EXPLORING ATTENTION DEFICIT HYPERACTIVITY DISORDER-
A CASE STUDY

by

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A Master’s Research Project Submitted in Partial Fulfillment
of the Requirements for the degree
Master of Arts

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April 2001

APPROVED

ACCEPTED:

Associate Dean for Education
ABSTRACT

The purpose of this study was to explore whether Ritalin helps a young male child with Attention Deficit Hyperactivity Disorder.

From the literature review a model was developed to determine the effectiveness of Ritalin on a six-year-old male subject of this study. This model was a blind trial study alternating the drug Ritalin and placebos every two weeks for eight weeks. The boy's mother was responsible for keeping and recording the days that the child was given the Ritalin and days he was given the placebo.

During these eight weeks the child's behaviors were observed and marked accordingly on the Attention Deficit Disorders Scale weekly by the classroom teacher, who was unaware of the placebos. The three most commonly reoccurring behaviors related to Attention Deficit Hyperactivity Disorder that were observed were inattentiveness, hyperness and impulsiveness.

The data from the observations showed that the Ritalin had a very minimal effect on the boy's behaviors. When taking Ritalin, his standard inattentive scores ranged from 9 to 11, and when taking the placebo his standard scores ranged from 7 to 8. In this case, the mean is 10, and the norm is considered three deviations above or below the mean.

Very similar results presented themselves in the hyperactive-impulsive scale. When taking Ritalin, the male child received scores ranging from 11 to 12. When he took the placebos, his scores ranged from 9 to 11. Again both scores were within the typical range of 7 to 13.
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CHAPTER ONE

THE PROBLEM

Introduction

Education today was extremely demanding. Students are expected to learn more while classroom sizes continue to increase. Due to the increasing class sizes, principals and teachers often do not have extra time to spend with needier students or those who demonstrate impulsive behavior and who have difficulty paying attention in class. Many students exhibit these behaviors which are the most frequently appearing symptoms of Attention Deficit Hyperactivity Disorder (ADHD).

ADHD is one of the fastest growing developmental disorders being diagnosed in young children today. According to the American Academy of Pediatrics (1999) 1.5 million or 8 percent of all children in America between the ages of 5 to 18 are receiving methylphenidate treatment for this disorder. The symptoms of ADHD do not normally become a concern until the children reach school age and are expected to pay attention in class and stay in their seats for a lengthy period of time. If a child does not listen and follow directions, and wanders around the room, a teacher may confer with parents suggesting that their child may have an inattention problem and may suggest to the parent that they see their pediatrician.

After a complete evaluation, if the child is diagnosed with ADHD, the
doctor may suggest different types of treatment. The most popular and least restrictive treatment is the use of stimulants. The most widely prescribed stimulant today for ADHD is Ritalin. Other stimulant drugs that may be used are: Adderal, Dextroamphetamine and Premoline (Chisholm, 1996).

Development of the Problem

The boy in this study is six-years-old and is in first grade. From the time he entered school in kindergarten, he has been recognized as a student who has difficulties listening and following directions and staying in his seat. During the the first parent/teacher conference in October, 2000, this six year old male's inattention and constant fidgeting were discussed. The parents agreed that he should be evaluated for ADHD by his pediatrician. The teacher explained that this six year old boy’s short attention span and constantly getting out of his seat is interfering with his school work. The teacher said that he may have a difficult time succeeding in school in the future. His mother, also a teacher, agreed that it is very important that his inattention and hyperness be addressed at this early age to avoid further problems in the future.

Any child may show inattention, distractibility, impulsivity, or hyperactivity at times, but the child with ADHD shows these symptoms and behaviors more frequently and severely than other children of the same age or development level (American Academy of Child & Adolescent Psychiatry, 1999). ADHD occurs in 3-5 percent of school age children. Children with ADHD will show some or all of these symptoms before the age of seven, and it can continue
into adulthood. ADHD is found to run in families. In fact twenty-five percent of biological parents of diagnosed children also have this medical condition (Safer, 1996). A child with ADHD often shows some of the following:

* trouble paying attention
* inattention to details and makes careless mistakes
* easily distracted
* loses school supplies, forgets to turn in homework
* trouble finishing class work and homework
* trouble listening
* trouble following multiple adult commands
* fidgets or squirms
* leaves seat and runs about or climbs excessively
* seems “on the go”
* talks too much and has difficulty playing quietly (American Academy of Child & Adolescent Psychiatry, 1999, p.2)

This six-year-old male has presented all of the above conditions at one time or another so he was taken to a pediatrician. He was said to have, at the very most, a mild case of Attention Deficit Hyperactivity Disorder. The doctor also noted that at this early age it is difficult to tell whether it is really ADHD or immaturity. She continued to explain that research clearly demonstrates that medication can be helpful. Stimulant medication such as methylphenidate (Ritalin) can improve attention, focus, and goal directed behavior and lessen the need for the six-year-old boy to engage in constant motion. The pediatrician mentioned that there are side effects of this drug and that there have not been many long term studies done on the effects of taking Ritalin over many years. Then a low dosage prescription of Ritalin was written for the six-year-old boy.
Need for the Study

Often children presenting ADHD symptoms are punished for repeatedly bad behavior or not completing seat work and are often sent out of the classroom for disrupting the class and not following directions. These children experience more failure than success and are criticized by teachers and family who do not recognize this growing health problem. With proper treatment these children can lead productive and successful lives and enjoy success in school (American Academy of Child & Adolescent Psychiatry, 1999). Ritalin has served to reduce hyperactivity and increase attention but is a controversial remedy because the drug itself is so new therefore scientific information on both long term success and side effects of Ritalin are not currently available. Hence there was a need to seek as much information to derive a reason or judgment on whether Ritalin is the best treatment for six-year-old males.

Purpose of the Study

The purpose of this study was to explore whether Ritalin helps a young male child with Attention Deficit Hyperactivity Disorder.

Research Question

Is the drug Ritalin an effective way to help children with Attention Deficit Hyperactivity Disorder succeed in school?
Definition of Terms

Attention Deficit Hyperactivity Disorder (ADHD)- 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. The problems in turn produce a wide range of difficulty in cognitive, academic, and social functioning (McCarney, a & b, Chapter 1 & 2, 1995).

Ritalin-a stimulant drug commonly used with children diagnosed with Attention Deficit Hyperactivity Disorder. Ritalin is a brand name for the drug methylphenidate. (MacClean’s, 1996, p.43).

Methylphenidate or MPH-A central nervous system stimulant that shares many of the pharmacological effects of amphetamine, methamphetamine, and cocaine (Knickerbocker, 1999 p.1,Op).

DSM-IV-A diagnostic Statitical Manuel, fourth edition used by the medical profession to diagnosis mental disorders (McCarney, Chapter 1 & 2, 1995).

