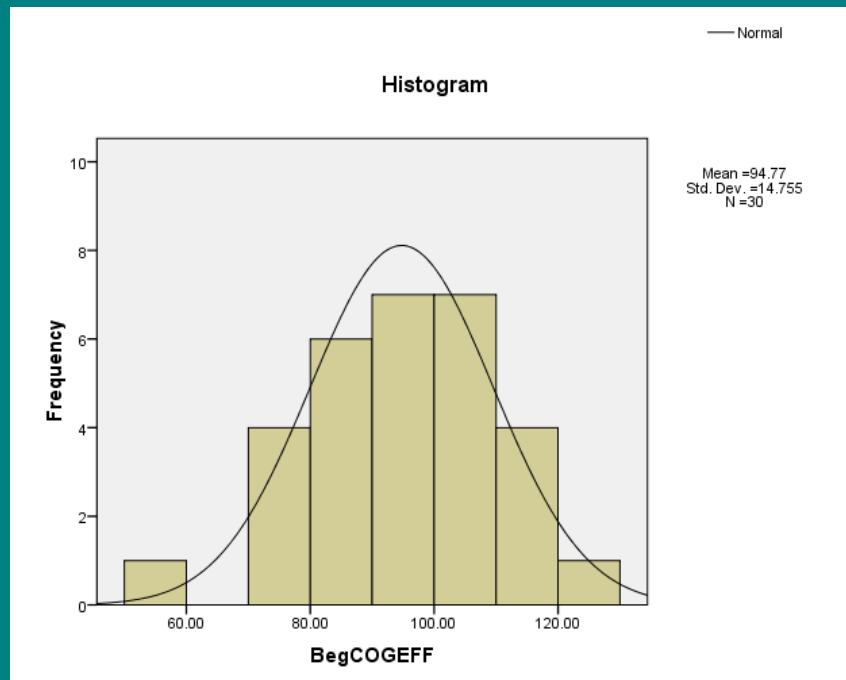


Cognitive Efficiency

The ability to process information automatically, with tasks requiring: 1) information held in working memory
2) visual perceptual speed.

Pre
Mean= 94.7

Post
Mean= 118

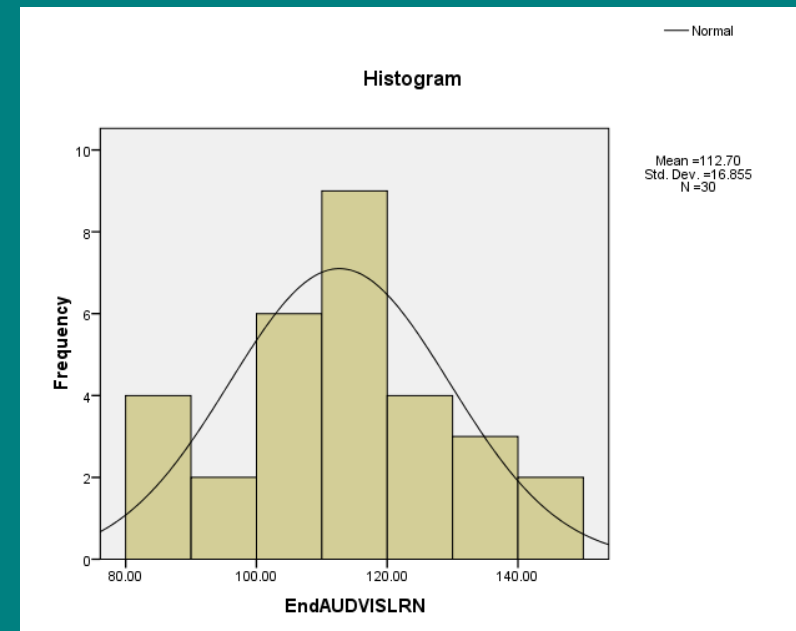
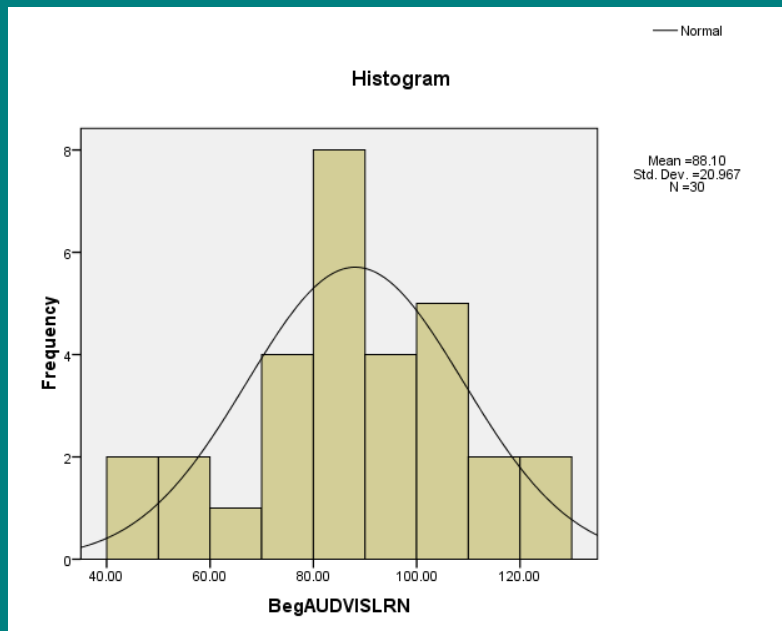


