2010

A review of instructional strategies for assisting children with attention deficit hyperactivity disorder in the preschool classroom

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There are many people in today's society who are diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD). More and more children in today's schools are exhibiting the characteristics that coincide with ADHD and the children exhibiting such behaviors appear to be getting younger and younger. The author of this review studied current scales and measurements that are being used to effectively diagnose young children with ADHD. The author described common characteristics found in preschoolers diagnosed with ADHD, as well as teaching strategies that are currently used for assisting these children in preschool classrooms.

A Review of Instructional Strategies for Assisting Children with Attention Deficit Hyperactivity Disorder in the Preschool Classroom

A Graduate Review

Submitted to the

Division of Early Childhood Education

Department of Curriculum and Instruction

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts in Education

UNIVERSITY OF NORTHERN IOWA

By

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August 2010

This Review by: Michelle Miller

Titled: A Review of Instructional Strategies for Assisting Children with Attention Deficit Hyperactivity Disorder in the Preschool Classroom

has been approved as meeting the research requirement for the

Degree of Master of Arts in Education.

11-2-10
Date Approved

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11-3-10
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11-2-10
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Abstract

There are many people in today's society who are diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD). More and more children in today's schools are exhibiting the characteristics that coincide with ADHD and the children exhibiting such behaviors appear to be getting younger and younger. The author of this review studied current scales and measurements that are being used to effectively diagnose young children with ADHD. The author described common characteristics found in preschoolers diagnosed with ADHD, as well as teaching strategies that are currently used for assisting these children in preschool classrooms.

TABLE OF CONTENTS

CHAPTER ONE

Introduction

A 4 ½-year-old boy had severe symptoms of hyperactivity, inattention and impulsivity. Peer relationships were strained, and he was admitted to the emergency room twice in one year as a result of accidents occurring from his impulsive behavior. The child was recently expelled from his preschool because of disruptive and out of control behavior. (Kratocival, Egger, Greenhill, & McGough 2006).

Twenty years ago, few individuals were diagnosed with Attention Deficit Hyperactivity Disorder and even fewer were taking medications for it (Barkley, 2005). Today, millions of people are diagnosed with ADHD, and researchers have suggested that as many as six to nine percent of the population could be affected (Ashley, 2005). ADHD afflicts four to six percent of all children and five times as many boys as girls (Coon, 2004).

Children who have ADHD characteristics are generally diagnosed around the age of seven. But the onset of ADHD behaviors typically occurs during the preschool years (Barkley, 2005). In the preschooler, ADHD behaviors included impaired performance on attention tests, a higher frequency of off-task behavior, shorter duration of play or attention intervals, higher frequency of activity shifts, and higher levels of motor activity (Flick, 1998). Recently, there has been an increase in the diagnosis of ADHD among preschool children (i.e., younger than 5 years) (Barke, Thompson, Abikoff, Klein, & Brotman, 2006).

Rationale

The life of a child whose ADHD is left unrecognized and untreated is likely to be filled with under-achievement and failure. Up to 30-50% of children diagnosed with ADHD may be held back in a grade at least once, and as many as 35% may fail to complete high school

altogether (Barkley, 2005). Imagine the toll on society when five to eight percent, or more than 2.5 million school-age children, have ADHD. This potentially could result in one or even two children with ADHD in every classroom throughout the United States (Barkley, 2005).

Since ADHD was added to the fourth edition of the *Diagnostic and Statistical Manual* (American Psychological Association, 1994), it has become the fastest-growing disorder in America, where it is diagnosed at least ten times as often as it is in Europe. Although a true disorder is present in some cases, psychologists fear that parents, teachers, and mental-health professionals are overusing this diagnosis, especially in boys, who make up 80% to 90% of all ADHD cases (Wade & Tavris, 2005). Critics argue that normal boy behavior – being rambunctious, refusing to take a nap, being playful, and not listening to teachers in school – is being turned into an illness (Wade & Tavris, 2005).

Diagnosing ADHD in preschool children is challenging for a number of reasons. One problem is the lack of specific ADHD symptoms in children this age. The core symptoms of ADHD (i.e., inattention, impulsivity, and hyperactivity) were common behaviors for many children in their preschool years (Connor, 2002). Experts in the field working with young children identified a high activity level to be the most noticeable symptom; however, inattention and impulsiveness were behavioral indicators as well. Some studies have reported that forty percent of preschoolers display symptoms of ADHD (Palfrey, Levine, & Walker, 1985). Other studies have shown that many of these behavioral symptoms are temporary and last for a few months (Campbell & Ewing, 1990). Among the preschoolers who were clinically diagnosed with ADHD, only 48 percent maintained this diagnosis later in childhood (Barkley, Fisher, Edelbrock, & Smallish, 1990).

