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# ADHD Assessment Practices Used by General Practitioners, Pediatricians, Psychiatrists, and Psychologists in West Virginia

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ADHD Assessment Practices Used by General Practitioners, Pediatricians, Psychiatrists, and  
Psychologists in West Virginia

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by

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## ABSTRACT

ADHD Assessment Practices Used by General Practitioners, Pediatricians, Psychiatrists, and

Psychologists in West Virginia

By Kristal D. Jenkins, M.S.

Attention-Deficit/Hyperactivity Disorder (ADHD) is the most commonly diagnosed behavioral disorder in childhood (NIH, 2000) and its prevalence continues to increase. ADHD is diagnosed by a variety of practitioners, including general physicians, pediatricians, psychiatrists, and clinical/school psychologists. There is little known regarding how these diversely trained professionals differ or may be similar in their beliefs regarding ADHD and their approach to diagnosis and treatment. The current study utilizes a survey methodology to address the commonalities and differences in the approaches these professionals take to conceptualize diagnostic criteria, etiology and course of treatment for children diagnosed with ADHD. The need for further research in both national and rural areas such as Appalachia is also discussed.

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## Introduction

Attention-Deficit Hyperactivity Disorder (ADHD) is the most commonly diagnosed behavioral disorder in children (NIH, 2000). As the public's acceptance of its presence in society grows, office visits for ADHD are increasing, and more and more children are being diagnosed with ADHD. ADHD related office visits to physicians have increased threefold for girls and 2.2-fold for boys from 1990-1998 (Sax & Kautz, 2003). In addition to the increase in frequency of diagnosis, there has also been an increase in the diversity of professionals assessing and diagnosing children with disruptive behavior. In light of this diversity of practice, it seems likely that these professionals will bring different diagnostic approaches to their examination of children, given their differences in training. With the increasing prevalence, it is important to determine if practitioners from the various disciplines are using the same criteria to assure diagnostic accuracy. Such a question has important obvious implications for practice but can also have implications for research, given that there is a certain amount of reliance on previous diagnosis to define groups within empirical studies.

Examination of diversity of practice with respect to ADHD may have particular relevance for rural and underserved areas. In communities where access to providers with more specialized training in children's behavioral and emotional disorders is more difficult to obtain there may be more pressure on generalists to provide assessment, diagnosis, and treatment than is typically true in areas with greater breadth of available professionals. Thus, understanding how generally trained professionals may conceptualize ADHD differently from others is of great importance in these communities.

Research indicates that many professionals choose not to practice in rural areas, limiting availability of health care services to rural families. For example, from 1981 to 1996, the

percentage of pediatric residents choosing to practice in rural areas decreased by half (14.6% to 7.4%) (Randolph & Pathman, 2001). In addition to availability of health care, access to those professionals with more specialized knowledge is more difficult due to transportation issues and low socio-economic status. The scarcity of specialized practitioners then leads to the situation in which general practitioners may find themselves forced to address diagnostic issues, such as behavioral difficulties in children, for which they are not specifically trained. As such, misdiagnosis may occur.

There has been concern over the years that ADHD is over-diagnosed (Sax & Kautz, 2003). Much of this concern is related to the rapid increase in the use of stimulant medication. The most common treatment for ADHD is stimulant medication, yet the long-term consequences of newer medications are unknown (Sax & Kautz, 2003). Stimulant treatments have not been examined in outcome studies lasting longer than 14-months. Despite this lack of long-term study, the number of prescriptions for the stimulant medication methylphenidate (e.g., Ritalin, and Concerta) increased by 500% between the years of 1991 and 1999. Sax and Kautz (2003) found that during this same period of time, the number of prescriptions written for other stimulants such as amphetamine (e.g., Adderall and Dexedrine) have increased by 2000% (Sax & Kautz, 2003).

This rise in the number of prescriptions may be due to the fact that it is mostly primary care physicians who are responsible for the most cases of diagnosis and treatment of children with ADHD. Research indicates that as many as seventy-five percent of children and adolescents who receive treatment for behavioral disorders such as ADHD are seen by primary care physicians (Bernal, 2003). This increase in the treatment of behavior disorders in children is changing the role of the primary care physician in family care. The role of the practitioner is

becoming increasingly focused on behaviors and social concerns in the home and school environments (Green, 1985). Pediatricians now report that half of their patients are seen for problems with behavioral, psycho-social, or educational concerns (Cassidy & Jellinek, 1998).

Given that these medical professionals are becoming increasingly responsible for the diagnosis and treatment of behavioral health issues, it is very important that we gain a clear understanding of how such professionals conceptualize these disorders. Little research has been done to assess whether or not the diversity in training among professionals affects their diagnostic practices with respect to behavioral disorders such as ADHD.

## Diagnostic Definition of ADHD and the Biological Model

The most recent criteria were published in 1994 in the DSM-IV. The DSM-IV conceptualizes the disorder as having three subtypes: ADHD, Predominantly Inattentive Type; ADHD, Predominantly Hyperactive-Impulsive Type; and ADHD, Combined Type. The latter consists of symptoms of inattention, hyperactivity, and impulsivity (APA, 1994). Diagnostic criteria for each subtype is available in Appendix A. The Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV) estimates the prevalence of ADHD in school-age children to be between 3% and 7% (APA, 2000). The American Association of Pediatrics (AAP) gives a higher estimate. They estimate the prevalence rate for ADHD among 6-12 year old children to be between 4% and 12%. The AAP explains that prevalence rates vary due to the fact that practitioners do not always adhere to DSM-IV criteria and diagnostic criteria have changed significantly over the years. Different geographic regions of the country and different countries may also use different diagnostic criteria (AAP, 2000).

The supposition that the symptoms that define ADHD have biological underpinnings has been a clinical concern for many years. As early as 1908, Tredgold found that patients who had experienced a mild brain injury during birth would often have behavior problems when they began school. History also created a group of individuals who were known to have brain damage following the encephalitis epidemic of 1917-1918. The affected individuals later displayed symptoms of impulsivity, hyperactivity, as well as emotional lability and antisocial behavior. In 1940, Strauss hypothesized that all individuals who displayed symptoms of impulsivity and hyperactivity had suffered “minimal brain damage” (Mercugliano, Power, & Blum, 1999).