Audio-Visual-Learning Ability

measures learning in situations where information is presented both orally and visually.

Pre
Mean= 88

Post
Mean= 112.7



Delayed Recall

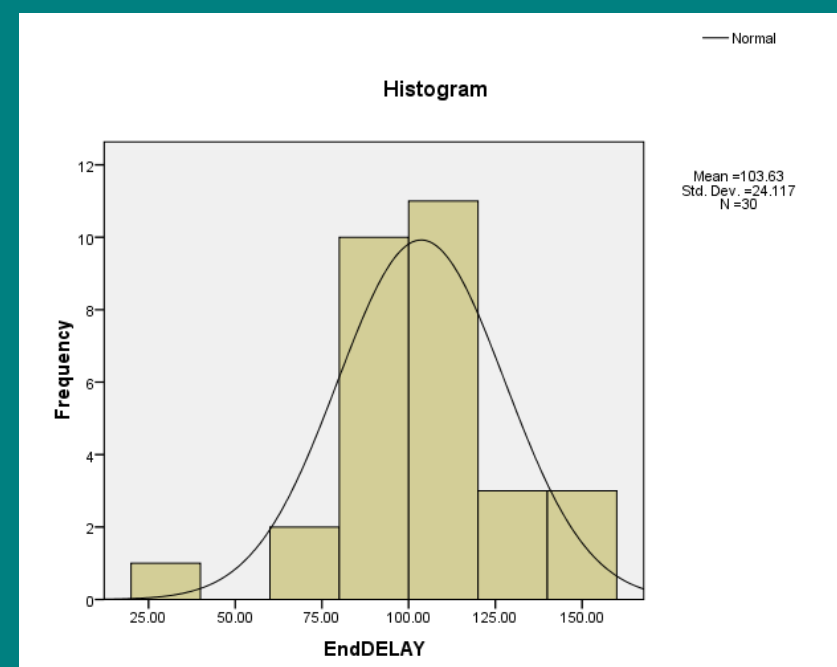
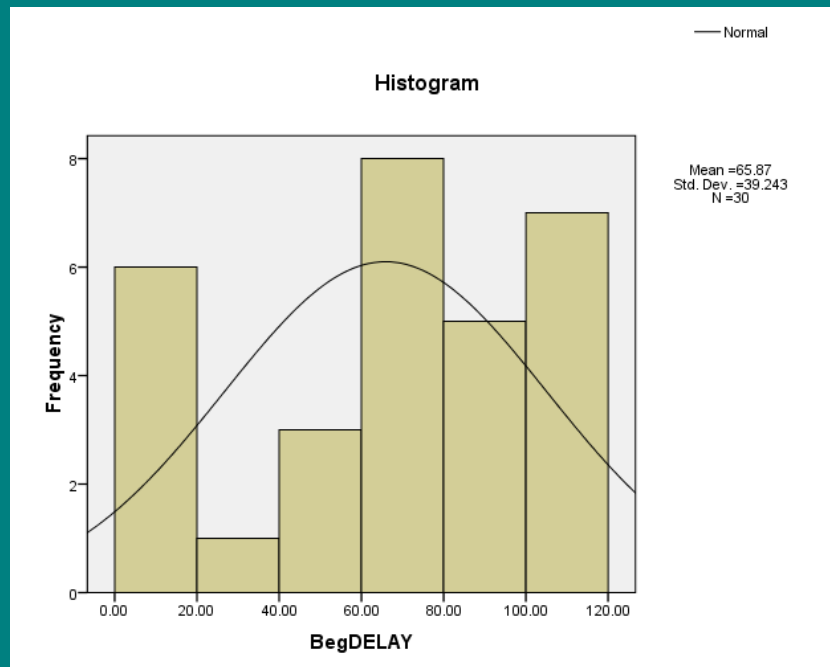
auditory and visual recall after a 30 min delay

