Attention Deficit/Hyperactivity Disorder

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Attention-Deficit/Hyperactivity Disorder

Attention-deficit Disorder with or without hyperactivity (ADD/ADHD) is not a new disorder and it is a relatively common problem affecting the average classroom. It was once believed to be a specific childhood disorder consisting of chronic inattention, impulsivity, and/or hyperactivity that were outgrown in during adolescence; however, ADD/ADHD is now recognized as a disorder that spans a lifetime. According to Nadeau (1996), not until the 1980s did attention problems in adults began to gain recognition in the scientific community. Currently, ADD/ADHD is estimated to range between 3% to 5% of all school-age children, and represents an average of “one to three children either diagnosed as ADHD or presenting problems typically associated with ADHD,” in a typical classroom, as cited by Heward (2000).

The disorder can be very problematic to the individual, and may cause significant underachievement in the classroom. Adults with ADD/ADHD are also faced with the multidimensional aspects of the disorder, and therefore, require similar strategies and accommodations to meet the challenges of the disorder.

The past one hundred years has witnessed the existence of ADD/ADHD and its multitude of name. As far back as the early 1900s, the popular literature of D. H. Lawrence writes of a schoolboy named Tom Brangwen who could not control his attention (Quinn, 1997). Quinn (1997) also references, “one of the first discussions of the disorder was probably that by Dr. Still in the British medical journal *Lancet* in 1902.” Then, at the end of World War I, an epidemic of encephalitis developed in some children behavioral traits identified as hyperactivity. This is the origin of the now discredited label *minimal brain damage* (MBD). Eventually, the label was replaced by *minimal*
Although ADD/ADHD is often associated with brain dysfunction, although the label continues to circulate scientific literature.

For many years the disorder was known as “hyperactivity,” but as times changed so did the focus of the disorder. During the late 1970s, attention began to shift toward other symptoms experience, namely, difficulties with distractibility and inattention. Since 1980, the preferred label of Attention Deficit Disorder with or without Hyperactivity (ADD/ADHD) has been used. The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (1994) is the first medical acknowledgment of diagnostic criteria. It includes three subtypes of the disorder: combined type; predominately hyperactive-impulsive type; and predominantly inattentive type.

The following is a time-line of different labels given to the disorder over the past several decades:

1940 Minimal Brain Damage
1957 Hyperkinetic Impulse Disorder
1960 Minimal Brain Dysfunction (MBD)
1968 Hyperkinetic Reaction of Childhood
1980 Attention Deficit Disorder with hyperactivity

There are several suspected causes for Attention-Deficit Disorder, however the exact nature of the disorder is unknown. Many theories cite causes ranging from genetics, to brain injury, and abnormalities in the brain’s neurotransmitters. There are also several treatments available, including behavioral programs and drug therapies. Most individuals practice some kind of therapy, and are able to experience success in school and the workplace, although much research is still needed in the understanding and treatment of Attention-Deficit Disorder.

School systems are beginning to better understand ADD/ADHD, teachers are responding to the needs of students with the disorders. Federal resources and special education for students with severe problems in Attention-Deficit are being allocated.
Children identified are being served with appropriate educational programs that improve learning and increase academic performance. Likewise, teachers and administrators are receiving in-service training about ADD/ADHD, as information about the disorder propagates the school systems around the country.
Characteristics of Attention Deficit Disorder

Attention Deficit Disorder (ADD) is characterized by attention skills that are developmentally inappropriate. There are different types of attention deficit disorders. Some individuals with ADD are exceptionally hyperactive and impulsive, others experience problems with inattention, and some have a combination of all three characteristics. For the ADD individual, these primary characteristics are prevalent to a far greater degree, and in a wider range of situations and circumstances, than would be described for normal behavior. Normal behavior is that which does not interfere with an individual’s ability to cope with the environment and interact with others.

Hyperactivity

Hyperactive children tend to be excessively restless, overactive, and easily provoked to excessive emotion in far greater amounts than and in many more situations when compared to the non-hyperactive individual. According to Whalen and Henker (1980), hyperactive children have difficulty controlling their bodies in situations that require them to sit still for a long time. Both, our society and American culture hold high ideals on children sitting still, paying attention, and planning and arriving at finished products. These demands are also required of very young children. The hyperactive child, who is unable to meet these demands, because of difficulty paying attention, controlling body movements and emotions, and not thinking before acting, is an immediate candidate for a myriad of problems. For the hyperactive child, daily life is a series of challenges brought about by a number of specific skill deficiencies and/or weaknesses.
Impulsivity

Some individuals with ADD have difficulty thinking before they act and difficulty following rules. They often understand and know the rules, but their need to act quickly overwhelms their limited ability for self-control. Studies by Hinshaw (1994) have shown that the majority of hyperactive children with ADD are also impulsive. A distinction between hyperactivity and impulsivity is made, because several non-hyperactive individuals with ADD display impulsive tendencies. This results in inappropriate, non-thinking behavior.