Statement of the Problem

The purpose of this study is to gain insight into the behaviors of a preschool child with Attention Deficit Hyperactivity Disorder, and how those behaviors affect the child in his/her classroom environment. This review will also summarize current instructional strategies for assisting children with Attention Deficit Hyperactivity Disorder in the classroom setting. In order to achieve this purpose, the following questions will be asked and answered.

Research Questions

1. What are the current scales or measurements that are being used to effectively diagnose young children with ADHD?
2. What are the common characteristics of preschoolers who are diagnosed with ADHD?
3. What are some current teaching strategies for assisting preschool children with ADHD?

Definitions

In the literature review for this study, the following words are defined to aid in understanding the research found on ADHD:

Attention Deficit/Hyperactivity Disorder (ADHD): a chronic condition that interferes with a person's capacity to regulate activity level, inhibits behavior, and attends to tasks in developmentally appropriate ways (Rief, 2003).

Hyperactivity: Irregular activity (Posner et al., 2007).

Impulsivity: A general lack of self-control (Posner et al., 2007).

Inattention: A lack of focused attention (Posner et al., 2007).

Co-morbidity: When one disorder is diagnosed simultaneously with another disorder (Posner et al., 2007).

Preschool age: A child who is between the ages of three and five (Posner et al., 2007).

CHAPTER TWO

Methodology

This chapter is written to identify the resources that I used in conducting my review of the literature. I will describe how I narrowed my search to these sources and how I analyzed each source that I used.

Method to Locate Sources

The research used in writing this review paper was primarily found by accessing the Rod Library at the University of Northern Iowa, and by visiting the Carnegie Stout Public Library and the Loras College Library, both in Dubuque, Iowa. I used a number of different data bases from the Rod Library to search for journals and magazine articles. The data bases used for locating articles on Attention Deficit Hyperactivity Disorder (ADHD) were PsychArticles, Psychinfo, Pubmed, and Family and Society Studies. I also found articles using ERIC and educational full text data bases.

Method to Select Sources

I focused my searches on articles and books that were published within the last ten years, which narrowed the searches to articles published from 1998-2008. I chose this time frame because the diagnosis of ADHD is a fairly new diagnosis, particularly in children aged three to five. Although ADHD is a less common diagnosis in preschool children, there are many sources on ADHD alone. In addition, I included some studies from the 1970s. I decided to include these articles in this paper because I believed they shared accurate findings concerning teaching strategies with preschoolers with ADHD, because I currently use some of these same strategies in my classroom.

I selected the sources for this review after deciding which questions I wanted answered. I wanted to know what were common characteristics of preschool-age children who exhibited this disorder, so I searched using keywords like: *hyperactivity in preschool classrooms*; *lack of attention in children in the preschool classroom* to find pertinent articles. After reading some of these articles I found that there are current scales and measurements that are being used to effectively evaluate ADHD in preschool children. This interest led me to the second question regarding evaluating preschool children. I searched this information using key words like: *measuring ADHD in young children (preschool age children)*. Lastly, I wanted to know what current teaching strategies were effective in assisting preschool children with ADHD. My search included the following key words and topics: *teaching strategies for preschoolers and ADHD*, *managing a preschool classroom and ADHD*.

I found several articles in this process. I was also able to find and review additional articles that were cited in the original articles I found in my search.

Although I have had some successes, I have found that my topic is a challenging one in locating research because diagnosing preschool children with Attention Deficit Hyperactivity Disorder is not recommended because many of the behaviors of children at this age are typical, and it would be easy to misdiagnose these children; therefore, most of the articles pertained to school-age children. I also found that I really needed to narrow my topic to key details because the term ADHD is so broad.

Another challenge I faced, and continue to face, is that I do not have access to the Rod Library on campus. All of my searches for this paper have been done through Rod Library distance services. Many of the sources I have found are not available electronically, so I needed

to request the articles through inter-library loans, which has not been a successful experience for me.

