



Does Brain Training Help Students with ADHD and Learning Challenges?

by John T. Brentar, Ph.D.

In our technology-focused world, particularly in Silicon Valley, we have learned to expect that computers will solve many of our problems and improve our efficiency. However, most of us have experienced that the ease of technology is not always a satisfactory solution.

In the field of psychology, brain training programs have become increasingly popular and advertise themselves as an efficient way to treat ADHD, working memory, or general memory improvement. Some of these companies, such as **Cogmed**, cater to psychologists, families, and schools as a way to help students with ADHD or learning challenges. Others, such as Lumosity, focus their marketing efforts on the general population, particularly older adults, as a way to improve memory. Collectively, these brain training products are designed to promote neuroplasticity, or the ability of the brain to change over a lifespan.

A Lucrative Business

The brain training market has grown to \$1 billion (Cogmed's sales have grown to close to \$15 million), and according to **SharpBrains**, a San Francisco research house, forecasts predict growth to \$6 billion by 2020. Parents of school-age children with learning and attention challenges are asked to make a significant financial commitment, and students a significant time commitment, in order to participate in the Cogmed program. With such an investment, an important question becomes, "Does brain training work?" Because many of our parents are more likely to ask about the Cogmed program, I will focus on examining its effectiveness.

Depending on Who You Ask...

Cogmed is designed to improve working memory, a trait regarded by psychologists and educators as essential for academic success. **Pearson**, who owns the Cogmed program, list a number of studies on their website purporting success in improving working memory. In one 2012 study, researchers at Pearson performed their own analysis that showed average gains of 26% in visual-spatial working memory and 23% in verbal working memory.

In an article published in *Psychiatric Times* in 2014, **Dr. Larry Brooks** reported that while independent studies evaluating Cogmed's effectiveness generally show that subjects' performance



improved at brain games with repetition and practice, it is not clear whether this improvement translates into real-world benefits. Specifically, Dr. Brooks argued that improvements in working memory span is only one small piece of working memory, and that improvement in this area alone is not sufficient to improve overall cognition in students with other deficits in learning, memory, and executive function skills. He added that critics have also argued that many of the studies are plagued by small sample sizes and non-replicated results.

Additional Research & Conclusions

Since 2012, at least three studies or multi-study overviews published in peer-reviewed journals have concluded that Cogmed is ineffective for ADHD. A fourth review included Cogmed with other brain training programs and found the group ineffective. In one of these studies, **Dr. Anil Chacko** and his associates (2014) studied 85 children aged 7 to 11 diagnosed with ADHD. These children were randomly assigned to either standard Cogmed Working Memory Training or a well-controlled Cogmed Working Memory Training placebo condition and evaluated both before and three weeks after treatment. Outcome measures included parent and teacher ratings of ADHD symptoms; objective measures of attention, activity level, and impulsivity; and psychometric indices of working memory and academic achievement.

Dr. Chacko concluded that “when a more rigorous comparison condition is utilized, Cogmed Working Memory Training demonstrates effects on certain aspects of working memory in children with ADHD; however, it does not appear to foster treatment generalization to other domains of functioning. As such, Cogmed Working Memory Training should not be considered a viable treatment for children with ADHD.” In other words, Cogmed did not make significant changes in “true” working memory as used in school, and the study participants showed no improvements in academic functioning (e.g., in reading, math, or spelling). He noted, “Our data suggest that Cogmed really only improves the more basic, and arguably less important, short-term memory on tasks that closely resemble Cogmed training tasks.”

The Bottom Line

In the research world, a skeptical stance is vital in science because it promotes further investigation. Without further evidence, the Cogmed program does not appear to be worth the investment at this point of time. Perhaps in the future, it will have a role in a multiple treatment approach program, including educational therapy, medication, brain training, and school-based interventions. In the meantime, educational therapy focused on working memory strategies in the context of the student’s academic work may be a more productive and wiser investment. For a list of working memory strategies, please visit www.morrissey-compton.org.