

Psychology Consultants

Personal Injury  
Assessments and Treatments  
for 21<sup>st</sup> Century

by

Dr Z Bobich

# Conventional approach

- Has not changed since 19<sup>th</sup> century
  - Reading documentation
  - Interview
  - Comparing with criteria (ICD-10 or DSM-IV)
  - Writing report with professional's opinion

# Shortcomings

- Reliability
- Lying
- Misperception
- System of values
- Assumptions
- Beliefs
- Prejudice
- Attitude
- External and internal pressures
- Unconscious mind (what we want to be and what we are)
- Insufficient information
- Level of knowledge
- Resources
- Ego

# Some facts about the truth

- 4 types of liars
- US Board of Clinical Neuropsychologists estimated the prevalence of malingering based on 33.000 cases
  - 29% Personal Injury
  - 30% Disability Compensation
  - 39% Mild Brain Injury
  - 35% Fibromyalgia
  - 31% Chronic Pain
  - 15% Depression
  - 19% Criminal Cases

cont.....

1. Malingering
2. Exaggerating excessively
3. Misperception
4. Genuine sufferer

# Sensitivity

= proportion of actual positives correctly identified

$$\text{Sensitivity} = \text{TP} / (\text{TP} + \text{FN})$$

- TP = True Positives
- FN = False Negatives

# Specificity

= proportion of negatives correctly identified

$$\text{Specificity} = \text{TN} / (\text{TN} + \text{FP})$$

- TN = True Negatives
- FP = False Positives

# Precision

= fraction of the information retrieved relevant to the needed information (% of the information returned that are relevant)

$$\text{Precision} = (\text{Rel I} \cap \text{Ret I}) / \text{Ret I}$$

- Rel I = Relevant Information
- Ret I = Retrieved Information
- $A \cap B$  = Intersection = set containing all elements that A and B have in common

Golden Test (Standard) = the best test (standard) available

# From 19<sup>th</sup> to 21<sup>st</sup> century

- Assessments of 21<sup>st</sup> century involve direct measuring of the brain's functioning
- Neuroscience explores the brain and its relationship with mind
- Level of organisation in nature can be presented by
  - Phenotype
  - Genotype
  - Endophenotype

# Phenotype

= a composite of organism's observable characteristics (traits), or anatomical and physiological properties of an individual and as a consequences of these properties – the individual's behaviour

- Psychiatry uses behavioural phenotypes (symptoms) for classification and diagnosis of the brain diseases
- The symptoms are subjective, unreliable and there is no way to measure their authenticity and quantity
- Psychiatric diagnosis is one equation with three variables (the clinician, the symptoms and the patient) that cannot be quantified → dubious validity

# Genotype

= the specific genetic structure of an individual in form of DNA. It is the genetic make-up of an individual with reference to a specific character under consideration)

$$G + E = P \quad (\text{Genotype} + \text{Environment} = \text{Phenotype})$$

Genotype and Phenotype represent two extreme levels of biological organisation)

(e.g. 2 eyes = genotype; eye colour = phenotype)

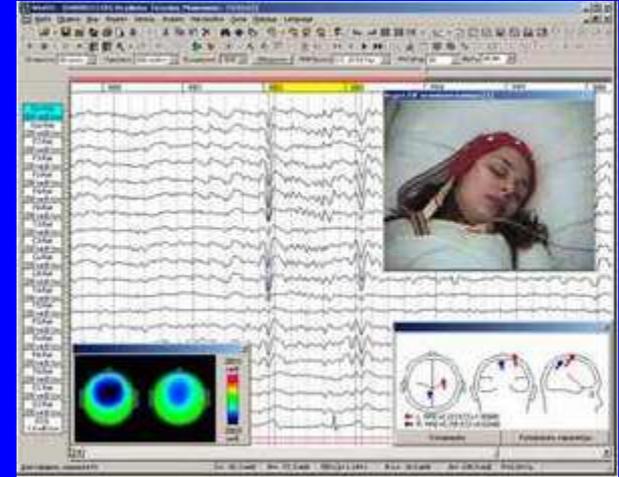
# Endophenotype

= a biological marker of a disease; it denotes a measurable component along the pathway between phenotype and genotype