This behavior may result from severe mood swings of emotion that cause frustration and impatience. These emotional highs and lows may produce a sense of urgency and cause the individual to make faster and more irrational decisions compared to the non-ADD person.

Inattention

Most individuals with Attention-deficit disorder (ADD) have major difficulties concentrating on tasks everything going on around them. Their short span of attention causes many problems in communication, because they often cannot stay focused when listening to someone. “During conversation, their mind tends to wonder away from the discussion and toward the numerous distractions of images and sounds in their environment” (Parker, 1999).

As a consequence of this inattention, the problems associated with following directions results because the directions weren’t fully received and understood in the first place. It is believed that ADD individuals have difficulty processing auditory or verbal information, and paying attention consistently, when compared with their peers. This is
especially evident when encountering boring, uninteresting or repetitive tasks. Attention, however, is a complex process requiring an individual to consistently apply different skills in order to function effectively in the classroom. Success is dependent upon a student’s ability to develop a number of attention-oriented strategies, as indicated by Bramer (1996), these include the ability to “focus attention appropriately at any given moment, to begin an assigned task, to sustain attention long enough for task completion, to ignore distractions, to divide attention (i.e., be able to take notes and listen to the teacher at the same time), and to be vigilant or ready to respond during group activities.”

Suspected Causes of Attention Deficit Disorder

The precise etiology of ADD/ADHD is unknown. There are numerous suspected causes and they include many unproven theories. Rief (1993) identifies several which have been discarded for lack scientific support, these include and are not limited to: the notion that diet and food allergies are responsible, ill-effects of fluorescent lighting, misalignment of the spine, candidas yeast infection, and inner ear disorders. Of the several theories that have continued to receive recognition in both the scientific community and among victims and families of individuals with Attention-deficit Disorder, just a few are described here.

*Molecular Genetic Influence*

There seems to be a distinct relationship between Attention-deficit and heredity. Studies by Fontenelle (1992), involving the relatives of children with ADD, find evidence that children with this disorder were four times more likely to have other family members
with the same problem, giving reason to believe that there is a genetic predisposition to the disorder. Many more boys than girls are affected by hyperactivity and this suggests a genetic predisposition in boys. (Goldstein & Goldstein, 1992)

Barkley (1995) references several studies lending to a tendency toward problems in the development of the frontal cortex of the brain and the caudate nucleus. In addition, he includes research conducted by Dr. Joseph Biederman and colleagues, which may have already identified one gene related to the disorder. However, much research is still needed and ongoing.

*Neurobiological Theory*

Functional deficiencies of the parts of the brain that are associated with the control and regulation of attention, arousal, and have also been suspected of causing Attention-deficit Disorder. The cause of these deficiencies is not known. Neurochemical functioning plays an important role in ADD. The brain is a complex network of nerve cell, neurons, which transmit information to each other. Parker (1996) describes this telecommunications network as, “…messages in the brain are transferred by electrical conduction with a nerve cell and by chemical conduction between nerve cells.”
The chemical substances produced by the brain, the neurotransmitters, are believed to be the origin of ADHD. In particular, an underproduction or an altered function of one of these neurotransmitters, dopamine, is believed to be responsible for the disruptive effects on emotions and behavior.

Any disruption in transmission may produce a poorly functioning networking system. This system influences many transmissions throughout the brain. Cells located in the brain may be able to modify behavior by communicating with other cells throughout the brain. The deterrence in the normal distribution of chemicals to other cells within the brain makes them more or less responsive to input from other cells. This transaction between the cells of the brain, and thus the child, may become more or less sensitive to outside distractions depending on the effect of the networking system (Parker 1996).

**Brain Damage**

It was long thought that each area of the brain had a specific function. According to this reasoning, injury/damage to one area of the brain would result in a decrease or elimination of the brain’s ability to carry out only the function controlled by that part of the brain. Research by Quinn (1997) finds that the ability to concentrate and pay attention deteriorates after brain injury regardless of which area of the brain was injured.

