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Teachers' Perceptions of Attention Deficit Hyperactivity Disorder: Incidence and Management

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Teachers' Perceptions of Attention Deficit Hyperactivity Disorder:
Incidence and Management

BY

Julie Olson

THESIS

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Running head: TEACHERS' PERCEPTIONS OF ADHD

Teachers' Perceptions of Attention-Deficit Hyperactivity Disorder: Incidence and Management

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Abstract

ADHD continues to be a common diagnosis of school children, and according to the DSM-IV, it affects approximately 3-5% of the population. Teachers are often the primary source of information regarding ADHD diagnoses in school children. A previous study by Glass and Wegar (2000) found that teachers were over-identifying children with ADHD and that medication was preferred as the primary treatment for these students. This study further examines teacher perceptions on the causes, incidence, and appropriate treatment methods of ADHD. In addition, this study also examines the prevalence of ADHD as determined by the ADHD Rating Scale-IV (School Version) (DuPaul et al., 1998), and determines if it carries biases towards gender or ethnicity. Results show that teachers are still over-identifying children with ADHD when compared to expected prevalence rates by the DSM-IV. Out of 121 rating scales analyzed, 23.97 percent were identified by teachers as meeting criteria for one of the three types of ADHD. Males had significantly higher scores than females and Whites had significantly higher scores than Hispanics. In conclusion, more research needs to be conducted on developing culturally appropriate rating scales for ADHD as well as making changes in the DSM-IV to reflect the growing incidence rates of ADHD.

Teachers' Perceptions of Attention-Deficit Hyperactivity Disorder: Incidence and Management

Attention deficit hyperactivity disorder (ADHD) is a behavioral disorder that begins in childhood and affects approximately 3% to 5% of the population (Weiler, Bellinger, & Marmor, 1999). It is also the most common pediatric psychiatric disorder, potentially affecting as many as one of every 20 children (Taylor, 1997; Baird, Stevenson, & Williams, 2000). Over the past 15 years, ADHD has grown into a national phenomenon and, as a disorder, currently has solid support from the Department of Education, the American Psychiatric Association, and many other agencies as an indentifiable disorder (Armstrong, 1996).

Biological Causes

While the cause of ADHD remains unknown, many researchers believe that the disorder has a biological origin. For example, Epstein et al. (2000) found that when members of a family document their symptoms of ADHD, consistent patterns are revealed that suggest ADHD is a genetically based disorder with common symptoms occurring in both parents and offspring. In addition, another study by Smalley et al. (2000) found that fifty-five percent of the families in their sample who had affected sibling pairs, had at least one parent with a diagnosis of ADHD. Smalley et al. (2000) also found that the frequency of ADHD in at least one parent was higher in families with one affected girl (63%) than in families with one affected boy (45%).

Biology is further implicated in ADHD. A study by Sunohara et al. (2000) showed the possibility of a role of the dopamine D4 receptor locus in ADHD. Even though Sunohara et al. (2000) indicated that the role of

the dopamine D4 receptor locus is unclear, it is important to complete follow-up studies to determine how this particular receptor contributes to the overall susceptibility to ADHD. Hyperthyroidism and other thyroid abnormalities have been consistently found in people with ADHD as well as a generalized resistance to thyroid hormone (American Family Physician, 1994a). In addition, children who are born with a very low birth weight were found to be more vulnerable to acquiring psychiatric conditions, especially ADHD, in the future (Botting, Powls, Cooke, & Marlow, 1997). Other possible biological causes that have been mentioned include biochemical abnormalities (imbalances of not only dopamine, but also serotonin and norepinephrine), neurological damage, lead poisoning, prenatal exposure to various chemicals, and delayed myelinization of the nerve pathways in the brain (Armstrong, 1996).

Wagner (2000) suggested structures in the brain and their functions that could possibly be associated with ADHD. The basal ganglia sequence and inhibit motor movements. Emotional expression is regulated by the limbic system. The frontal lobes are responsible for higher cognitive reasoning, organizing, interpreting, and prioritizing information. The parietal lobe integrates sensory input from somatic, visual, and auditory regions, as well as helps with orientation with respect to position and movement of the body and objects in the environment. The temporal lobe is the primary site of language comprehension and time recognition and also assists with organization and categorization of events. The reticular formation plays a central role in sleep and arousal, attention, muscle tone, movement, and several vital reflexes. It also receives information from areas throughout the brain and projects impulses to other areas in the brain

and spinal cord. The cingulate gyrus acts as an alternate route for sensory information. Waste is removed by the lateral ventricles and the corpus callosum allows for communication to take place between both hemispheres of the brain (Wagner, 2000).

Environmental/Social Causes

Although there is much evidence to show a biological or genetic cause for ADHD, it is equally important to note environmental or social causes for the disorder. People with greater ADHD symptom severity have been shown to have higher levels of family discord, low income, insufficient living conditions, and a maternal history of psychiatric disorder (Scahill et al., 1999). Scahill et al. (1999) also found that half of the children with ADHD in their sample also had at least one comorbid psychiatric condition. In addition, a study of the sleep patterns of children with ADHD found that the sleep-wake system in these children was unstable (Gruber, Sadeh, & Raviv, 2000). Although sleep patterns might have a biological basis, the disruption of a normal sleep-wake cycle could be due to environmental influences such as inconsistent or inappropriate bedtimes set by parents (Gruber et al., 2000).

It is important to dispel certain beliefs about some causes of ADHD. While many people believe that refined sugar and sugar substitutes are responsible for hyperactivity in children, scientific evidence has not supported this perception. The American Academy of Family Physicians (1994b) stated that physicians should not recommend sugar-free diets not only because of the lack of scientific evidence, but also because they are difficult to maintain and are socially inappropriate and inhibiting. Also, trauma exposure has not been linked to ADHD, although it has been

shown to be of particular importance for clinically assessing children with oppositional defiant disorder (ODD) (Ford et al., 1999).