During the 1960's, the phrase "minimal brain damage" was replaced by "minimal brain dysfunction" after researchers found that not all individuals with these symptoms had a known brain injury (Mercugliano, Power, & Blum, 1999). In 1968, individuals who displayed symptoms of hyperactivity in the absence of a known organic cause were given the diagnosis of "hyperkinetic reaction of childhood." If symptoms were due to organic brain damage, the diagnosis of "non-psychotic brain syndrome" was given (Barkley, 1997).

The exact etiology of the symptoms of ADHD remains controversial, both in the literature and in the realm of practice. It is reasonable to speculate that a practitioner's understanding of possible etiology is likely to be influenced by his or her training. Medically trained physicians may place more emphasis on the neurology, while psychologists may place more emphasis on the environment and the child's response to it. ADHD is often considered by many researchers to have neurological underpinnings, although structural and functional neuroimaging tests are not sufficient indicators of the disorder (Furman, 2005).

There is also research which indicates that ADHD is associated with deficits in functioning in the frontal lobe area of the brain. In a meta-analysis, Biederman, Faraone, Mick, Spencer, Wilens, and Keily (1995) found the most common deficits in individuals with ADHD to be smaller volume in the frontal cortex, subcortical regions, and cerebellum (Biederman, et al., 1995b).

Genetic linkages to ADHD have also been postulated. Often when a child has ADHD, a sibling or parent has also been diagnosed. Studies indicate that siblings and parents of children with ADHD are at a 2- to 8- fold risk for ADHD (Biederman, et al., 1995a). Though not without their critics (e.g., Wyatt & Midkiff, 2006), twin studies indicate that the heritability of ADHD may be as high as 80 percent (Biederman & Faraone, 2002).

The fronto-subcortical system is also suspected to play a role in ADHD. This region of the brain contains catecholamines. Catecholamines have been implicated to be the action mechanisms for stimulant medications. Imaging studies have implicated three regions of the fronto-subcortical region. These areas are the caudate, putamen, and globus pallidus. These areas are involved in the coordination of motor behavior, as well as executive functions, reward pathways, and behavioral inhibition (Alexander, DeLong, & Strick, 1986; Yamaski, LaBar, & McCarthy, 2002).

Research also suggests that ADHD may be caused by environmental toxins or specific pregnancy or delivery complications. For example, lead exposure has been linked to hyperactivity, distractibility, restlessness, and lower cognitive functioning. Studies also show that fetal post-maturity, duration of labor, fetal distress, toxemia, eclampsia, or maternal age may also be associated (Biederman & Faraone, 2002). It has also been found that ADHD could be linked to the effects of prenatal smoking (Hynd & Voeller, 1991).

## The Psychosocial Argument for ADHD

Family/environmental influences may also play a significant role in ADHD. Biederman et al., (1995a) found that ADHD families were more likely to experience chronic conflict, exposure to parental psychopathology (particularly maternal) and decreased family cohesion when compared to control families. Family conflict had the most significant impact. Marital discord has also been found to predict the likelihood of disruptive behavior in boys (Institute of Medicine, 1989). It is likely that these family/environmental influences cause behaviors that are “symptoms” of ADHD, but are not neurologically based. It is likely that children who live in environments that are chaotic or unstable are actually distracted by their thoughts/fears/concerns about their home environment (Lindahl, 1998; Repetti, Taylor, & Seeman, 2002). The likelihood of this occurrence is increased when practitioners are not adequately trained in identifying psychosocial problems in children. Leaf et al., (2004) reported that out of 50 pediatricians studied, 31 (62%) reported that they had no special training in developmental pediatrics (Leaf, Owens, Leventhal, Forsyth, Vaden-Kiernan, Epstein, Riley, & Horwitz, 2004). It is possible that a child may actually be experiencing symptoms of anxiety or depression; however, without thorough assessment, their symptoms become labeled as ADHD because they match DSM-IV criteria for ADHD.

Biederman et al., (1995b) noted six risk factors for developing mental health symptoms in children identified by Rutter, Cox, Tupling, Berger, and Yule (1975) which were severe marital discord, low social class, large family size, paternal criminality, maternal mental disorder, and foster placement. These risk factors are also positively correlated with ADHD symptoms (Biederman et al., 1995a). The lack of structure and consistency in such family environments is also likely to influence the child’s behavior. Consistent, appropriate rewards

and punishment are likely to not have been implemented. Such inconsistency can lead children to test limits. If the child has been neglected, it may even go as far as to seek attention in any way, even negative attention. This can mean going as far as to act out and exhibit symptoms consistent with an ADHD diagnosis. Children from environments where they have been moved from different foster placements or where they may not have received attention or educational support may have difficulty keeping up with their classmates in an academic setting and may act out in the classroom to mask the fact that they are having difficulty. Psychologists who provide more therapy services to families and who address behavioral functioning may be more likely to recognize these possible etiologies of ADHD than physicians who are trained to treat symptoms with medication.

## Clinical Practice Guidelines for the Diagnosis of ADHD

In 2000 the American Academy of Pediatrics (AAP) published clinical practice guidelines for the diagnosis and evaluation of children with ADHD (AAP, 2000). While stating that these guidelines were not to be considered as a protocol for diagnosis, the AAP believed that practice guidelines were needed to help physicians arrive at a diagnosis in a more systematic and more objective manner. The intent of the guidelines was to help ensure that children are appropriately diagnosed and medicated, as well as rule out any coexisting disorders that may be present.

The AAP made six recommendations. The first recommendation was for pediatricians to assess for ADHD when a child between the ages of 6 and 12 presents with academic underachievement, behavior difficulties, or classic symptoms of ADHD such as hyperactivity, inattention, or impulsivity. This recommendation was made due to the high rate of school-aged children who were being diagnosed with ADHD.

The second recommendation was that physicians use DSM-IV criteria. This was to help ensure that the child's symptoms actually meet all of the criteria for ADHD. It is important for physicians to keep in mind several important criteria, aside from the symptoms themselves, including that the child's problematic behaviors must cause functional impairment. The symptoms must also be present across settings, such as in the home and school environment. The child must also have displayed these behaviors/problems before 7 years of age.