Procedure to Analyze

Most of the sources that I found in this review of the literature used quantitative research methodology. Much of the research I found compared particular treatment groups to control groups in which children did not receive interventions.

I searched for authors who were cited in many of the other articles. In addition, I did this because I assumed these authors were knowledgeable sources of information on ADHD.

Criteria

I chose articles that I discussed in this review, first and foremost, because when I searched using specific key terms, these are the articles that were identified. I also wanted to be sure that the articles that I found were professional articles and that many of them were peer reviewed articles.

CHAPTER THREE

Literature Review

I have read a number of different articles on ADHD. In this chapter I will summarize some of the articles I found that gave information to the reader on scales and measurements being used today with preschool-age children. This chapter will also discuss characteristics of ADHD in preschool age children, as well as current teaching strategies in preschool classrooms.

Current scales and measurements

Despite the perception that diagnosing preschool children with Attention Deficit Hyperactivity Disorder is not recommended, a number of scales have been used to measure ADHD in preschool age children. The remainder of this section will identify and describe scales used in studies discussed in this paper.

The Children's Problem Checklist. Given that many preschoolers display inattentive and hyperactive behaviors similar to those associated with ADHD, this population is most likely to give false positives when assessed using inattentive and hyperactive symptom ratings alone. Preschoolers are not yet engaged in a structured school setting where they receive grades, report cards, or where they are required to complete routine tasks, such as switching classes, and facing responsibilities of having certain supplies for each class. Because there is a lack of a structured school setting in most preschool age classrooms, the available evaluation or diagnostic measures are not suitable for use with this population (Healy & Rucklidge, 2006). As a result, Healy and Rucklidge (2006) developed a screening measure of ADHD specifically for use with preschool children.

This instrument, the *Children's Problem Checklist* (CPC) (Schinka, 1985) included both parent and teacher scales that can be completed in just a few minutes. Academic achievement

was not assessed. Rather the scale focused on behavioral disruptions, peer and adult relationships, and self-esteem, as well as frequent accidents and bedtime difficulties, which are more characteristic of younger children. The same questions were asked of the parent, for information on home life, and the teacher, for information on school life. Some sample questions in this checklist are as follows: Does the child disrupt family life/classroom?; Does the child have difficulty getting along with siblings/children at school?; Does the child have difficulty making or keeping friends?

According to Healy and Rucklidge (2006), there were no significant differences in CPC ratings by age from both the parents and teachers. When children were grouped by sex, there were significant differences in CPC ratings by teacher but not by parents. Teachers rated boys at higher levels of impairment.

Overall, the CPC appears to be a simple, yet sound screening measure of ADHD impairment. The authors found it to have good temporal stability and concurrent validity. In addition, the teacher version had good internal consistency across gender, whereas for the parent version, internal consistency was acceptable for boys and somewhat weaker for girls (Healy & Rucklidge, 2006).

Attention-Deficit/Hyperactivity Disorder – rating Scale, Fourth Edition. *The Attention-Deficit/Hyperactivity Disorder – rating Scale, Fourth Edition* (ADHD-RS-IV) (DuPaul, Power, Anastopoulos, & Reid, 1998) is a rating scale based on the 18 DSM-specific ADHD symptoms for which a score on a four-point scale is assigned by the rater (i.e., *Never or rarely* =0, *Sometimes* =1, *Often* =2 *Very often* =3); this scale is to be completed by parents and teachers. More recent data on this scale (McGoey, DuPaul, Haley & Shelton, 2007) similarly indicated that the scales are highly reliable and valid when used with preschool children.

The Japanese version of the Miller Assessment for Preschoolers. In order to clarify the strengths and weaknesses of children with ADHD, a comprehensive test tool was needed (Iwanaga, Ozawa, Kawasaki, & Tsuchida, 2006). *The Japanese version of the Miller Assessment for Preschoolers* (JMAP) was developed. This is a modified version of the Miller Assessment for Preschoolers (MAP) (Miller,1989) that assesses cognitive and verbal abilities, as well as sensory-motor functions, focusing on preschool-age children ranging in age from 33 to 74 months. The JMAP made it possible to objectively assess the sensory-motor, cognitive, and verbal functions at preschool age, and to describe the strengths and weaknesses in children.