Much of what is known about the function of different parts of the brain comes from observations of people who have suffered accidental injuries. Goldstein and Goldstein (1992), discuss a “clinical pattern of change” that results from injury to specific areas of the brain:
“Injuries to the right side of the brain result in deficiencies or difficulties with the left side of the body. Injuries to the frontal lobes result in inability to use the motor system. Injuries to the parietal lobes result in inability to use the sensory system, and injuries to the occipital lobes result in inability to use the visual system. When the brain stem is damaged, loss of consciousness occurs.”

In a report by the Surgeon General, some investigators report that exposure to toxins, such as lead, or episodes of oxygen deprivation from the fetus, may cause brain damage, by adversely affecting the dopamine-rich areas of the brain (Greenhill and Osman, 2000). These theories support observations that symptoms suffered by ADD/ADHD children are more common in children whose mothers smoked during pregnancy, in children who have been exposed to high quantities of lead, and in children who had a lack of oxygen in the neonatal period.

Myths and Misconceptions

There is no doubt that falsehoods concerning the causes of Attention-deficit Disorder surround the subject and continue to cause fear and confusion. One popular belief held that eating foods that contained additives and preservatives caused ADD/ADHD. Dr. Benjamin Feingold backed the claim in the 1970’s and early 1980’s; however, substantial research done was unable to support Feingold’s claim, “only a very small number (5% or less) of mainly preschoolers showed a slight increase in activity or inattentiveness when consuming these substances.” However, “No evidence has ever
been provided that normal children develop ADHD by consuming such substances or that ADHD children are made considerable worse by eating them” (Barkley 1995).

Other disclaimed studies show links to ADD/ADHD. Many include the ideas that low thyroid hormone levels were responsible, or that fluorescent lighting gave off certain soft X-rays and radio frequencies that made children hyperactive. Still other notions credited ADD/ADHD to motion sickness, or to toxins given off by yeast that lives in the body. Finally, theories that blame environmental factors, especially bad parenting, were the major cause of Attention-deficit Disorder. None of which have received much support in the scientific literature (Barkley 1995).

Diagnostic Criteria for Attention Deficit/Hyperactivity Disorder

When diagnosing behavioral characteristics that are reported subjectively, the process becomes problematic and complex. Because these reports on an individual’s behavior come from those who normally contribute to the individual’s environment, attitudes and biased observations may affect those perceptions. Nevertheless, physicians must consider ratings and observations for proper diagnosis of ADD/ADHD, because the disorder cannot only interfere with learning and behavioral control in childhood, but it can profoundly compromise functioning in multiple areas throughout the life span.

Behavior Patterns and Characteristics

Since the behavior of ADD/ADHD individuals varies from situation to situation and from day to day, it is important to note patterns of inconsistency in behavioral. Reports should include observations of children over long periods of time and in
comparison to other children of the same age. This includes the elimination of other disorders with similar characteristics. Fowler (1990) cites several types of information, which are critical in proper diagnosis. These include the following:

- The onset, severity and frequency of the troublesome behaviors and their possible precipitating factors.
- The history of mental health problems or childhood hyperactivity in the parents and their siblings as well as in the child’s siblings.
- The number of children in the family and the amount and severity of sibling rivalry.
- The presence of marital discord and other family stressors.
- How the family is coping with the ADD/ADHD child or individual and what supports are available to them in the community.
- The consistency of parental disciplinary measures and the child’s responses to them.
- Maternal health problems during pregnancy and the events associated with labor, delivery and the early days of life.
- Feeding and sleeping problems in the child or individual during infancy.
- Medications that the child or individual may be taking.

This type of detailed information assists in documenting patterns of behavior and changes in age and maturation. Beginning with infancy, ADD, and in particular ADHD, is often noticeable in the first year of life. The infant may wiggle constantly, even before birth. He may demand constant attention and cry or fuss non-stop. There may be
disturbed patterns of feeding and sleeping, which continue long beyond the age when most children begin to sleep through the night. As the child begins to crawl and walk he usually experiences more than his share of accidents.

Upon entering preschool his excessive motor activities becomes more obvious, and difficulties with attention and impulse control escalate. Signs of aggression and temper tantrums are normal observations when at play. Impulsivity may create situations of disaster as the child engages in dangerous activities, such as dashing across a street without looking, or climbing up a bookshelf or inside a refrigerator to retrieve an item.

An ADD/ADHD child is able to learn rules of good behavior, but has great difficulty abiding by these rules unless he is constantly guide and redirected. Because of this lack of ability, his school years are plagued with troublesome occurrences. Since the child cannot attend long enough to a task, he usually has several incomplete projects and assignments. Consequently, he lags behind his peers in academics and in social abilities. His behavior usually includes excessive talking, with loud outbursts and out of turn responds. These classroom disruptions place him in bad favor among his peers, teachers, and parents (Quinn, 1997).