ADD-H Comprehensive Teacher’s Rating Scale (ACTeRs)-A Rating Scale used to asses, diagnosis and place students with Attention Deficit Hyper-Activity Disorder (Miller, n.d., n. p.)

Attention Deficit Disorder Evaluation Scale (ADDES)-A scale that enables educators, school and private psychologists, pediatricians, and other medical personnel to evaluate and diagnose Attention-Deficit/Hyperactivity Disorder in children and youth from input provided by primary observers of the student’s behavior (McCarney, 1995, a & b, Chapter 1).
Introduction

Children with Attention Deficit Hyperactivity Disorder (ADHD) are characterized by rather severe problems in attention, impulsiveness and excessive motor activity (McCarney, 1995a & b). The American Psychiatric Association defines Attention-Deficit/Hyperactivity Disorder as (as cited in McCarney, 1995a & b):

....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. The problems in turn produce a wide range of difficulty in cognitive, academic, and social functioning. These difficulties frequently require treatment.

This chapter will define Attention Deficit Hyperactivity Disorder; will discuss articles concerning the assessment of Attention Deficit Hyperactivity Disorder and stimulant intervention; and will describe both the benefits and side effects of using Ritalin to treat young children diagnosed with Attention Deficit Hyperactivity Disorder.

Attention Deficit Hyperactivity Disorder

According to the DSM-IV (American Psychiatric Association, (as cited by McCarney, 1995 a) Inattention and Hyperactivity-Impulsivity, are described as follows:
Inattentive Symptoms may present themselves in academic, occupational or social situations. Individuals with this disorder tend to make careless mistakes in schoolwork or other tasks. Their work is often messy and find it difficult sustaining attention in tasks or play until completion. Individuals appear as if their mind is elsewhere and they did not hear what has been said. They often do not follow through on requests or instructions. If the tasks requires great mental effort these individuals consider these tasks unpleasant and markedly aversive. As a result, these individuals tend to avoid these activities. Work habits are disorganized and the materials necessary for doing the task are often scattered, lost or damaged. Trivial noises or events that are usually and easily ignored tend to be very distractive. In social situations, these individuals may make frequent shifts in conversation and appear distracted.

Hyperactivity-Impulsivity Symptoms present themselves as fidgetiness or squirming in one’s seat, excessive running or climbing in situations where it is inappropriate, or by talking excessively. Individuals tend to fidget with objects, tap their hands and move their feet excessively. These individuals talk excessively and make inappropriate noises. In teenagers and adults these symptoms take the form of feelings of restlessness and difficulty engaging in quiet activities.

Impulsivity presents itself as impatience, difficulty in delaying responses, blurting out answers and difficulty awaiting one’s turn. These individuals frequently interrupt or intrude on others. They make comments out of turn, fail to listen to directions and begin conversations at inappropriate times. They
tend to grab objects from others, touch things they are not supposed to touch, and clown around. For a complete definition of Attention Deficit Hyperactivity Disorder Definition see Appendix A.

Assessment

Currently the developers of DSM-IV used empirical studies to cluster ADHD symptoms around inattention and hyperactivity-impulsivity. The presence of six of nine inattentive symptoms and/or six of nine hyperactivity-impulsivity symptoms are needed for diagnosis (Nordby, 1994).

Additional criteria include onset before age seven, the presence of symptoms in at least two situations, and the ruling out of other psychiatric disorders (Nordby, 1994). Because the criteria require symptoms to be present for at least six months in multiple settings, diagnosis of ADHD is not possible at a clinical visit. Because of the unreliability and subjectivity of measurement tools, no single objective measure can diagnose ADHD (McBurnett, Lahey, & Pfiffner, as cited by Norby, 1994). Assessment should include a network of parents and professionals using multiple methods in multiple situations, along with a thorough review of school records (Hunt, ; McKinney, Montague, & Hocutt, as cited by Norby, 1994). Assessment instruments should be used to detect learning disabilities and emotional behavioral disorders which can co-occur with Attention Deficit Hyperactivity Disorder.

Two assessment tools used both by medical and public education
professionals are called the ACTeRS: Parent Form and the ADD-H Comprehensive Teacher’s Rating Scale (ACTeRS-Teacher). These forms are used to evaluate Pre-K through 12th grade students.

The ACTeRS: Parent Form The purpose this form is to aid in the diagnosis of Attention-Deficit Disorder with or without Hyperactivity; it is used as a screening device to differentiate children with ADD and those who may have other learning disabilities and is useful for monitoring medication levels. This assessment is in grades Pre-K through twelfth. This performance scale is a paper-pencil or computer-administered 25-item multiple-choice test assessing behavior relevant to Attention-Deficit Disorder. It provides separate scores for five factors: Attention, Hyperactivity, Social Skills, Opposition Behavior, and Early Childhood. An examiner is required and is not suitable for group use. The form can be completed in approximately 10 minutes. It can be computer scored or scored using a hand key. The publisher is MetriTech, Inc. (Miller, n.d.).

ACTeRS Teacher’s Rating Scale - The purpose of this scale is to aid in the diagnosis of Attention-Deficit Disorder with or without Hyperactivity; used as a screening device to differentiate children with ADD and those who may have other learning disabilities; it is useful for monitoring medication levels. This scale is used with children in grades kindergarten through eighth grade. This scale is a paper-pencil or computer administered 24 item multiple-choice test assessing behavior relevant to the diagnosis of Attention-Deficit Disorder. It provides separate scores for four factors: Attention, Hyperactivity, Social Skills
and Oppositional. The classroom teacher rates items on a 5-point scale ranging from "almost never" to "almost always." An ACTeRS Profile (Boys' and Girls' forms) is generated (Miller, n.d).

The ADD-H: Comprehensive Teacher's Rating Scale (ACTeRs) is a short concise teacher rating scale designed to be a practical tool for the diagnosis and treatment monitoring of attention deficit disorder (Miller, n.d.). ACTeRS was designed with three goals including: "(1) to put the appropriate emphasis on attention; (2) to be useful to clinicians for diagnosis of ADD and monitoring of children who manifest a deficit in attention, both before and during treatment" (Miller, n.d., n.p.). The test has 24 items and is gender neutral and consists of a simple statement or phrase from 1 to 11 words. The teacher will read each short phrase and rate the child's behavior on a 5-point Likert-type scale ranging from a rating of 1=almost never to 5=almost always. The teacher completing the rating scale is directed to compare the child's behavior with that of his or her classmates (Miller). The 24 test items are arranged in four areas including: Attention (six items), Hyperactivity (five items), Social Skills (Seven items), and Oppositional Behavior (six items). Included in the test are separate profiles for boys and girls. Interpretation of raw scores is based on percentiles. The teacher completing the scale transfers the raw score for each of the four scales to the gender-specific profile and reads the resulting percentile rank of the student. An examiner is required and is not suitable for group use. It takes approximately 10 minutes. The form is hand scored or computer scored (Miller, n.d.)
The authors suggest that one can confidently feel that a diagnosis of ADHD is legitimate if the subject scores at or below the 10th percentile on the Attention subscale regardless of other scale scores. A child who scores above the 10th but below the 25th percentile on Attention subscale is considered handicapped and a score at or below the 25th percentile an any subscale should be considered an indicator of a major deficit. Scores ranging from the 25th to 40th percentile are labeled as moderate problems and from the 40th to 50th percentile as mild problems (Miller, n.d.).