The JMAP is an individually administered test consisting of 26 items distributed across five major developmental indices. The first major development is a Foundation Index (evaluating the child's sense of spatial positioning and movement, sense of touch, and development of the basic components of movement). Some of the items measured here are: vertical writing, hand-to-nose, standing balance and walks on a line. The second area of development is a Coordination Index (evaluates gross, fine, and oral motor abilities). Here is where motor accuracy, tongue movements and articulation are measured. The third is the Verbal Index (evaluates language items which examine memory, sequencing, comprehension, association, and expression). General information, following directions and sentence repetition are measured here. The fourth area of development measured is a Non-verbal Index (includes four items that test memory, sequencing, visualization, and the performance of mental manipulations not requiring spoken language) measuring items such as sequencing, object memory and puzzles. The last area of development measured is a Complex Index (measures sensory-motor abilities in conjunction with cognitive abilities). Here is where drawing a person, block designs and imitation of postures is measured.

The NIMH DISC-IV-Parent Version. The NIMH DISC-IV-Parent Version (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) is a structured diagnostic interview instrument for children aged 6-17 years, which has demonstrated reliability and validity. The DISC-IV showed acceptable reliability for most diagnoses with the kappas ranging from fair to excellent. To this date, there has not been a formal validity test of the DISC-IV (Schaffer et al., 2000). This interview is to be used with preschoolers; slight modifications were made to some items to ensure that they were developmentally appropriate, based on a review of the DISC-2.3 Young Child Version (Shaffer, D., Fisher, P., Dulcan, M., Davies, M., Piacentini, J., Schwab-Stone, M., Lahey, B., Bourbon, K., Bird, P., Canino, G., & Regier, D, 1996).

The Child Behavior Checklist. The Child Behavior Checklist (CBL) (Achenbach & Edelbrock, 1983) is a widely used parent-report measure of behavioral competencies and problems experienced by children in the preschool age range. Similarly, the Teacher Report Form (TRF) (Achenbach et al, 1991) is the teacher-completed measure of a child's behavioral/emotional problems, academic performance, and adaptive functioning. These measures have established reliability and validity in the preschool ages. The levels of reliability ranged from 0.84 to 0.97 and the criterion validity was assessed and found to be acceptable (Achenbach, Howell, Quay, & Conners, 1991).

The Conners' Rating Scale. The Conners' Rating Scale (Conners, 2000) is a research and clinical tool widely used to assess hyperactivity-impulsivity, attention problems, and oppositional behavior in youths aged 3-17 years. The parent version has 80 items comprising 14 subscales, and the teacher version has 59 items and 13 subscales (psychosomatic subscale omitted). The psychometric properties of the scales have been demonstrated in children as young as 3 years of age (Conners , Sitarenios, Parker, & Epstein, 1998). Each scale was able to classify more than

85% of children having ADHD or not. Ratings of 2 or 3 (representing *often* or *very often)* were considered to indicate symptoms, an approach that has not been used previously (Lahey, Pelham, Loney, Lee, & Willcut, 2002; Pelham, Gnagy, Greenslade, & Milich, 1992).

Each instrument has its own special quality and can be used in appropriate circumstances, according to the authors of the instruments. In chapter four of this review, I will analyze and summarize information about these instruments along with recommending use of some of the instruments.

Characteristics of ADHD

It has been known that ADHD significantly impairs a young child's functioning in multiple domains, including home, school, and social settings, as well as his/her physical safety (Posner & Greenhill, in press). ADHD in preschool-aged children has been a great public health challenge affecting as many as 6% of community samples (Campbell & Ewing, 1990; Lavigne et al., 1996). The rate of diagnosis has been increasing as symptoms and impairments are now detected as early as 2 years of age. Although the onset of impairing ADHD, primarily overactive-impulsive type, has been most likely to occur during the preschool years (Connor, Edwards, Fletcher, Baird, Barkley & Steingard, 2003), limited descriptive information has been available about the disorder in this age group. In addition to functional impairment, children with ADHD exhibited an increased chance of physical injury related to impulsive behavior, with more reported accidents, unintentional injuries, and visits to the emergency room than children without ADHD (Di-Scala, 1998; Lam, 2002; Schwebel, 2002).

Children with ADHD often were described as careless, disorganized, carefree, and non-reflective, even as preschoolers. In addition, they had trouble remaining in their seats and were often physically and verbally abusive to peers and teachers (Campell, 1990). In fact, between

30% and 60% of young children with ADHD (particularly boys) were frequently non-compliant and defiant in response to commands and authority figures (Barkley et al., 1990).