During preadolescence, poor impulse control and restlessness usually interferes with his social interactions. Many children become isolated and/or depressed, because social skills become counterproductive. This in combination with his disregard for rules and low level of tolerance for frustrations may lead to antisocial and delinquent behavior, further alienating the individual. According to Bramer (1996), hyperactivity is usually suppressed with age, although, inattention and impulsivity may continue into adulthood.
Medical Examination

Children of school age are often brought to the physicians at the request of their teachers. Frequently, the parents report that the child’s teacher has recommended a neurological examination for the child. Commonly, children with ADD/ADHD test poorly in their ability to balance on one foot, hop, or to move hands back and forth rapidly, signifying delays in the maturation of their nervous system. They may also have difficulties knowing the right and left sides of their own body (Quinn, 1997).

The experienced physician knows that a good and complete medical examination, including an assessment of the child’s hearing and vision, is essential for ruling out any possible physical problems and come to a proper diagnosis. As Parker (1996, ¶ 1) phrased it, “Using sophisticated technologies such as computerized axial tomography (CT) scans and magnetic resonance imaging (MRI), scientists have tried to determine structural abnormalities in the brains of those with ADD. Findings have been inconclusive. Another line of research investigating electrical activity in the brain’s cortex using electroencephalogram (EEG) or evoked potential responses also has not been conclusive.”

Psychological Tests

The clinical or school psychologist is trained to administer and interpret psychological and educational tests that can provide important information about the child’s intellectual ability, reasoning skills, use of language, perceptual development, impulsiveness, attention span, and emotional functioning. The psychologist may also ask the parents to fill out questionnaires to assess how the child reacts in different situations.
There are numerous psychological tests, but the most commonly used test of intelligence in schools is the revised Wechsler Intelligence Scales for Children (WISC-III, 1991). This test for use with children ages 6 to 16 and yields a composite IQ score from six verbal subscales, and a performance IQ from the six performance subscales. This test requires the child to focus and sustain attention in several areas; consequently, a majority of children with ADHD often score low in these subscales because of their characteristically low inattention level (Hartmann, 1993).

Currently, the *Diagnostic and Statistical Manual of Mental Disorder (DSM IV)*, published by the American Psychiatric Association (1994), specifies criteria for the diagnosis of Attention Deficit/Hyperactivity Disorder. The majority of cases involving the diagnosis of ADD/ADHD usually require the diagnostic evaluation input of a team consisting of a trained physician, the individual’s teacher and parents, and others professionally involved with the individual. The individual must consistently display six or more symptoms of either inattention or hyperactivity for a period of at least six months, as indicated by the diagnostic criteria for ADD/ADHD:

A. Either (1) or (2):

(1) Six (or more) of the following symptoms of *inattention* have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

*Inattention*

(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
(b) often has difficulty sustaining attention in tasks or play activities
(c) often does not seem to listen when spoken to directly
(d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
(e) often has difficulty organizing tasks and activities
(f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
(g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
(h) is often easily distracted by extraneous stimuli
(i) is often forgetful in daily activities
(2) Six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

**Hyperactivity**
- (a) often fidgets with hands or feet or squirms in seat
- (b) often leaves seat in classroom or in other situations in which remaining seated is expected
- (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
- (d) often has difficulty playing or engaging in leisure activities quietly
- (e) is often “on the go” or often acts as if “driven by a motor”
- (f) often talks excessively **Impulsivity**
- (g) often blurts out answers before questions have been completed
- (h) often has difficulty awaiting turn
- (i) often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

D. Clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Behavior rating scales are used in addition to assess the child’s behavior in school and at home. Such scales offer quantifiable, descriptive information about the child, thus providing a means by which to compare the child’s behavior to that of others of the same sex and age. Whalen and Henker (1980) support the use of rating scales to assess ADDADHD, because they provide standardized scores on a number of factors, usually related to attention span, self-control, learning ability, hyperactivity, aggression, social behavior, and anxiety.

Medical and psychological evaluations provide very useful information for making the diagnosis of ADD/ADHD. When considered in conjunction with the history of the child’s problem, proper diagnosis of ADHD can be achieved with a relatively high degree of reliability.
Treatment of Attention Deficit Disorder

Once a diagnosis of ADD/ADHD has been made in an individual appropriate treatment is available to facilitate proper adjustment. Instructional targets are the focus when identifying deficits and intervention. Common treatments involve different levels of intervention ranging from medical management to behavioral modifications (Diller 1998). Not all children with ADD/ADHD require medication to manage their behavior, either because their deficits are mild and can be managed by behavior modification strategies, or because their environments both at school and at home are able to arranged in way as to compensate for the child’s attentional deficits.