ACTeRs was first developed in the mid-1980s and initial norms were based on 1,330 students from kindergarten through fifth grade. The current edition of ACTeRs has expanded norms through eighth grade. The instrument has been restandardized based on a sample of 2,362 students from 23 schools who had been rated by 84 teachers (Miller, n.d.). The publisher is MetriTech, Inc.

Another commonly used test (school form and home form) designed to recognize areas of behavior disorders are the Attention Deficit Disorders Evaluation Scale-School Version (ADDES-School) (McCarney, 1995 a) and the (ADDES Home) (McCarney, 1995 b) Rating Forms, written by Stephen B. McCarney Ed.D. and published by Hawthorne Educational services, Inc.

Attention Deficit Disorders Evaluation Scale-School Version (ADDES)
The general purpose of the ADDES School School Version was designed as a vehicle for objective reporting on the part of those persons (teachers) who have primary observational opportunities; to document the most common
characteristics of children and youth with ADHD; to Categorize Attention Deficit Hyperactivity Disorder behavior patterns into the two recognized areas of Inattention and Hyperactivity-Impulsivity; it compares Attention-Deficit Hyperactivity Disorder characteristics to those of the national standardization sample. And it provides information necessary for the development of goals, objectives, and intervention strategies which will form the basis for program planning by identifying specific characteristics of ADHD which should receive a specialized program of intervention for maximizing the student potential.

Specifically, the ADDES School version may be used to: (a) screen for characteristics of Attention Deficit Hyperactivity Disorder; (b) provide a measure of Attention-Deficit Hyperactivity Disorder behavior for any child or youth referred by the school or parents; (c) provide information which may contribute to the diagnostic process for Attention Deficit Hyperactivity Disorder; (d) develop program goals and objectives; and (e) identify intervention activities for Attention Deficit Hyperactivity Disorder in the educational environment (McCarney, 1995 b).

The ADDES was designed to service students in grades Pre-K through twelfth. The Attention Deficit Disorders Evaluation Scale-School Version includes 60 items. They were developed according to the recommendations of diagnosticians and educators of Attention-Deficit/Hyperactivity Disordered students who were professionally involved in measuring Attention Deficit Hyperactivity Disorder behavior and making diagnostic decisions. The 60 items were chosen because they are relevant representations of ADHD
behavior and are easily observed by educators in the educational environment (McCarney, 1995 b). The ADDES School Version consists of items describing behavior and a 5 point rating scale. An educator familiar with the child rates how often each item describes the child’s behavior.

The descriptors for the scale points are frequency referenced and range from, does not engage in the behavior (0), to occurs one to several times per month (1), week (2), day (3) or hour (4).

The Percentile Score is a global measure of behavior and provides a reference of the child’s or youth’s behavior in comparison to other children and youth in the standardization sample. Percentile scores are determined by adding the sum of subscale standard scores and converting to percentile scores which are found in the conversion tables (Tables B1-B10) in the Appendix of the ADDES School Version manual (McCarney, 1995 b). Percentile scores are derived scores which indicate the percentage of children or youth whose scores occurred at or below the sum of subscale standard scores. These scales are categorized by male/female and age of child (e.g., females, ages 4 through 6 years, 7 through 8 years, 9 through 10, and 11 through 13 years). Males’ ages range from ages 4 through 6 years, 7 through 8 years, 9 through 10, and 11 through 13 years (McCarney, 1995 b).

The standardization data were analyzed by age and sex of the students. There were differences found by sex on both subscales with males receiving higher scores than females (i.e., males exhibited more of the inappropriate behaviors). Subscale raw scores decreased from early teenage
years for both sexes. Because differences were found between males and females, and on at least some subscales, among the tested age levels, 10 standardization groups were developed. Four analyses were performed on 5,795 evaluations of students ages 4.0 to 19.0 years. "The results of these analyses are generalizable to the extent that the sample is representative of the population to which the instrument will be administered. The Attention Deficit Disorders Evaluation Scale-School Version standardization included 30 states representing all the major geographic regions of the United States and approximates the demographic characteristics of the nation, it is appropriate to conclude that the results are accurate (McCarney, 1995 b, p12)."

**Attention Deficit Disorders Evaluation Scale-Home Version** - The general purpose of the ADDES was designed as a vehicle for objective reporting on the part of those persons (parents and guardians) who have primary observational opportunities. To document the most common characteristics of children and youth with ADHD. To Categorize Attention Deficit Hyperactivity Disorder behavior patterns into the two recognized areas of Inattention and Hyperactivity-Impulsivity. It compares Attention-Deficit Hyperactivity Disorder characteristics to those of the national standardization sample. It also provides information necessary for the development of goals, objectives, and intervention strategies which will form the basis for program planning by identifying specific characteristics of ADHD which should receive a specialized program of intervention for maximizing the child's or youth's potential (McCarney, 1995 a).

Specifically, the ADDES Home version may be used to: (a) Screen for
characteristics of Attention Deficit Hyperactivity Disorder; (b) provide a measure of Attention-Deficit Hyperactivity Disorder behavior for any child or youth referred by the school or parents; (c) provide information which may contribute to the diagnostic process for Attention Deficit Hyperactivity Disorder; (d) develop program goals and objectives; and (e) identify intervention activities for Attention Deficit Hyperactivity Disorder in the home (McCarney, 1995a).

The ADDES Home Version is administered to students in grades kindergarten through eighth grade. The Attention Deficit Disorders Evaluation Scale-Home Version was designed to be a relevant measure of Attention Deficit Hyperactivity Disorders for the home environment which provides efficiency of effort and time on the part of those parents and guardians rating children and youth and making use of the results. The scale is based on recognized definition of Attention Deficit Hyperactivity Disorder behavior by the American Psychiatric Association (McCarney, 1995a). This was achieved by including items and subscales which best reflect the intent of the DSM-IV. The 46 items included in this scale were developed according to the recommendations of diagnosticians professionally involved in measuring Attention Deficit Hyperactivity Disorder behavior and making diagnostic decisions, parents of ADHD children and youth, and those characteristics of ADHD previously referenced from the DSM-IV (McCarney, 1995a).