The third recommendation addresses these issues more specifically by stating that information from the child's caregiver should be obtained regarding the onset and duration of symptoms. How well the child functions in different environments should also be addressed. The AAP goes further to recommend the use of validated rating scales (e.g., Conner's Rating

Scales) specifically created for ADHD. They recommend use of these instruments over those used to assess children's symptoms in a more global manner (e.g., the Child Behavior Checklist, or Behavior Assessment System for Children--BASC), stating that global measures are less sensitive to ADHD symptomology. It should be noted that while the Conner's and similar scales focus more specifically on ADHD symptoms, they may be more subject to demand characteristics in situations where parents and teachers are strongly convinced that ADHD is present.

The AAP's fourth recommendation involves incorporating information from the child's teacher and school into the assessment. Any assessments the school has performed as well as any observations the child's teacher may have made are important to consider when evaluating the child. As with the parents, the use of ADHD-specific rating scales is preferred. ADHD specific questionnaires or rating scales are also preferred over broad band assessment instruments. However, the committee does not state that broad band or global instruments are not useful. They can help to assess comorbidities, or other disorders which may be causing the child's symptoms.

This need to assess for coexisting conditions is the AAP's fifth recommendation. The AAP believes that it is important to assess for and rule out any other disorders which may be masked by the ADHD symptoms. However, they fail to acknowledge the possibility that ADHD type symptoms may be exhibited "because" of the presence of another disorder, rather than just in addition to ADHD. There is also no recommendation to refer individuals with ADHD symptoms for psychological testing to rule-out learning disabilities which may cause the child to appear inattentive, and no formal assessment to determine if the child's attention is actually impaired in a structured setting, with norms to compare performance to the child's peers.

Assessing the child's performance in a setting where he or she is asked to perform tasks similar to those performed in school can be an important indicator of his or her ability to attend to stimuli.

The sixth and final recommendation is that professionals not use brain imaging tests or continuous performance tasks because they are not reliable and do not effectively distinguish between children with and without ADHD (AAP, 2000).

## Clinical Practice Guidelines for the Treatment of ADHD

In 2001, the AAP extended the ways in which they assist practitioners by publishing clinical practice guidelines for the treatment of school-aged children with ADHD (AAP, 2001b). The AAP's Subcommittee on ADHD Quality Improvement was made up of experts in psychology, neurology, child psychiatry, family practice, and education, as well as epidemiology. After reviewing the literature, these subcommittee members arrived at five recommendations. The first recommendation is the need to recognize ADHD as a chronic condition. This implies that ADHD persists throughout the lifespan and can never be cured through any means. This further suggests that even with treatment the symptoms will persist and ignores the possibility of multiple etiologies.

The second recommendation is that target outcomes need to be developed in collaboration with the child's school personnel, the child and his or her family, and the physician. These need to be realistic, developmentally appropriate, and measurable. These target outcomes can include goals such as improvement in peer functioning or improved academic performance. The committee recommends developing between 3 and 6 goals for the child.

The third recommendation is that a child with an ADHD diagnosis should be treated with a combination of stimulant medication and behavior therapy, or behavior therapy alone, when appropriate. The committee's recommendations for medication use by physicians are based on the results of three meta-analyses and the more recent study of the Multimodal Treatment of ADHD (MTA study) (Jensen, Arnold, & Richters, 1999; Swanson, McBurnett, & Wigal, 1993; Ottenbacher, 1983; Thurber, 1983; Kavale, 1982). Lasting 14-months, the MTA study is the largest, most rigorous randomized controlled trial of ADHD treatment strategies to date. It

compared pharmacological, behavioral, and combined treatment strategies. This study included 579 children between the ages of 7 and 9.9 years. The children were randomly assigned to one of four treatment groups: medication management, behavior management, a combination of medication management and behavior management, or standard community care.

The results of the MTA study, as well as the other reviews, show that stimulant medications appear to be the most effective treatment for ADHD. They have been shown to have positive effects on classroom performance by helping the child to focus its attention and improve classroom behavior. However, stimulant medication has not been proven to affect scores on achievement and intelligence tests. Also, the child's problematic behaviors may continue to fall in the clinically significant range, even while taking stimulant medication. In the MTA study, only 34% of those children who were medically managed obtained behavior ratings in the "normal" range on global behavior rating scales.

The committee also made recommendations on which medication should be prescribed. They noted that methylphenidate (Ritalin) was found to be safer than pemoline (Cylert) due to the possibility of a fatal reaction caused by hepatotoxicity with the latter (Sheveli & Schreiber, 1997). Tricyclic antidepressants and bupropion have also been used to treat ADHD. However, the committee did not recommend these drugs as a first choice for treatment due to possible side-effects. For example, desipramine (Norpramin), a tricyclic antidepressant, has been associated with death of children in rare cases (Biederman, Thisted, Greenhill, & Ryan, 1995).

The committee recommended that when a drug does not appear to be working at the highest feasible dose the physician should try a different stimulant. This suggests that the AAP views ADHD as a neurological disorder, with little consideration of the influence of family/environmental influences on the behavior of children, or with little potential for

behavioral intervention. Pelham (1999), however, warns against using high levels of medication alone. He reports that children in the MTA study who were in the combined medication and behavior therapy group were on 20% less medication at the end of the study, compared to the medication maintenance group. He attributes this to the benefits of behavior therapy and to keeping the medication used in this group at an even level throughout the study. He also states that three-fourths of the children who began in the behavior therapy condition who were not medicated, as well as one-half of those who had been medicated prior to the study, were able to continue without medication at the end of the 14 month study (Pelham, 1999).

Behavior therapy has also been proven to be beneficial for children with ADHD, at home and at school. Behavior therapy most often involves parent training in behavior modification strategies. Behavior modification strategies are also often implemented at school to structure and provide rewards and consequences for behaviors displayed in the classroom. The MTA study supports using behavior therapy as an adjunct therapy to stimulant medication. When used in combination with stimulants, it was more effective at improving conduct and improving academic functioning than when either behavior therapy or medication was used alone. Teachers and parents also approve more strongly of combination treatments as opposed to using either medication alone or behavioral treatment alone (AAP, 2001b). Behavior therapy has also been shown to improve self-efficacy ratings in parents (Pisterman, Firestone, McGrath, Goodman, Webster, Mallory, & Goffin, 1992). Parents are also more likely to view children as “normalized” when they are receiving behavior therapy in addition to medication (Pelham, 1999).

