Memory training unlikely to help in treating ADHD, boosting IQ

31 May 2012

Working memory training is unlikely to be an effective treatment for children suffering from disorders such as attention-deficit/hyperactivity or dyslexia, according to a research analysis published by the American Psychological Association. In addition, memory training tasks appear to have limited effect on healthy adults and children looking to do better in school or improve their cognitive skills.

"The success of working memory training programs is often based on the idea that you can train your brain to perform better, using repetitive memory trials, much like lifting weights builds muscle mass," said the study's lead author, Monica Melby-Lervåg, PhD, of the University of Oslo. "However, this analysis shows that simply loading up the brain with training exercises will not lead to better performance outside of the tasks presented within these tests." The article was published online in *Developmental Psychology*.

Working memory enables people to complete tasks at hand by allowing the brain to retain pertinent information temporarily. Working memory enhancing tasks usually involve trying to get people to remember information presented to them while they are performing distracting activities. For example, participants may be presented with a series of numbers one at a time on a computer screen. The computer presents a new digit and then prompts participants to recall the number immediately preceding. More difficult versions might ask participants to recall what number appeared two, three or four digits ago.

In this meta-analysis, researchers from the University of Oslo and University College London examined 23 peer-reviewed studies with 30 different comparisons of groups that met their criteria. The studies were randomized controlled trials or experiments, had some sort of working memory treatment and a control group. The studies comprised a wide range of participants, including young children, children with cognitive impairments, such as ADHD, and healthy adults. Most of the studies had been published within the last 10 years.

Overall, working memory training improved performance on tasks related to the training itself but did not have an impact on more general cognitive performance such as verbal skills, attention, reading or arithmetic. "In other words, the training may help you improve your short-term memory when it's related to the task implemented in training but it won't improve reading difficulties or help you pay more attention in school," said Melby-Lervåg.

In recent years, several commercial, computer-based working memory training programs have been developed and purport to benefit students suffering from ADHD, dyslexia, language disorders, poor academic performance or other issues. Some even claim to boost people's IQs. These programs are widely used around the world in schools and clinics, and most involve tasks in which participants are given many memory tests that are designed to be challenging, the study said.

"In the light of such evidence, it seems very difficult to justify the use of working memory training programs in relation to the treatment of reading and language disorders," said Melby-Lervåg. "Our findings also cast strong doubt on claims that working memory training is effective in improving cognitive ability and scholastic attainment."

More information: "Is Working Memory Training Effective? A Meta-Analytic Review," Monica Melby-Lervåg, PhD, University of Oslo; Charles Hulme, PhD, University College London and University of Oslo; *Developmental Psychology*, online.

Provided by American Psychological Association

APA citation: Memory training unlikely to help in treating ADHD, boosting IQ (2012, May 31) retrieved 3 December 2022 from https://medicalxpress.com/news/2012-05-memory-adhd-boosting-iq.html

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