The qualifiers enable the rater to identify the frequency to which the child or youth engages in the behavior according to the following frequency references: (0) does not engage in the behavior; (1) one to several times per
month; (2) one to several times per week; (3) one to several times per day; (4) one to several times per hour.

The Percentile Score is a global measure of behavior and provides a reference of the child's or youth's behavior in comparison to other children and youth in the standardization sample. Percentile scores are determined by adding the sum of subscale standard scores and converting to percentile scores which are found in the conversion tables (Tables B1-B10) in the Appendix of the manual (McCarney, 1995 a). Percentile scores are derived scores which indicate the percentage of children or youth whose scores occurred at or below the sum of sub scale standard scores (e.g., females, ages 4 through 6 years, 7 through 8 years, 9 through 10, and 11 through 13 years). Males' ages range from ages 4 through 6 years, 7 through 8 years, 9 through 10, and 11 through 13 years. The standardization data was analyzed by age and sex of the students. There were differences found by sex on both subscales with males receiving higher scores than females (i.e., males exhibited more of the inappropriate behaviors). Subscale raw scores decreased from early teenage years for both sexes. Because differences were found between males and females, and, on at least some subscales, among the tested age levels, 10 standardization groups were developed (McCarney, 1995 a).

Four analyses were performed on 2,415 evaluations of children/youth ages 3.0 to 18.9 years. "The results of these analyses are generalizable to the extent that the sample is representative of the population to which the
instrument will be administered. The Attention Deficit Disorders Evaluation Scale-Home Version standardization included 23 states representing all the major geographic regions of the United States and approximates the demographic characteristics of the nation, it is appropriate to conclude that the results are accurate (McCarney, 1995 a, p. 11).

**Methylphenidate (Ritalin)**

A popular method currently available to assist children with Attention Deficit Hyperactivity Disorder is the most widely used drug called Ritalin (methylphenidate). Ritalin is manufactured by CIBA-Geighy Corporation and is supplied in 5 mg., 10 mg., and 20 mg. tablets, and a sustained release form, Ritalin SR as 20 mg. tablets. It is readily water soluble and is intended for oral use only. Since Ritalin is a Schedule II Controlled Substance it is a drug that is regulated by the federal government.

Ritalin is a central nervous system stimulant, similar to amphetamines in the nature and duration of its effects. It works by activating the brain stem arousal system and cortex. Pharmacologically, it works on the neurotransmitter dopamine, and in that respect it resembles the stimulant characteristics of cocaine. When prescriptions instructions are followed, Ritalin would be classified as having mild to moderate stimulant properties, but when snorted or injected it has a strong stimulant effect similar to cocaine (Bailey, 1995).

According to the Drug Enforcement Administration (1995) that on
average, there has been a 2.5-fold increase in the prevalence of methylphenidate treatment of youths with Attention Deficit Hyperactivity Disorder (ADHD) between 1990 and 1995. In all, approximately 2.8 percent of US youths aged 5 to 18 were receiving this medication in mid 1995. Doctors who prescribe Ritalin say this increased use of Ritalin is due largely to an increased duration of treatment as well as the diagnosis of more girls, adolescents and inattentive youths and a recently improved public image of this medication treatment.

**Critics of Ritalin**

One thought is that Ritalin is overly prescribed or is prescribed to children that have not been properly diagnosed with ADHD. According to David Cohen (as cited in Donnelly, 1998), a professor of social services at the University of Montreal, “Children from single-parent or lower-income families are more likely to be put on the drug.” Cohen’s research shows that 12 percent of children on welfare are on Ritalin. As well, eight of every 10 children on Ritalin are boys. Cohen asks, “Are we medicating boys because they’re genetically meant to be active? Are we forgetting that, developmentally, girls are ahead of boys” (Donnelly, 1998, p. 32)?

Identification of ADHD symptoms become more apparent when the children begin school. The parents may have a child who is more restless than others, but the diagnosis starts in the school when that child is placed in the classroom with other children, says Cohen (as cited in Donnelly, 1998).
"The teacher may mention to the parent that the child acts up in class, and may recommend that the child see a psychologist" (Donnelly, 1998, p. 32). The process of referring a child to the appropriate medical professional for evaluation may take months, but children are put on Ritalin right way as a precaution. The children appear to be less active in class pleasing the teacher and parents. Thus there is less student follow up unless there are negative side effects from the drug. These effects can include depression, loss of appetite and insomnia (Chesapeake Institute & The Widmeyer Group, 2000).

Supporting Professor Cohen’s research is Dr. Thomas Millar (as cited in Donnelly, 1998), a Vancouver child psychiatrist and author of ADD and The Omnipotent Child. Dr. Millar states, “ADD is a mythical disorder. Ritalin is attractive to parents because it says that the child’s behavior is not their fault, but rather the result of a chemical imbalance in the brain. The real problem is that these children have not been raised properly and lack proper training.” (Donnelly, 1998, p. 44). The drug is appealing to educators as well. Instead of dealing with a misbehaving or attention-seeking child, the teacher will have a child that sits quietly at his desk.

Furthermore, a study performed in North Carolina finds that most 9 to 16 year olds receiving Ritalin or other stimulants don’t exhibit Attention Deficit Hyperactivity Disorder, the only condition for which the drugs are approved (Bower, 2000). This survey where 1,422 children, ages 9 to 13 from public schools and their parents were interviewed from 1992-1996, showed that 92 of the children displayed ADHD. Another 63 children met criteria for a less severe
version of the disorder. Of the 168 children receiving stimulants during the
study, 56 children had full blown ADHD and 17 children exhibited the milder
form. That left one half of the stimulant treated children as never having ADHD.
However, Ritalin did help the children that have ADHD but had no effect on
parent-reported symptoms of inattention or hyperactivity with children not
diagnosed with ADHD. And children taking Ritalin, proved more likely to
exhibit muscle tics and insomnia, side effect of prolonged stimulant use
(Stimulant Therapy Study as cited by Bower, 1998).

The Norfolk, Virginia study concluded as did the North Carolina Study
that doctors may be over-diagnosing some groups of children with attention
deficit hyperactivity disorder and over prescribing drugs to treat the condition.
(Barisic, 1999). Researchers examined about 30,000 grade school children in
two districts in southeastern Virginia and found that students took drugs for
ADHD in school at two to three times the expected rate, according to the study
in the American Journal of Public Health. ADHD has been estimated to affect
3% to 5% of school aged children nationwide, with less than 3% actually
receiving medication (Barisic, 1999). By comparison, Gretchen LeFever, a
pediatric psychologist and lead author of the study, found that 8% to 10% of
children in second through fifth grades routinely took ADHD medication in
school during the 1995-'96 school year. The two cities chosen for this study
were the most diverse in southeastern Virginia. One is small, urban, poor, and
a mostly black district while the other is wealthy and mostly white.
Researchers also found that ADHD medication was used by three times as
many boys as girls and twice as many whites as blacks. Also the use of the medication increased as children aged. By the fifth grade, 19% to 20% of white boys received ADHD drugs (Barisic, 1999).

