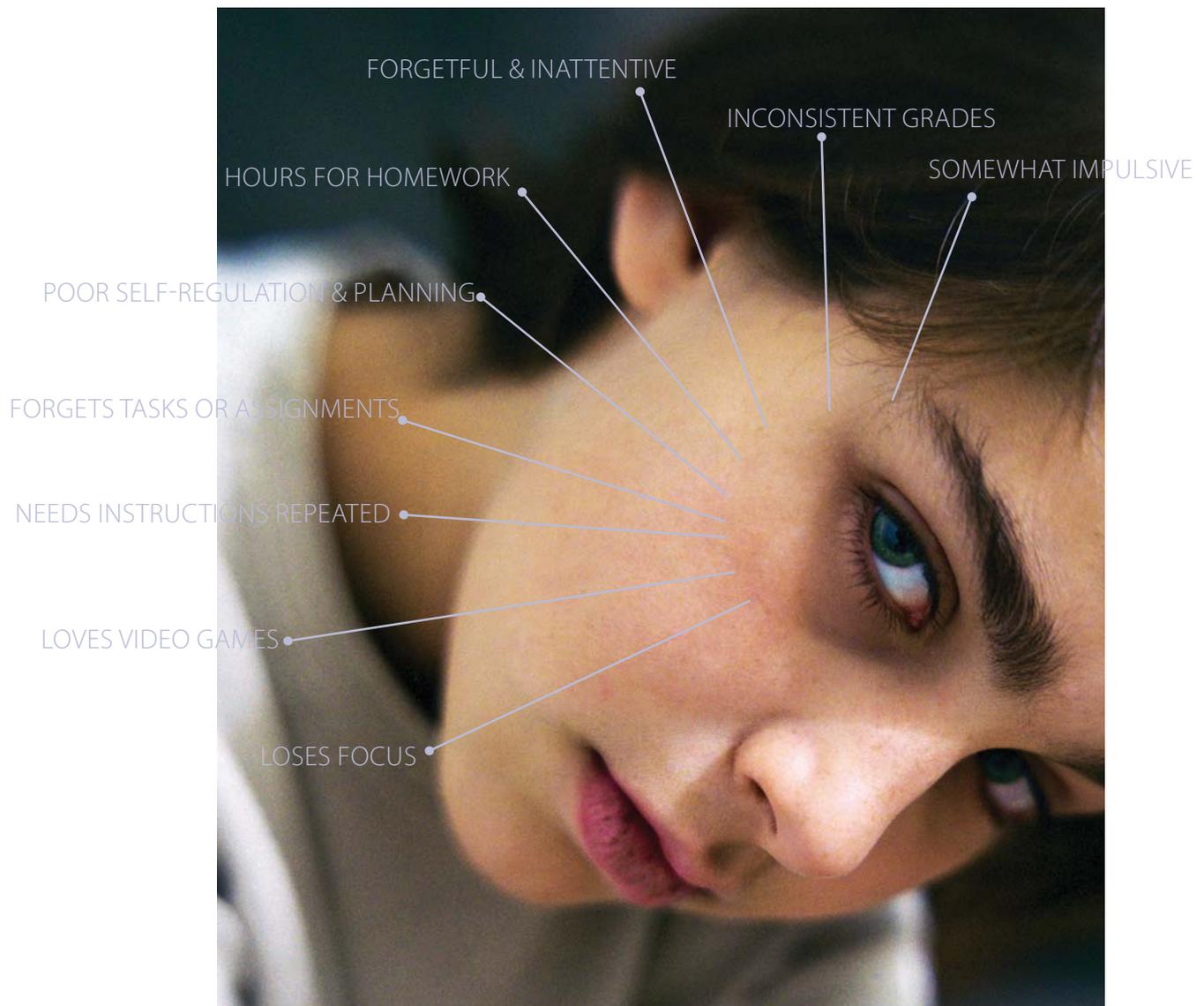


# Unmasking Attention Difficulties

ADD is a common concept in our culture, but what do we really know about it?

Dr. Russell Griffiths navigates the science of ADD and presents encouraging reasons for hope.



**A**ttention Deficit Disorder is characterized by a prolonged history of inattention, impulsiveness, poor concentration, and variable amounts of hyperactivity, all normal human characteristics. All of us are forgetful and inattentive at times, become nervous and fidgety, and are somewhat impulsive. “ADD is not the presence of these behaviors, but the degree to which they manifest. People with ADD have an overabundance of these characteristics.”<sup>1</sup>

by Dr. Russell Griffiths



**BrainRx™**

## In the U.S., over 3 million

**youth** have been diagnosed with ADD. Recent research shows that boys and girls with ADD may be equal in numbers. The American Medical Association states, "ADD is one of the best researched disorders in psychiatry...the overall data on its validity are far more compelling than for most mental disorders and even many medical conditions." According to the Diagnostic and Statistical Manual of Mental Disorders 4th Edition, failing to pay close attention, making careless errors, and having difficulty sustaining attention are the most common symptoms. Consequences of this impairment on learning and academic/vocational progress can be devastating.

## The Science Behind Stimulants

Stimulants were found to have calming effects on disruptive behavior as early as 1937, leading to the widespread use of medications like Ritalin® to treat hyperactivity. Not until the 1980's advent of brain scan technology was the paradox of using stimulants to slow down constantly moving children explained. Neuropsychologists identified weaker activity levels in the frontal lobes resulting in poor self-regulation, planning, and ability to attend to tasks. Stimulant medications strengthen this area by releasing dopamine, a natural stimulant and neurotransmitter normally abundant

in the brain's prefrontal area. An underactive cortex may be less able to use these chemical messengers or have fewer dopamine neurons that connect the lower brain to the prefrontal cortex. Constant motion and risk taking may be an attempt to energize the brain.