Gender and cultural differences are also present among children with ADHD. Although the reported male-female ratio has varied from 3:1 to 9:1, girls with ADHD tend to have poorer social functioning and may be at a higher risk for developing social problems (Carlson, Tamm, & Gaub, 1997). Pineda et al. (1999) stated that ADHD may be dependent upon culture. One culture may have different standards and expectations of appropriate behavior than another culture. Pineda et al. (1999) also stated that if ADHD characteristics are more accepted in one culture, the instances of ADHD will be less frequently reported. The opposite is also true: if the characteristics are not as readily accepted, then the instances of ADHD will be more frequently reported (Pineda et al., 1999). Research has shown that African Americans tend to have higher rates of ADHD than Caucasians (Reid et al., 2000). However, a study by Reid et al. (2000) comparing ADHD across African American and Caucasian groups found no gender difference across these two ethnic groups. This means the accepted male ADHD cases to female ADHD cases ratio was consistent across the two ethnic groups.

Due to the differences in culture, researchers express caution when discussing the use and interpretation of rating scales with students who are from different cultures (Reid et al., 1998). ADHD diagnoses and treatments in the future will be more effective when ethnic and cultural factors are identified and managed as well as individual and developmental factors (Livingston, 1999). Other researchers state that in addition to culture and ethnicity, age and socioeconomic status must also be examined

when attempting to understand the different variables and their effect on individuals with ADHD (Gingerich, Turnock, Litfin, & Rosen, 1998). Age has a significant impact on the individual with ADHD. As a person becomes older, hyperactive behaviors decrease while inattention and impulsivity are still problematic behaviors for the person (American Psychiatric Association, 1994). The prevalence of ADHD may also be higher among lower socioeconomic groups because individuals considered to have ADHD may be less likely to benefit from education than their peers (Gingerich et al., 1998). Gingerich et al. (1998) argued that understanding the environment of the ADHD individual is of extreme importance because it provides the structure and feedback system that influence the individual and his/her symptoms.

Diagnosing ADHD

Criteria needed for an accurate diagnosis are available in the DSM-IV and include three major characteristics: impulsivity, inattention, and hyperactivity (American Psychiatric Association, 1994). D'Alonzo (1996) further explained the three major characteristics of ADHD: Impulsivity can be seen in children who blurt out answers, have difficulty awaiting their turn, and who interrupt others; inattention can be defined as inattention to detail, careless mistakes in schoolwork, difficulty maintaining attention and listening, not completing assigned tasks, deficits in organizational skills, losing needed materials, avoiding tasks, forgetfulness, and being distracted by environmental stimuli; hyperactivity can be exemplified by being fidgety, leaving areas without permission, running excessively, having difficulty playing quietly, being in constant motion, and talking frequently. The characteristics of ADHD children are present in all

children at some point in time. What makes the characteristics of these children abnormal is when the behaviors are excessive in their intensity, persistence, and patterning (Hawkins, Martin, Blanchard, & Brady, 1991). Making an accurate diagnosis of ADHD is often difficult due to the subjective nature of the outlined criteria and the fact that many children demonstrate the symptoms of ADHD at one time or another (Weiler et al., 1999). Other symptoms associated with ADHD include reduced abilities in social skills, self-control, organization, and time management (Baird et al., 2000).

Delay aversion is often cited as a characteristic of ADHD. Children with ADHD, when presented with a choice, are often unable to wait for a larger reward and instead opt for the smaller reward that will be received in the shortest amount of time (Kuntsi & Stevenson, 2001). In another study by Kuntsi, Oosterlaan, & Stevenson (2001), hyperactive children not only chose the immediate reward, but they often found the waiting period aversive. This was measured by how often the children talked or engaged in other activities while waiting for the larger reward. In the classroom, children with ADHD are often unable to focus their attention long enough to receive a larger award of the teacher's approval, instead opting for smaller rewards, such as peer attention or immediate negative teacher attention.

Typically, ADHD symptoms occur in early childhood, before age 7 (American Psychiatric Association, 1994), and are most often observed in the school setting. Therefore, teacher observations along with behavior rating scales are essential for determining the presence of ADHD in children (Wolraich & Baumgaertel, 1996). Teacher ratings are often relied

on because teachers have the opportunity to observe children in different school settings for long periods of time (Abikoff, Courtney, Pelham, & Koplewicz, 1993). In the past, teachers have identified more than the 3-5% of students as having ADHD. For example, as many as 15% of the sample in one study would have been labeled ADHD by teachers (Weiler et al., 1999). Glass and Wegar also (2000) found that teachers over-identified six to fifteen percent of students as having ADHD. One reason for this over-identification is that any individual with atypcial behavior is likely to get more attention (Shelley-Tremblay & Rosen, 1996). Shelley-Tremblay and Rosen (1996) also noted that while children with ADHD receive more attention, most of it is negative. School personnel also often encourage parents to receive a medical diagnosis by directly or indirectly encouraging the parents to seek medication for their child (Smelter, Rasch, Fleming, Nazos, & Baranowski, 1996).

ADHD should not be diagnosed by using one instrument, but rather, from the child's history, from parents, and from teacher reports (Thompson, 1996). Parents must be careful when attending to popular magazines, television shows, and other media that contain information about ADHD because many of these sources portray the disorder in such a way that almost any child could be identified. All children exhibit socially unacceptable behaviors at some point in time, which is a normal part of the maturation process (Smelter et al., 1996). Some researchers believe that ADHD is a disorder that represents a poor fit between the individual and his/her environment (Shelley-Tremblay & Rosen, 1996).