The fourth treatment recommendation is that physicians carefully assess treatment when a child has not made improvement toward his target outcomes. It is recommended that

physicians consider adherence issues, use of all treatment options, and assess for comorbidities. It is possible that the diagnosis is incorrect and may need revising. It is also possible that the child needs to have new target outcomes. In order to fully assess the reasons why treatment is ineffective, physicians must obtain information from different sources, such as school. It is also important to recognize when a referral to a developmental-pediatrician, psychologist, or psychiatrist is needed (AAP, 2001b).

The last recommendation is that physicians obtain periodic feedback from parents and teachers. Appropriate stimulant medication dosing is more easily obtained when physicians have frequent feedback from teachers and parents. Children should also be seen frequently to monitor adherence to the treatment plan created and to medication (Jensen, Arnold, & Reichers, 1999).

### Applying the AAP's Treatment Guidelines to the "Real World"

Many would agree that the AAP's clinical practice and treatment guidelines are necessary. However, there are several barriers to their implementation. One is that the recommendations for diagnosis rely on the assumption that the physician has a good understanding of what ADHD is and is skilled at considering differential diagnoses. Diagnosing ADHD appropriately requires an understanding of all of the childhood emotional and behavior disorders. Without this knowledge, physicians are less likely to identify other emotional and or behavioral disorders which require different treatment, increasing the likelihood that a child will receive an incorrect ADHD diagnosis.

Another problem is that most physicians with demanding practices may not have the time that a complete family and symptom history requires. For example, the average office visit with a primary care pediatrician is 13 minutes in duration (Jellinek, 1997). With session lengths as short as this, it is highly unlikely that physicians will get a thorough assessment of the symptoms, the duration, the functionality of the child, and an adequate picture of family functioning. It is also unlikely that an appropriate treatment plan will be developed. Any behavior modification plan needs to be well thought out and discussed. Without an appropriate understanding of what he or she is supposed to do, even a well-prepared plan is doomed to fail.

## Research on the Diagnostic and Treatment Practices of Physicians

In an effort to determine how physicians' training affects their ADHD diagnostic practices, Copeland, Wolraich, Lindgren, Milich, & Woolson (1987) mailed members of the American Academy of Pediatrics questionnaires regarding their diagnostic practices and their preferred treatment for ADHD and asked when they were trained in their residency. They found that out of 417 respondents, only 52% used DSM-III criteria to assist them with their diagnosis. Pediatricians who received training before 1970 were more likely to report using the behavior of the child during the office visit and using "soft" neurological signs as indicators of the presence of ADHD (Copeland, et al., 1987). That is unfortunate because neurological signs are poor indicators of ADHD. Hynd and Voeller (1991) found that fifteen percent of children who display such symptoms do not meet the DSM criteria for ADHD (Hynd & Voeller, 1991). Physicians with training prior to 1970 were also found to be more likely to base their diagnosis on the child's presentation in their offices (Copeland, et al., 1987) in spite of the fact that the child's behavior in the office is not be viewed as a reliable source of information based on the novelty of the situation and the brief time spent observing the child. They described their treatment of choice as methylphenidate (Sleater & Ullman, 1981).

Wolraich, Lindgren, Stromquist, Milich, Davis, & Watson, et al., (1990) surveyed a random sample of members of the American Academy of Family Physicians to determine their assessment practices and treatment of choice. Out of 704 family practitioners surveyed, 164 completed the survey. The researchers also sent surveys to 10 physicians in two Midwestern cities to complete screening forms on children who were currently being seen in their practices. Like pediatricians, family practitioners also prescribe methylphenidate as their first choice of treatment of ADHD, and they prescribed this stimulant more often than pediatricians. Only one-

fourth of those surveyed reported using DSM criteria to diagnose ADHD. Due to the lack of use of structured interviews, formal direct observation, or diagnostic criteria, only 72% of the children diagnosed by the family practitioners actually met the diagnostic criteria for ADHD. The researchers also found that of those children diagnosed with ADHD, only 53% had teacher reported symptomatology that actually met DSM criteria, even while not taking medication.

The passing of time and increased knowledge regarding ADHD behaviors and assessment has not had a significant impact on the diagnostic practices of physicians. Ten years after the Wolrach, et al., (1990) study, Evink, Crouse, and Elliott (2000) performed a study to determine whether family practitioners and pediatricians make the same diagnoses. The researchers surveyed more recently trained (since 1980) physicians in rural and urban areas of Minnesota. Their research reflects similar findings as past research. Their pediatricians were both more familiar with and more likely to use DSM criteria to diagnose ADHD than family practitioners. All of the pediatricians surveyed knew the diagnostic criteria, yet only 87% of them used it in practice. By comparison, only 55% of the family practitioners were familiar with the diagnostic criteria, and only 37% reported that they used it. The family practitioners reported being familiar with the basic criteria, such as hyperactivity, impulsivity, and inattentiveness. Pediatricians were more likely to report using ADHD assessment tools, such as Conners' Rating Scales. Family physicians were more likely to refer to another professional for an assessment. The comparison of rural and urban practices indicated that urban physicians felt pressured to make a diagnosis more than rural physicians (38% to 29%). In addition to feeling more pressured, urban physicians were less likely to collaborate with schools, than were rural physicians (92% to 71%) (Evink, Crouse, & Elliott, 2000).

In a more recent study of 47 pediatricians working in private practice in North Carolina, Williams, Klinepeter, Palmes, Pulley, and Foy (2004) found that 41 of them (87%) used checklists or the DSM-IV as diagnostic criteria for behavioral health disorders. Ninety-four percent of these pediatricians reported prescribing stimulants frequently, or often. Almost half (48%) of the physicians reported spending time during the interview discussing issues related to ADHD. These included such concerns as, etiology, school modification issues, consistency in parenting, and parental self-care. Thirty-four percent of these pediatricians reported that they provided assistance with parenting issues, and 29% assisted with behavior modification techniques. These physicians reported that they were capable of accomplishing this by extending the length of the initial intake or follow-up visits (Williams, et al., 2004).

