

# Attention deficit hyperactivity disorder

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Have you ever known someone who struggles with being unorganized, unable to listen, have behavior problems or interrupts conversations frequently? Have you ever thought that their brain is wired a little differently? That question is the essence of ADHD. ADHD stands for Attention Deficit Hyperactivity Disorder. ADHD is defined as a “ persistent pattern of inattention and / or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development (APA, p. 78).” Since there is an abundance of information concerning this topic, this paper will focus on the nature and effects of ADHD, highlighting cognitive and genetic research, while taking into consideration the role of culture.

#### Nature of ADHD

The clinical history of the behavioral syndrome underlying the ADHD diagnosis can be traced back over 200 years in medical literature (Palmer and Finger, 2001). Currently, ADHD is a diagnosis formulated by the American Psychiatric Association (APA, 1994) on the basis of clinical criteria. The criteria describes chronic behavioral symptoms of inattention, impulsiveness and hyperactivity that are presented to a degree that significantly interfere with a person’s family and peer relations as well as their educational and or occupational functioning. There are, according to the current DSM IV TR criteria, three main sub-types of ADHD: The mainly hyperactive / impulsive sub-type (314. 01), the mainly inattentive sub-type (314. 00) and the combined hyperactive-impulsive / inattentive sub-type (314. 01).

International prevalence rates vary between three and six percent of school aged children and young people. ADHD applies social and cultural boundaries, with males outnumbering females by a ratio of about 3 to 1 (Tannock, 1998). ADHD is the most prevalent of childhood behavioral disorders. Furthermore, although considered for many years a disorder restricted to childhood, research evidence shows that it continues into adulthood for between 30 to 70 percent of those people who present the symptoms in childhood (Weiss and Hechtman, 1993; Hinshaw, 1994). The developmental course of ADHD usually begins between the ages of three and four, though some children show evidence of the disorder in early infancy, and others not until the ages of five or six years (Anastopoulos, 1999). The APA diagnostic criteria requires the presence of symptoms before the age of seven years.

### Effects

The effects of ADHD are seriously debilitating. Individuals with ADHD are more likely than the general population to experience social isolation, road accidents and long term psychological dysfunction (Tannock, 1998). People with undiagnosed ADHD are often dismissed as incompetent, disorganized, aggressive, disruptive, lazy, untrustworthy, neglectful, selfish, accident prone, antisocial and asocial. There is strong evidence to suggest that school students with ADHD are likely to perform at far lower levels academically than their scores on standardized tests of cognitive ability would predict (Hinshaw, 1994; Barley, 1990). ADHD is found to co-occur with a wide range of other learning, emotional and behavioral disorders (Angold, Costello & Erkanli, 1999; Barkley, 1990).

The emotional and behavioral dual diagnosis disorders tend to emerge during the middle childhood and early adolescent years, giving rise to the hypothesis that these are socially induced problems that occur as a result of the misunderstanding and mismanagement of the primary ADHD symptoms (Barkley, 1990). Other studies have found symptoms of ADHD to be associated with serious relationship problems, marital breakdown, employment difficulties (Hinshaw, 1994) and even imprisonment (Farrington, 1990; Weiss and Hechtman, 1993).

### Causes of ADHD

Although ADHD has become one of the most widely researched of all disorders of its type in the psychological and psychiatric literature, its precise causes remain elusive. Tannock's (1998) authoritative review of international research on ADHD, identifies two major areas of theoretical exploration of this subject: cognitive research and genetic research.

### Cognitive Research

Cognitive research has increasingly focused on the impulsiveness as the central feature of ADHD, and the possibility that a dysfunctional response inhibition system, located in the pre-frontal cortical region of the brain, is the neuropsychological mechanism underlying this problem. According to this view, children with ADHD can often be characterized as experiencing significantly greater problems than most in delaying or inhibiting a behavioral response.

The nature of the dysfunction in this system is described alternatively in terms of a failure of the inhibitory control system to become activated, or as

extreme delay in the activation of this system (Rutter & Smith, 1995). Barkley (1990) proposes a model which suggests that neurologically based problems of response inhibition lead directly to problems in four major executive functions of cognition: working memory, internalized speech, motivational appraisal and reconstruction (p. 148).

These difficulties of executive functions create particular challenges for children in school, where an emphasis is commonly placed on the need for secondary behavior, passive listening, self regulation and recall, from the earliest phases of learning. These problems tend to confound teachers' and others' expectations about the individual's ability to concentrate, recall and follow rules. For these reasons, many children with ADHD experience schooling both socially and academically as one of failure and rejection.