Co-morbidity with other disorders appeared to be common among preschoolers with ADHD (Wilens et al., 2002). According to Wilens et al., previous studies reported that 64% to 74% of two to six year-old children with ADHD met criteria for at least one additional disorder. Oppositional defiant disorder (ODD), conduct disorder (CD), generalized anxiety disorder (GAD), and mood disorders were most commonly reported, suggesting vulnerability to both internalizing and externalizing disorders (Wilens et al., 2002).

A study conducted by Posner et al. (2007) reported the ADHD symptoms, impairment, and associated characteristics in the largest recorded clinical sample of preschool children rigorously diagnosed with ADHD. The subjects were recruited for a randomized clinical trial, by the National Institute of Mental Health (NIMH), which funded Preschoolers with ADHD Treatment Study (PATS) . In order to qualify for treatment, preschoolers were required to meet criteria for DSM-IV (APA, 2000) ADHD, Combined or Hyperactive-Impulsive type. They were to have a T score higher than 65 on both parent and teacher DSM-IV subscales of the Conners' Parent Rating Scale (CPRS: R-L) (Conners, 2000) and Teacher Rating Scale (TRS R-L) (Conners, 2000). Other requirements included having an impairment rating of 55 or lower on the Children's Global Assessment Scale (c- GAS) (Shaffer et al., 1983), and a score above 70 (full scale) on the Differential Ability Scale (DAS) (Elliott, 1990), which measures cognitive ability and achievement. The children were to have lived with their caretakers for at least six months, and be enrolled in a school or daycare program with eight same-aged peers for at least two half-days a week (Kollins et al., 2006). The children in this nine month study were between 3 and 5.5 years of age.

The semi structured Preschool ADHD Treatment Study *(PATS) Diagnostic Interview (PDI)* (Othmer, Penick, Powell, Read, & Othmer, 2000) was specifically developed for this study. The PDI interview included age-appropriate probes, administered to the preschooler's main caretaker, to aid in the determination of symptom presence and severity. Probes for each ADHD symptom were developed and agreed upon by an expert panel. A total of 18 ADHD symptoms were rated on a likert scale of 0 *(never)* to 5 *(always)* by the evaluator (Posner et. al., 2007). Some of the anecdotal examples of the most severe types of impairment experienced by the children in the PATS sample revealed the following. An example under physical injury is a preschool age child who fractured her collarbone after jumping off a bed into a dresser. The same child pulled a heavy rope from a pole, hitting herself in the head. She also fell and hit her head on the table while climbing on her grandmother's sofa. An example of risk behaviors included a child found hanging halfway out of a window. His mother also found him lying across electric burners after turning on the stove. He also ran into traffic if his hand was not held. Some examples of how these children were disruptive in class included: a child described as often going from desk to desk to tabletop and later climbing bookcases and then succeeding in getting other children to follow her. To contain her, she had been assigned to a desk in a separate area because frequently she was out of her seat and disruptive in class.

The results of the PATS interview and the other measures used in this study showed that participants with moderate to severe ADHD were found to exhibit high frequencies of hyperactive and impulsive symptoms in addition to exhibiting a lack of attention. More than 90% of participants met the primary symptoms of ADHD normally reported in school-aged children with the following behaviors (Miller,1989): Not listening, being distracted, fidgeting, leaving his or her seat, running about or climbing excessively, being often on the go, having

difficulty waiting their turns, and interrupting. The inattentive symptoms of *distracted by extraneous stimuli* and *does not seem to listen* were present in over 50% of those with the H/I type. The inattention symptoms of *difficulty organizing tasks* and *loses things necessary for activities* had the lowest frequency of all ADHD symptoms (Posner et al., 2007).

It was also suggested, as a result of this study, that clinicians evaluating preschoolers with ADHD should routinely assess for the presence of Oppositional Defiant Disorder (ODD), communication disorders, and anxiety disorders. This was recommended because of the high prevalence of these disorders in this population (Posner et al., 2007).