A single-modality of treatment is generally not effect in dealing with the wide range of symptoms and the problems faced by individual with ADD/ADHD. Any successful plan must consider a number of strategies in the diagnosis and treatment of Attention-deficit. Although the scope of treatments is far-reaching, only two will be discuss here, those include the use of psychostimulant agents and their side affects, and behavioral approaches focusing in behavioral modification techniques.

*Psychostimulant Agents*

Medication has long been considered the single most effective treatment for ADD/ADHD. The most widely prescribed drugs, according to DeGrandpre (1999), include stimulant medications, such as Ritalin, Dexedrine, and Cylert. It is suspected that these agents have an increased alertness effect on the central nervous system, especially influencing the neurotransmitter chemicals of the brain. Following are some name brands (Bramer, 1996) along with dosages, side effects, and considerations:
<table>
<thead>
<tr>
<th>DRUG</th>
<th>DOsing</th>
<th>COMMON SIDE EFFECTS</th>
<th>DURATION OF BEHAVIORAL EFFECTS</th>
<th>PROS</th>
<th>PRECAUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RITALIN* Methyphenidate Tablets</td>
<td>Start with a morning dose of 5 mg/day and increase up to 0.3-0.7 mg/kg of body weight.</td>
<td>Insomnia, decreased appetite, weight loss, headache, irritability, stomachache</td>
<td>3-4 hours</td>
<td>Works quickly (within 30-60 minutes); effective in about 50% of adult patients; good safety record</td>
<td>Not recommended in patients with marked anxiety, motor tics, family history of Tourette syndrome, or history of substance abuse.</td>
</tr>
<tr>
<td>RITALIN-SR Methyphenidate Tablet</td>
<td>Start with a morning dose of 20 mg and increase up to 0.3-0.7 mg/kg of body weight. Sometimes 5 or 10 mg standard tablet added in morning for quick start. Up to 60 mg/day.*</td>
<td>Insomnia, decreased appetite, weight loss, headache, irritability, stomachache</td>
<td>About 7 hours</td>
<td>Particularly useful for adolescents and adults to avoid needing a noon time dose; good safety record</td>
<td>Slow onset of action (1-2 hours), not recommended in patients with marked anxiety, motor tics, family history of Tourette syndrome, or history of substance abuse.</td>
</tr>
<tr>
<td>DEXEDRINE* Dextroamphetamine Tablet Spansules 5 mg 5 mg 10 mg Elixir 15 mg</td>
<td>Start with a morning dose of 5 mg/day and increase up to 0.3-0.7 mg/kg of body weight. Give in divided doses 2-3 times per day. 2.5-40 mg/day.*</td>
<td>Insomnia, decreased appetite, weight loss, headache, irritability, stomachache</td>
<td>3-4 hours (tablets) 8-10 hours (spansules)</td>
<td>Works quickly (within 30-60 minutes); may avoid noon time dose in spansule form; good safety record</td>
<td>Not recommended in patients with marked anxiety, motor tics, family history of Tourette syndrome, or history of substance abuse.</td>
</tr>
<tr>
<td>CYELERT* Penetline Tablets (long acting) 18.75 mg 37.5 mg 75 mg 37.5 mg chewable</td>
<td>Start with a dose of 18.75-37.5 mg and increase up to 112.5 mg as needed in a single morning dose. 18.75-112.5 mg/day.*</td>
<td>Insomnia, agitation, headache, stomachache; infrequently, abnormal liver function tests have been reported</td>
<td>12-24 hours</td>
<td>Given only once a day</td>
<td>May take 2-4 weeks for clinical response; regular blood tests needed to check liver function.</td>
</tr>
<tr>
<td>TOFRANIL* Imipramine Hydrochloride Tablets 10 mg 25 mg 50 mg</td>
<td>Start with a dose of 25 mg in evening and increase 25 mg every 3-5 days as needed. Given in single or divided doses, morning and evening. 25-150 mg/day.*</td>
<td>Dry mouth, decreased appetite, headache, stomachache, dizziness, constipation, mild tachycardia</td>
<td>12-24 hours</td>
<td>Helpful for ADD patients with comorbid depression or anxiety; lasts throughout the day</td>
<td>May take 2-4 weeks for clinical response; to detect pre-existing cardiac defect a baseline ECG may be recommended. Discontinue gradually.</td>
</tr>
<tr>
<td>NORPRAMIN* Desipramine Hydrochloride 10 mg 25 mg 50 mg 100 mg 50 mg 150 mg</td>
<td>Start with a dose of 25 mg in evening and increase 25 mg every 3-5 days as needed. Given in single or divided doses, morning and evening. 25-150 mg/day.*</td>
<td>Dry mouth, decreased appetite, headache, stomachache, dizziness, constipation, mild tachycardia</td>
<td>12-24 hours</td>
<td>Helpful for ADD patients with comorbid depression or anxiety; lasts throughout the day</td>
<td>May take 2-4 weeks for clinical response; to detect pre-existing cardiac defect a baseline ECG may be recommended. Discontinue gradually.</td>
</tr>
<tr>
<td>CATAPRES* Clonidine Tablets Patches .1 mg TTS-1 .2 mg TTS-2 .3 mg TTS-3</td>
<td>Start with dose of .025-.05 mg/day in evening and increase by similar dose every 3-7 days as needed. Given in divided doses 3-4 times per day. 0.15-3 mg/day.*</td>
<td>Sleepiness, hypotension, headache, dizziness, stomachache, nausea, dry mouth, localized skin reactions with patch</td>
<td>3-6 hours (oral form) 5 days (skin patch)</td>
<td>Helpful for ADHD patients with co-morbid tic disorder or severe hyperactivity and/ or aggression</td>
<td>Sudden discontinuation could result in rebound hypertension; to avoid daytime tiredness starting dose given at bedtime and increased slowly.</td>
</tr>
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</table>
The most commonly prescribed psychostimulant agent is *methylphenidate*, best known by its brand name Ritalin. It has been shown to have a major effect in improving levels in attention and decreasing levels of hyperactivity in children. Its effectiveness is to the point that test scores, including, auditory attention and processing skills of children with ADD/ADHD no longer differ from those of normal children. The specific action that the stimulants have on the brain functioning is unclear, but neurotransmitter chemicals have an increased synapse between neurons in the brain. “One of the chief attractions of Ritalin is the rapidity of its effects,” Diller (1998).