## Criteria for endophenotype

- Has to be associated with the illness
- Has to be heritable
- Has to be state independent
- Endophenotype and illness have to co-segregate in family

# Our assessment is based on neurophysiology

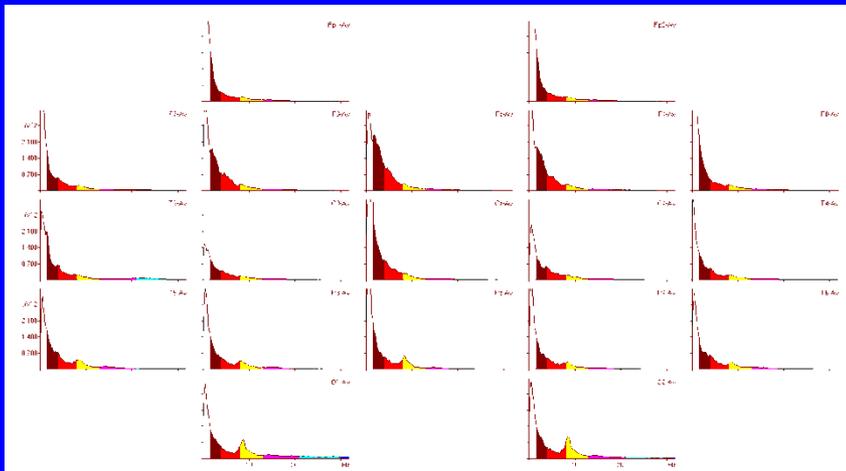
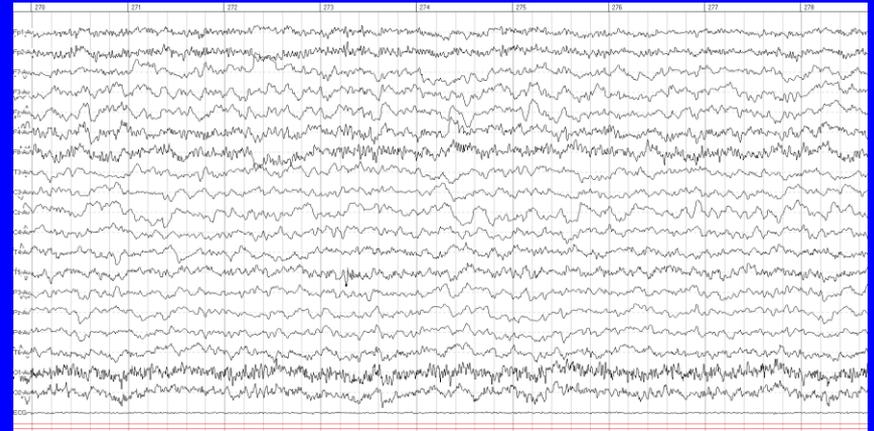


The starting point for our assessments is QEEG, also known as the brain mapping. It shows the client's brain malfunctioning and cannot be faked.