Other researchers have noted an association between ADHD and sensory motor problems. Reeves, Werry, Elkind, and Zametkin (1987) found that children with an Attention Deficit Disorder (ADD) evidenced higher rates of neurodevelopment abnormalities than a group of control children on tests of sensory motor coordination. However, since most of these studies focused on school-age children, the results did not translate well to preschool children with ADHD. Kadesjo and Gilberg (1998) indicated that some children have both symptoms of ADHD and developmental coordination disorder, a condition called Deficits in Attention, Motor control, and Perception (DAMP). They indicated that 47% of ADHD children were regarded as DAMP. On the *Sensory Integration and Praxis Tests (SIPT)* (Ayres, 1996), Mulligan (1996) reported that subjects with ADHD demonstrated relative weaknesses in vestibular processing and in most areas of motor planning. Other studies conducted reported a relationship between lower motor functioning and ADHD symptoms (Pick, Pitcher, & Hay, 1990).

In order to clarify the strengths and weaknesses of children with ADHD, a comprehensive test tool is needed. An experimental study of 46 preschool aged boys was conducted by Iwanaga et al. (2006). The comprehensive tool used in this study was the translated

Japanese version of the *Miller Assessment for Preschoolers (JMAP)* (Miller, 1989). This was an experimental study of 46 preschool aged boys with ADHD combined type with a mean age of 62.8 months. To compare the ADHD-C group, data from 46 Japanese boys, ranging in age from 45-72 months were obtained randomly from standardized samples of the JMAP.

The JMAP was administered in a structured situation in a room free of auditory and visual distractions. A total of 20 of the 26 items were administered while sitting face-to-face at a table with an occupational therapist who had been trained to administer and interpret the JMAP. One motor test was done sitting face-to-face without a table, and five motor tests were done standing. Each child took 30 to 50 minutes to complete the JMAP (Iwanaga et al., 2006).

In this study, sensory-motor development was evaluated mainly by two indices (i.e. Foundation Index and Coordination Index) and one test *Imitation of Posture* in the Complex Index. The Foundation Index of 22 boys with ADHD-C (48%) fell within the below-5th percentile range, with 32 boys (70%) scoring below the 25th percentile (Iwanaga et al., 2006).

According to Iwanaga et al.(2006), the results of this test indicated that fundamental sensory-motor abilities scores were lower in the ADHD-C group than in the norm group. Equilibrium and postural control difficulties were the most common problems demonstrated by these children. The fine motor abilities for hand, mouth, and tongue movements, and motor praxis were lower in the ADHD-C groups. These results underlined the need for examining and treating the sensory-motor disabilities of boys with ADHD-C in their preschool years (Iwanaga et al., 2006).

Previous studies have discussed disabilities in the motor abilities of children with attention disorders. Kadesjo and Gillberg, for example, reported about half of 7-year-old children with ADHD in a study showed symptoms of severe or moderate clumsiness on gross motor and

fine motor ability testing (Kadesjo & Gillberg, 1998). Similarly, about half of the boys with ADHD-C in the Iwanaga et al. study (2006) fell below the 5th percentile on the fundamental sensory-motor index. Therefore, this data and this report suggested that motor problems reported in school-age children with ADHD were also present in preschool boys with ADHD (Iwanaga et al., 2006).

The previous studies suggested some key characteristics of ADHD. ADHD is frequently associated with at least one additional disorder, and the severity of ADHD varied for each child. Children with moderate to severe ADHD were hyperactive and impulsive and exhibited a lack of attention. Some children showed only primary symptoms of ADHD, such as the following: not listening, easily distracted, fidgeting, leaving his/her seat, running and climbing. The lack of sensory-motor skills, including both large and small motor skills, were also associated with ADHD.

Current Teaching Strategies

Without early intervention in school and at home, many of the behavioral symptoms associated with preschool children who exhibited ADHD symptoms continued to appear and often escalated once the demands of elementary school were placed on the child (Campbell, 1990). Usually the children designated as hyperactive while in preschool continued to manifest problems with impulsive behavior, aggression, and lack of social adjustment in elementary school (Campbell & Ewing, 1990).

Given the stability of problem behaviors, interventions that aided a child's symptoms and prepared a child for kindergarten were strongly recommended for this population. However, parents, community providers, and experts in the area of ADHD have identified a lack of resources to prepare preschool-age children with ADHD for the formal school setting. A needs

assessment that was administered to parents of preschool-age children with ADHD, community service providers to these children, and nationally known experts in ADHD indicated a strong need for (a) educating parents and service providers about this disorder, and (b) providing interventions directed at improving academic performance and behavior management (DuPaul et al., 1998).