The behaviors that define inattention in the DSM-IV are largely related to academic activities (Wolraich & Baumgaertel, 1996). The

classroom is an environment in which students must demonstrate self-application and self-discipline (Hawkins, Martin, Blanchard, & Brady, 1991). Classroom environments also demand attentional focus and motor control, while in the presence of various stimuli (Jensen et al., 1997). Children with ADHD can be argumentative, immature, rejected by peers, and overactive. These characteristics make learning difficult for the ADHD student as well as his/her peers in the classroom (Taylor & Larson, 1998). Most classroom environments favor the student who is able to sit quietly, maintain attention by ignoring distractions, and analyze a situation before responding (Jensen et al., 1997). This becomes an arduous task for those students with attentional and behavioral problems.

Since all children are required to receive an education, it is likely that the majority of ADHD students will be identified and served within the classroom environment (Reid, Vasa, Maag, & Wright, 1994). In fact, teachers probably have one or two students in their classrooms with ADHD (How to manage, 1997). Teachers need to be aware of the classifications for ADHD, as well as diagnostic procedures, and behavioral characteristics (Taylor & Larson, 1998). This knowledge will help teachers understand how to better instruct ADHD students. In a study by Hawkins et al. (1991), teachers indicated that they were not specifically trained to teach students with ADHD. Hawkins et al. (1991) recommended that teachers must obtain adequate training in effective assessment methods, such as the use, application, and interpretation of direct observation techniques, questionnaires, social histories, standardized tests, medical reports, etc. They also suggested that this information be presented at a

pre-service level because of the probability that every teacher will encounter students with ADHD (Hawkins et al., 1991).

Rating scales are often used in the process of identifying students with ADHD. Rating scales provide normative information and also allow for comparisons to be made between students and their peers (D'Alonzo, 1996). One particular rating scale, the ADHD Rating Scale-IV (School Version), was developed to specifically obtain teacher ratings of the frequency of the symptoms of ADHD as described in the DSM-IV (DuPaul et al., 1997). This rating scale is presented on a 4-point Likert scale (DuPaul, Power, Anastopoulos, & Reid, 1998). The standardization sample of the ADHD Rating Scale-IV yielded gender, age, and ethnic differences. Boys were reported to engage in more ADHD behaviors than girls, younger children received higher ratings of ADHD than older children, and African American children obtained higher ratings of ADHD than Caucasian and Latino children (DuPaul et al., 1998). Teachers also over-identified ADHD in every age group for both genders in the standardization sample. The prevalence rate for children 5 to 7 years of age was 25.3%, 23.8% for 8 to 10 year-old children, 21.5% for 11 to 13 year-olds, and 15.0% for 14 to 18 year-olds. The results show that the overall prevalence of ADHD may decline with age (DuPaul et al., 1998).

Interventions for Children with ADHD

Between 85% and 90% of children with ADHD will be served in the general education classrooms for various amounts of time throughout the school day and can be successful with the right intervention (Montague & Warger, 1997). Although ADHD students may have a right to receive services under the Individuals with Disabilities Education Act (IDEA) or

Section 504 if they meet certain criteria (Montague & Warger, 1997), most students with ADHD are served in the regular classrooms. Therefore, teachers are the primary agent in implementing and monitoring effective and appropriate interventions because they are in the best position to monitor the settings in which the behaviors occur (Katisyannis & Landrum, 1997).

Many different interventions are used to deal with students who have ADHD. Behavior management, appropriate educational placement, and stimulant medications are often used to improve academic performance and behavior in most children (Taylor, 1997). Behavior management techniques can help the ADHD student to be productive in the classroom, and accepted in schools, at home, and in social situations (Lucker & Molloy, 1995). Various reinforcement and response-cost programs can be implemented with ADHD students to help them positively regain control of their behaviors in the classroom. A study by Glass (2001) found that teachers with less than five years of experience did not frequently use positive methods in classroom management.

Medication

Stimulant medication is also used to control behaviors exhibited by ADHD students. Between 60% to 90% of students diagnosed with ADHD are currently taking medication (Montague & Warger, 1997). When taken properly, the medication allows the student to be less distractible, more able to concentrate, and more attentive. It may also allow for behavioral problems, such as aggression and inappropriate social interactions, to decrease. While many people believe that medication cures ADHD, it is important to note that there is no known cure for ADHD and, at the very

least, medication has the potential to improve the academic and social achievement of students with ADHD by controlling the inappropriate behaviors (Montague & Warger, 1997). Davino, Lehr, Leighton, Miskar, and Chambliss (1995) found that teachers agreed that stimulants are useful for the treatment of ADHD.

In addition to behavior management, appropriate educational instruction, and stimulant medications, many other useful strategies, techniques and interventions have also been published to aid teachers who have students with ADHD (Calhoun, Greenwell-Iorillo, & Chung, 1997; Weaver, 1994; Semrud-Clikeman, Nielson, & Clinton, 1999; Taylor & Larson, 1998; How to manage, 1997). Reid et al. (1994) cautioned against overly involved interventions because interventions perceived as being unrealistic or requiring too much time to implement are unlikely to be used.

A previous study by Glass and Wegar (2000) examined 225 teachers' perceptions of the incidence of ADHD, their views on the causes of ADHD, and the interventions they found to be most appropriate for dealing with ADHD students. Surveys were mailed to the participants to obtain the pertinent information on these topics. The results showed that most teachers believed there was a biological cause to ADHD and chose a combination of medication and behavior modification as the desired intervention/treatment. Thirty-six percent of the teachers identified six to fifteen percent of their students as having ADHD. Based on the teachers' knowledge of the students who have been medically diagnosed with ADHD, the mean incidence of ADHD in the public classrooms was eight percent and twelve percent in the private classrooms. In addition, classroom size was shown to be an influence on how many students the

teachers rated as having ADHD. The teachers with the largest class size of more than twenty-three students, identified sixteen to twenty-five percent of the class as displaying ADHD behaviors. Glass and Wegar (2000) concluded that due to limited resources, teachers and school administrators tended to ignore possible methods of intervention, such as changes in classroom size and alternative teaching methods, which may lead to the over-identification of students with ADHD.