Although the majority of pediatricians interviewed in the study by Williams, et al., (2004) used diagnostic criteria, 57% responded that they felt as though they were not adequately trained in behavioral health problems. They indicated that they believed that more training and experience is needed for physicians in diagnosis and treatment of children with behavioral health issues. Pediatricians who had been practicing for five years or less reported feeling more prepared to diagnose ADHD than those practicing for more than five years. Most felt they had needed more training in diagnosing and treating depression and anxiety, in order to correctly diagnose and rule-out ADHD. Also, they indicated the need for more training on comorbidities and Oppositional Defiant Disorder, Conduct Disorder, and Pervasive Developmental Disabilities (Williams, et al., 2004).

### Implications of Findings for Rural Areas and Appalachia

Fritz and Bergman (1986) found that physicians generally feel less than well-educated about behavioral and emotional issues and that many, especially family practitioners, fail to properly assess for these disorders (Fritz & Bergman, 1986). This is especially concerning given that family practitioners are often forced to see children with ADHD symptoms due to the lack of access to a pediatrician or child psychiatrist. This is often the case in rural areas across the country, especially in Appalachia, where medical access is limited, and families are often impoverished, limiting their availability to seek treatment outside of the area.

Little is known about how family practitioners conceptualize ADHD in children. Wolraich (1980) found that family practitioners spend less time interviewing and discussing symptoms with the family than pediatricians (Wolraich, 1980). This decreases the likelihood that family practitioners will integrate family information (i.e., family stress or conflict, domestic violence, negative or ineffective parenting techniques) into the child's diagnostic conceptualization and treatment. Also, in rural areas, general practitioners often have large patient loads and little time for follow-up appointments. There has been little research comparing the diagnostic practices of physicians in rural vs. urban areas. Research that has been done, suggests that rural practitioners may be more willing to collaborate with the schools in the community to provide better care for their patients (Wolraich, 1980).

It is important to look at the training of physicians and how they are being taught to assess for ADHD and perform differential diagnoses. Research has indicated that training is often lacking in the areas dealing with behavioral and developmental issues, despite the increase in number of children seen for such issues over the years. It is also surprising to see that often pediatricians' diagnostic practices are not in compliance with the recommendations of the AAP's

(2000) diagnostic guidelines. Even more disturbing is the number of family practitioners who are not familiar with the DSM criteria for ADHD, yet who diagnose and treat it. It is important that the diagnostic practices of physicians in Appalachia be examined to determine how their practices and training compare to those in other parts of the country, and to standard guidelines for diagnosis.

The current study examined the diagnostic and treatment practices, as well as the training of various professionals who work with children diagnosed with ADHD. Utilizing a survey methodology, this study examined the following hypotheses: 1) Physicians will place more emphasis on the biological etiology of ADHD than psychologists; 2) Physicians will place less emphasis on psychological testing and differential diagnosis than psychologists when diagnosing ADHD; and 3) Psychologists will place more emphasis on the influence of environment/family in the etiology of ADHD.

## Method

### *Participants*

Participants for this study were licensed psychologists, psychiatrists, family practitioners, general practitioners, and pediatricians practicing in West Virginia. The mailing lists were obtained from the state psychology licensing board and the state medical board. Recipients of the survey were randomly chosen from the mailing lists. A total of 780 surveys were mailed and 106 were returned, for a response rate of 14%. Two hundred surveys were mailed to each group of physicians including, family practitioners, pediatricians, and psychiatrists. The group labeling themselves general practitioners were few in number so the entire population, 80, were mailed surveys. One hundred surveys were mailed to clinical and school psychologists. The composition of the final sample of respondents (by practicing category) is presented in the table below:

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Table 1

### *Participant Demographics*

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Discipline	Number of Participants	% of Respondents
Practicing General Practitioner	1	1
Family Practitioner	16	15
Psychiatrist	14	13
Pediatrician	29	27
Clinical Psychologist	37	35
School Psychologist	5	5
Dually Licensed Psychologists (Clinical and School)	4	4

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### *Procedure*

A survey requesting demographic information and opinions regarding ADHD etiology, diagnosis, and treatment was mailed to participants. Participants were asked to identify their discipline, age, year of graduation, and practice setting. A summary of the composition of the final sample along these demographic variables is presented in Table 2 (See Appendix B for a

copy of the survey). The survey asked about their opinions regarding their own practice in the treatment of childhood emotional and behavioral disorders, as well as assessment tools used to diagnose ADHD. Participants were also asked to rate on a 5 point Likert type scale, to what degree they agreed (Strongly Disagree to Strongly Agree) with 56 items regarding their opinions and diagnostic practices with respect to ADHD.

## Results

### *Factor Analysis*

A factor analysis was performed on the 56 items regarding practitioners' opinions and diagnostic practices. A principal axis factoring procedure with a Varimax rotation was performed, followed by a scree test to determine the number of factors involved. Based upon the scree plot, it was determined that 7 distinct factors emerged. Items with factor loadings of .450 and greater were included for the factors. Each factor had an Eigenvalue of greater than 2. The seven factors account for 48.34% of the total cumulative variance prior to rotation, and 41.32% after the Varimax rotation was performed. The seven factors and their contents are listed in Appendix C.

Table 2

### *Demographics of Practitioners' Age, Year of Graduation, and Practice Setting*

	Age *						Year of Graduation*						Practice Setting*					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
<b>DISCIPLINE</b>																		
General Practitioner					1							1	1					
Family Practitioner	4	2	6	3	1		4	5	2	5			10	3		3		
Psychiatrist	3	3	5	2	1		2	5	2	4	1		3	4	4	1		2
Pediatrician	4	8	6	5	5	1	4	9	4	5	6	1	20	5	1	2		1
Clinical Psychologist	6	11	15	3	1	1	8	13	12	2	1	1	22	6	5	2		1
School Psychologist			2	3				1	3	1			1					4
Psychologist (School and Clinical)	2		1	1			2			2			4					

\*Age: 1 = 25-34; 2 = 35-44; 3 = 45-54; 4 = 55-64.; 5 = 65-74; 6 = 75-84; \*Year of Graduation: 1 = 2000-2008; 2 = 1990-1999; 3 = 1980-1989; 4 = 1970-1979; 5 = 1960-1969; 6 = 1950-1959; \*Practice Setting: 1 = Independent Practice; 2 = University/Medical School; 3 = Community Mental Health Center; 4 = Hospital; 5 = School; 6 = Other.

