The status of empirical support for treatments of attention deficits
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CRD summary
The authors concluded that there is insufficient evidence to draw conclusions about the efficacy of programmes designed to address attention deficits, regardless of the treatment programme or population. This seems an appropriate conclusion given the paucity of high-quality studies presented. However, the review has some methodological limitations and there is a possibility that relevant studies were missed.

Authors' objectives
To evaluate evidence for the effectiveness of treatments for remediation of attention deficits across disorders and age levels.

Searching
PsycINFO, MEDLINE and ERIC were searched from 1967 to 2001; the search terms were stated. The authors stated that additional studies were generated from articles identified from the database search.

Study selection
Study designs of evaluations included in the review
No inclusions criteria were stated with regard to the study design. Few study details were reported.

Specific interventions included in the review
Studies evaluating any treatment for attention deficits were eligible for inclusion. The interventions included in the review were: Attention Training System; Captain's Log; Attention Process Training; Pay Attention!; Attention Training Technique; biofeedback; Orientation Remedial Module; Bracy Cognitive Rehabilitation Program; computer, microcomputer or video game programmes; and other training programmes.

Participants included in the review
Studies of any population were eligible for inclusion. The studies included in the review had populations of individuals with attention deficit hyperactivity disorder (ADHD), mental retardation, learning difficulties, brain injury, hypochondriasis, anxiety, attention problems, reading disability, stress, schizophrenia, stroke, serious emotional disturbance, multiple sclerosis, aggression, alcoholism, autism, memory and reading problems, depression, test anxiety and unilateral neglect. They also had a control population and non-clinical populations. The included studies evaluated both adults and children. No further details of the populations were reported.

Outcomes assessed in the review
No inclusion criteria were stated with regard to the outcomes. Details of the outcome measures were not reported.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Each study was assigned a level of evidence ranging from I (best) to VI (worst), based on its study design, whether it used a control group, and the nature of the control group. In addition, the methodology of the review was rated as commendable, acceptable, marginal or seriously flawed on the basis of the following: sample size; methods of recruitment; inclusion and exclusion criteria; randomisation; comparability of the groups on demographic variables; appropriateness of norms for clinical sample or case study; attrition rate and possible associated biases; blinding; follow-up; statistics provided; application of normative data; procedural confounds; and whether assumptions were met for statistical tests. Method ratings took the type of study into account. Two reviewers independently rated the studies. Any
disagreements were resolved through consensus.

**Data extraction**
The authors did not state how the data were extracted for the review, or how many reviewers performed the extraction.

The results of each study were categorised as positive (attention improved), negative (no difference found, or further impairment resulted), or inconclusive (studies that reported differing immediate results, or results included conflicting findings depending on measure). Categorisation was carried out by two independent reviewers and any disagreements were resolved through consensus.

**Methods of synthesis**

- **How were the studies combined?**
The study results were tabulated and combined in a narrative. The studies were grouped according to treatment type, disorder and category (I to VI). Based on the aggregate of studies for each treatment and disorder, summary findings were categorised from A (strongly supported) to E (contraindicated) according to the strength of the evidence. Categorisation was carried out by two independent reviewers and any disagreements were resolved through consensus.

- **How were differences between studies investigated?**
Some study details were tabulated and differences between the studies were discussed in the text.

**Results of the review**

Although the authors stated that 83 studies that met inclusion criteria were found in the databases, details of 96 studies were tabulated: 15 RCTS, 24 non-randomised trials with concurrent controls, 1 non-randomised trial with a historical control, 41 case series with no control and 15 case reports. Neither the total number of participants, nor the numbers of participants recruited in each of the included studies, were reported.

Inter-rater agreement was 90.29% for rating studies methodologically and 89.32% for rating the results as positive, negative or inconclusive.

None of the programmes were rated as strongly supported or supported by the evidence. Programmes that were tentatively supported by the evidence, but for which better research is needed, included: Attention Process Training for children with ADHD; Pay Attention! for adults with mild-moderate mental retardation or brain injury; biofeedback treatment for children and adults with ADHD and children with learning difficulties; and Bracy cognitive rehabilitation for adults with brain injury or schizophrenia.

Programmes that were rated as insufficiently or inconclusively supported by the evidence were: Attention Training Technique for adults with anxiety disorders; biofeedback treatment for children with ADHD or learning difficulties, children with mental retardation, and adults with brain injury; Bracy cognitive rehabilitation for adults with brain injury, schizophrenia or stroke; Captain’s Log for adults with schizophrenia or children with ADHD; and Orientation Remediation Module for adults with brain injury or schizophrenia.

The Attention Training System for children with ADHD was rated as contraindicated.

**Authors’ conclusions**
The authors concluded that, regardless of the treatment programme or population, there was insufficient evidence to draw conclusions about the efficacy of programmes designed to address attention deficits. More rigorous study of the available treatments across age levels and disorders is required before conclusions can be drawn.

**CRD commentary**
The authors set out a clear objective at the beginning of the review. The inclusion criteria were very broad in order to include all relevant programmes in all populations; however, no inclusion criteria for the outcomes or study design were
reported. Appropriate sources were searched, but it was unclear whether any language restrictions were applied and publication bias did not appear to have been assessed. The methods used to select studies and extract the data were not reported, therefore the potential for error and bias cannot be ruled out. The quality assessment was carried out using appropriate criteria, and in duplicate, thereby reducing the risk of error and bias.

Few study details were provided: the numbers and ages of the participants were not stated, and the outcome measures used in each study were not reported. The authors stated that some of the included studies did not measure outcomes related to attention, so their relevance to the review question would seem limited. Given the considerable differences between the studies, grouping studies by treatment type in a narrative synthesis was appropriate. Despite some methodological limitations, the authors’ conclusion, that there is a paucity of good-quality evidence and a need for further research, seems appropriate even though there is a possibility that relevant studies were missed.

**Implications of the review for practice and research**

Practice: The authors did not state any implications for practice.

Research: The authors stated that randomised studies with appropriate controls or comparison treatments will be forthcoming. They stated that homogeneous study populations will improve the generalisability to similar populations, and that studies need to include outcome data to show the long-term maintenance, or lack thereof, of the improvements over time.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.