This study is an extension of the previously described study by Glass and Wegar (2000). One purpose of this study is to examine teachers' perceptions on the causes, incidence, and appropriate treatment methods of ADHD. It is important to understand how teachers view ADHD because teachers are valuable informants in assisting with a diagnosis of ADHD. They are also relied on, often exclusively, to determine the prevalence rate of ADHD in population samples (Abikoff, Courtney, Pelham Jr., & Koplewicz, 1993). Also, few studies have examined ADHD in the schools or the relevance of prevalence rates to school enrollment (Daley, Onwuegbuzie, & Griffin, 1998). Differing from Glass and Wegar (2000), this study also examines the prevalence of ADHD as determined by the ADHD Rating Scale-IV (School Version) (DuPaul et al., 1998). The use of the ADHD Rating Scale-IV in this study will also provide the teachers with the DSM-IV criteria while rating their students' symptoms of ADHD. Another purpose of this study is to compare the results from this study to those found in the ADHD Rating Scale-IV standardization sample regarding the over-identification of male and minority students. Since rating scales and the DSM-IV criteria are often used in the process of identifying those students with ADHD, it is important to study further this

rating scale to determine if it consistently over-identifies students or carries biases towards gender or ethnicity.

I hypothesize that the results of the teacher interviews will be similar to those found by Glass and Wegar (2000). Specifically, a biological cause will be the most reported by the teachers. A combination of medication and behavior modification will be preferred interventions. Most teachers in the study by Glass and Wegar (2000) believed that ADHD was present in 6%-15% of their classroom. I hypothesize teachers with more students in their classrooms will find more instances of ADHD. I also hypothesize that the perceived incidence of ADHD will be higher than 3%-5%.

Aside from the research conducted by Glass and Wegar (2000), I hypothesize that the teachers will over-identify ADHD in students even with the DSM-IV criteria set forth in the ADHD Rating Scale-IV (School Version). Teachers over-identified ADHD in every age group for both genders in the standardization sample of the ADHD Rating Scale-IV (School Version) (DuPaul et al., 1998). I also hypothesize that boys and minority students will be identified at the highest rates. Boys were rated by teachers as exhibiting more ADHD symptoms than girls. African-Americans were also rated more frequently than other ethnic groups by their teachers in the standardization sample (Du Paul et al., 1998).

Method

Participants

Fifty-two regular K-6 classroom teachers were randomly selected from eight different rural schools located across central Illinois, including

elementary and middle schools/junior highs. Forty-six of the teachers were female and six were male. Twenty-five percent of teachers reported they had 0-5 years of experience, 23% had 6-10 years of experience, 11% had 11-15 years of experience, 6% had 16-20 years of experience, and 35% had over 20 years of experience.

Materials

A survey adapted from the one previously used in a study by Glass and Wegar (2000) was used. Each teacher was asked the number of students in his/her classroom, the number of students who have been diagnosed with ADHD and whether or not he/she agreed with the diagnosis, and how many additional students the teacher thinks may have ADHD. The survey also included questions on the teacher's perception of the cause of ADHD (biological, environmental, extreme normal behavior) and the method of treatment the teacher deems appropriate for students with ADHD when presented with the choices of (1) the use of medication, (2) behavior modification, (3) medication and behavior modification, (4) no treatment at all, or (5) other. Reliability and validity data for the Glass and Wegar (2000) survey was unavailable.

The ADHD Rating Scale-IV (School Version) (DuPaul et al., 1998) was also used to compare teachers' perceptions of the students with ADHD behaviors to the students actually identified as potentially having ADHD through this rating scale. This behavior rating scale was developed to obtain teacher ratings of the frequency of symptoms of ADHD, as set forth by the DSM-IV (DuPaul et al., 1997). The ADHD Rating Scale-IV (School Version) consists of 18 items with Inattention symptoms outlined in the odd-numbered items and Hyperactivity symptoms outlined in the

even-numbered items. Based on the behavior that was demonstrated by the student in the classroom, the teacher rates the items in regards to the frequency of the particular behavior. The frequency of each item is outlined in a Likert-type format: 0 (never or rarely), 1 (sometimes), 2 (often), and 3 (very often), with higher scores indicating a higher incidence of ADHD behaviors. The presence of ADHD was determined by 6 (out of a possible 9) scores of 2 (often) or 3 (very often) on the odd, even, or combined items (DuPaul et al., 1998).

Overall, the ADHD Rating Scale-IV (School Version) was found to have adequate psychometric properties for use as a screening, diagnostic, or treatment outcome measure. The scores from the ADHD Rating Scale-IV have been found to have adequate levels of internal consistency and stability over a 4-week period and have also been found to be significantly correlated with observations of classroom behavior (DuPaul et al., 1997). Internal consistency was represented by the following alpha coefficients: Total score = .94, Inattention = .96, and Hyperactivity-Impulsivity = .88. Test-retest reliability data are described by the following Pearson product-moment correlation coefficients: Total score = .90, Inattention = .89, and Hyperactivity-Impulsivity = .88 (Du Paul et al., 1998).

Discriminant validity was found by using a sample of 92 children between the ages of 6-14.75, in grades kindergarten through eighth grade, who were from different ethnic groups and socioeconomic statuses. The Kaufman Brief Intelligence Test (K-BIT) was administered to the sample and yielded an average group Composite IQ of 101.9. The parents of the children completed the Child Behavior Checklist (CBCL), teachers rated

the students using the teacher-rated Child Attention Problems Scale (CAP), and both parents and teachers completed the Home and School Versions of the ADHD Rating Scale-IV. Clinicians completed the Diagnostic Interview for Children and Adolescents-Revised (DICA-R) for each child. Based on these data, the children were assigned to a diagnostic group (ADHD/I or ADHD/COM) or a control group. Statistically significant differences in mean ratings were found among the three groups: teacher Inattention ratings ($F(2, 87) = 22.34$, $p < .0001$) and teacher Hyperactivity-Impulsivity ratings $F(2, 87) = 23.57$, $p < .0001$) (Du Paul et al., 1998).