## Relief without a Cure

In those with ADD, the frontal cortex (surface) of the brain has more difficulty using glucose (blood sugar) and less blood flow than in people without ADD (Hallowell and Ratey, 1994). The frontal cortex inhibits impulses, initiates behavior, and controls working memory. When underactive, the ability to screen out irrelevant stimuli is reduced and the individual pays attention to everything. This results in poor regulation of the motivation system and makes staying on task difficult without immediate rewards. Video games provide rapid, constant feedback and stimulation and tend to be very engaging for people with ADD. In the case of routine schoolwork, lack of sufficient stimulation results in little sustained

effort and inconsistent academic performance. Students may make mistakes on simple problems but put greater effort into stimulating tasks. Boredom is often mistaken for poor sustained attention when the task is no longer unique.

Approximately 5-15% of the population has ADD and 30% of parents of ADD children have the disorder. Parenting or life situation problems may make attention and learning deficits worse but do not cause the disorder.

**The numbers of boys and girls with ADD may be equal, but the good news is attention is a cognitive skill that can be improved and developed in both.**



## Cumulative Consequences

Attention deficits have serious consequences: failure, dropout, depression, conduct disorders, unsuccessful relationships, workplace underachievement, and substance abuse. Elementary children can't consistently follow expectations: "Stay in your seat, raise your hand, follow directions, and do the work I give you for the time I consider appropriate."

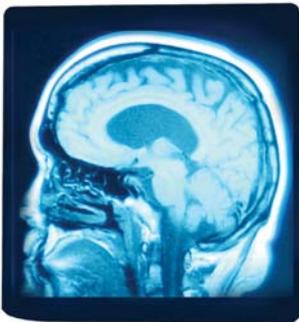
The situation worsens for older students with ADD. Independence, self-direction, and large-scale, long-term projects are common. Frequent class changes bring new environments with different visual and auditory



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stimuli and teachers with contrasting rules and varying personalities. Combine these factors with normal developmental changes and the mix is especially problematic.

Often, symptoms of attention or learning deficits are misunderstood for laziness, lack of motivation, or limited intelligence. Memorization is excessively difficult for ADD students. Many feel inadequate or dumb, avoid homework, need several reminders to get started, and lose motivation through frustration—but they are neither dumb nor lazy. They most likely lack specific cognitive strengths and strategies that make learning easier. Most students with attention



**Study of the prefrontal cortex is focus of much of the scientific research on ADD behavior and brain function.**

problems have one or more learning deficits. The Center for Disease Control reports that about half of all ADD students have learning disabilities.

#### **ADD or Not?**

ADD mimics or is frequently combined with other conditions. Low self-esteem and depression often accompany ADD due to a sense of chronic failure and underachievement. In ADD, an under-energized right cortex may protect against depression,

but combined with weakness in the left cortex, it results in moodiness and irritability. (Depression Beyond Serotonin, H. Marano, 1999). The right side of the brain manages cause and effect relationships, spatial perception, and decision making. An underactive right hemisphere may cause trouble seeing the whole picture, poor spelling, getting lost, losing things, and difficulty adapting to unexpected situations.

A learning disability can be due to a range of processing weaknesses. For example, an auditory processing disorder is characterized by difficulty interpreting and making sense of language—analyzing sounds, recalling verbal information, and organizing thoughts for expression. Imagine sitting through a lecture that is sometimes in your native language and sometimes in ancient Phoenician! How well and how long could you sustain attention? Auditory processing weaknesses, like other specific learning disabilities, often accompany or are misconstrued as attentional weaknesses. Stressful situations, allergies, asthma, diabetes, hearing or vision problems, iron deficiencies, lead intoxication, medication side effects, or thyroid problems can produce symptoms that mimic ADD; however—based on the neurological evidence—bad parenting, laziness, poor motivation, or low intelligence are never a cause.

#### **“Alternative” Medicine: Another Approach**

Based on neuroscientific research, attention is a cognitive skill set that can be improved and developed. Why do schools treat ADD with

accommodations like removing distractions, reducing workload, or isolating students into quiet areas? This may allow better performance temporarily but does nothing to develop the cognitive skill of attention long-term. That would be like treating poor vision by having someone read to you instead of getting glasses, contacts, or having surgery. Your future would be ill served.

#### **How do You Develop Attention?**

Neuroscience shows that by targeting and stimulating the underactive region of the brain responsible for the characteristics of inattention (the prefrontal cortex), attention can be strengthened. Therefore, the correct approach is the opposite of the usual accommodations used. Besides, it's not that the person is not paying attention—they pay attention to every environmental stimulus. Attention develops when a person performs a task requiring attention while exposed to structured distracting stimuli. This designed intensity and distraction is at the core of cognitive skills training aimed at improving attention. Unlike biofeedback or neurofeedback that simply identifies underactive brainwaves, cognitive training alters brain structure to strengthen cognitive function. It is active rather than passive, just like diet and exercise improve health and conditioning. Those with ADD deserve the opportunity to overcome distractions and limitations this disorder presents. Appropriate training, not accommodation, presents that opportunity.