Other commonly used drugs include *pemoline*, which is marketed under its brand name Cylert. This long-lasting stimulant drug enables an individual to take only one dosage. Similarly, *dextroamphetamine*, prescribed under the name Dexedrine, usually requires only one sustained-released (SR) dosage, however, there are several problems prescribing these agents.

Ritalin, and other stimulants, has a remarkable effect in the socio-adaptive behavior of individuals identified with ADD/ADHD. Thus enabling the child to better focus attention, control, impulsiveness, regulate motor activity, improve visual-motor coordination, and in general exhibit more purposeful, attention-oriented behavior.

*Side Affects*

Normally, stimulant drugs have remarkably few side effects, if they are given in appropriate doses, however, some short and long term side effects exists. The majority of concerns in prescribing psychostimulant agents involve difficulties in dosage adjustments. According to Greenhill and Osman (2000), decisions are made by trial and
error, and several dosages may need experimentation with until the proper dosage is found. As with all stimulants, appetite suppression is of great concern and needs to be monitored when prescribing these agents. When the medication is taken 15 to 30 minutes before breakfast or lunch, the child’s appetite will resume four to five hours after the drug intake. If poor appetite persists, the medication dose should be decreased.

Other side effects include sleep interference but are usually not a problem when the child’s last dose of daily medication is given with enough time to wear off before bedtime. If difficulty continues, the dose should be reduced. Occasionally, an individual may complain of abdominal pains or butterflies in his stomach during the first few days of treatment, as well as, headaches or a light-headed, dizzy feeling (Diller, 1998).

Individuals taking psychostimulant drugs seldom become depressed, although if the individual becomes dazed, listless or lethargic, a reduction in the dose is usually indicated, and will promptly eliminate this problem. Quinn (1997) identifies tremors and nervous tics as signs that need to be reported immediately to the physician, but she includes, are sometimes experienced on rare occasions by individuals taking drug therapy. Similarly, a slight rise in blood pressure and pulse is normal. Therefore, the individual’s blood pressure, pulse, height and weight should be checked every three to six months.

Psychological side effects of drug therapy may be extremely beneficial. An enhanced sense of self-esteem and improvement in the child’s behavior and his interpersonal relationships is probably the greatest reason for drug therapy. Changes in the parents’ and teacher’s attitude towards the child in response to his improved behavior, can be very beneficial to child’s success in school and in his home environment.
Behavior Modification

Behavior modification is based on the principle that our behavior is influenced and can be changed by the type of response it elicits, as indicated by Fowler (1990). Since an individual is influenced by the behavior and responses of parents and people in his environment, it is believed that an individual should be able to modify his behavioral according to norms set forth by the major factors governing society. Therefore, a child can bring about a change in his behavior by modeling the behavioral responses of parents, teachers, and others.