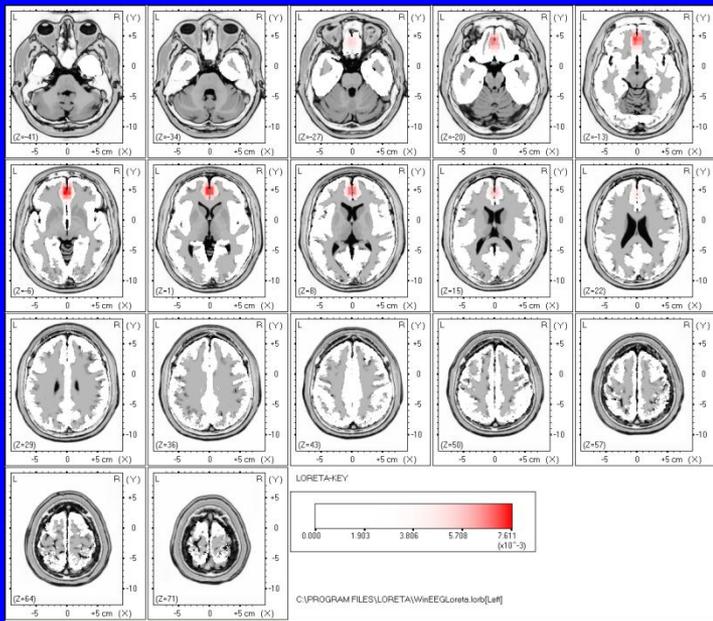
We then calculate  
biological markers

for certain conditions

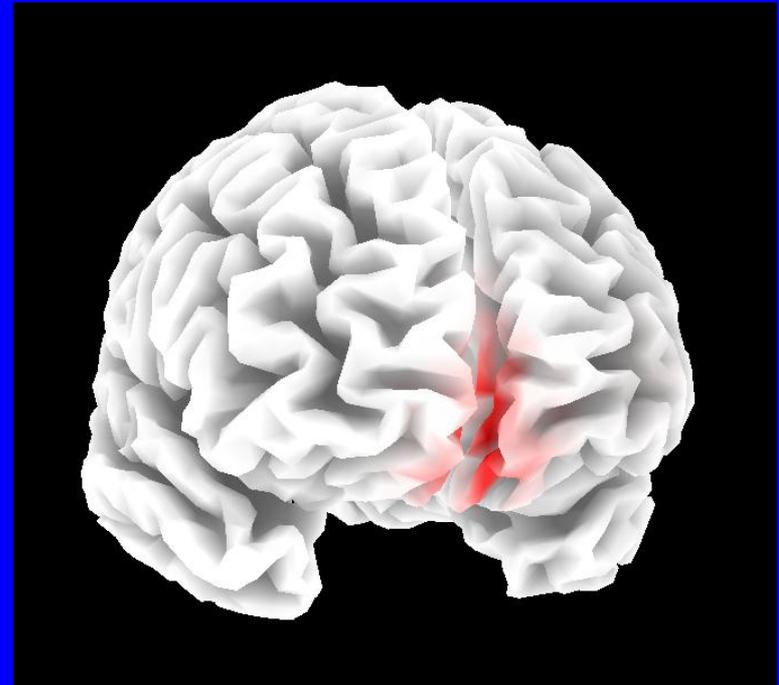


as it cannot be faked, it  
shows the true state of  
the patient's condition

We compare individual's results with the normative data and look for the unique signature of the brain



This is the brain of a patient whose brain is showing malfunctioning of the frontal lobe (executive functioning such as planning, attention sequencing, and decision making)



# PSYCHOLOGY CONSULTANTS

Neurofeedback and Biofeedback treatment

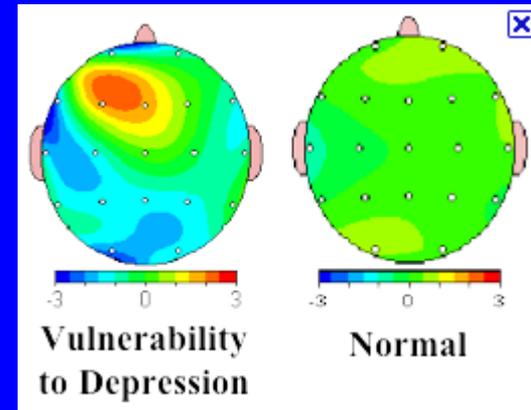




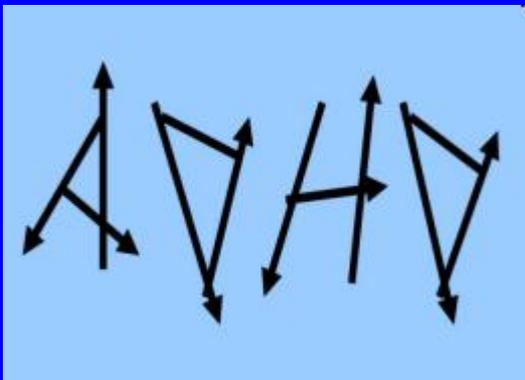
# Depression

Antidepressants have only an 18% effect over and above placebos and are associated with significant side effects. Neurofeedback offers a non-invasive and drug free treatment alternative for depression.