#### Genetic Research

Levy and Hay (2001) and Tannock (1998) report evidence from studies that have been carried out over the past 30 years that ADHD is more common in the biological relatives of children who do not have ADHD than it is in the biological relatives of children who do not have ADHD. A difficulty with these studies is that it is hard to control for environmental factors which family members often share and which may influence the development of ADHD type behaviors. This problem is addressed through twin and adoption studies which have repeatedly shown a much greater incidence of ADHD among identical twins than among non-identical twins. Similarly, studies which compare the incidence of ADHD among children and parents who are biologically related with that of children and parents where the child is adopted, have tended to support the heredity argument.

There is also evidence from molecular genetic research which has pointed to genetic abnormalities in the dopamine system (Levy & Hay, 2001), which plays a key role in the regulation of movement and selective attention (Thompson, 1993). Having said this, Levy & Hay (2001) implies that genes do not predict behavior, though they may influence predisposition in relation to some behavioral outcomes.

The role of culture These individual factors are nested within a further set of influences which are of a structural and cultural nature (Cooper, 1997; Ideus, 1997). For example, we can think of ADHD not so much as a disorder, but as a cognitive style which is not well adapted to modern life in the industrialized world. The child's problems' in this context are characterized by an apparent inability to conform to social and procedural rules, in the home and school; extreme difficulty in maintaining effort and interest in school and leisure activities, particularly those involving sustained attention, and problems of over activity and impulse control that make the individual appear self centered and antisocial.

These behavioral patterns are rendered problematic in environments where a high value is placed on methodical rule observance, predictable behavioral patterns and the ability to sustain effort on sedentary tasks in group situations. Throughout the world, where there is mass schooling, these are qualities commonly required of the student. In western culture, these expectations of conformity and self control go hand in hand with a paradoxical emphasis on early childhood as a period of relative freedom from such constraints. For the child with a tendency to develop ADHD concerted and intensive early intervention designed to influence the

development of internal controls would seem to be essential. This becomes problematic when we place it alongside what some commenters see the disintegration, throughout the developed world, of the social and familial networks which traditionally provided support, expertise and resources necessary to fulfill this need (Ruther and Smith, 1995).

### Intervention

While there is an increasing consensus, among clinicians, about the nature of ADHD, its management and particularly the use of medication has become a subject of controversy. In the US between 2 and 2.5 percent of all school aged children are prescribed some form of medication for hyperactivity, with over 90 percent of these being prescribed the psychostimulant medication, methylphenidate (Greenhill, 1998). There are a number of important observations about the use of methylphenidate and other psychostimulant treatments for hyperactivity, which are shared by a wide range of informed observers. First, controlled studies show that psychostimulant medications, generally when applied in relatively low and moderate doses, are widely regarded as being highly effective in reducing the core symptoms of ADHD (Hill and Cameron, 1999).

Second, methylphenidate in particular is seen as an extremely safe medication, being non-addictive, with only mild side effects for the majority of users, which can be controlled and often avoided through careful adjustment of the dosage after attention is paid to routine and regular reports from users, their parents and teachers (Kewley, 1998). Finally, it is widely agreed that medication alone is never a sufficient treatment, but where it is used it should always be part of a multi-model intervention

approach which employs behavioral, psycho-social, cognitive and environmental interventions (NICE, 2000; BOS, 2000).

This multimodal approach to intervention, which is also reflected in recommended assessment procedures, reveals a conception of ADHD as in part a dysfunction of the individual, and in part a problem that is created and exacerbated by the environment in which the individual operates. From this perspective medication is seen as creating a window of opportunity which allows social and other influences to be brought to bear effectively. Coupled with this approach is the realization that the behavior of children with ADHD is often misunderstood by parents, peers, other adults and teachers, and seen as a problem of motivation and violation rather than an involuntary reaction to stressful circumstances created by the conflict between a particular cognitive style and the cognitive style.

By developing an understanding of these behavioral problems in terms of the cognitive and other theories of ADHD, adults and others can make more informed judgments about how best to approach and facilitate the positive development of a child with ADHD. In this way the concept of ADHD can be seen to help reinforce the widely held view that apparent behavioral problems are often experienced by their perpetrators as reasonable responses to what they experience as difficult circumstances. This last point has obvious implications for those who have influence over the environments that children inhabit. As the foregoing indicates, ADHD is a complex phenomenon that can be understood in different ways. This paper has discussed the nature and effects of ADHD, highlighting cognitive and genetic research, while taking into consideration the role of culture and research in



shaping our understandings. Further, multi-disciplinary research is necessary to extend these understandings.