Predictive validity for the school version was determined by using a school-based validity study. The sample was comprised of 95 students between the ages of 5-14, who were from different ethnic groups and socioeconomic statuses. Each student was rated at or above the 93rd percentile on the Inattention and/or Overactivity factor of the CAP. These children were assigned to a diagnostic or control group based on their scores from the parent version of the DICA-R and the teacher-rated CAP-2. Children were then categorized as having ADHD if they met the criteria for the DICA-R and were rated at or above the 93rd percentile on the CAP-2 (Du Paul et al., 1998).

Procedure

In order to carry out this study, principals and/or teachers employed at the various schools were contacted and assistance was requested from several teachers at each school. Each teacher was asked to complete the adapted survey of attention-deficit hyperactivity disorder in the classroom and two ADHD Rating Scales-IV (School Version) by randomly selecting the third male and the seventh female on the class roster. Some teachers

were asked to complete five rating scales apiece by randomly selecting the second, third, and fifth males and the first and fourth females on their class rosters. The child's age, gender, and ethnicity was required on the top of the form to assist in determining if any cultural and gender differences in the frequency of ADHD symptoms exist.

Analysis

The prevalence of ADHD, as reported by the teachers using the ADHD Rating Scale-IV (School Version) was determined by scoring the forms and determining if ADHD symptoms were present. In theory, only 3-5% of the students in the sample will have significant symptoms of ADHD, according to the ADHD Rating Scale-IV. In reality, the number was much higher. The perceived cause of ADHD (biological, environmental, extreme normal behavior) as well as the most appropriate type of treatment for the students with ADHD was determined by the most frequent answer given by the teachers as in the Glass and Wegar (2000) study. The perceived cause was compared with the preferred method of treatment to determine if the treatment is a logical intervention for the perceived cause. For example, Glass and Wegar (2000) found that the teachers who believed ADHD to be environmentally influenced thought that a combination of medication and behavior modification was the most logical treatment, even though medication does not change the environment, but what occurs within the person. The number of students the teachers perceive to have ADHD was compared to the total number of students in the classroom and converted into a percentage. Also, the number of students formally diagnosed with ADHD by a physician was converted into a percentage and compared to the percentage of 3%-5% in

the DSM-IV. Classroom size was considered when comparing the perceived prevalence of ADHD in the classroom. A series of t-tests of ADHD Rating Scale-IV results were used to determine if any differences are present among gender, age, and ethnicity variables. Finally, an overall mean percentage was computed depicting the teachers' overall perceived incidence of ADHD in their classrooms.

Results

The largest percentage of surveyed teachers (47.06) thought the cause of ADHD was mostly biological/chemical, although many thought the cause to be both biological/chemical and environmental (39.22 percent). Only 11.76 percent thought the cause to be only environmental, 0 percent thought it to be extreme normal behavior, and 1.96 percent chose biological/chemical, environmental, and extreme normal behavior. When asked how ADHD should be controlled, the large majority of teachers (90.38 percent) chose the combination of behavior modification and medication. Only 5.77 percent chose behavior modification, 1.92 percent chose medication, and 1.92 percent chose the option of other. "Other" responses included answers such as depends on the student, highlighted textbooks, having tests read, and modified answer choices. None of the teachers chose the option of no treatment at all. All of the teachers who perceived the cause of ADHD to be biological/chemical or a combination of biological/chemical and environmental factors chose treatments of behavior modification or a combination of behavior modification and medication. All of the teachers who perceived the cause of ADHD to be only due to environmental factors also chose these options for treatment.

Within their classrooms, teachers reported actual doctor-diagnosed incidences of ADHD ranging from 0-22.73%. The mean incidence was 4.93%, which falls within the 3-5% incidence rate set forth by the DSM-IV. Almost half of the teachers, 48 percent, reported a zero percent incidence rate of students diagnosed with ADHD in their classrooms. In contrast, when the teachers were asked how many students they thought had ADHD in their classrooms, the incidences ranged from 0-24%, with a mean incidence of 8.61%. Only 36.54 percent of teachers believed that none of their students had ADHD.

Classroom size has been considered a factor in the over-identification of students with ADHD. The average classroom size included 19.88 students. Twenty-five classrooms had less than 19.88 students and twenty-seven classrooms had more than 19.88 students. Over half, 51.85 percent, of the teachers whose classrooms had greater than 19.88 students reported that the actual incidence of ADHD in their classrooms was over 3-5%. Only 20 percent of the teachers whose classrooms have less than 19.88 students reported the actual incidence to be over 3-5%. None of the classrooms with less than 19.88 students had incidences of ADHD within the range of 3-5%. However, 22.22 percent of classrooms with greater than the mean number of students had incidences within that range. Similarly, 25.93 percent of classrooms with greater than the mean number of students had incidence rates under 3%. In contrast, 80 percent of classrooms with less than the mean number of students had incidences under 3%.

The perceived incidence percentages followed a similar pattern (see Table 1). The teachers with classrooms of more than 19.88 students

over-identified (incidence rate >5%) students with ADHD in 62.96 percent of the classrooms, 18.52 percent of classrooms had students who were identified in the 3-5% range, and 18.52 percent of the classrooms had students who were identified less than 3%. The classrooms with fewer than 19.88 students over-identified 44.00 percent of the students and under-identified 56.00 percent of the students. Again, no students were identified within the 3-5% range.