Parents and teachers, normally implement behavior modification programs devised by a psychologist/psychiatrist for a child diagnosed with ADD/ADHD. Procedures assist in bringing the child’s behavior more in line with societal norms and expectations. Parker (1999) relates that the goal is to teach the child certain behaviors, such as, behaving properly, recognizing and following rules, cooperating with others, and becoming a better listener. These programs usually involve precise, on-the-spot procedures, incorporated into the classroom by the child’s teacher. The idea is that once a child learns these skills, he will have more positive and rewarding relationships with other people and will better function in the home, school, and community.

The principle is to apply systematic acknowledgement and reward for the good things the child does, for instance, identifying when the child cooperates, pays attention, sits still, plays quietly and completes a task, while avoiding reinforcement of his undesirable behaviors. According to Rief (1993), minor undesirable behaviors should best be ignored. It is believed that the consequences that follow the performance of that behavior will alter previously bad behaviors. If an action is followed by a pleasant or
rewarding experience, that action is more likely to be repeated by the child in similar circumstances in the future. Likewise, when everyone in the child’s environment can consistently ignore an undesirable behavior, the greater the likelihood of obtaining desired behavioral effects.

*Cognitive Behavior Therapy*

Cognitive behavior therapy as applied to children with ADHD, aims to improve their problem-solving skills and self control through teaching them to use “inner speech” to guide their behavior. They are taught to monitor and evaluate their own performances, to instruct themselves to follow a sequence of steps in problem solving and to provide themselves with appropriate, constructive consequences for their own behavior. It is most effective when used with children eight years of age and older, because they are more likely to have the necessary mental maturity to implement it.

Through a combination of discussion, demonstration/modeling, and rehearsal, the child is taught a set of verbal self-instructions. It follows a sequence of steps: defining the problem, approaching the problem, focusing attention, choosing a response, carrying out the response, self-evaluation, and self-reinforcement (Parker, 1996).

The sequence of steps is tailored to the needs and abilities of the individual child, and altered as necessary to fit specific problems. The child practices using the steps, first on impersonal and non-threatening problems such as games, maze puzzles, and school-like tasks (for example, simple arithmetic problems) and then on more emotionally loaded interpersonal problems. Bramer (1996) describes how hypothetical problems are role played by the therapist and child or group of children, using the verbal self-
instructions to generate more socially appropriate responses. Practice within the therapy sessions is supplemented by “homework” assignments requiring the child to apply these steps to problems encountered at home and at school. Parents and teachers are also taught how to prompt the child to use the steps if he forgets to use them in a situation where they might be helpful.

Like behavior modification, cognitive behavior therapy seems to be an effective tool for improving the behavior of children with ADHD. However, its long-term effectiveness has not been established as yet.

The social skill deficits that so often accompany ADHD are often the most troublesome aspects of this disorder. Chronic social failure is likely to lead to demoralization and lowered self-esteem, and the further problems that these create. Thus, it is of vital importance that these children be given direct instructions in the social skills they lack, as it cannot be assumed that they will just “pick them up” the way most children do. Parents and other caring adults should take pains to provide opportunities for social success.

Teaching Children with Attention Deficit Disorder

Every teacher needs to have a set of well-defined boundaries for all the students to follow in the classroom. This section attempts to focus on teaching children with ADD/ADHD, and therefore, will relate strategies for those particular students. Lesson plans should be designed around what interests students what motivates them. Parker (1996) believes that the teacher should praise positive efforts by the student and that a student’s success in school should be communicated to the parents at home for
additional reinforcement.

Maintaining a structured classroom is probably the single most effective strategy for providing the ideal learning environment for children with ADD/ADHD. Teachers should strive to maintain organization and routine that students are required to abide by. Clearly defined classroom rules communicate teacher expectations regarding student behavior and performance. Rules must be enforced in a consistent manner, and similar behavior should be expected at home.

Students with ADD/ADHD should be expected to organize their belongings, as well as, their assignments. Most of these students experience great difficulty attending to this task; nevertheless, teachers should maintain expectations, although to a level at which the student will experience some success. Students will also need help in setting realistic goals for completing projects. There will be greater chances of success if projects are reduced into smaller assignments with a time-line for completion. It is important that teachers and parents maintain a positive attitude and adjust expectations accordingly.

