

# Adhd: effects and management

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The subject of Attention-Deficit Hyperactivity Disorder (ADHD) has undergone intense research in the past decade. Much of this is rooted in the fact that approximately 5% of children are affected with the disorder. Children with ADHD are identified as having increased behavioral difficulties because of excessive motor activities, poor self regulation and inattentiveness (Dulkan et al., 1997).

It has been found that as many as 30% of children inflicted with ADHD have learning disabilities with academic underachievement becoming a common correlate. Since these children do not meet the expectations of society and their learning environment they are usually met with anger, punishment, and rejection. In turn these children develop a low-self esteem and low levels of motivation (Morgan, 1997).

The etiology of ADHD is still a mystery to researchers. Within the field there are many correlates to biological (genetic) and social causes. The present paper seeks to explore current research through investigating the social and bio-genetic influence of ADHD on child intelligence. Testing and treatments of those with ADHD will also be discussed. In accordance with Dulcan et al. (1997) ADD, ADD-H, ADHD, although not identical, will be considered interchangeably due to similarity.

#### Characteristics and Testing of ADHD Intelligence

Even though ADHD occurs in people of every intelligence, a majority of children affected experience academic problems. These children may have specific learning disabilities, such as dyslexia, or may have multiple learning problems (Beiderman et al., 1993). In a study by MacLeod et al. (1996)

comparing ADHD children with those unaffected, those with the disorder performed significantly worse than the others. Learning disabilities can be said to arise from attentional difficulties in the classroom setting. Many of these difficulties occur in tasks where listening and time is a factor. Reading disabilities have also been found as a result of ADHD (Millberger et al., 1991).

Even though there is a higher prevalence of boys and those with low intelligence diagnosed, others with ADHD are impaired as well. Results have found that girls with this disorder face greater intellectual impairment, especially with picture vocabulary tasks, than boys or control girls (Seidman et al., 1997). There is also significant findings that the level of intelligence affects ADHD children in different ways.

More specifically, those with both ADHD and normal to high intelligence are more prone to accidents, and have a smaller number of steady friends. Children who were identified with low intelligence and ADHD were found to have more behavioral and emotional problems in their adolescence. Long term studies have found that the outcome of these children was continued academic problems and school failures (Aman et al., 1996). However, there is suggestion ADHD children show greater artistic ability when writing or drawing slowly and precisely (Morgan, 1997).

Testing the intelligence of ADHD involves a number of measures.

Psychoeducational testing is used to assess intellectual ability and to search for learning disabilities. Tests such as the Wechler Intelligence Scale are used for intelligence testing, yet, much debate exists because of the need to

change the test to meet the child's attention deficits (Braswell, 1991). A new intelligence test has been created by Naglieri (1997) called the Cognitive Assessment System to help diagnose and measure ADHD intelligence. This test is based on the premise that traditional tests don't measure processes such as planning and attention, which is essential in testing and detecting ADHD students. There is inconsistent data for the use of computerized tests of attention and vigilance for this purpose (Dulcan et al, 1997).

In many cases the effects of ADHD on children's intelligence is influenced by social factors. For instance studies show that symptoms become worse in situations which are unstructured, minimally supervised, boring, or require sustained attention or mental effort (Dulcan et al., 1997). A study by Greene et al. (1996) purports that learning disabilities are lead by difficulties in social functioning. There is an inverse deviation in IQ scores when related with increased social disability scores. The same study looked at teacher perceptions, which showed that the less likable and more aggressive the child was, the lower the performance. In researching verbal deficits in ADHD children, Faraone (1993) found many early intellectual problems linked with disruptive behavior such as hyperactivity and aggression.

Data also shows that parental conflict, diminished family cohesion, and number of parents psychiatrically ill during the child's lifetime adversely affected intelligence scores (Greene et al., 1995). The researchers conclude that a significant correlation links IQ and social functioning. Another study by Biederman et al. (1995) shows similar results. Six factors were listed from

the family environment which correlated with ADHD children's cognitive deficits. These include: severe marital discord, low social class, large family size, paternal criminal record, maternal mental disorder and foster home placement. This study asserts that children with ADHD have a more "malleable" IQ and are more adversely affected. The Greene et al. (1995) study, argues that family size is of no significance. Conversely, when investigating parental style and family influence on ADHD IQ levels, Nausbaum (1990) reports that little evidence exists.

Poor school achievement for ADHD children is also associated with the need for immediate reinforcement. These children have been shown to perform as well as others in situations where consistent, immediate and positive reinforcement is in place. Rule governed behavior is additionally difficult for these students. Even when they understand the rules, they do not follow through with correct behavior, therefore the right social environment is necessary. Theories of Vygotsky's such as "self talk" and social guidance were listed as possible influences (Braswell, 1990).

Studies have found that lower intelligence in ADHD children is not socially mediated, but in fact rooted in genetics and human biology. In testing the families of these children, it has been shown that siblings show increased learning disabilities and higher rates of ADHD (Faraone, 1993). Family patterns show that approximately 20 to 30 percent of children with ADHD have a parent or sibling with similar problems.

