



## **Is Memory Main Hindrance to Detachment (Autism)?**

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Working memory was specifically examined in 11 low-functioning autistic children by using the CAST computer game. The CAST game consists of two conditions which offer to examine different components of executive function. The subjects were divided into two subgroups (high-or low scoring) according to their performance and heterogeneity within the autistic sample was found. The performances of the high-scoring autistic subjects were not significantly different from the normally-developing controls children. However, the executive controls, such as planning and application of strategy were impaired in the high - scoring children with autism and NSDD. All the low-scoring subjects were with autism or NSDD, who were impaired in working memory capacity, but intact in spatial memory. An interaction between working memory and preservative inhibition was also found. Results suggest that perseverative behaviour is a defining feature of autism, and working memory deficit is possibly accompanied with some neurological impairments rather than autistic specific.

Autism spectrum disorders (ASD) and attention deficit / hyperactivity disorder (ADHD) are childhood-onset neurodevelopment disorders affecting key fronto-striatal and fronto-parietal circuits that are important for executive functions The term executive function (EF) is used in brain research and neurophysiology to describe mental functions with which higher life forms govern their behaviour. EFs involve multiple distributed neural networks that include the thalamus, basal ganglia and prefrontal cortex.

Several authors have proposed that symptoms of ADHD arise from a primary deficit in a specific EF domain such as response inhibition, working memory, or a more general weakness in executive control this hypnthesis is based on the observation that prefrontal lesions sometime produce behavioral hyperactivity distractibility or impulsivity as well as deficits on EF task . A theory by Barkely considered inhibitory dysfunction as a core deficit in children with ADHD, which causes secondary deficiencies in other EFs such as working memory,. cognitive flexibility and planning . Nigg describes in a meta-analysis of

neuropsychological findings in ADHD highest effect sizes for spatial working memory and response suppression tasks (ADHD vs. Non-ADHD children) .

There are also many empirical reports of executive impairments in individuals with autism spectrum disorders across wide age ranges and functioning levels. Hill's recent review highlights impairments on at least two aspects of EF: planning and flexibility .

EFs have been examined in neuropsychological studies that were carried out in direct comparison of children and adolescents with ASD or ADHD. To date six studies have compared EF in ASD and ADHD.

Two studies were conducted independently in the year 1999 by Ozonoff et al. and Nyden et al. Ozonoff et al. found in children with ASD difficulties in planning and cognitive flexibility but no inhibition deficit, and the reverse neuropsychological pattern in children with ADHD. Nyden et al. were not able to replicate these findings. In their study, both groups of disorders showed an inhibition deficit, and the ADHD children had a limited cognitive flexibility.

Geurts et al. extended the aforementioned studies by examining a broader spectrum of EFs in patients with ADHD and high-functioning autism (HFA) with the aim of distinguishing between the two disorders . The ASD-group showed deficits on all EF tasks except of interference control and working memory, and significantly greater impairment than the ADHD-group on planning and Cognitive flexibility. The ADHD group was most impaired on inhibition of prepotent response and verbal fluency.

Goldberg et al report no differences between ADHD and ASD children on response inhibition, planning and flexibility tasks . Both groups were impaired on 1 working memory task compared to healthy control children.

Happe et al. compared age- and IQ-matched groups with ASD and ADHD and found greater inhibitory problems in the ADHD group on a Go/NoGo, planning and working memory task, while the ASD group was solely, worse on a response selection task .

A study by Johnson et al. tested children with HFA and ADHD on a sustained Attention to Response Task (SART) and report of clear deficits in response inhibition and

sustained attention in the ADHD group. The HFA group showed dissociation in response inhibition performance .

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