Online cognitive training not effective in reducing ADHD symptoms, finds major review

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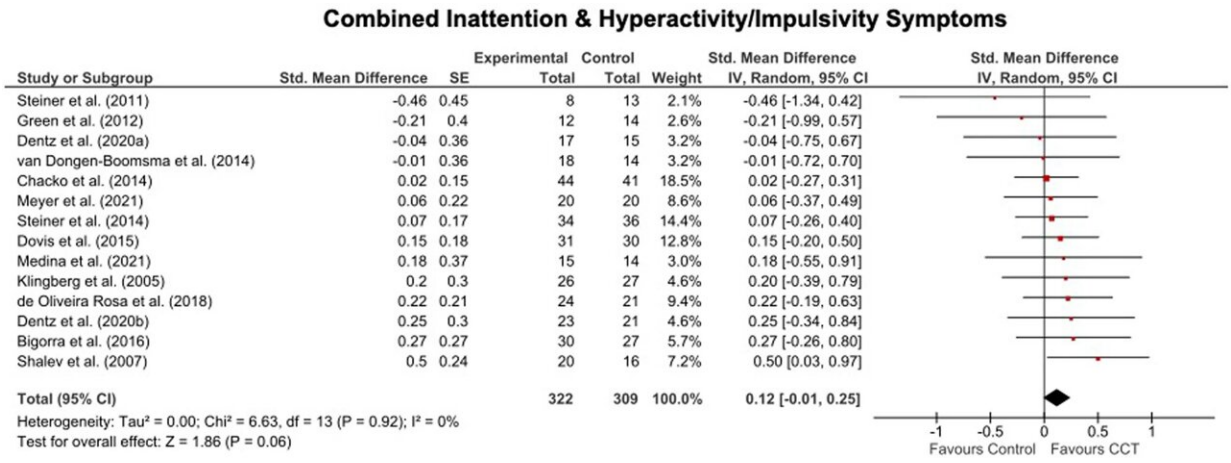

Forest plots for meta-analysis of effects of PBLIND outcome measures of ADHD total symptoms. Note. CCT Computerized Cognitive Training, SE Standard Error, Std. Standardised. Credit: *Molecular Psychiatry* (2023). DOI: 10.1038/s41380-023-02000-7

A major review of research led by the Institute of Psychiatry, Psychology & Neuroscience (IoPPN) at King's College London and the University of Southampton, on behalf of the European ADHD Guidelines Group (EAGG), found little to no evidence that computerized cognitive training brings benefits for people with attention deficit hyperactivity disorder (ADHD).

Computerized cognitive training is an online tool designed to improve cognitive processes such as short-term memory, attention and inhibitory control (the ability to control your attention, behavior, thoughts and emotions). It has been proposed as a treatment option to help reduce symptoms of hyperactivity/impulsivity and inattention at the core of ADHD.

The review team conducted a meta-analysis of 36 randomized controlled trials (studies in which people are randomly assigned to different groups to test a specific intervention) investigating the effects of computerized cognitive training on outcomes in individuals with ADHD. The study, published in *Molecular Psychiatry*, found that cognitive training did not lead to clinically meaningful reductions in overall ADHD symptoms or on specific hyperactivity/impulsivity symptoms. It may, however, result in a small improvement in inattention in some settings.

"We conducted the largest, most comprehensive meta-analysis of randomized control trials to date to investigate the efficacy of computerized cognitive training in reducing ADHD symptoms. Our meta-analysis revealed little to no support for the use of this cognitive training as a stand-alone intervention for ADHD symptoms. Although small, short-term effects on inattention symptoms were found, they were likely of limited clinical importance. Overall, I think it's now time to seek out new interventions targeting different processes," said Dr. Samuel Westwood, lecturer in psychology education at King's IoPPN and lead author of the paper.

In most trials, participants completed the computerized cognitive training at home. Some completed the training at school, in a laboratory, a clinic/hospital or a mixed setting (switching between multiple). There were some improvements in a limited set of cognitive processes—particularly working memory (the ability to hold in mind and manipulate information over the short term) following specific working

memory training. This may be of benefit to the subset of individuals with ADHD and who also experience working memory difficulties.

The authors explain that the findings do not support the use of computerized cognitive training in its current form as a stand-alone treatment for ADHD symptoms, and that new approaches that target different processes should be explored to develop effective interventions for ADHD.

Professor Edmund Sonuga-Barke, Professor of Developmental Psychology, Psychiatry and Neuroscience at King's IoPPN and joint senior author of the paper, said, "ADHD is a very heterogeneous condition in terms of what brain processes are implicated. It is likely that different sorts of interventions are required by different people. New and innovative approaches will be needed to move the field forward."

Professor Samuele Cortese, chair of the EAGG, Professor of Child and Adolescent Psychiatry at the University of Southampton and joint senior author of the paper, said, "Rigorous meta-analytic evidence such as this one is crucial to inform the development of clinical guidelines, with the ultimate goal to provide the best evidence-based treatments to individuals with ADHD."

More information: Samuel J. Westwood et al, Computerized cognitive training in attention-deficit/hyperactivity disorder (ADHD): a meta-analysis of randomized controlled trials with blinded and objective outcomes, *Molecular Psychiatry* (2023). DOI: 10.1038/s41380-023-02000-7

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