Table 1
Incidence Rates of ADHD by Classroom Size

	Mean +		Mean -	
Incidence rate	Actual	Perceived	Actual	Perceived
Over 5%	51.85%	62.96%	20.00%	44.00%
3-5%	22.22%	18.52%	0%	0%
Under 3%	25.93%	18.52%	80.00%	56.00%

Note. The mean classroom size was 19.88 students.

The ADHD Rating Scale-IV was used to determine if teachers would over-identify students as having symptoms of ADHD even with the DSM-IV criteria set forth within the rating scale. A total of 123 rating scales were completed. There were 66 males and 57 females, 86 Whites, 35 Hispanics, 1 African American, and 1 Asian/Pacific Islander. The rating scales of the African American and the Asian/Pacific Islander were not used due to the small number in each group. Thirty of the thirty-five rating scales completed on the Hispanic students came from classes comprised entirely of Hispanic students. The mean age of the Whites was 8.52 years and the mean age of the Hispanics was 7.31 years. The mean age of the

males was 8 years and the mean age of the females was 8.38 years. Out of 121 rating scales analyzed, 29 students, or 23.97 percent, were identified as meeting criteria for one of the three types of ADHD: Inattentive, Hyperactive-Impulsive, or a combination. The students rated as having the Inattentive symptoms of ADHD were 6 males, 67%, (mean age = 7.83) and 3 females, 33%, (mean age = 10.3). Further, 8 of these students were White, 89%, (mean age = 9.13) and only 1 was Hispanic, 11%, (mean age = 5). The students rated as having the Hyperactive-Impulsive symptoms of ADHD were all White males, 100%, (mean age = 8.75). The students rated as having the combined symptoms of ADHD were 14 males, 87.5%, (mean age = 8.14) and 2 females, 12.5%, (mean age = 6.5). All 16 students were White, 100%, (mean age = 7.93) (see Table 2).

Table 2
Students Rated as ADHD

Type	Females	%	Males	%	Whites	%	Hispanics	%
Hyperactive	0	0	4	100	4	100	0	0
Inattentive	3	33	6	67	8	89	1	11
Combined	2	12.50	14	87.50	16	100	0	0

A series of t-tests were used to determine if any differences in scores on the ADHD Rating Scale-IV were present among those rated as having ADHD, gender, and ethnicity variables. A series of independent samples t-tests were conducted on the given scores. Results show that students rated as having ADHD ($M = 35.03$) had significantly higher scores than those who did not meet criteria ($M = 6.17$), $t\ (119) = 19.499$, $p < .000$. Males ($M = 18.20$) also had higher scores than females ($M =$

6.96), t (119) = 4.708, $p < .000$. Further, Whites (M = 15.71) had higher scores than Hispanics (M = 6.66), t (119) = 3.315, $p < .001$. In addition, 41.4% of the students identified as having ADHD were 5-7 years old, 31.0% were 8-10 years old, and 27.6% were 11-13 years old.

Discussion

Survey results were generally consistent with Glass and Wegar (2000). As in Glass and Wegar (2000), a biological cause for ADHD was chosen the most by the teachers. However, a combined cause of biological and environmental was chosen almost as frequently. Glass and Wegar (2000) also found that teachers chose to control ADHD with a combination of medication and behavior modification, the treatment option chosen most frequently by teachers in this study. This treatment is logical if the perceived cause is biological/chemical. Glass and Wegar (2000) found that 77.6 percent of the teachers who believed ADHD was caused by environmental factors chose the treatment of behavior modification and medication. In this study, all of the teachers who chose the cause of environmental factors preferred the treatment of behavior modification and medication. Medication does not affect the environment of the child. Glass and Wegar (2000) concluded that sometimes it is easier to medicate the child than to look for other solutions that are more time-consuming. Another reason for choosing medication might be because the media have sensationalized ADHD and the medications used to treat ADHD. These medications are seen as "miracle" pills or as a "quick fix" because children are able to become more well-behaved and focused after being treated with medication.

Teachers reported an overall mean incidence rate of 4.93% actual doctor-diagnosed incidences of ADHD in the classroom. This percentage is within the range of 3-5% set forth by the DSM-IV. However, 48% of the teachers reported a zero percent incidence rate of students diagnosed with ADHD in their classrooms. This suggests that the number of students with ADHD is not spread out evenly among the classrooms; some classrooms have more than the 3-5% and some have less. Classroom size was found to be a factor in the over-identification of students with ADHD. The mean classroom size was 19.88 students. Over half of the teachers with more than 19.88 students reported that the actual incidence rate of students with ADHD in their classrooms was greater than 3-5%. When comparing those classrooms with greater than 19.88 students to those with less than 19.88 students, a much smaller percentage of teachers reported incidences greater than 3-5% in the smaller classrooms. In fact, the majority of smaller classrooms, 80%, reported incidences less than 3-5%. This indicates that the smaller the classroom, the fewer incidences of ADHD. This could be because the teacher is more aware of what is going on with each students in the classroom and a more structured environment is easier to achieve with a smaller number of students. In contrast, Glass and Wegar (2000) found that the largest percentage of students with ADHD was found in the smallest classrooms of 5-15 students. Glass and Wegar (2000) explained this phenomenon by stating that the large majority of these classrooms were located in private schools, which may lead to selection bias. In addition, Glass and Wegar (2000) stated that this small classroom size is rarely found in the public school system and it may represent unidentified special education classrooms.

When teachers were asked to report how many students they thought had ADHD, the mean incidence rose to 8.61%, with a range of 0-24%. Again, most classrooms with more than the mean number of students identified larger numbers of students with ADHD. Jensen et. al. (1997) stated that larger classrooms contain many distractions and the ADHD child may perform much better with alterations in his/her environment, such as smaller classroom size. The number of incidences reported by teachers with less than the mean number of students also increased, but the majority of these teachers continued to have incidence rates below 3-5%. Glass and Wegar (2000) found that only 28 percent of the teachers believed their classroom incidence of ADHD to be at or below 5%.

