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Does The Intermediate Booklet Category Test Detect Neurological Deficits In ADHD Children?

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Abstract

The purpose of this study was to evaluate the capability of the Intermediate Booklet Category Test (IBCT) detecting neurological deficits among ADHD children. The study included thirty children between the ages of 9 and 14 years with at least an Average IQ. Fifteen of the children were previously diagnosed with ADHD and the other fifteen children did not have any ADHD diagnosis.

DOES THE INTERMEDIATE BOOKLET CATEGORY TEST DETECT NEUROLOGICAL DEFICITS IN ADHD CHILDREN?

Attention Deficit Hyperactivity Disorder (ADHD) is a common disorder consisting of three primary symptoms. These symptoms include attention, impulsiveness, and hyperactivity. Onset of these deficits arise in early childhood, usually before the age of 7, and effect approximately 3 to 7% of the childhood population. ADHD is three times more likely to be diagnosed in boys than girls and 50 to 80% of the children will carry the disorder over into adolescence. Over the course of the child's development, ADHD is associated with many risks. These risks can include low academic achievement, poor school performance, grade retention, suspensions and expulsions from school, poor relationships with family and friends, depression, anxiety, delinquency, aggression, and substance abuse (Barkley, 1997). Children with ADHD are more likely to not succeed in school. Their peers are likely to perceive them as being immature and irritating. Their peers may also tend to avoid or neglect them because of their tendency to have bossy behaviors and low frustration tolerance (Ballard, Bolan, Burton, Snyder, Pasterczyk-Seabolt and Martin, 1997). Children diagnosed with ADHD will often have difficulty reading and may perform poorly with memory and recall tests (Loge, Station, & Beatty, 1989).

Many other disorders can co-occur with ADHD. These include mood disorders, conduct disorders, oppositional defiant disorder and tics or Tourette syndrome. Many ADHD individuals will also have characteristics of learning disabilities. More than half of all ADHD individuals could have one or even more than one comorbid condition (Goldman, Genel, Bezman, and Slanetz,1998).

The main characteristic of ADHD is a pattern that is persistent of inattention and/or hyperactivity-impulsivity which appears more frequently and with more severity than the typical individual at or around the same developmental stage. There must be some impairments present before the age of 7 and some impairments must also be noticeable in two of the three settings including home work and school. The individual must also have some type of interference with social, academic, or occupational functioning during their development. ADHD must not be better accounted for by any other mental disorder.

Individuals who are diagnosed with inattention may not be able to give close attention to details. They may have difficulty at school or other settings concerning careless mistakes or messy work or may also have difficulty staying on task long enough to complete their homework. Individuals are often disorganized and easily distracted. Individuals with hyperactivity may have trouble staying in their own seat and will often squirm and be fidgety. Impulsivity is demonstrated as being impatient and the individual may have trouble listening to directions (American Psychiatric Association, 1994).

Recently, there has been neuropsychological evidence suggesting that two brain legions, known as the frontal lobes and right parietal lobe, are connected to ADHD. It is thought that the prefrontal regions refer to areas such as planning and implementing goal-oriented strategies, controlling impulses, and organizing strategies. The parietal lobes refer to areas of spatial perception and spatial attention. The ADHD frontal lobe theory was first recognized in the 1930s. Practitioners and investigators noticed similarities between patients with lesions of the frontal lobe and children with symptoms of ADHD. The patients with the frontal lobe lesions and the children with ADHD both presented impaired response inhibition, excessive restlessness, distractibility and inattention (Arman, Roberts, Jr., & Pennington, 1998).

One of the best indicators of diffuse brain impairment in the Halstead-Reitan Neuropsychological Test Battery is the Halstead Category Test (Golden, 1978). Even though the Halstead Category Test is valid and is utilized clinically, there are some limitations with regard to its size, cost and electrical components. Because of these limitations, other tests have recently been developed. The Booklet Categories Test (BCT) was developed in 1979 by McCampbell and DeFilippis and is a booklet version of the original HCT for adults utilizing the same test items. In 1986, Byrd and Warner developed the Intermediate Booklet Category Test (IBCT) in order to provide an older children's version of the HCT in a booklet form. The IBCT and HCT contain the same 168 test items (Byrd & Ingram, 1988).

Purpose

The purpose of this study was to determine whether the Intermediate Booklet Category Test was effective in detecting neurological deficits among Attention Deficit Hyperactivity Disorder children between the ages of 9 and 14.

METHOD

Subjects

For the purpose of this study, both male and female subjects ranging from age nine to fourteen years, were randomly selected from the database of Putnam County Schools of West Virginia. All of the subjects were at least average intelligence, signified by IQs of not more than one standard deviation above or below the mean and were among the general population. Fifteen of the youths, who met the above stated intelligence criteria, were previously diagnosed as having Attention Deficit Hyperactivity Disorder through testing and through differential diagnosis. An additional fifteen youths in the same age range and same intelligence were chooses from the general population as a control group. These fifteen youths have not been diagnosed as having ADHD or have not been diagnosed with any other neurological disorder.