One area in which there have been a number of studies on interventions with ADHD children in the preschool classroom included the many functions of preschool play with regard to development (Bruner, Jolly, & Sylva, 1976). Free play in a preschool classroom for individual children or groups can become chaotic. Excessive switching from one activity to another without task completion may leave the classroom in disarray, with opportunities for learning reduced rather than enhanced (Stollar & Dye, 1994).

A rigidly structured environment generally was not recommended for children in this age group (National Association for the Education of Young Children, 2002); however, structure facilitated pre-academic instruction and socialization, and may be necessary for children with special needs (Carta, Schwartz, Atwater, & McConnell, 1991; Nordquist & Twardosz, 1990). Although there are advantages of an orderly classroom for teachers, there also may be advantages in decreasing the number of activity changes for certain children. Some research suggested that excessive activity level in preschool may have negative consequences later in life (Carta et al., 1991). For example, Halverson and Waldrop (1976) found activity level at 2 ½ years of age to have negative implications for intellectual and social functioning at 7 ½ years of age. Children who were rated highly active at 2 ½ years of age and again at 7 ½ years received lower scores on an intelligence scale. High activity level in preschool was significantly related to inappropriate peer interactions at 7 ½ years of age.

Activity changes in normal play were likely expressions of curiosity, excitement, and task completions. However, when activity changes were excessive, learning associated with free-play situations may be harmful. Professional and parental concern with activity level constituted a frequent and growing problem (Barkley et al., 1990) and disruptive activity changes presented a practical concern to teachers in terms of classroom management.

A study by Stollar and Dye (1994) was designed to achieve a reduction of activity changes during free-play times, and to examine other *switching events* that would be accessible to preschool teachers. Rather than the completion of a task, this study utilized environmental manipulations as switching events within the steps of the intervention: (a) ringing a bell at the end of a 10-minute interval to signal to the children to clean up their activities; (b) asking children to come to the group area; (c) allowing children opportunities to choose special play areas based on whether classroom rules were followed. Thus, this study investigated the effects of opening previously unused play areas, adding a *switching system*, and allowing each child a chance to participate in special areas when classroom rules were followed.

The classroom participants included 14 children (7 boys and 7 girls), ranging in age from 3.2 years to 4.3 years. Two target children and two comparison children were chosen for this study.

The behavior focus in this study was the rate of activity change. An activity change was recorded when a child moved from one activity to another without task completion (Stollar & Dye, 1994).

The results of this study indicated that by adding structure to the classroom, the teacher could manage the activity changes made by the preschoolers. The intervention resulted in a

decrease of activity changes for two children whose rates of activity change had been previously considered disruptive by the teachers (Stollar & Dye, 1994).

DuPaul et al. agreed with the conclusion of this study by Stollar and Dye (1994), stating that "preschool-age children with ADHD function best in a highly structured environment with specific, concise directions and demands. If these routines, directions, or demands vary, the child may have difficulty adjusting and adapting to meet them" (DuPaul et al., 1998, p. 776).

Summary

From this review of literature I have learned that there are many reliable scales to measure and assess the validity of ADHD in young children. Many of the scales we find today in use with preschool-age children are adaptations of the scales that are used to assess school age children with ADHD, and they seem to be ones that researchers have successfully used in their studies.

Preschool-age children exhibiting hyperactivity and impulsivity were at-risk for school failure and later diagnosis of a disruptive behavior due to the impulsive nature of their responses and actions in the classroom (Campell, 1994). This suggested that there needs to be more literature for parents and caregivers of preschool-age children on interventions at home and school that will help them become successful learners. There is limited research in this area. My review was limited by a lack of current research.

Research on one intervention that I read repeatedly, and one that I use in my own classroom, is structured play. I have some students who exhibit ADHD-type behavior if the classroom play time is not structured. With these students, I provide picture cards of certain activities that they may choose in the given *center* time, and if that center area is full (four

children are allowed in a center at a time), they must choose a different center. This seems to work in my classroom with these specific children.

CHAPTER FOUR

Conclusion

ADHD is a common and oftentimes debilitating life-long disorder which, in the past, has been diagnosed and studied primarily in school-age children (American Psychiatric Association, 2000). Behaviors characteristic of ADHD appear to be becoming more common among preschool children. Researchers have developed a number of valid scales and measurements that are being specifically used with preschool-age children. I have organized this portion of the paper around my three research questions.

What are the current scales or measurements that are being used to effectively diagnose young children with ADHD?