Cognitive behavioural therapy (CBT) has an 80% relapse rate in the long term.



NFB treatment retrains the brain to regain the balance.



# ADHD

NFB is technology's answer to psychotherapy, drugging, cognitive rehabilitation and poor cerebral functioning.

Neurofeedback is currently recognised as the most efficient treatment for ADHD.

No drugs

No side-effects

Non-invasive

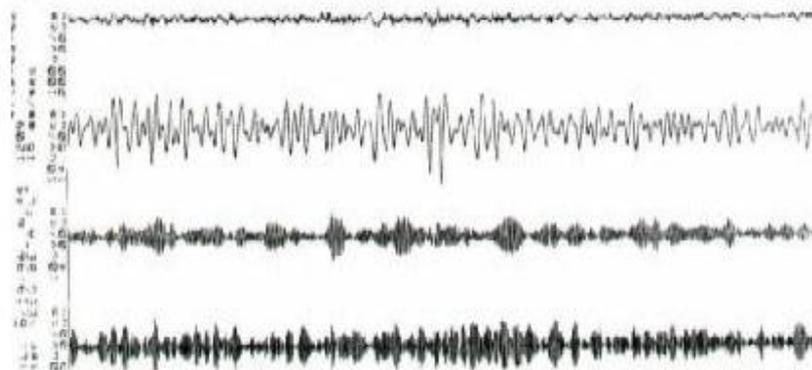
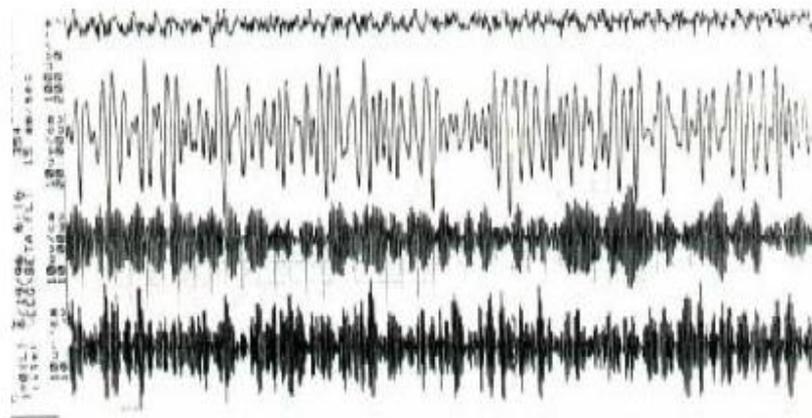
52 year old female with Reflex Sympathetic Dystrophy (RSD) post RTA and neck surgery. Symptoms: right side face shoulder/arm, right eye lid spastic ptosis, depression, sleep disorder



Before NF training



After 30 minutes NF  
On NC



# PTSD

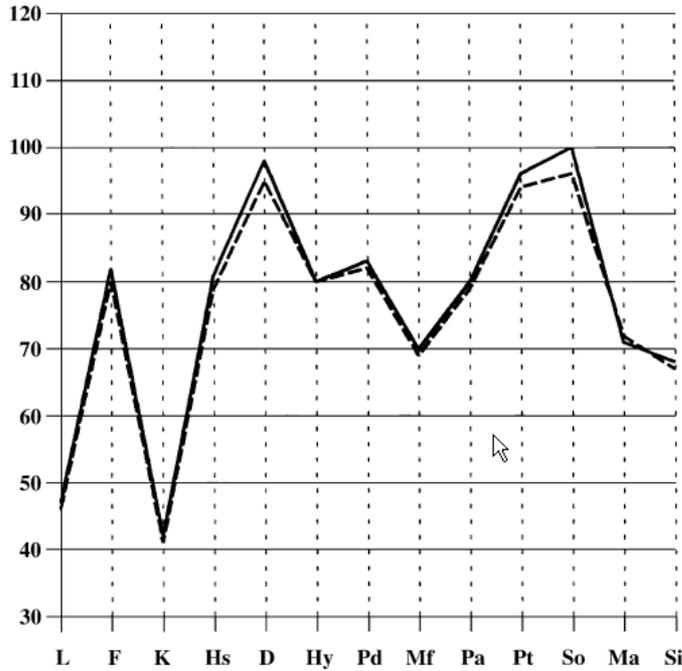


Fig. 1. Peniston-Kulkosky 1991 PTSD study. Pre- and post-MMPI changes from traditional treatment. Solid line indicates pretreatment. Dotted line indicates posttreatment.

