

An investigation of visuospatial memory impairment in children with Attention Deficit Hyperactivity Disorder (ADHD-CT) with and without stimulant medication

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Introduction

Memory impairment is not considered a core cognitive feature of ADHD-CT, although it is associated with impairments in attentional and executive functions. This study investigates visuospatial memory impairment, in particular encoding and retrieval aspects, in children with ADHD-CT who are stimulant medication naïve and medicated with stimulant medication. We hypothesise that ADHD-CT will be associated with visuospatial memory encoding but not retrieval deficits and that stimulant medication should ameliorate these encoding deficits.

Method

6-12 year old children, identified with
ADHD-CT-stimulant medication naïve (N=62)
ADHD-CT-stimulant medicated (N=58)

defined by

- (1)-parental structured clinical interview;
- (2)-parent and teacher dimensional report subscale scores -core symptom domains of ADHD-CT-
greater than 1.5 standard deviations above the mean
for a given child's age and gender

Healthy control participants (N=39)

Age-, gender- and full scale IQ- matched

-random assignment to medicated group

-stimulant medication dosage titrated to an
optimal level using Tannock *et al.*'s (1995) method

***Dexamphetamine* N=32 (14.29 (5.68))**

***Methylphenidate* N=26 (25.81 (11.34))**

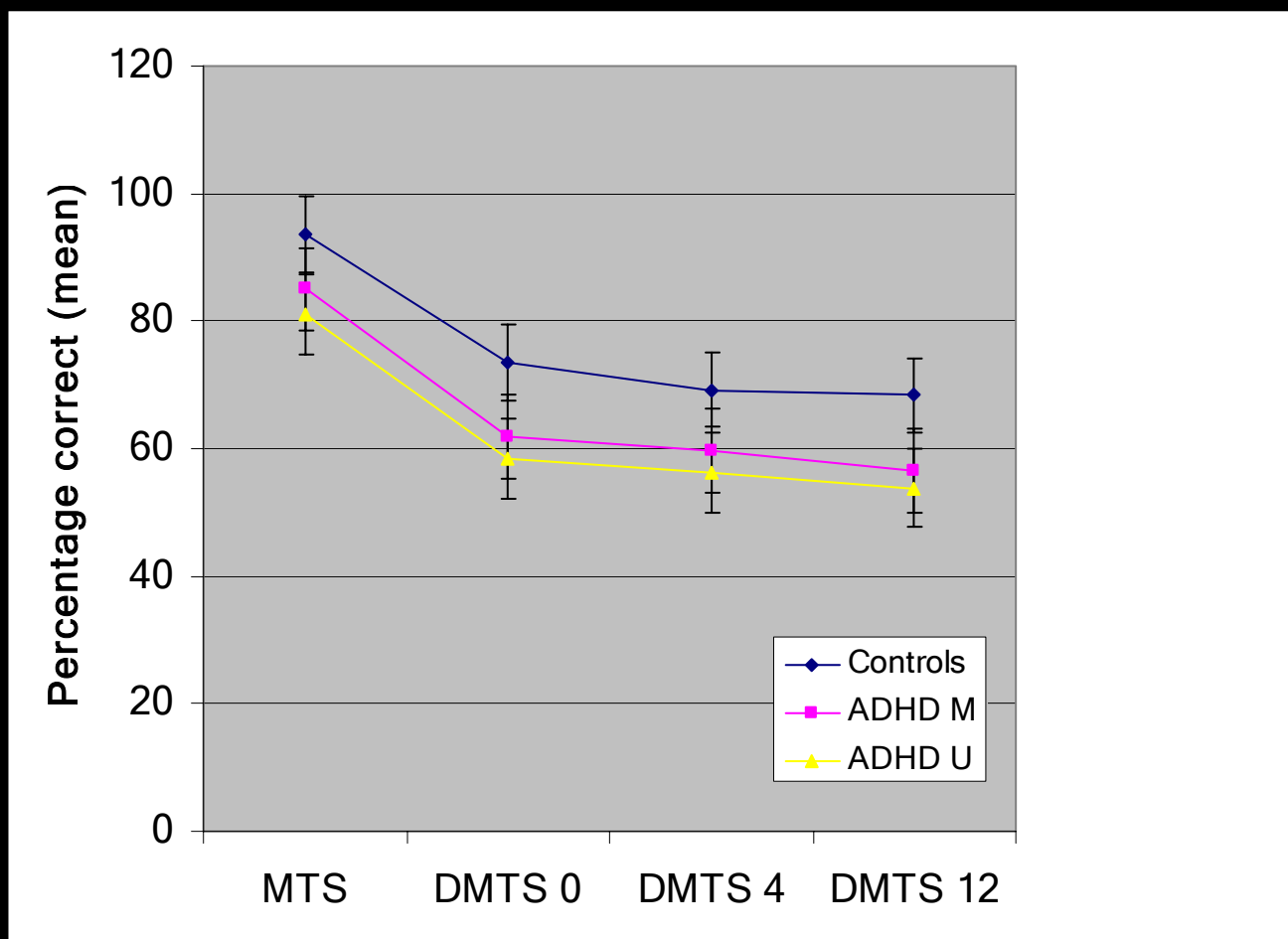
-comorbid diagnoses of major depressive disorder
or conduct disorder excluded;

oppositional defiant patterns of behaviour and
language learning difficulties matched between the
ADHD-CT groups

