

**Response Inhibition, Working Memory, Attention, and Concept of Time  
as Executive Functions in boys diagnosed with ADHD**

**by**

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## **Abstract**

The purpose of the present research was to examine the current conceptualisation(s) of Attention-Deficit/Hyperactivity Disorder (ADHD), and to further contribute to the development of theory about the disorder, by way of a systematic empirical investigation. Initially, a comprehensive review of the literature was undertaken which served to establish the theoretical framework within which the subsequent research could proceed. Those issues which arose from the literature that required further clarification were explored in more detail in a series of semi-structured interviews with six leading international authorities in the field of ADHD research. The results obtained revealed that the current understanding(s) of ADHD appears to rely largely on the prevailing theoretical models of the disorder, and in particular, Barkley's (1997a) Unifying Theory of ADHD. In addition, the interview participants posited that four executive impairments are demonstrated by children with ADHD, namely, impairments in: response inhibition, verbal and non-verbal working memory, selective and sustained attention, and concept of time.

The present research set out to systematically examine the nature of these predicted impairments with ADHD ( $n = 68$ ) and non-ADHD Control boys ( $n = 67$ ). All of the ADHD participants had been diagnosed by a consultant paediatrician as meeting DSM-IV criteria for ADHD, and were selected because they had not been identified with any diagnosed comorbidity. In order to address other potentially confounding factors, the ADHD participants received no stimulant medication for a minimum period of 20 hours prior to testing, and the ADHD and Control participants were individually matched on Age. However, satisfactory Age-matching (i.e., to within three months) could only be achieved at the expense of a reduced sample size, and the matched sample

consisted of 50 ADHD boys (14 ADHD Predominantly Inattentive Type and 36 ADHD Combined Type) and 50 Control boys. In addition, the present research sought to address the issue of poor construct validity, by employing instrumentation specifically designed to be sensitive to the predicted impairments of boys with ADHD.

The data obtained were examined using multivariate analyses of variance and revealed that the ADHD boys were significantly impaired on measures of verbal memory, attentional switching, and time reproduction, relative to individually Age-matched Control boys. However, no significant differences were observed on the measures of response inhibition, non-verbal memory, or selective attention. In addition, no significant differences were observed according to ADHD subtype, although this might be attributable to the limited size ( $n = 14$ ) of the ADHD-PI sample, and it is suggested that this result be interpreted with caution. However, the finding of slower overall reaction times, and modality-specific impairments in verbal memory and visual time reproduction tasks, provide clear directions for further research.

In conclusion the present study has confirmed the executive impairments that were identified in Study One, and has provided evidence pertaining to the suitability of the instrumentation.

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## **Declaration**

In accordance with the regulations for presenting theses and other work for higher degrees, I hereby declare that this thesis is entirely my own work and that it has not been submitted for a degree at this or any other university.

**John West**

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Note: This thesis has been formatted in accordance with modified American Psychological Association (1995) publication guidelines.

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