Cogmed Working Memory Training research

Recently, two meta-analyses on nonpharmacological treatment studies in children with ADHD were unable to derive an overall significant effect size (ES) for the core symptoms of ADHD for cognitive training (Hodges, Hutchison, & Denson, 2012; Sonuga-Barke et al., 2013) as well as for several neurocognitive functions (Hodges et al., 2012). In two meta-analytic reviews (Melby-Lervag & Hulme, 2013; Rapport, Orban, Kofler, & Friedman, 2013) and two reviews (Shipstead, Redick, & Engle, 2012; Chacko et al., 2013) further concerns were expressed about the efficacy of WM training particularly. Inconsistent findings within and between studies, yielded doubt about the generalization of the trained task effect in this training (Chacko et al., 2013).

Cogmed Working Memory Training study design

- Fifty-one children (5.5-7.3 years) with ADHD
- Random allocation to CWMT (N=26) or placebo CWMT (N=21)
- Conditions:
  - In the active condition, the software adjusted task difficulty based on the child’s performance. The placebo condition was completely identical to the active condition, except that the items to be remembered did not exceed the starting level of two items.

Intervention

The training consisted of 25 sessions of 15 min, 5 days a week. Both conditions included 7 visuospatial WM tasks. For each task, a number of visual stimuli were presented sequentially on the computer screen and the child had to reproduce the targets in correct order. Training data were uploaded to a server after each training session. The parents were instructed to encourage the child during the training course, and give small rewards every five sessions and after training completion. A certified Cogmed coach contacted the parents every week to evaluate the performance and motivation of the child with a standardized questionnaire.

Neurocognitive results

B-weights for normally distributed neurocognitive variables based on BWEIGHTS for normally distributed neurocognitive variables, the figure shows that despite a relatively small sample size and thus limited statistical power, there was no reason to reject the null-hypothesis.

A significant difference in favor of the CWMT group was found on the total score ADHD Rating Scale IV, without a treatment-effect.

Behavioral results

Both groups showed a decrease on the ADHD Rating Scale IV, without a treatment-effect.

Near versus far transfer

This study suggested improvement on the trained visuospatial WM represented by a significant improvement on the training in the active condition. A near-transfer effect was not maintained after Bonferroni correction. Far-transfer effects were absent. These results were consistent with recent meta-analyses and reviews (Shipstead et al., 2012; Chacko et al., 2013; Melby-Lervag & Hulme, 2013; Rapport et al., 2013), which questioned if working memory training could enable transfer effects.