

# Neurofeedback

*Neurofeedback gave my son back control in his life* MI (Dean's dad)

Mark A. Elliott PhD and Stanislava Antonijevic PhD of  
Mindscapes Health

[www.mindscapeshealth.com](http://www.mindscapeshealth.com)  
[www.mindscapesperformance.com](http://www.mindscapesperformance.com)



**MindscapesHealth**

# ADHD

Has lifelong negative impact

Treatable using amphetamines

- Other solutions (considered alternative or complimentary) struggle for an evidence base

# Neurofeedback from the practitioner's perspective

## What is Neurofeedback?

- involves recording the electroencephalogram (EEG) on the scalp
- Run-time analysis compares actual with desired EEG
- Comparison “fed back” in terms of successful performance in game-like computer program
- Form of operant conditioning based upon brain state

# Neurofeedback and case studies

Danny's story at -

<https://vimeo.com/48547290>

featuring Danny Rock with Stanislava Antonijevic of MindscapesHealth;  
directed by Joanna Wnek and Shane Reid; executive producer Donal Haughey

# Immediate effects of NF on ADD/ADHD symptoms

Prof. Michael Fitzgerald once said is that having ADHD is like driving a fast car without a break and the steering wheel.

NF helps to slow down the car a bit and adds steering wheel and the break.

# People tend to report they

- Are generally more relaxed
- Are able to get up and get ready in the morning
- Sleep better
- Have reduced muscle tension
  
- Have better control of behaviour (feel in control)
- And improved time organization
- Focus better at school/work
- Achieve improved academic performance
- Have improved social relationships
- Have improved speech, language and communication

e.g.

- Danny – expelled from one school, required by a second to take medication to attend (We were informed that the school obliged his mother to sign a contract that he will take Ritalin )
- Did not take medication
- During and following more than 40 sessions of NF he
  - Stayed at school and did not present disruptive behaviour
  - Achieved 100% in Math and English tests – unheard of previously

# Validity and acceptance

The American Academy of Pediatrics listings of 'Evidence-Based Child and Adolescent Psychosocial Interventions' from PracticeWise.

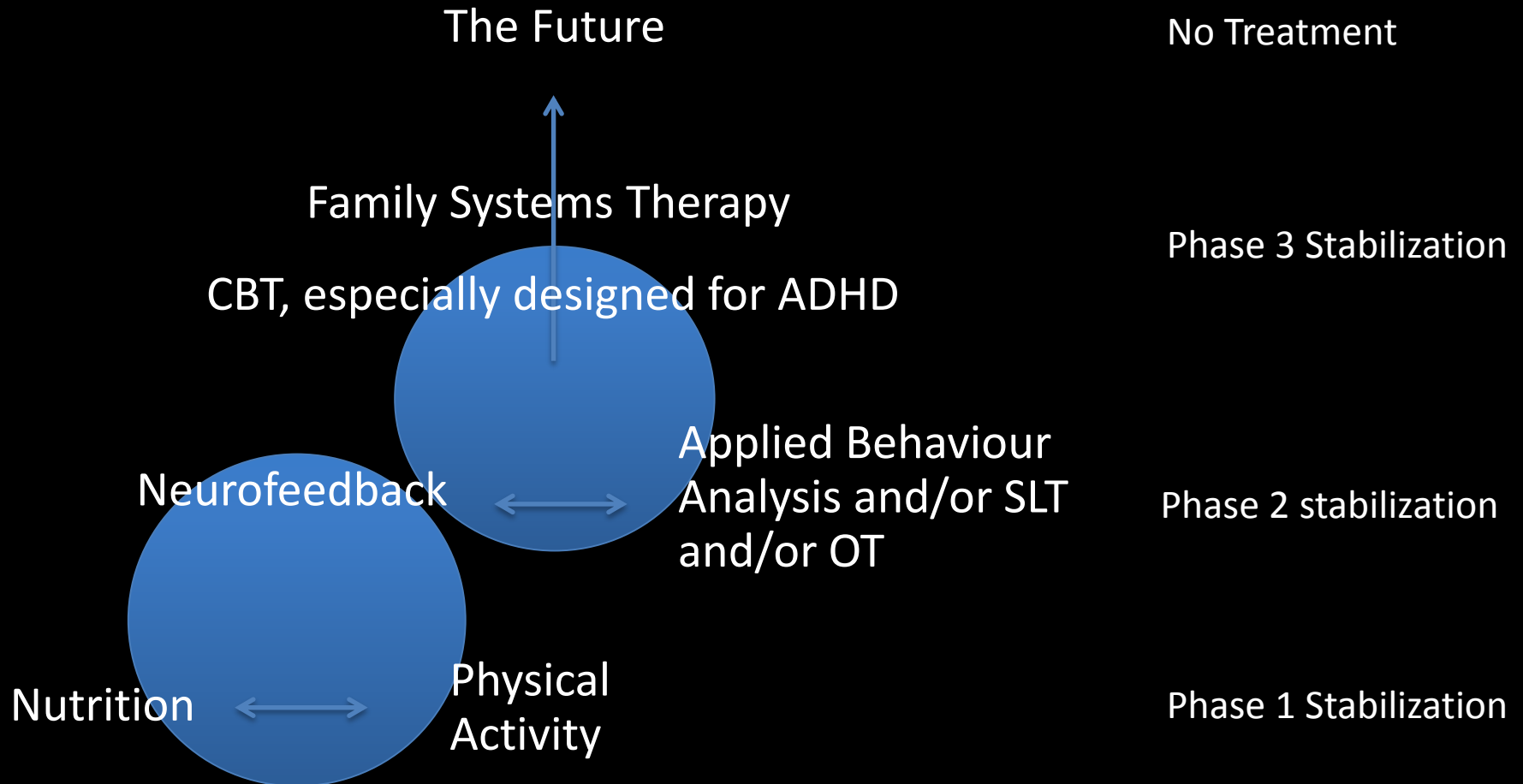
- Biofeedback (including neurofeedback) is Level 1 - Best Support, in the treatment of Attention and Hyperactivity Behaviours



# However

- Typical psychometric measures may not be precise, may have usual validity issues, may be culturally specific
- No evidence that effects are permanent or for how long effects might last
  - Implications for treatment - ?

# Solutions



# The Neurofeedback (very brief) Bibliography

- Arns, M., de Ridder, S., Strehl, U., Breteler, M., & Coenen, A. (2009). Efficacy of neurofeedback treatment in ADHD: The effects on inattention, impulsivity and hyperactivity: A meta-analysis. *Clinical EEG and Neuroscience*, *40*, 180–189.
- Arns, M., Drinkenburg, W., Kenemans, J.L. (2012). The Effects of QEEG-Informed Neurofeedback in ADHD: An Open-Label Pilot Study. *Applied Psychophysiology and Biofeedback*, *37*, 171-180.
- Gevensleben, H., Holl, B., Albrecht, B., Schlamp, D., Kratz, O., Studer, P., et al. (2010). Neurofeedback training in children with ADHD: 6-Month follow-up of a randomised controlled trial. *European Child and Adolescent Psychiatry*, *19*, 715–724.
- Strehl, U., Leins, U., Goth, G., Klinger, C., Hinterberger, T., & Birbaumer, N. (2006). Self-Regulation of slow cortical potentials: A new treatment for children with attention-deficit/hyperactivity disorder. *Pediatrics*, *118*, e1530–e1540.