Although the exact number of people taking Ritalin is not known, this year, experts estimate, as many as two million Americans—the vast majority of them children—will take the medication, some as often as five times a day. As social acceptance of this disorder increases, so do the number of children being diagnosed with ADHD. Today, experts estimate that at least 3 percent and perhaps as much as 10 percent of the American population has ADHD (Korte, Campanelli, Stammen, 1995). Yet even as Ritalin becomes a commonplace some parents remain frightened that it is a mind-altering, potentially addictive drug. Critics within the medical community say the drug is being over prescribed and that the hallmark symptoms of the disorder— inattention, hyperactivity and impulsivity—could describe just about any child (Korte, Campanelli, Stammen, 1995). Moreover, despite hundreds of studies of Ritalin, far too little is know about how it works and why.

Ritalin and its usage became a grave concern in 1995. The Drug Enforcement Administration (DEA) under the U.S. Department of Justice issued a press release October 20, 1995 stating:

Methylphenidate (MPH), most commonly known as Ritalin, ranks in the top 10 most frequently reported controlled pharmaceuticals stolen from licensed handlers.

Abuse of MPH can lead to marked tolerance and severe psychic dependence.
Organized drug trafficking groups in a number of states have utilized various schemes to obtain MPH for resale on the illegal market.

MPH is abused by diverse segments of the population, from health care professions and children to street addicts.

A significant number of children and adolescents are diverting or abusing MPH medication intended for the treatment of ADHD. In 1994, a national high school survey (monitoring the Future) indicated that more seniors in the U.S. abuse Ritalin than are prescribed Ritalin legitimately.

Students are giving and selling their medication to classmates who are crushing and snorting the powder like cocaine. In March of 1995, two deaths in Mississippi and Virginia were associated with this activity.

Dawn statistics on estimated emergency room mentions indicate that there were 271 mentions in 1990, 657 mentions in 1991, 1044 mentions in 1992, and 725 in 1993 (of which 28% to 40% were associated with abuse for dependence of psychological effects).

The U.S. manufactures and consumes 5 times more MPH than the rest of the world combined.

MPH aggregate production quota has increased almost 6 fold since 1990 (DEA Press Release, 1995, n.p.).

DEA spokesperson James McGivney (cited in Korte, Campanelli, Stammen, 1995) indicated that abusers receive a better high than cocaine and crack. They dissolve Ritalin and shoot it up like heroin. In March 1995, police in Muskegon, Michigan arrested a 17 year old boy with ADHD on charges he illegally sold a generic form of Ritalin to other youngsters. In April, a Roanoke, Virginia teenager died from a Ritalin overdose. A California doctor once had
his medical license taken away after he admitted taking as many as 200 Ritalin tablets a day over his 20 year career. In Indiana, a school nurse was arrested for skimming Ritalin tablets out of students’ pill bottles. And in Varmilion, a mother was charged with stealing Ritalin from her hyperactive boy and taking it herself (Korte, Campanelli, Stammen, 1995). Ritalin devotees, however, insist that the potential for abuse is limited.

Advocates of Ritalin

A recent study for Attention Deficit Hyperactivity Disorder (The MTA Study, as cited by Brink, 1998) by the National Institute of Mental Health has concluded that Ritalin can achieve satisfactory results with minimal side effects, or none at all. This study shows that drugs like Ritalin calm kids down better than previously thought, as long as the children continue taking them. But, ADHD children are at higher risk than other children of dropping out of school, becoming smokers, abusing alcohol or drugs, and spending time in prison.

The MTA study (Brink, 1998) shows that taking Ritalin can shift troubled kids to a more positive focus. This study is based on the largest clinical trial involving ever conducted by the National Institute of Mental Health (NIMH). It was NIMH first clinical trial involving children and the longest active treatment study of ADHD. Its strongest finding is that the drug works and that it can erase enough symptoms of ADHD to eliminate the diagnosis for 82 to 85 percent of children. Although children are sometimes given the drug twice
daily, the study shows that three times a day is more effective. The researchers monitored the effect of the drug closely through weekly and monthly talks with both parents, altering the dose, or changing drugs as necessary (Brink, 1998).

But how often are children monitored this closely in every day cases? “Hardly ever,” (Brink, 1998, p.7) says William Pelham, one of the principal investigators of the NIMH study and director of the Attention Deficit Hyperactivity Disorder program. Phelham continues to say, “...That kind of prescribing is an extreme rarity. If one tenth of one percent of kids are getting medicated like this, I’d be astonished” (as cited in Brink, 1998, p.7).

The NIMH study, which lasted 14 months looked at 576 children in six cities, sorting them into four groups. One group received drugs. One group received psychosocial therapy, which meant parent training, teacher counseling and intensive work on social skills. A third group received both drugs and therapy and a fourth group received whatever treatment happened to be available. It was proven that although drugs alone worked, drugs in combination with other therapy worked even better. Both of these approaches were far more effective than psychosocial treatment alone or standard outside treatment (Brink, 2000).

Another study by a Stanford neuroscientist (Stanford University, 1998) found a clear difference in brain functioning between boys who have ADD and those who do not. The authors of the study are Medical Doctors Glenn Austin and Hugh Ridlehuber and School Psychologist Gary Kirkorian of the
Community/Academia Coalition in Los Altos, California, and Gary Glover and John Desmond of the Stanford Medical Center's Radiology Department. In this study, 16 boys between the ages of 8 and 13 were asked to play a mental game. The boys, 10 of whom had been diagnosed with ADD and 6 of whom had not, were instructed to press a button when they saw any letter of the alphabet except the letter X on a display screen. Because most of the letters were not X, each child built of a predisposition to press the button and needed to control his impulse to press the button when he saw an X. The study proved to be more difficult for the boys with ADD, because poor impulse control is one the disorder's symptoms. After comparing the brain images, researchers found a clear difference in the activation of neuronal tissue which is involved in motor control. The subjects were given Ritalin and asked to perform the same task. The brain activation differences between the boys with ADD and those without were even more dramatic. Both the normal kids and the ADD kids got better in their impulse control when they had taken the drug. Ritalin improved everyone's performance (Stanford University, 2000).

According to the April 8 issue of The Journal of the American Medical Association Dr. Larry S. Goldman, M.D., and colleagues from the Council on Scientific Affairs of the American Medical Association searched the National Library of Medicine database to review studies reported from 1975 through March 1997. This study analyzed studies on school-aged children with ADHD and the use of Ritalin and other stimulants to treat these children. The study found little evidence of a wide spread over diagnosis or misdiagnosis of
Attention Deficit Hyperactivity Disorder or of over prescription of Methylphenidate (Goldman, 1998).

