

## ADHD

It is well established in the research literature that individuals with ADHD have difficulty with "executive functioning" – the processes that reside in the frontal lobes. They enable recall of tasks that need accomplishing, organization to accomplish these tasks, assessment of consequences of actions, prioritization of thoughts and actions, keeping track of time, awareness of interactions with surroundings, the ability to focus despite competing stimuli, and adaptation to changing situations.

Research has identified alterations in the dopaminergic and adrenergic pathways of individuals with ADHD. In particular, areas of the prefrontal cortex appear to be the most affected. Dopamine and norepinephrine are neurotransmitters playing an important role in brain function. The uptake transporters for dopamine and norepinephrine are overly active and clear these neurotransmitters from the synapse faster than in normal individuals. This is thought to increase processing latency and salience, and diminished working memory.

### Anger and Antisocial Behavior

Impulsive behavior is a common effect of ADHD. One example of that is anger. People with ADHD have difficulty controlling their emotions, so they may display violent or hostile behavior that is excessive. In addition, many with ADHD are driven to danger by impulsivity or hyperactivity -- hallmark symptoms of ADHD -- combined with a high need for stimulation and a diminished ability to grasp consequences.

Studies in children with ADHD document strong associations with both antisocial behavior and frontal lobe dysfunction (Moffitt, 1993a, 1993b, Pennington & Ozonoff, 1996).

In her book, *The Biology of Violence*, Dr. Debra Niehoff notes; "*ADHD is not simple misbehavior; it's no more willful than the insensibility of a horse enduring a first-time rider. Attention fails when there's too much to attend to, when the needle of the signal is lost in the haystack a perceptual noise. And overwhelmed brain has no priorities, and without priorities, responsible actions are impossible.*"

*ADHD troubles parents, educators, and child psychiatrist because about half of children who can't pay attention are also behind the door when the rules of conduct are handed out. In the subgroup, inattention festers into an oppositional, hostile defiance that may net them a trip to the nearest mental health professional. If they're not careful, it may land them in the nearest juvenile detention facility. According to Tony Rostain, of the Philadelphia Child Guidance Center, 'It's the kids with the oppositional form of ADHD who develop a real problem with aggression. If you look at kids who present for treatment here in the clinic, probably more than three quarters fall into this category. Inattentive or hyperactive kids who are pleasant socially and get along with others can be managed. The aggressive kids are harder to manage.'*

*Long-term follow-up suggests that the concerns parents and physicians have about hyperactivity is not unfounded. Oppositional ADHD in children can be a prelude to worse behavior in adolescence and adulthood. At least 20 reports linking early hyperactivity and attention deficits to later antisocial or violent behavior have appeared in the clinical literature. Other studies have documented an increased risk for substance abuse and suicide. . . Some children with the aggressive form of ADHD are hostile and impulsive. 'These kids are hypervigilant to the extreme,' explains Rostain. 'They can't calm down enough to pay attention. They're easily frustrated, on a hair trigger.'* Niehoff, D. (1999). *The biology of violence*. The Free Press, p.201-202.

In their book, *Assessing and Managing Violence Risk in Juveniles*, Borum and Verhaagen note; "*Hyperactivity is shown a strong and consistent relationship to violent behavior. Current*

research shows that hyperactive children demonstrate high rates of antisocial behavior and conduct problems in adolescence. . .Hyperactive boys have even been shown to be significantly more violent than their non-hyperactive male siblings. . . Associations have also been found between measures of restlessness and fidgetiness and subsequent violence in males. . .

Manuzza et al. (1989) studied 103 hyperactive males and 100 non-hyperactive controls between 16 and 23 years of age. Hyperactive males were significantly more likely than controls to be arrested for any offense (39% versus 20%) or for a felony (25% versus 7%). A very similar pattern was found in a controlled study, where hyperactive kids had significantly higher rates of arrest (46% hyperactive versus 11% control) and incarceration (22% versus 1%). Hyperactive subjects also had a higher rate of arrest specifically for violent crimes (34% versus 9%). . . Overall, then, ADHD appears to be a significant risk factor for the development and acceleration of violent behavior throughout childhood and adolescence and even into adulthood." Borum, R., Verhaagen, D. (2006). Assessing and managing violence risk in juveniles. Guilford Press, p.37-38.

### **Risky Behaviors**

As a result, they may begin courting problems early. Teens with ADHD get three times as many speeding tickets and are involved in nearly four times as many car accidents as peers without the disorder. In one study of adolescents, more than 50% of teens diagnosed with ADHD contracted a sexually transmitted disease. Risk taking then extends into adulthood in the form of substance abuse, physical fights, habitual gambling, jumping headlong into online relationships with strangers, and other perilous or even life-threatening actions.

George Keepers, MD, is chair of psychiatry at Oregon Health and Science University and director of the OHSU Adult Attention Deficit Disorder Clinic. He notes, "*How might ADHD be at fault? The disorder impairs the brain's executive functions. Where we form judgments, where we predict the future, where we try to conform our actions to tasks that will lead us to success, rather than to failure.*" There is hope, but that is dependent on early medical treatment. "*Their likelihood of avoiding risky behaviors is very much related to whether they're treated,*" Keepers says.

### **Need for Intense Stimulation**

Why do some people with ADHD have a "hunger for intense stimulation," as psychiatrist Edward M. Hallowell, MD, describes in his book *Driven to Distraction?* Thrill or danger may focus the distracted or inattentive mind in a way similar to that of ADHD stimulant medications: by enhancing the release of adrenaline, Hallowell writes. "*Hence, such behavior may constitute a form of self-medication.*"

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Moffitt, T. E. (1993a). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100, 674-701.

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Pennington, B. F., & Ozonoff, S. (1996). Executive functions and developmental psychopathology. *Journal of Child Psychology and Psychiatry*, 37, 51-87.