Attention Training with ADHD Children: Preliminary Findings in a Double-Blind Placebo-Controlled Study

Roger deBeus, PhD (1,2), J.D. Ball, PhD (2), Mary E. deBeus, PhD (2), and Richard Herrington, PhD (3)
(1) Advanced Psychological Services, Riverside Health System, Newport News, VA; (2) Eastern Virginia Medical School, Norfolk,
VA; and (3) University of North Texas, Denton, TX
roger.debeus@att.net

Introduction

Attention training or EEG biofeedback (neurofeedback or neurotherapy) has been shown in previous studies to be effective in minimizing the cardinal symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) in children (Lubar, Swartwood, Swartwood, & O'Donnell, 1995; Monastra, Monastra, & George, 2002). However, some of the main criticisms of the previous research is a lack of adequate controls, failure to control for treatment bias, and diagnostic workups (Baydala & Wikman, 2001). This is the first randomized double-blind placebo-controlled neurotherapy study performed with ADHD children.

Method

The design of the study consisted of a diagnostic workup, 40 sessions, and pre-, mid-, and post-assessments. The diagnostic workup consisted of a structured clinical interview with the parent(s), and IQ, achievement, continuous performance test (CPT), and quantitative electroencephalogram (QEEG) with each child (all the children were tested medication-free with a 48-hour washout period). Each child was required to have ADHD as the primary diagnosis, IQ greater than 80, if on medication only taking psycho stimulants, and no history of head injuries, seizures, or other serious mental disorders (i.e., depression, anxiety).

During the sessions each child played Sony PlayStation games with an active sensor placed at FZ. In order to ensure that each child received treatment, a crossover occurred after 20 sessions. The children were randomized into two groups. Group One received 20 sessions of brainwave-modulated Sony PlayStation videogames and then received 20 sessions with the videogames while brainwave activity was monitored. Group Two received treatment in the opposite order.

Pre-testing occurred before sessions began and consisted of parent, teacher, and self-report rating scales. Midpoint- testing occurred at the crossover point and consisted of the previous rating scales, CPT, and QEEG with each child. Post-testing occurred after the 40 sessions were completed. Parents and teachers completed rating scales while the children were re-administered the intake procedure.

Results

Forty-four children (28 males and 16 females) seven to 11-years-old (average age 9.2) in grades two through five have participated. Half of the children were medicated on a psycho stimulant only. Each child had a primary diagnosis of ADHD (25 primarily Inattentive; four primarily Hyperactive; and 15 Combined). Average IQ was 104 (range = 80 to 132).

Conclusion

This study will not only look at the efficacy of a placebo-controlled design, it will address how medication, diagnosis (diagnoses), and other variables affect

outcomes with EEG biofeedback. This study will also examine how children learn to perform this training using growth-curve modeling.

References

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