Instrument

The Intermediate Booklet Category Test (IBCT) was developed in 1986 by Byrd and Warner, and is an older children's, booklet form version of the HCT. The instrument consists of 168 stimulus items, which are divided into six subtests, contained in two binders. The stimulus designs are printed in white with a black background. The

first five subtests contain a common principle or concept which guides the determination of the correct response in each of the subtests. In the final subtest, the correct answer is not determined by any single principle. The final subtest repeats items from the fist five subtests and requires the subject to remember the principle from previous subtests. After each response, the examiner provides feedback by responding either "correct" or "incorrect".

Procedure

The IBCT was administered to each subject individually by the presenting thesis candidate. The test binders were placed in between the examiner and the subject. Each subject was given the test instructions and was given a sample item to complete. After each stimulus card response from the subject, the examiner responded with "correct" or "incorrect". Each subject was tested at a table with minimal distractions and no other persons present.

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Appendix A

Literature Review

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most studied as well as diagnosed disorders among children today. It is diagnosed in approximately 3 to 7% of the total childhood population, with males dominating over females approximately 3:1 (Barkley, 1997). When compared with non-ADHD boys, boys with ADHD have greater difficulty on nonautomated language and motor tasks and display slow gross motor output (Carte, Nigg, & Hinshaw, 1996). When compared with boys, results show that girls with ADHD perform worse on various tasks including attention, intellectual performance, and achievement (Seidman, Biederman, Faraone, Weber, Mennin, & Jones, 1997). In over half of the childhood cases, the disorder can continue into adolescence. ADHD can effect the individuals academic achievements as well as the social relationships (Wodrich, 1994).

Children with ADHD present inattention and/or hyperactivity-impulsivity more frequently and severe than typical individuals. Their onset is before the age of 7 and have some interference with school, home, and/or work. Indications of the disorder may include not being able to stay on task, being fidgety, trouble listening to directions, being distracted easily, disorganized or being messy (American Psychiatric Association, 1994).

It is typical of children with ADHD to often have difficulty reading. They may also perform poorly on recall tests dealing with learning and memory. When given the WISC-R, it often will show a weakness on Information, Arithmetic, Coding, and Digit Span. Among those with hyperactivity, children with ADHD will often perform poorly on tests

regarding a spatial factor. These subtests include Picture Completion, Object Assembly and Block Design (Loge, Station, & Beatty, 1990).

It is recognized that up to 50% of the children diagnosed with ADHD will continue to have the disorder through their adult life. For adults with ADHD, the inattentive component can encompass many difficulties in life. Adults with ADHD may have trouble retaining employment, be inattentive to rules and regulations, have difficulty keeping personal relationships, and may not think about the consequences to their behaviors (Jackson & Farrugia, 1997).

There are other conditions that can co-occur with the diagnosis of ADHD. In fact, as many as 65% of ADHD children will have 1 or possibly more than 1 comorbid conditions. These conditions include mood disorders, conduct disorders, oppositional defiant disorder, tics or Tourettes Syndrome and the most common condition co-occurring with ADHD is learning disabilities (Goldman, Genel, Bezman, & Slanetz, 1998).

ADHD is considered to be a neurological syndrome and collection of behaviors that block the individual from learning in a traditional organized manner. Historically, children would have been diagnosed as having a minimal brain dysfunction or hyperkinetic syndrome (Ladies Home Journal, 1992).

Children diagnosed with ADHD are presumed to have a biological correlation. This is particularly referring to the prefrontal areas of the brain (McBurnett, Harris, Swanson, Pfiffner, Tamm, & Freeland, 1993). This frontal lobe theory was first introduced back in the 1930s by practitioner and investigators who were dealing with both patients

with frontal lobe lesions and children with ADHD symptoms. Both of the groups displayed an impaired response inhibition, excessive restlessness and distractibility and attention (Aman, Roberts, & Pennington, 1998). Children with ADHD perform poorly on frontal lobe dysfunction assessment tasks. These deficits include response preservation, motor disinhibition, planning difficulties, and inattention (Barkley, Grodzinsky, & DuPaul, 1992).

A person's ability to be attentive, to self-regulate impulsiveness and to delay gratification are all parts of the prefrontal brain functions (Ballard, Bolan, Burton, Snyder, Pasterczyk-Seabolt, & Martin, 1997). Lesions in the prefrontal regions conclude in a breakdown of the ability to regulate goal-directed activity and modulation of responding impulsively. Individuals with these lesions have difficulty suppressing ongoing activities even though they are receiving environmental feedback that they are being inappropriate (Chelune, Ferguson, Koon, & Dickey, 1986).

As a subtest to the Halstead-Reitan Neuropsychological Test Battery, the Halstead Category Test is considered to be one of the best indicators of diffuse brain impairment (Golden,1978). Because of cost, size, and electrical components of the Halstead Category Test, two tests have been developed in order to improve on these limitations. One test, known as The Booklet Categories Test (BCT), was developed in 1979 by McCampbell and DeFilippis. The BCT is a booklet version of the original HCT for adults which utilizes the same test items. Byrd and Warner developed the Intermediate Booklet Category Test (IBCT), in 1986. The IBCT was developed in order to

provide an older children's version of the HCT in a booklet form and contains the same 168 test items as the HCT (Byrd & Ingram, 1988).

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