When the teachers in this study were asked to use the ADHD Rating Scale-IV to rate random students in their classrooms, they identified 23.97% of students as having ADHD. Classroom size was again an important factor. Teachers with more than the mean number of students accounted for 62.07% of the students rated as having ADHD, while 37.93% of the students were rated as having ADHD by teachers with less than the mean number of students. This further suggests that classroom size is related to the over-identification of students with ADHD.

Further examination of the results of the rating scales indicated many significant differences in scores among those rated as having ADHD, as well as differences in gender and ethnicity. Students rated as having ADHD had significantly higher scores than those who did not meet criteria. This suggests that the ADHD Rating Scale-IV has clear and accurate guidelines for diagnosing ADHD. Males had significantly higher scores

than females, which is consistent with the DSM-IV. This could be because males are more likely to be referred for a diagnosis of ADHD because they display more aggressive behaviors which are more disruptive to parents and teachers (Gingerich et.al., 1998). The prevalence rate for children in different age groups followed the same pattern as the prevalence rate in the standardization sample of the ADHD Rating Scale-IV (DuPaul et. al., 1998). The older age group of 11-13 years had the lowest percentage of ADHD identification. This suggests that the overall prevalence of ADHD may decline with age. Gingerich et. al (1998) stated that people with ADHD learn various coping strategies as they mature. The surprising finding of this study was that White students had significantly higher scores than Hispanic students. In the standardization sample, African Americans had higher ratings than Caucasian and Latino children (DuPaul, 1998). If ADHD characteristics are more accepted in one culture, the incidences of ADHD will be less frequently reported (Pineda et al., 1999). For example, sometimes, Latin Americans and Hispanics are viewed as more talkative than Whites (Pineda et al., 1999). Because teachers may expect Hispanics to be more talkative than Whites, this cultural expectation could be one reason for Whites having higher scores than Hispanics. Another reason could be found in DuPaul et al. (1997); their research found differences between Hispanic and Caucasian groups only in the 14-18 year old group, with Hispanics scoring higher. In the present study, most of the participants were under 14 years of age. Yet another reason for these findings is found in Reid et al. (1998); ADHD in minorities is an area that needs further research and rating scales often do not perform in the same way across groups. Minorities often live in highly stressful environments

(Gingerich et. al., 1998) and rating scales do not address home life or other issues that could be causing ADHD-like symptoms. In addition, the expectations of school personnel, families, and communities vary according to cultural, developmental, and personal factors. The procedures for diagnosing and treating ADHD should improve when cultural factors are considered (Livingston, 1999). The logical conclusion is to develop culturally-normed rating scales (Reid, 1995).

Implications

As in Glass and Wegar (2000), this study found that teachers are still over-identifying students as having ADHD. Classroom size appears related to this problem. With many state budget cuts coming up in the near future, classrooms are going to be growing larger and larger. If classrooms become larger, the perceived incidences of ADHD will probably increase as well.

In addition, more research needs to be conducted on rating scales for ADHD and different ethnic groups. This is an understudied area and scores on rating scales often result in differential identification of students of different ethnic backgrounds. Therefore, rating scales on minorities should be used and interpreted with caution. If possible, a rating scale that is representative of the population should be used (Reid, 1995). Cultural beliefs about ADHD should be researched and scores on rating scales should not be used as the only measure of determining or ruling out the presence of ADHD in minority groups. In addition, a complete physical examination should be done in all cases to rule out any medical problems that may be contributing to the ADHD-like behaviors.

The DSM-III and DSM-III-R identified the general prevalence of ADHD as somewhere between 3-5% of the population. The DSM-IV identified the same prevalence rate, even though the criteria for ADHD had changed. Three subtypes were created based on two dimensions of inattention and hyperactivity/impulsivity. The third subtype is the combined type of the two dimensions. Other criteria were added including age of onset, duration of symptoms across settings, and evidence of adverse effect on social, academic, or occupational functioning (DSM-IV; APA, 1994). Wolraich & Baumgaertel (1996) found that the new criteria for the DSM-IV was likely to increase the prevalence rates of the disorder. This suggests that the change in criteria also relates to a change in prevalence rate. This study and Glass and Wegar (2000) found increased incidence rates of ADHD, greater than the 3-5% prevalence rate set forth by the DSM-IV. Instead of continuing to over-identify students as having ADHD, the prevalence rate needs to be changed to reflect the changes made in the criteria for ADHD from the DSM-III and the DSM-III-R to the DSM-IV.

Limitations

If this study were to be replicated, I would suggest using students who are more representative of the United States population. This would include students who are African American and Asian American/Pacific Islander. I would also use older students to get a clearer picture of the presence of ADHD across different age groups.

Conclusion

As ADHD continues to be highly sensationalized in the media and a buzzword in the educational system, people should remember that there are

other alternatives to medicating students with ADHD. Keep in mind that not every student who is inattentive, hyperactive, or impulsive does not have ADHD. Educators and parents should work together to teach these children coping skills and strategies to focus their attention so that they will become successful adults and contributing citizens of this country.

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Appendices

Information Summary and Informed Consent

Dear Educator:

I am a graduate student in school psychology currently working on my thesis project. I would appreciate your assistance in collecting data for this project, which examines teachers' perceptions of the incidence and management of Attention-Deficit Hyperactivity Disorder (ADHD). I would like to assess teachers' perceptions of students' behavior by having you complete a survey, The Survey of Attention-Deficit Hyperactivity Disorder in the Classroom, and two short rating scales, the ADHD Rating Scale-IV, for one boy and one girl in your class. Estimated time for completing the survey and two rating scales is about 5 minutes for each.