*Analyses of group differences*

Initially, because of the small number of respondents in some of the groups, professionals were collapsed across areas into two professional groupings, physicians versus psychologists. General practitioners, family practitioners, pediatricians, and psychiatrists were classified as physicians, while those practicing psychology in clinical and school settings, as well as those dually licensed as school and clinical psychologists were labeled as psychologists. A one-way multivariate analysis of variance (MANOVA) was conducted to determine the effects of practitioner's discipline (physician or psychologist) on beliefs and diagnostic practices regarding ADHD.

Significant differences were found between psychologists and physicians. The multivariate test of significance for the effect of practitioner discipline was significant ( $F(7, 98) = 12.408, p < .001$ ) indicating a significant difference in the ADHD beliefs and diagnostic practices of practitioners. The partial eta was significant and strong  $= .47$ , indicating that 47% of the multivariate variance of the dependent variables is associated with the practitioner grouping factor. Table 3 contains the descriptive statistics for the seven factors compared between physicians and psychologists.

Table 3

*Means and Standard Deviations of Factor Ratings*

Factor	Discipline	Mean	SD
Best Practice	Physicians	47.225	7.469
	Psychologists	51.478	4.852
Environment	Physicians	12.833	4.267
	Psychologists	14.696	4.021
Referral	Physicians	7.433	3.022
	Psychologists	8.913	2.731
Pressure	Physicians	15.433	2.854
	Psychologists	15.456	2.465
Biological Influence	Physicians	17.833	4.299
	Psychologists	19.087	3.319
Medication	Physicians	15.250	2.608
	Psychologists	11.522	3.373
Response	Physicians	7.950	2.251
	Psychologists	6.848	2.170

*The role of biological etiology.* The first hypothesis examined was the expectation that physicians will place more emphasis on the biological etiology of ADHD than psychologists. To address this hypothesis, the means for Factor Four were examined. This hypothesis was not supported, ( $F(1, 104) = 2.689, p = .104$ ).

*The role of psychological testing and differential diagnosis.* The second hypothesis stated that physicians will place less emphasis on psychological testing and differential diagnosis than psychologists when diagnosing ADHD. A single factor addressing both the emphasis on differential diagnosis and psychological testing did not arise during the factor analysis. The first factor, labeled Best Practice, addresses differential diagnostic practices and so the test of

hypothesis two was examined with two separate analyses. With respect to emphasis on differential diagnosis considerations, there was a significant difference between physicians and psychologists on this factor,  $F(1, 104) = 11.260, p < .001$ . An examination of the means supports the hypothesis that psychologists ( $M = 51.48$ ) place more emphasis on differential diagnosis possibilities than do physicians ( $M = 47.22$ ). To address the second half of the hypothesis concerning the emphasis on psychological testing, a one-way analysis of variance (ANOVA) was performed examining the response to the specific question asking respondents to rate the importance they placed on psychological testing as a diagnostic necessity. This ANOVA supported the second half of hypothesis two ( $F(1, 102) = 15.332, p < .001$ ). An examination of the means suggested that psychologists ( $M = 3.99$ ) placed a greater emphasis on psychological testing to rule-out the influence of cognitive impairment or learning disorders, and measuring attention in a structured setting than physicians ( $M = 3.73$ ).

*The role of the environment and family influence.* The third hypothesis stated that psychologists will place greater emphasis on the influence of environment/family in the etiology of ADHD. The second factor, labeled Environment, addresses the influence of family and the child's environment. There was a significant difference ( $F(1, 104) = 5.212, p < .05$ ) between the professional groups with psychologists ( $M = 14.696$ ) placing more emphasis on this factor as important in diagnosis than did physicians ( $M = 12.83$ ). This suggests that psychologists view family/environment as having a greater influence on the development of ADHD symptoms than physicians.

*Analyses of discipline differences.* After completing the analyses of the collapsed groups, additional analyses were performed to determine whether practitioners in specific disciplines differed from one another with respect to their diagnostic and treatment practices. Due to there

being only one general practitioner in the study, the results of this participant were combined with the family practitioners'. Significant results were found when analyzing the effect of the independent variable, Discipline, on respondents' ratings of several factors. One-way ANOVA's were used to determine significance with the factors. Discipline was found to have a significant relationship with Best Practice,  $F(5, 100) = 3.576, p < .01$ , Biological Influence,  $F(5, 100) = 10.694, p < .001$ , and Medication,  $F(5, 100) = 10.69, p < .001$ . The means and standard deviations for these factors are presented in Tables 4-6. A post hoc Tukey HSD analysis was performed and indicated significant difference between clinical and dually licensed psychologists and family practitioners. Clinical and dually licensed psychologists were more adherent to the recommendations for best practice, including utilizing DSM-IV criteria. There was also a significant difference between the endorsement of items relating to the etiology of ADHD. Psychiatrists were found to endorse items related to a biological etiology of ADHD more strongly than pediatricians. However, pediatricians as well as psychiatrists were found to more frequently endorse items related to the medication factor than clinical and school psychologists. Psychiatrists also more frequently endorsed such items than dually licensed psychologists. This suggests that pediatricians and psychiatrists view medication as safe, effective, and the treatment of choice more often than psychologists, despite the fact that the two larger groups (physicians versus psychologists) do not differ in their belief regarding the importance of biological etiology.