Before and after  
Neurofeedback treatment

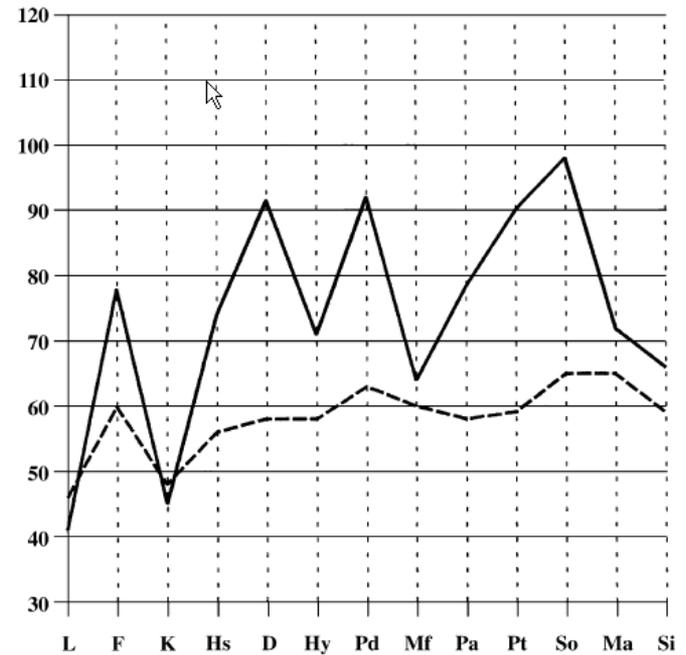
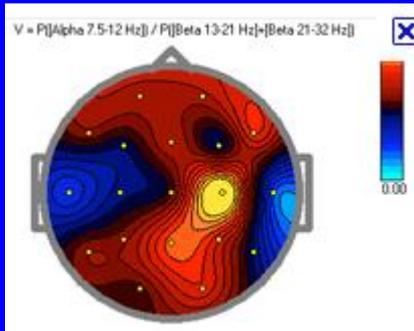


Fig. 2. Peniston-Kulkosky 1991 PTSD study. Pre- and post-MMPI changes after neurofeedback treatment. Solid line indicates pretreatment. Dotted line indicates posttreatment.

# Anxiety - Panic Attacks



Biofeedback treatment is extremely efficient in treating anxiety (up to five times faster than conventional psychological methods).



Our approach: change physiology and the mind will follow.

# EEG Neurofeedback Loop

The Subject



Most human learning is based on operant conditioning. Organisms do what they are reinforced for