If you choose to participate, please rate the third male and the seventh female on your class list. If you do not have seven females in your class, please rate the last one. Please do not include the child's name on the rating scale, but please do indicate the child's sex, age, level (grade) in school, and ethnicity.

Any assistance that you can give me will be greatly appreciated. If you have any questions or concerns, or if you would like a summary of the results, please contact me at the e-mail below.

Sincerely,

Julie Olson

Julie Olson
olson2@mcleodusa.net

INFORMED CONSENT

If you are willing to participate, please read and sign the following:

I understand that Julie Olson is completing a thesis project on teachers' perceptions of ADHD. The information that she obtains will be used strictly for the purpose of completing her thesis. No names or any other identifying information will be used.

I agree to participate in this study. I also agree to complete the Survey of Attention-Deficit Hyperactivity Disorder in the Classroom and the ADHD Rating Scale-IV on two of my students. I understand that participation is confidential and voluntary. Further, I understand that I can withdraw from the study at any time without penalty and I can ask questions.

Name _____ Date _____

Thank you for your assistance!

SURVEY OF ATTENTION DEFICIT HYPERACTIVITY DISORDER
IN THE CLASSROOM

1. Gender: Female Male

2. Years of Teaching Experience: 0-5 6-10 11-15 16-20 Over 20

3. Type of School: Elementary Junior High/Middle School

4. What grade level do you currently teach?
K 1 2 3 4 5 6

5. How many students are in your classroom?

6. How many of those students have been diagnosed by a physician as having ADHD?

7. Do you agree with the diagnosis of ADHD for these children?
Yes No Only for ___ children

8. Do you believe that any additional children in your classroom may have ADHD?

IF THE ANSWER TO NUMBER 8 IS NO, SKIP TO QUESTION 12

9. How many additional students do you think may have ADHD?

10. Have you spoken to the parents or guardians of any of these children regarding your concerns? Yes No

11. Have you received any training materials from your school regarding the symptoms of ADHD and/or how to accommodate ADHD children in the classroom? Yes No

12. Do you think ADHD is caused by-
____ a biological/chemical disorder within the child's brain
____ an abnormal behavior pattern brought on by environmental factors
____ an extreme form of normal behavior that may cause problems for the child

13. How often do you employ the following strategies for managing children who display ADHD behaviors in your classroom?
0 = Never 1 = Occasionally 2 = Frequently 3 = Always
____ a. Requiring less classwork or homework
____ b. Separating the child from other students
____ c. Making special accommodations (such as giving a test orally, etc.)
____ d. Referring the child to "detention" or to the principal's office for unruly behavior
____ e. Offering praise, stickers, or other "rewards" for accomplishments that you **do not** offer to the class as a whole

____ f. Attempt to involve the parents in management of the child's symptoms
____ g. Verbal reprimands
____ h. Allow the child to work at his/her own pace instead of staying on-task
____ i. Allow the child "hands-on" alternatives (such as a poster instead of a written book report, etc.)
____ j. Allow the child to move around in the classroom and/or frequent breaks

14. The last three options of allowing the child to work at his/her own pace instead of staying on task, allowing the child "hands-on" alternatives, and allowing the child to move around in the classroom or take frequent breaks are usually considered "non-traditional" teaching strategies. If your answer to **any or all** of the three was "Never", is that because: (CHECK ALL THAT APPLY):

____ a. You had never been advised of that method
____ b. You don't believe it would benefit the child
____ c. You don't believe it would be good for the class as a whole
____ d. You lack the time to allow this method

15. Do you 1= Strongly Agree, 2= Mildly Agree, 3= Mildly Disagree, or 4=Strongly Disagree with the following statements?

____ a. Many children diagnosed with ADHD do not really have the disorder.
____ b. A few children diagnosed with ADHD do not really have the disorder.
____ c. There are probably many children not diagnosed with ADHD who actually have the disorder.

16. Treatment for ADHD varies. From your experience, which method do you believe works best?

____ a. Behavior modification only
____ b. Behavior modification and medication
____ c. Medication only
____ d. I don't believe ADHD children need any treatment
____ e. Other: Please describe_____

17. Do you have any comments you would like to share about ADHD?

ADHD RATING SCALE–IV: SCHOOL VERSION

Sex: M F Age_____ Grade_____

Ethnicity: (circle one) Hispanic Asian/Pacific Islander
Caucasian Other _____
African-American

Circle the number that *best describes* this student's school behavior over the past 6 months (or since the beginning of the school year).

	Never or rarely	Sometimes	Often	Very often
1. Fails to give close attention to details or makes careless mistakes in schoolwork.	0	1	2	3
2. Fidgets with hands or feet or squirms in seat.	0	1	2	3
3. Has difficulty sustaining attention in tasks or play activities.	0	1	2	3
4. Leaves seat in classroom or in other situations in which remaining seated is expected.	0	1	2	3
5. Does not seem to listen when spoken to directly.	0	1	2	3
6. Runs about or climbs excessively in situations in which it is inappropriate.	0	1	2	3
7. Does not follow through on instructions and fails to finish work.	0	1	2	3
8. Has difficulty playing or engaging in leisure activities quietly.	0	1	2	3
9. Has difficulty organizing tasks and activities.	0	1	2	3
10. Is "on the go" or acts as if "driven by a motor."	0	1	2	3
11. Avoids tasks (e.g., schoolwork, homework) that require sustained mental effort.	0	1	2	3
12. Talks excessively.	0	1	2	3
13. Loses things necessary for tasks or activities.	0	1	2	3
14. Blurts out answers before questions have been completed.	0	1	2	3
15. Is easily distracted.	0	1	2	3
16. Has difficulty awaiting turn.	0	1	2	3
17. Is forgetful in daily activities.	0	1	2	3
18. Interrupts or intrudes on others.	0	1	2	3