Table 4

*Means and Standard Deviations of the Effects of Discipline and Best Practice*

Discipline	N	Mean	SD
Family Practitioner	17	44.76	10.85
Psychiatrist	14	47.82	3.91
Pediatrician	29	48.38	6.16
Clinical Psychologist	37	50.81	4.83
School Psychologist	5	52.60	2.88
School and Clinical Psychologist	4	56.25	4.92

Table 5

*Means and Standard Deviations of the Effects of Discipline and Biological Influence*

Discipline	N	Mean	SD
Family Practitioner	17	16.76	5.21
Psychiatrist	14	20.71	2.27
Pediatrician	29	17.07	3.95
Clinical Psychologist	37	19.16	3.41
School Psychologist	5	18.60	2.41
School and Clinical Psychologist	4	19.00	4.08

Table 6

*Means and Standard Deviations of the Effects of Discipline and Medication*

Discipline	N	Mean	SD
Family Practitioner	17	13.76	2.44
Psychiatrist	14	16.14	2.03
Pediatrician	29	15.70	2.66
Clinical Psychologist	37	11.51	3.13
School Psychologist	5	11.60	2.07
School and Clinical Psychologist	4	11.50	4.51

A one-way ANOVA revealed that there was also a significant effect of the type of degree held by the respondent and their endorsement of the factor, Medication, ( $F(4, 101) = 13.782, p <$

.001). A Tukey HSD test indicated that medically trained practitioners were found to more often endorse the Medication factor than those practitioners with a Master's degree in psychology.

The means and standard deviations for the Medication variable are located in Table 7.

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Table 7

*Means and Standard Deviations of the Effects of Respondents' Degree and Medication*

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Degree	N	Mean	SD
M.D.	60	15.250	2.608
Ph.D.	12	12.917	2.539
Ed.D.	3	13.000	2.646
M.A.	27	11.111	3.238
M.S.	4	9.000	2.160

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These results, as those reported for the variable discipline, should be interpreted with caution due to the small number of respondents making up each group.

## Discussion

The present study addressed the attitudes and diagnostic practices of physicians and psychologists who diagnose and treat children with Attention Deficit Hyperactivity Disorder (ADHD). The ADHD diagnosis in children appears to be increasingly in the public's awareness. While some studies note that the number of diagnoses and prescriptions written for treatment is climbing (Cassidy & Jellinek, 1998; Sax & Kautz, 2003), there is concern that professionals from different disciplines may have distinctly different ways of conceptualizing ADHD in terms of etiology and effective treatment. While this has long been hypothesized, it has not been widely studied. This study addressed this concern by asking physicians, including general practitioners, family practitioners, pediatricians, and psychiatrists, as well as psychologists, both school and clinical, to complete a survey regarding their beliefs and diagnostic practices related to ADHD in school-age children. The concern that there was a disparity among the professionals from various training backgrounds and discipline was found to be warranted.

The study tested three hypotheses: 1.) Physicians will place more emphasis on the biological etiology of ADHD than psychologists; 2.) Physicians will place less emphasis on psychological testing and differential diagnosis than psychologists when diagnosing ADHD than psychologists; and 3.) Psychologists will place greater emphasis on the influence of environment/family in the etiology of ADHD than medically trained professionals.

Among the study's participants, it was found that there was not a significant difference between the overall groups of physicians and psychologists and their beliefs regarding the role that biological determinants play in ADHD symptoms. There was a high endorsement of items related to biological influences across the various disciplines; however, psychiatrists more consistently endorsed items related to this factor than pediatricians. Physicians were more likely

to view medication as safe, effective, and the treatment of choice than psychologists. These findings may best be explained by the increased focus of training across programs regarding neurological influences and brain development. Such training is increasing due to the large number of patients who are currently prescribed psychotropic medications, and the need for psychologists to understand how these medications affect brain functioning, as well as the side-effects. Psychopharmacology training has also increased due to the increased interest from the APA and practicing psychologists to obtain prescription privileges (Foxhall, 2000; Tulkin & Stock, 2004). This training is typically in addition to training in psychotherapy, diagnosis, and assessment. This allows psychologists to become skilled at recognizing the impact of environmental factors at play when making a diagnosis and implement behavior modification prior to or instead of referring a child for medication when appropriate.

There was also a significant difference regarding the emphasis placed on the environment/family etiology of ADHD. The importance of the environmental factors such as family dynamics in the development of disruptive behavior disorders is well documented. This would be consistent with research which has found that boys were more likely to exhibit ADHD like symptoms when their families were rejecting, coercive, or excessively demanding (Lindahl, 1998). It has also been found that children who are reared in families where there is conflict, aggression, or inadequate support are more likely to experience mental health and behavioral problems, as well as increased risk for physical health problems (Repetti, Taylor, & Seeman, 2002).

Psychologists more strongly endorsed these items than those medically trained practitioners. This is possibly due to the length of time psychologists spend learning about family systems theory, the impact of dysfunctional families, and the effects on children growing

up in homes of families where there is a poor relationship between the children and parents. Of those who were medically trained, pediatricians placed more emphasis on the role of the family than did other physicians. Pediatricians are likely to recognize the important role that families play in caring for the physical well-being of children and understand that families who are more supportive both physically and emotionally have physically and mentally healthier families. In 2001, the American Academy of Pediatrics recognized that the role of the pediatrician was changing and that pediatricians were treating an increasing number of mental health and behavioral issues. As a result, the AAP stated that pediatricians must commit themselves to treating psychosocial issues with children and their families (AAP, 2001a). This increased emphasis may make them more sensitive to these factors in understanding the etiology of problem behaviors such as those found in children with ADHD.

The structure and duration of patient contacts also differ significantly between physicians and psychologists, perhaps reflecting the differing beliefs regarding environmental factors. Psychologists typically spend a significant amount of time with the families of the children, typically 45 minutes or more, compared to physicians who spend an average of 13 minutes with the family and child (Jellinek, 1997). The structure of longer patient contacts lends itself more to the exploration of family stressors, discipline practices, and other concerns that may be impacting the child's behavior. In addition, because the vast majority of psychologists do not have prescription privileges, they are more likely to have experience with the improvements in behavior that can come from behavioral interventions, thus, predisposing them to endorse the effectiveness of such treatments and the role that environment can play in the development of problem behaviors.

The hypothesis that physicians would place less emphasis on psychological testing and differential diagnosis than psychologists when diagnosing ADHD was also supported.