Summary

Some children diagnosed with Attention Deficit Hyperactivity Disorder who are nurtured and encouraged by parents or teachers do grow into bright energetic adults and excel in creative, high-risk professions such as art, sales and business. But others, after a childhood marked by academic failure and parental anger, turn into resentful, discouraged adults. With so many pitfalls, relief in the form of a pill can be appealing. And there is no question according to the advocates of Ritalin that methylphenidate, manufactured under the trade name Ritalin, has salvaged the lives of many children with ADHD. In moderate doses, stimulants like Ritalin can have the surprising effects of calming children enabling them to focus on particular tasks and complete them. The impulsive, aggressive behavior declines leading to an improved life both at home and at school.

But Ritalin is a powerful drug with properties similar to amphetamines or, “uppers,” and many doctors are cautious about its use and the side effects. The critics of Ritalin believe that the drug is overly prescribed and that schools are referring more and more children to doctors for evaluation. Critics believe that parents are ignoring their responsibilities with regards to disciplining and molding their children. Teachers, doctors and parents are using Ritalin as a quick and easy fix for the inattentive and active child.
Most importantly, the first step must be diagnosing the child correctly, ruling out all other possible learning disabilities that may present similar symptoms. Schools, pediatricians and many other medical professionals can assist parents with the diagnosing of Attention Deficit Hyperactivity Disorder.

Finally, parents with children diagnosed with Attention Deficit Hyperactivity Disorder must remember that medication such as Ritalin is not a cure or guarantee for academic success and should not be used as the only treatment strategy for children with Attention Deficit Hyperactivity Disorder.
CHAPTER THREE

METHODOLOGY

Introduction

The purpose of this study was to explore whether Ritalin helps a young male child with Attention Deficit Hyperactivity Disorder.

Research Design

The model used in this study was a case study because it is an intensive description of an individual and his behaviors. "By concentrating upon a single phenomenon or entity ("the case"), this approach seeks to uncover the interplay of significant factors that are characteristics of the phenomenon" (Merriam & Simpson, 2001, p.108). There are several steps to follow while doing a case study. The first step is to select the "case" for analysis. The second step is to collect raw data. This may include observation, interviewing, document analysis and surveys. The final step in this process is writing the case study narrative (Merriam & Simpson, 2000).

The six year old male's Attention Deficit Hyperactivity Disorder behaviors and the use of Ritalin to modify these behaviors were the focus of this case study.

This study was set up as a blinded trial study. This simply means that the child and his teacher did not know when the six year old was given the
Ritalin or the placebo. The only person with this knowledge throughout the study was his mother. She kept a daily log marking the days the child was given Ritalin and days he was given the placebo.

Two tests used to assist the parents and school with this diagnosis were the Attention Deficit Disorders Scale, Home and School Version. The psychologist involved with the male child chose the Attention Deficit Disorders Scale for three reasons. First is is used jointly by the school psychologist and parents for diagnosing children with Attention Deficit Hyperactivity Disorder. Secondly, the test categorizes similar and reoccurring behaviors allowing the school and parents the opportunity to focus on these particular behaviors. Lastly, the test is used to monitor and regulate children on prescription drugs.

The next step was to put the male child on Ritalin beginning the week of January 2, 2001. He would be given the Ritalin in the home at 8:00 a.m by his mother. When he was in school, the classroom teacher, who was familiar with the Attention Deficit Disorders Evaluation Scale-School Version, observed his behaviors looking for changes in his inattention and hyperness. The teacher reviewed the questions on the ADDES and answered them according to what had been observed during the week of Jan. 2, 2001 as presented by McCarney (1995), as follows:

It should be noted that the ratings of the student's performance should be relative to those behaviors as they occur naturally in the educational environment (i.e., behavior should be rated as it occurs under typical circumstances, rather than atypical circumstances when anyone's behavior might be construed to be unusual or extreme). (p. 18)
The child's mother observed him at home during the week of January 2, 2001 and completed the ADDES Home Version. This form was used as an additional tool to help with the diagnosis of the male child with ADHD. It allowed the school psychologist to compare and contrast home and school behaviors. This was very important since school and home behaviors tend to be so adverisive (McCarney, 1995).

The boy's mother rated his behaviors as they occurred naturally in the home environment. She should do so based on her personal knowledge of his typical performance of the behaviors on the scale. The ADDES Home and School Version were returned every Friday to the school psychologist for eight weeks.

The third and forth week of this study the boy was given a placebo. The classroom teacher and his mother continued to fill out the ADDES Home and School Version and turned them in weekly to the school psychologist. This pattern of taking Ritalin for two weeks and taking a placebo for two weeks continued for eight weeks. The teacher was not advised of any changes in the boy's medication. She assumed that six year old boy had been taking Ritalin the entire eight weeks. The only reason a placebo was given to the child was to continue his belief that he was taking medication that helped him stay focused during the day.

The school psychologist was in charge of distributing and scoring the Attention Deficit Disorders Evaluation Scale School and Home Version. The ADDES School and Home Version forms were scored at the end of the case
study, not weekly.

Population

The people involved in this case study were the six-year-old male, his mother, classroom teacher, the school psychologist and the boy's pediatrician.

Assumptions and Limitations

Assumptions for this study were that the classroom teacher and the mother answered the questions accurately and understood the questions. This case study also assumed that the school psychologist had the proper credentials to evaluate the six year old male for ADHD.

Limitations were that there was only one person in the study and therefore this study was not generalizable and the time frame for this study (eight weeks) may be too short to provide for a long term evaluation or prediction of boy's behavior.

Instrumentation

This case study used The Attention Deficit Disorders Evaluation Scale Second Edition Home Version and School version (ADDES) written by Stephen B. McCarney, Ed. D. and published by Hawthorne Educational Services, Inc.

Both versions use a Likert-Stye Rating Scale with qualifiers ranging from (0) does not engage in the behavior to (1) one to several times per month, (2) one to several times per week, (3) one to several times per day and (4) one to
several times per hour (McCarney, 1995 a & b).

Procedure

The child’s mother gave him his medication, one pill, 10 mg, every day beginning January 2, 2001. He continued taking 10 mg of Ritalin through January 14. During this time, the teacher and the boy’s mother observed his behaviors looking for differences with his inattention, ability to follow instructions and his hyperness.

The classroom teacher was given eight original copies of the Attention Deficit Disorders Evaluation Scale-School Version Tuesday, January 2, 2001. The teacher turned in one completed form to the School Psychologist every Friday during this study.

The parent was given 8 copies of the Attention Deficit Disorders Evaluation Scale-Home version at the beginning of the study and turned in one form each Friday to the school psychologist.

