CORRESPONDENCE

The Efficacy of Cognitive Training Programs in Children and Adolescents: A Meta-analysis

by Prof. Dr. med. Dieter Karch, Dipl.-Math. Lucia Albers, Prof. Dr. Dipl. Gerolf Renner, B. Sc. Ergotherapeut (FH) Norbert Lichtenauer, Prof. Dr. med. Rüdiger von Kries in volume 39/2013

The Goal Is to Improve Learning Behaviors

On reviewing the individual studies included in the meta-analysis I noticed the wide range of ages. According to recent insights, the brain structurally matures until after adolescence (myelination, initially an increase, then a decrease, in gray matter) (1). Strong fluctuations in IQ have been observed in association with this in healthy adolescents aged 10–20 (by about 23 points in both directions) (2). It is therefore not surprising if no long term changes in IQ were noted as a therapeutic effect. The degree to which individual age groups in their cognitive development can be regarded as an collective at all remains up for discussion. Since cognitive functions are practically always activated in combinations rather than in isolate, the construct of a “specific effect” of cognitive performance training is in itself diffuse.

What is more important for the treating physician, however, are the effects termed “secondary nonspecific” effects. According to the Regulations Governing the Prescription of Remedies (Heilmittelrichtlinien) (3), cognitive performance training/neuropsychologically oriented treatment in occupational therapy is not an end in itself. The primary goal is not the improvement of a cognitive performance that is more or less specific but mainly the improvement of a patient’s competence. This includes explicitly the acquisition of the basic competence to work (analogous in children to school-related learning competence) and the improvement of independent life choices (in children: of independent learning behaviors). If cognitive performance training has affected behaviors then the requirements of the Regulations Governing the Prescription of Remedies were obviously met, and the physician can—as is confirmed by the present meta-analysis—continue to prescribe cognitive performance training/neuropsychologically oriented treatment for the benefit of the individual child.

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In Reply:

We thank Dr Ladner-Merz for her contribution, in which she raises two important issues:

- The possible confounding of the results owing to maturation related changes in behaviors and cognitive performance, and
- The selection of outcomes under study.

With regard to confounding of the study results by the age distribution of the study subjects: the meta-analysis is based exclusively on randomized trials, which are likely to be structurally consistent. Only few studies reported training phases longer than three months; the measurements were taken immediately after the training.

§38, part 1, of the Regulations Governing the Prescription of Remedies, explicitly lists as the primary outcome measures of cognitive therapy the improvement and preservation of cognitive functions, such as concentration, memory retention, attention, orientation, memory, as well as action planning and problem solving. For this reason, these were the primary outcome measures of our meta-analysis. The study did not find any significant improvements in these parameters. As Dr Ladner-Merz correctly describes, the goal of functional improvements is an improvement of impaired basic competence (secondary outcome measures). The significant effects observed in this context were, however, found only in studies without active control groups. On the basis of our data, we therefore cannot conclude any specific effect of the applied cognitive training programs.

However, it may still be justifiable to work with such programs in the setting of a comprehensive treatment concept—as one of several approaches. Presumably what matters for the intended success is not which therapeutic/training programs were applied, but the attention and acceptance/compliance that characterize the therapeutic process.

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Conflict of interest statement

The authors of both contributions declare that no conflict of interest exists.