The Attention-Deficit/Hyperactivity Disorder-rating Scale (DuPaul et al., 1998), The Japanese version of the Miller Assessment for Preschoolers (JMAP) (Miller, 1989), the DISC-IV-Parent Version (Shaffer et al., 2000), The Child's Behavior Checklist (Achenbach & Edelbrock, 1983), and The Connors' Rating Scale (Conners, 2000) are five current scales that are being used to effectively diagnose young children with ADHD. Of the five scales I found, all of them gather information from both the parent and the teacher. I think gaining information from the parent is just as important as information from the teacher, because the life of a preschool-age child is primarily spent at home prior to attending preschool. Even if the child spends a portion of his or her day in child care, most children do spend a portion of their days at home with parents or grandparents.

These measurements primarily assessed the child on behavioral disruptions, peer and adult relationships, and self-esteem. Most of the questions asked of the parent pertaining to the child were similar to questions asked of the teacher. Some answers were measured simply by *yes* or *no* answers, and others used a likert scale to discriminate among responses. The Japanese version of the Miller Assessment (Miller, 1989) for preschoolers is a standardized test that addresses the *whole* child by assessing the child's verbal-functions, sensory-motor functions, and cognitive functions, and by describing the strengths and weaknesses in preschoolers.

It is my belief that the severity of the behaviors should determine which measurement should be used. I have used the simplest assessment, which seems to be the Child's Behavior Checklist (CBL) (Achenbach & Edelbrock, 1983), on a specific child in my classroom. I believed that this child was exhibiting ADHD behaviors, and I used this form to validate what I thought was true. As it turned out, this child was exhibiting many behaviors characteristic of ADHD, but he was also exhibiting other behaviors associated with Oppositional Defiant Disorder (ODD), which often coincide with one another.

What are the common characteristics of preschoolers who are diagnosed with ADHD?

In my review, I discussed characteristics of ADHD. Preschoolers that exhibit ADHD behaviors may be careless, disorganized, carefree, and non-reflective. They also have difficulty sitting still and can be physically and verbally abusive to others (Campell, 1990).

A term that was new to me in this review of research was co-morbidity. This is when a child exhibits characteristics of other disorders, in addition to those behaviors characteristic of ADHD. As in the child that I mentioned earlier, he exhibited many of the behaviors of ADHD, as well as behaviors of ODD. Wilens et al. (2002), reported that 64% to 74% of two to six year-old children with ADHD met criteria for at least one additional disorder. Additional disorders

such as ODD, conduct disorder (CD), generalized anxiety disorder (GAD), and mood disorders were most commonly reported to co-exist with ADHD in preschoolers (Wilens et al., 2002).

What are some current teaching strategies for assisting preschool children with ADHD?

Finally, I wanted to review literature that reported on current teaching strategies used in preschool classrooms with children exhibiting behaviors of ADHD. In the past, I have believed in the philosophy of *free play* in the classroom during center time. Free play is where the child chooses a center area in which he/she would like to play for a period of time. This play time could last the entire center time, or only five to ten minutes. During this time, there was not a limit on how many children could play in that center. With time, and the comfort level the children began to display, as well as some of the behaviors that started to emerge, I realized that this sort of environment did not work for all children. This is when I decided to rearrange the way center time was spent in my classroom.

As I was reviewing articles for this portion of my paper, I came across a study by Stollar and Dye (1994). This study was designed to reduce activity changes during free play times and examined other *switching events* that would be easily attainable by the teachers. This article discussed interventions that I was already using successfully in my classroom that were supporting those children with ADHD-like behaviors. I was limiting the number of children in each center, and I would also limit the time that they spent in that center if they were not playing appropriately. Another strategy I used was to dismiss those children who had ADHD tendencies from circle time first to choose the center where they would like to go. I used to dismiss those children last because of their behavior, but I found that if they were able to receive priority in selecting centers, the ADHD behavior may be reduced or disappear (depending on the child). In

my classroom experience, if a child with ADHD does not have opportunities to participate in choice activities on a given day, those behaviors will continue and possibly become worse.

I found this review of research beneficial to me in that it opened my eyes more about ADHD and what tools are available to help educators support the children in their classrooms. It was interesting to learn the percentage of preschool children who exhibit ADHD behaviors who will likely exhibit some other behavior disorder as well. The information I found on strategies used in today's preschool classrooms was comforting and validating to me. I now know that what I do in my classroom has been proven successful in others' classrooms as well.

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