Beginning Monday, January 15, 2001, at 8:00 a.m., the boy was given his medication, as usual, only this time it was the placebo. The teacher was given the ADDES form and was told to continue to evaluate the boy as she did the week before looking for changes in his behavior. The mother was doing the same but was observing him knowing that he was not taking Ritalin for the next two weeks, January 15 through January 28, 2001. The six-year-old male began taking Ritalin January 29 through February 11. The placebo was taken February 12 through February 25, the last day of this study. See Figure A on page 34 for
the exact days that Ritalin and placebo were given to the boy.

Figure A

<table>
<thead>
<tr>
<th>January, 2001</th>
<th>February, 2001</th>
</tr>
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<tbody>
<tr>
<td>Sun</td>
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<td>1</td>
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<td>21</td>
<td>22</td>
</tr>
<tr>
<td>28</td>
<td>29</td>
</tr>
</tbody>
</table>

*Black Number indicates the day a placebo was given
*Red Number indicates the day Ritalin was given

Method of Analysis

Both the School Version and Home Version of the Attention Deficit Disorders Scale, Second Edition, are hand scored and use conversion tables provided in the index of each manual. There are two types of scores; The subscale Standard Scores and the Percentile Score.

Subscale Standard Scores (School Version)

The subscale standard scores are determined by converting raw scores from the appropriate conversion tables (Tables A1-A-10) found in the Appendix of the manual. The subscale standard scores provide a measure of the subscales or characteristics of Attention-Deficit Hyperactivity Disorder measured by the scale (i.e., inattentive and hyperactive-impulsive). The sub scales were valuable indicators of areas of serious concern for any individual student and provide support for specific criteria by which students are identified as Attention-

The standard scores represent a mean of 10 and a standard deviation of 3. Standard scores of 7 through 13 are considered statistically average (within one standard deviation above or below the mean), while standard scores of 6 and below or above 13 are more than one standard deviation from the mean and are considered statistically atypical. Standard scores below 7 on the Attention Deficit Disorders Evaluation Scale-Home Version (i.e., shaded area of the profile) indicate a cluster of behaviors which are statistically more than one standard deviation below most of the children and youth in the normative sample. A subscale standard score below 4 (i.e., dark shaded area) indicated a standard deviation of two or more and indicates a serious level of concern. A standard score between 7 and 13 indicates that the child or youth demonstrates performance within the same range as most of the children and youth in the normative sample used for the standardization of the ADDES-School Version. (McCarney, 1995, p.22).

Percentile Score (School Version)

The percentile score is computed for each rating of the Attention Deficit Disorders Evaluation Scale -School Version by adding the subscale standard scores and referring to the appropriate conversion tables (Tables B1-B10) in the Appendix of the manual. The percentile score provides an easy reference to the student’s behavior in comparison to the students in the standardization sample. (McCarney, 1995, p.24).

The subscale standard scores and percentile score are then recorded on the profile sheet. The scores which fall in the light shaded area are one or more standard deviations from the norm, scores in the dark shaded area are two or more standard deviations from the norm and constitute an area of serious concern.
Subscale Standard Scores (Home Version)

Subscale standard scores are found by adding all raw scores for the subscales (e.g., Inattentive, Hyperactive-Impulsive)) and converting the raw scores to standard scores for the appropriate age group from Tables A1-A 10 in the Appendix of the manual. Subscale standard scores represent areas of behavior clustered around the factor cluster CHARACTERISTICS of ADHD found in the DSM-IV and most commonly recognized as the definition of Attention Deficit Hyperactivity Disorder.

The standard scores represent a mean of 10 and a standard deviation of 3. Standard scores of 7 through 13 are considered statistically average (within on standard deviation above or below the mean), while standard scores of 6 and below or above 13 are more than one standard deviation from the mean and are considered statistically atypical. Standard scores below 7 on the Attention Deficit Disorders Evaluation Scale-Home Version (i.e., shaded area of the profile) indicate a cluster of behaviors which are statistically more than one standard deviation below most of the children and youth in the normative sample. A subscale standard score below 4 (i.e., dark shaded area) indicated a standard deviation of two or more and indicates a serious level of concern. A standard score between 7 and 13 indicates that the child or youth demonstrates performance within the same range as most of the children and youth in the normative sample used for the standardization of the ADDES-Home Version. (McCarney, 1995, p.22).

Percentile Score (Home Version)

The percentile score is found by adding the subscale standard scores and referring to the appropriate conversion table in the Appendix (Tables B1-B10) of the manual. The percentile score indicates how the child or youth compares to the child or youth compares to the children and youth in the standardization sample. If a child scores on the 15 percentile, this means that the child's behavior ranked lower than 85 percent of the children in the standardization sample. Percentile scores provide a convenient means for making comparisons to the standardization sample (McCarney, 1995, p. 22).
The research model used to gather information regarding the positive or negative impact on using Ritalin to change the boy’s behavior was a case study. One essential property focused in this case study was the descriptive property. This is defined as: “The end product of a case study is a rich description of the phenomenon under study” (Merriam and Simpson, 2000, p. 109).

The people involved in this case study were the child’s classroom teacher, his mother, the school psychologist, and the boy’s pediatrician.

According the to findings, using Ritalin on a daily basis to assist the boy with his inattention and hyperactivity did not have a grave impact on his behavior or success in school. Remembering that standard scores and percentile scores which fall in the light shaded area are one or more standard deviations from the norm, scores in the dark shaded area are two or more standard deviations from the norm and constitute an area of serious concern.

The standard scores represent a mean of 10 and a standard deviation of three. Standard scores of 7 through 13 are considered statistically average (within a standard deviation above or below the mean), while standard scores of 6 and below or above 13 are more than one standard deviation from the mean and are considered statistically atypical. A standard score between 7 and 13 indicates that the child or youth demonstrates performance within the same range as most of the
children and youth in the normative sample used for the standardization of the ADDES-Home and School Version (McCarney, 1995, p. 22).

Graph A-1 on page 39 represents a weekly behavior representation of the six-year-old boy's inattention at school while taking Ritalin and placebos. During weeks one and two he was taking 10 mg of Ritalin. Week one the child received a standard score of 9 and week two a score of 10, both scores were well within the typical range of 7 through 13. Weeks three and four he was taking placebos and received a score of 8 and 7 continuing to be in the normal range. During week four his standard score dropped slightly, but still remained typical and within the suggested three standard deviations of the mean.

Weeks five and six, the boy received standard scores of 9 and 11, both in the normal range. Week seven he received a score of 7 and week eight a standard score of 8. Again all within the typical range. It is true that Ritalin did increase the six year old boy's attentiveness but not enough to say that it drastically improved his ability to listen and follow directions currently and will continue to do so in the future.

Graph A-2 on page 40 represents a weekly behavior representation of the young male's Hyperactivity and impulsivity at school while taking Ritalin and placebos.