ADHD-CT children - consecutively referred for assessment because they were not responding to usual clinical psychological management approaches delivered at a community primary care level; met the inclusion criteria of living in a family home and attending normal primary schools. All IQs > 70; none had overt neurological disease or psychotic symptoms

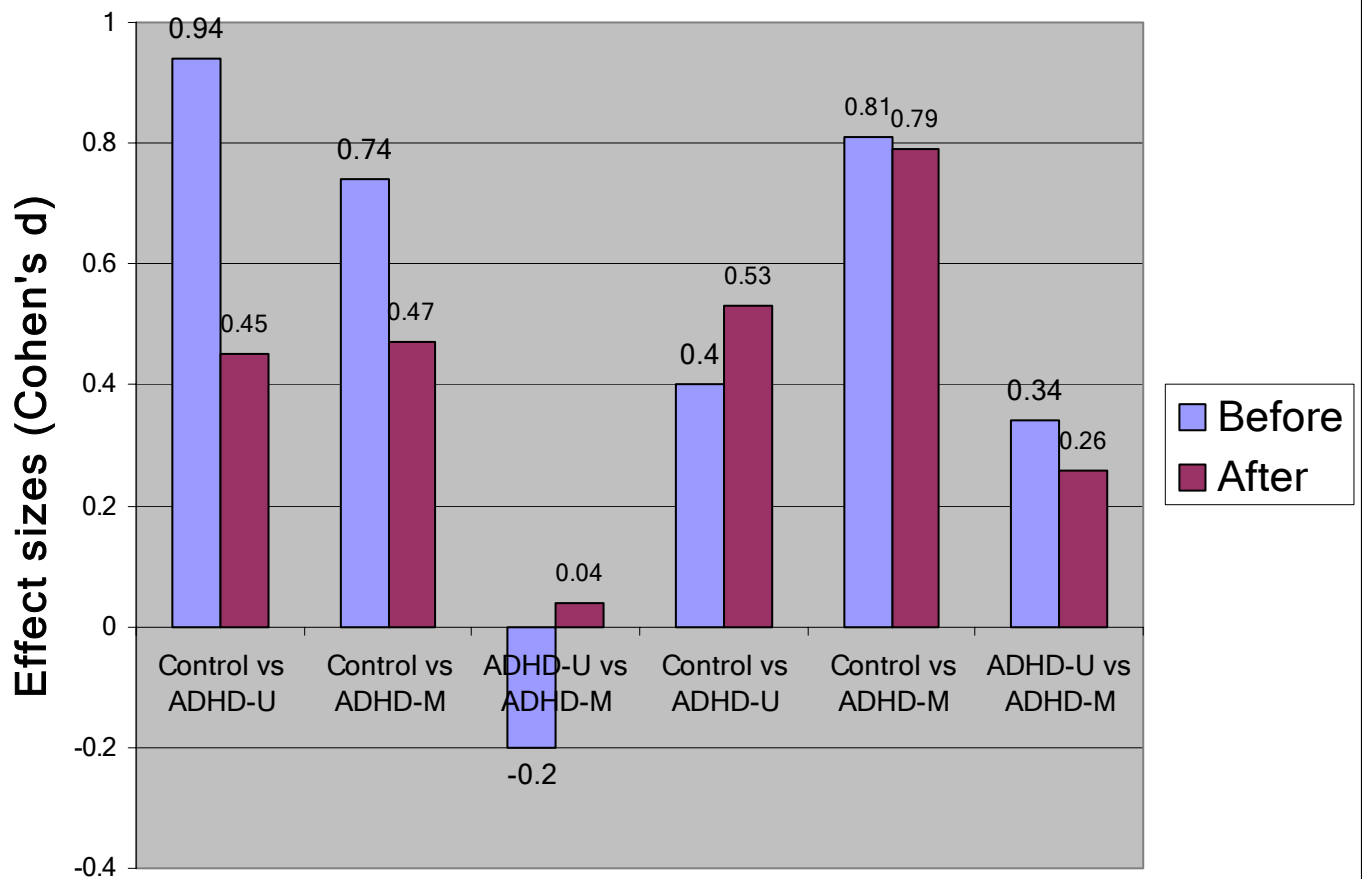
Results

Response accuracy of each group at each condition of the DMTS task



MTS = matching to sample; DMTS 0/4/12 = delayed matching to sample 0/4/12 seconds delay; Controls = healthy participants; ADHD-M = ADHD combined type medicated participants; ADHD-U = ADHD combined type participants, medication naïve

Effect sizes before and after covarying for performance on the MTS condition



Discussion

Both medication naïve and medicated ADHD-CT groups demonstrated impairment in visuospatial memory, which was delay-independent

the encoding rather than retrieval phase of visuospatial memory was dysfunctional

deficits in a visuospatial memory task reflect attentional deficits rather than being specifically due to dysfunction of the medial temporal lobe explicit memory system.