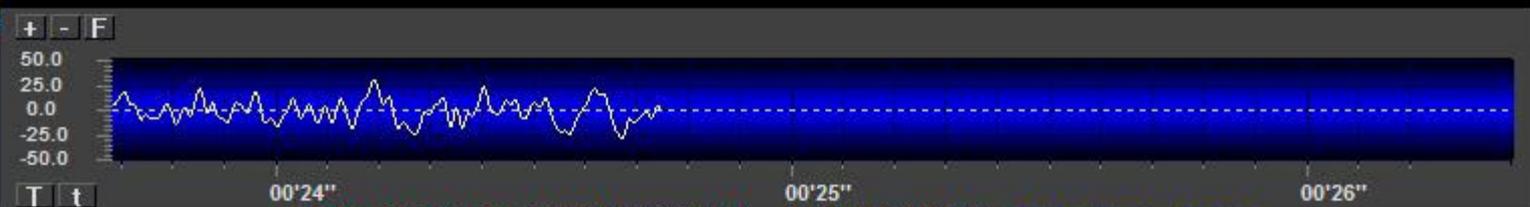
Measurement



Display

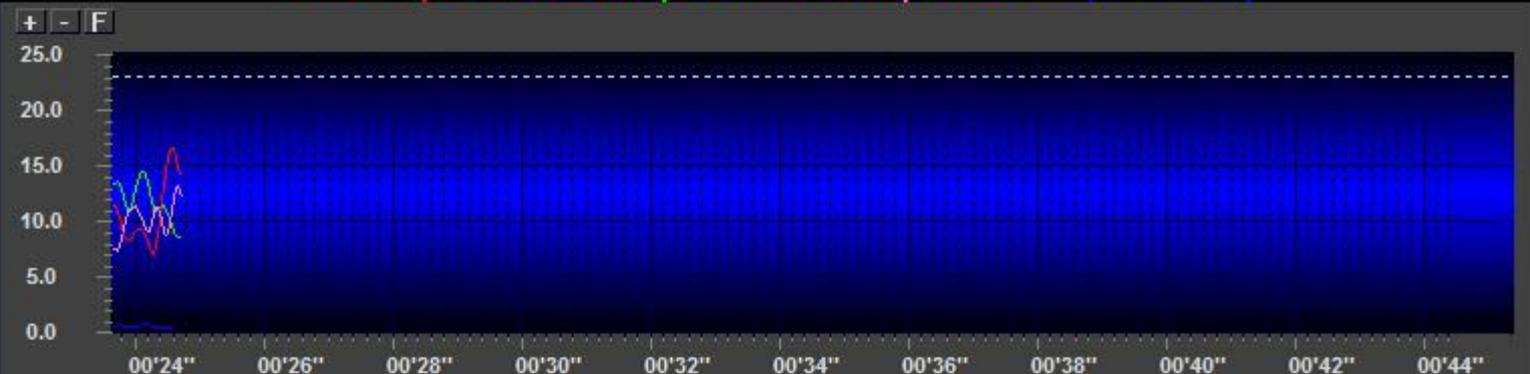
SMR/(theta+Beta)

1.00

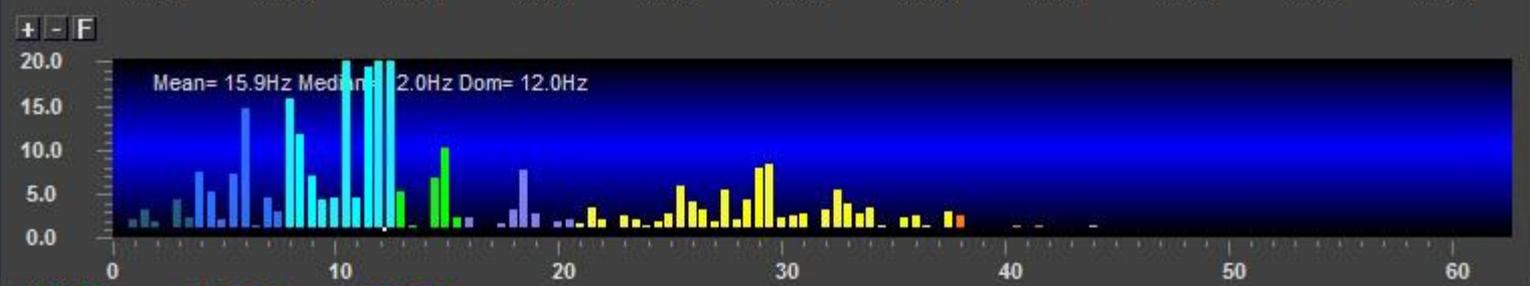


Theta amplitude SMR amplitude Beta amplitude SMR/(theta+Beta)

0.75



0.50



0.25

SMR Theta Beta



# Lights Up

Theta SMR Cor %>Th - Session  
 -0.10 74%

SMR-Beta Cor %>TH - 30sec  
 -0.16 85%

Signal	SMR	Inhibit1	Inhibit2
Count	338	125	258
Rate Change	2	5	1
Output Level	84.00%	27.41%	56.57%
Elapsed	5938	Run	456
No connection made			
<input type="button" value="Refresh"/> <input type="button" value="Reset"/>			

+ - F

+ - F

+ - F

+ - F

# The Training