The findings were very similar to that of the weekly inattentive scale. All eight weeks the boy's behavior remained relatively the same, fluctuating no more than two standard deviations from the mean. All his scores fell within the typical range of a 6 or 7 year old male living in the United States.
January 2, 2001 through February 25, 2001 Behavior results on Ritalin and the placebo
Weekly Hyperactive-Impulsive scale

January 2, 2001 through February 25, 2001 Behavior results on Ritalin and the placebo
Summary

The purpose of this study was to explore whether Ritalin helps a young male child with Attention Deficit Hyperactivity Disorder.

The internet was explored as were journals, text books, newspaper articles and the DSM IV Manual from which information was gathered concerning the effects of Ritalin on young children diagnosed with Attention Deficit Hyperactivity Disorder.

From the literature review a model was developed to determine the effectiveness of Ritalin on a six-year-old subject of this study. This model was a blind trial study alternating the drug Ritalin and placebos every two weeks for eight weeks. The six year old boy's mother was responsible for keeping and recording the days that he was given the Ritalin and days he was given the placebo.

During these eight weeks the boy's behaviors were observed and marked accordingly on the Attention Deficit Disorders Scale weekly by the boy's classroom teacher, who was unaware of the placebos. The three most commonly reoccurring behaviors related to Attention Deficit Hyperactivity Disorder that were observed were inattentiveness, hyperness and impulsiveness.
The data from the observations showed that the Ritalin had a very minimal effect on the child's behaviors. When taking Ritalin, the boy's standard inattentive scores ranged from 9 to 11 and when taking the placebo his standard scores ranged from 7 to 8. Remembering that the mean is 10 and the norm is considered three deviations above or below the mean.

Very similar results presented themselves in the hyperactive-impulsive scale. When taking Ritalin, the male child received scores ranging from 11 to 12. When he took the placebos, his scores ranged from 9 to 11. Again both within the typical range of 7 to 13.

Conclusion

The conclusion drawn from these three areas of observations are that the drug Ritalin can modify the six year old male's inattention, hyperness and impulsivity minimally, but not enough to warrant a continuing use of Ritalin.

From this data, one can say that the boy's behaviors currently fall within the norm of young children his age and does not currently present signs of Attention Deficit Hyperactivity Disorder.

Finally, secondary observations made by the boy's pediatrician and his mother were that he had lost weight due to a loss of appetite, and showed signs of having insomnia. All were signs of possible side effects of Ritalin usage as stated in the literature review.
Reccomendations

Parents with children diagnosed with Attention Deficit Hyperactivity Disorder must remember that medication is not a cure or guarantee for academic success as seen in this study, but rather one of many solutions to help their child learn to live and work with this challenging developmental disorder.


Barisic, Sonja (1999) *Too many kids getting Ritalin, study hints A study in Virginia finds attention deficit drugs in greater use than expected*, Milwaukee Journal Sentinel, Final; Vol, 13-169; News Section


APPENDIX A

ATTENTION DEFICIT HYPERACTIVITY DISORDER

DSM IV definition
Inattention may be manifest in academic, occupational or social situations. Individuals with this disorder may fail to give close attention to details or may make careless mistakes in schoolwork or other tasks (Criterion A1a). Work is often messy and performed carelessly and without considered thought. Individuals often have difficulty sustaining attention in tasks or play activities and find it hard to persist with tasks until completion (Criterion 1.b). They often appear as if their mind is else where or as if they are not listening or did not hear what has just been said (Criterion A1c). There may be frequent shifts from one completed activity to another. Individuals diagnosed with this disorder may begin a task, move on to another, then turn to yet something else, prior to completing any one task. They often do not follow through on requests or instructions and fail to complete schoolwork, chores, or other duties (Criterion A1d). Failure to complete tasks should be considered in making this diagnosis only if it is due to inattention as opposed to other possible reasons (e.g., failure to understand instructions). These individuals often have difficulties organizing tasks and activities (Criterion A1e). Tasks that require sustained mental effort are experienced as unpleasant and markedly aversive. As a result, these individuals typically avoid or have a strong dislike for activities that demand sustained self-application and mental effort or that require organizational demands or close concentration (e.g., homework or paperwork) (Criterion A1f). This avoidance must be due to the person’s difficulties with attention and not due to a primary oppositional attitude, although secondary oppositionalism may also occur. Work habits are often disorganized and the materials necessary for doing the task are often scattered, lost, or carelessly handled and damaged (Criterion A1g). Individuals with his disorder are easily distracted by irrelevant stimuli and frequently interrupt ongoing tasks to attend to trivial noises or events that are usually and easily ignored by others (e.g., a car honking, a background conversation) (Criterion A1h). They are often forgetful in daily activities (e.g., missing appointments, forgetting to bring lunch) (Criterion A1i). In social situations, inattention may be expressed as frequent shifts in conversation, not listening to others, not keeping one’s mind on conversations, and not following details or rules of games or activities.
Hyperactivity may be manifested by fidgetiness or squirming in one's seat (Criterion A2a), by not remaining seated when expected to do so (Criterion A2b), by excessive running or climbing in situations where it is inappropriate (Criterion A2c), or by talking excessively (Criterion A2f). Hyperactivity may vary with the individual's age and developmental level, and the diagnosis should be made cautiously in young children. Toddlers and preschoolers with this disorder differ from normally active young children by being constantly on the go and into everything; they dart back and forth "out of the door before their coat is on," jump or climb on furniture, run through the house, and have difficulty participating in sedentary group activities in preschool classes (e.g., listening to a story). School-age children display similar behaviors but usually with less frequency or intensity than toddlers and preschoolers. They have difficulty remaining seated, get up frequently, and squirm in or hang on the edge of, their seat. They fidget with objects, tap their hands, and shake their feet or legs excessively. They often get up from the table during meals, while watching television, or while doing homework; they talk excessively; and they make excessive noise during quiet activities. In adolescents and adult, symptoms of hyperactivity take the form of feelings of restlessness and difficulty engaging in quiet sedentary activities.

Impulsivity manifests itself as impatience, difficulty in delaying responses, blurting out answers before questions have been completed (Criterion A2g), difficulty awaiting one's turn (Criterion A2h), and frequently interrupting or intruding on others to the point of causing difficulties in social, academic, or occupational settings (Criterion A2i). Others may complain that they cannot get a word in edgewise. Individuals with this disorder typically make comments out of turn, fail to listen to directions, initiate conversations at inappropriate times, interrupt others excessively, intrude on others, grab objects from others, touch things that they are not supposed to touch, and clown around. Impulsivity may lead to accidents (e.g., knocking over objects, banging into people, grabbing a hot pan) and to engagement in potentially dangerous activities without consideration of possible consequences (e.g., riding a skateboard over extremely rough terrain) (McCarney, 1995).
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