Computer Enabled Neuroplasticity Treatment: a Clinical Trial of a Novel Design for Neurofeedback Therapy in Adult ADHD

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Background
We report a randomised controlled clinical trial of neurofeedback therapy intervention for ADHD/ADD in adults. We focus on internal mechanics of neurofeedback learning, to elucidate the primary role of cortical self-regulation in neurofeedback. We report initial results; more extensive analysis will follow.

Methods
Trial has two phases: intervention and follow-up. The intervention consisted of neurofeedback treatment, including intake and outtake measurements, using a waiting-list control group. Treatment involved $40 hour-long sessions 2-5 times per week. Training involved either theta/beta or sensorimotor-rhythm regimes, adapted by adding a novel 'inverse-training' condition to promote self-regulation. Follow-up (ongoing) will consist of self-report and executive function tests.

Setting
Intake and outtake measurements were conducted at University of Helsinki. Treatment was administered at partner clinic Mental Capital Care, Helsinki.

Randomisation
We randomly allocated half the sample then adaptively allocated the remainder to minimise baseline differences in prognostic variables.

Blinding
Waiting-list control design meant trial was not blinded.

Participants
54 adult Finnish participants (mean age 36 years; 29 females) were recruited after screening by psychiatric review. 44 had ADHD diagnoses, 10 had ADD.

Measurements
Symptoms were assessed by computerised attention test (T.O.V.A.) and self-report scales, at intake and outtake. Performance during neurofeedback trials was recorded.

Results
Participants were recruited and completed intake measurements during summer 2012, before assignment to treatment and control, September 2012. Outtake measurements ran April-August 2013. After dropouts, 23 treatment and 21 waiting-list participants remained for analysis.

Initial analysis showed that, compared to waiting-list control, neurofeedback promoted improvement of self-reported ADHD symptoms, but did not show transfer of learning to T.O.V.A. Comprehensive analysis will be reported elsewhere.

Trial Registration
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