Pre

Mean= 65.8

Post

Mean= 103.6

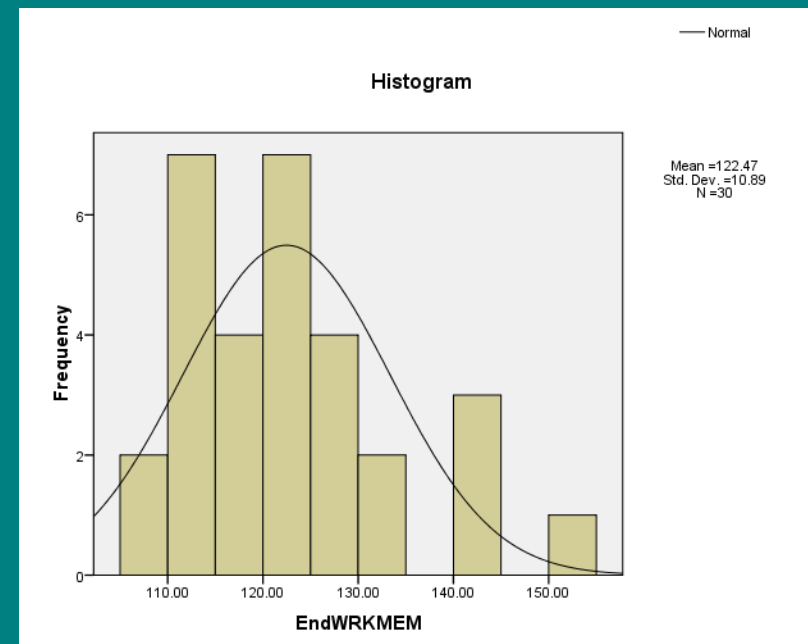
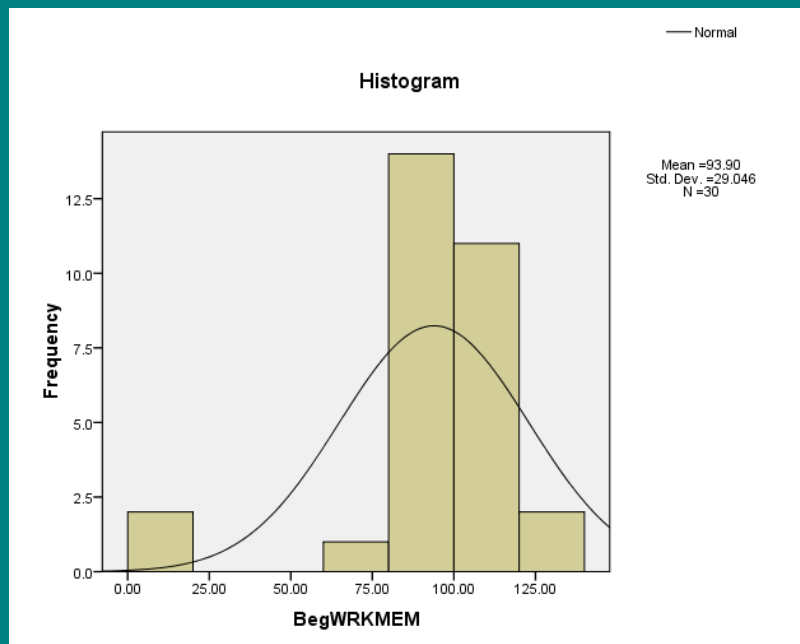


Working Memory

the ability to hold information in immediate awareness while performing mental operations on the information

Pre= 93

Post= 122



Special thanks for the clinical work
and administrative assistance
performed by:

The Crossroads Institute, Scottsdale, AZ

Clinical Outcomes in Addiction:

A Large Neurofeedback Case Series

Jay Gunkelman, QEEGT
Curtis Cripe, Ph.D

qEEGJay@sbcglobal.net

 **Q-Pro Worldwide**

USA-Russia-Switzerland