For students having difficulty paying attention, teachers need to modify instructional methods. It is important for teachers to make eye contact when giving directions and assignments. The use of computer assisted learning materials has been demonstrated as a very effective technique to learning. These methods have proven to be great tools for the easily distracted child. Other recommendations involve shortening assignments, giving the child extra time to complete work when necessary, providing breaks within a long work period, or by prompting the ADD child to stay on task. These allowances are a necessary means for the student’s success (Parker, 1999).
Adults with Attention Deficit Disorder

Although ADD/ADHD was originally believed to be primarily a childhood disorder, many adults are being identified and treated. Thanks to research, there is a wide range of effective treatments proven to be effective; of which, may include counseling, medication, accommodations in school and the workplace, and education about this disorder (Nadeau, 1996).

Many problems experienced by the adult with ADD/ADHD mirror those experienced by adolescence, with the exception of hyperactive, which seems to decrease with age (Quinn, 1995). Symptoms of inattention and distractibility can limit a person’s ability to function successfully in their environment. This is especially the case with individual’s suffering from low self-esteem, anxiety, depression and, to a lesser extent, substance abuse are common problems. Not all adult experience such difficulties, although the likelihood of obstacles interfering with success in school, career, social and family life is of increased concern for adults with ADD/ADHD. Difficulties in the workplace are often plagued by the individual’s lack organization and his tendencies toward distractibility. Without proper treatment and accommodations, Nadeau (1996) claims that the individual with ADD/ADHD usually has a difficult time keeping a job or “moving up the corporate latter.”

The impact ADD/ADHD has on an individual’s relationships can be devastating. Social difficulties may include an individual being overly intrusive, forgetful, and/or suffer from mood swings. These problems inevitably cause strain on relationships, making it difficult for persons to keep friends. Others may misinterpret their behavior as rude, self-centered, or irresponsible. Some adults with ADD withdraw from relationships
and social gatherings because of previous experiences of rejection or misunderstanding. Many continue to exhibit the same pattern of inappropriate social behavior that has led to this rejection, not realizing how their behavior affects others (Bramer, 1996).

Unmonitored Attention-Deficit may cause distress in marital relationships, and life as a family unit may be stressful and chaotic. Communication between spouses/mates and between any children within the family may be affected by the disorder’s characteristics, causing problems and creating an unharmonious living environment.

Special Education and the Civil Rights of Individuals with Learning Disabilities

According to Quinn (1997), Attention-Deficit Disorder becomes a disability under federal law when it substantially limits a major life activity such as learning or working (Quinn, 1997). Therefore, individuals with Attention-Deficit Disorder are protected by the Individuals with Disabilities Act (IDEA), Section 504 of the Rehabilitation Act, and the Americans with Disabilities Act of 1990 (ADA).

The complexity of this disorder impedes its recognized acceptance as a disability category of IDEA, although, services are possible under the category of “other health impairments”. Since most children function adequately in a regular classroom with teacher modifications and intense supports, the likelihood that this disorder will receive appropriated attention from agencies is slim. Only in the case of special education are services provided to children requiring assistance. Supplemental services to the student can come in the form of a trained behavioral consultant, or resource programs wherein the individual receives extra help from a special education teacher who is trained to
teacher children with Attention-Deficit Disorder. Similarly, in the rare case that a child with ADD/ADHD has in combination of other learning disabilities or emotional disturbances, he may be placed in a self-contained classroom with special supports (Quinn, 1995).

After admittance into a program, the law requires that services for students that qualify have an individualized educational program, an IEP, created by a team of professionals for the school to follow in delivering services to the student. It is a comprehensive plan that tells where the student is in terms of certain specified skills, where the student is expected to be in the future, how the student will acquire the skills, how long it should take, and how to measure if the program was successful. In addition, the IEP process must plan meetings with parents and school officials at a mutually agreed time and place, and must be reviewed at least once a year, but more often if deemed necessary, or by parental request.

**Prognosis for Individuals with Attention-Deficit Disorder**

Individuals with Attention-Deficit Disorder, from infancy to adulthood, have special circumstances to deal with, although diagnosis doesn’t have to mean failure. Many individuals experience very positive effects. Because of the range of characteristics of the disorder, many individuals credit their ADD/ADHD for the major successes in life. They have learned to recognize the unique energy in creativity and spontaneity, which allows some of them the ability to engage in several different tasks at once.

Even as risk-takers, individuals with ADD/ADHD have created new innovative
ideas and products. In the right environment, adults and children with the disorder can become entrepreneurs and leaders who thrive on the high pressures of a fast paced environment. For those individuals who recognize their special abilities and identify effective treatment, Attention–Deficit can become an avenue for success in school and in society (Bramer, 1996).
References