There is the suggestion that these children inherit a type of nervous system which makes them prone to learning disabilities (Nussbaum, 1990). Data

from family risk, adoption, and twin research are supportive of this assertion (Braswell, 1991). However, recent research has indicated that ADHD and learning disabilities are transmitted independently in families and that their occurrence is due to non-random mating (Milberger et al., 1995). In looking at probands of parents, Biederman et al. (1993) also conclude ADHD and learning disabilities are independent, and rather due to random mating, therefore not etiologically dependent.

Other researchers claim the intellectual deficit lies in physiological anomalies. More specifically, imbalance in the neurotransmitter systems of the brain, dysfunction in the reticular activating system, or a lag in brain development (Nussbaum, 1990). In determining if the neurocognitive characteristic in individuals with resistance to thyroid hormone (RTH) are similar to those with ADHD, researchers have found that children with RTH have like deficient achievement levels as those with ADHD (Stein et al., 1995).

There is also evidence that epinephrine (EPI) levels are lower in ADHD children. Urinary EPI levels are inversely related to fidgeting and aggression for second-grade ADHD students. During intelligence testing, results have shown that these EPI levels during a cognitive challenge is at least 40% lower than controls (Hanna et al., 1996). In a study which had subjects enhance beta activity and suppress theta in EEG activity during cognitive testing, those with ADHD improved in intelligence testing. Improvements were assumed to be a result of attention enhancement affected by EEG biofeedback (Linden et al., 1996).

## Improving Learning Disabilities in ADHD Children

Investigating effectiveness of treatments of ADHD learning disabilities allows additional information on the social and bio-genetic causes of academic underachievement related with this disorder. It has been stated that both instruction and contingency management is necessary to remedy academic deficits. Some techniques include; token economies, class rules, attention to positive behavior, as well as time out and response cost programs.

Suggested to compliment and further increase probability of improvement is the alliance of parents, patient and school with the consideration of individual needs for the student and subsequently accommodating the environment to these needs. Scales such as the Academic Performance Rating Scale or daily report cards (due to necessity of immediate reinforcement) are useful in monitoring performance (Dulcan, 1997).

Cognitive-behavioral interventions have also been shown to have a positive effect in academic achievement. Interventions such as self-instructional training, problem-solving training, attribution retraining and stress reduction procedure work as well. However well they work, these methods of interventions have not been widely implemented in treatment of ADHD children (Braswell, 1991). Many children are segregated into learning disability classes separate from other students. It is essential tutoring and resources be made for the child, however, many are able to learn at the same level with the other children.

It has been found that many ADHD children are inappropriately placed in special education programs for the learning disabled. This is mainly because of social maladjustment, so extremes are not necessary. A percentage of ADHD students do exhibit normal intelligence but are socially inept.

Therefore careful testing and diagnoses is imperative for the improvement of these youths. And by failing to provide interventions for their behavior problems, they may become restricted in their opportunities for academic success (Lopez et al., 1996).

It is quite often found that the majority of ADHD children improve with psychopharmaceuticals, specifically stimulants such as Ritalin. Results reveal that medication related improvements include increased work output, improved accuracy and efficiency, and better learning acquisition (Dulkin et al., 1997). Learning and achievements in arithmetic, reading, and fine motor skills improve as well. There is a 70 to 90 percent response rate to stimulants (Gillberg et al., 1997).

These results are quite dramatic in short term, but long term efficacy is still questioned (Braswell, 1991). There is much consensus in literature that a combination of treatment types is best to improve academic deficits. The cornerstones of treatment are support, education of parents, appropriate school placement, and psychopharmacology (Braswell et al., 1991; Dulcan et al., 1997; Gillberg et al., 1997; Nussbaum et al., 1990).

In reviewing the current literature on how intelligence is affected by ADHD, it is easy to see that it is a subject yet to be firmly defined. Intelligence tests have been erroneously utilized in diagnosing and categorizing ADHD children



and new tests must be developed in accordance to their disorder (Naglieri, 1997). The current increase in ADHD children seems somewhat suspicious. Is it an increase in the children, or a decrease in the deserved attention they are receiving from parents? The stimulant Ritalin is being overly diagnosed as a quick fix. There must be much more behavioral and parental/school attention intervention in order for this epidemic of hyper children to be curbed.

It would be interesting to see this generation of Ritalin children grow. Intelligence and ADHD have been linked in twin and adoption studies to family, therefore these studies could still be testing quite different things. Other studies also have found links in hyperactivity and affect to genetic dispositions. In testing, it is hard to determine if it is genetic or environmental due to the fact that many with ADHD can also be without learning disorders (Beiderman et al., 1993). Therefore, if we are to label this as a disease a bio-social etiological approach is necessary in diagnosis, treatment and intelligence assessment.