Psychologists were found to be more adherent to DSM-IV criteria, and to place more emphasis on psychological testing to rule-out other possible factors causing difficulties with attention and hyperactivity. This is an important finding since the AAP has created practice guidelines which state that physicians should adhere to DSM-IV criteria when making a diagnosis and should rule-out other diagnoses. These results have significant treatment implications for families living in mental health shortage areas as well as for the physicians who practice there. Family practitioners, who are quite likely to practice in underserved areas, are likely to feel the pressure of needing to provide services to families experiencing behavioral disruption, despite a lack of training in that specific area. Due to their decreased emphasis on the rule out of differential diagnosis, via testing, they may be more likely to diagnose ADHD in exclusion when other disorders may also be present.

### *Limitations*

The findings of this study are interesting and informative, yet, the current study has several limitations. Although it was intended to look at the beliefs and diagnostic practices of practitioners in West Virginia, the results can not be generalized to other states. West Virginia is a state consisting of vast rural communities, where access to health care is limited. Also, the return rate for the survey was quite low. Only 106 out of 780 surveys mailed were returned completed and there is no information regarding the factors that lead some professionals to complete the survey and others to disregard it. Therefore, this is a very select sample. It is possible that due to the rural nature of the practices commonly found in West Virginia, that practitioners found their days too filled with seeing clients to spend the time completing the four-

page survey. While those who completed the survey did not complain about the length, it is possible that a more abbreviated survey may have resulted in a higher return rate. Another issue affecting the return rate was that the state licensing boards did not provide a way to distinguish those individuals who actually treated school-age children from those who did not. This increased the odds of sending the survey to individuals who were unable to complete it even if they had chosen to take the time. Depending on the nature of the factors affecting the return rate, additional surveys returned may have strengthened the stated findings or resulted in a different set of conclusions altogether. Although limited by a low return rate, this study is informative in that it illustrates that there is a significant difference in the approaches that physicians and psychologists take to the diagnosis and treatment of ADHD. This has implications when an accurate diagnosis is needed to implement the most effective treatment. Children experiencing symptoms of serious problems, such as depression, anxiety, Autism and Asperger's Disorder, need an appropriate diagnosis to get proper treatment and swift action taken to help stop or reduce progression of the problems. Incorrect diagnoses impede improvement and can lead to rapidly deteriorating conditions.

#### *Implications for Practice*

The results of the present study showed that physicians view medications as safe, effective, and as the treatment of choice for ADHD, regardless of the etiology. This suggests that children who are seen by a physician are more likely to be treated with medication as a first line of treatment, prior to ruling-out other diagnoses or identifying significant family factors which may need to be addressed with behavioral treatment. By being focused primarily on the biological etiology of ADHD, physicians often fail to develop treatment goals which involve the

whole family, despite research that indicates that behavior therapy can be effective in reducing ADHD symptoms (Pelham, 1999).

Physicians are also less likely to view psychological testing as necessary, which may cause a learning disorder to go unidentified and result in the child falling behind academically and possibly be retained. While it is easy to mistake attentional difficulties as being due to ADHD and not influenced by the lack of understanding of classroom information, the ramifications for such a misdiagnosis can have a significant impact on a child academically, emotionally, and socially. Such misdiagnoses are more likely to occur when little time is spent obtaining a thorough developmental history and appropriate follow-up.

While the majority of children with behavioral disorders are seen by primary care physicians (Fritz & Bergmen, 1986), this is especially true in rural areas, especially the Appalachian region, where the current study was conducted. In Appalachia, there are fewer psychologists available to see children. The region is also troubled with professionals who chose to leave the most rural and impoverished areas to practice. The focus of the remaining physicians in the area is often on the biological influences of ADHD and likely results in an increased diagnosis of ADHD in Appalachia. It also suggests that appropriate treatment goals are not being implemented, being that often families living in economically deprived areas where there are few jobs and little resources for assistance, such as Appalachia, may be experiencing more stress and may be more likely to be experiencing the types of problems which have been found to result in ADHD symptoms.

One way to bring the somewhat disparate views of ADHD together is to increase interdisciplinary training opportunities for physicians and psychologists. This would allow better training and help to create a better understanding of the disciplines and help promote

consultation and referral between the two groups. Working with other practitioners in the community would allow psychologists to acquire a better understanding of the biological causes of ADHD, as well as help physicians become more aware of the influence of family systems and environmental influences on symptoms. Psychologists and physicians need to assure that they are developing and monitoring progress on individualized plans of treatment. Increased observation of children in their natural environments is also needed to get a more accurate picture of their behavior. This is especially true in the school setting, since this is often where children display the most difficulty with attention, and a lack of focus would have the most detrimental effects. Observation in the classroom would also allow the observer to compare the target child's attention span to the level of attention displayed by a child without attention problems. Observation in the natural environment would help to decrease anxiety which may play a role in an office or laboratory setting.

#### *Implications for Future Research*

More research is needed to assess the training of all practitioners regarding ADHD and how they conceptualize this disorder. This knowledge would help to illuminate the need for more comprehensive training curricula in academic institutions and promote advancement in both the fields of medicine and psychology.

Also, continued research into the multiple etiologies of ADHD will be important. Providing a clear understanding of how environmental and biological factors work dynamically to produce behavioral difficulties is critical to understanding the important roles that both pharmacological and environmental interventions can provide. Ideally, such research should be conducted by teams comprised of a variety of disciplines as was the case with the large scale longitudinal Multimodal Treatment Study of children with ADHD, funded through the National

Institute of Mental Health (Pelham, 1999). Such research is likely to provide a clearer, more balanced, picture of ADHD and is likely to be disseminated more widely among practitioners of all disciplines.

There is a need for more research regarding the influence that environment/family plays in the etiology and/or exacerbation of ADHD symptoms. While it is recognized that there are indeed children who suffer from ADHD symptoms which are neurologically based, there is evidence which suggests that not all cases are the result of neurological trauma or defect. More information is needed regarding the impact of environmental influences so that effective treatments can be implemented and so that appropriate assessment measures can be utilized. Barriers to conducting more comprehensive ADHD assessments should also be explored, as well as alternatives to help improve service quality to children everywhere.

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## Appendix A

DSM-IV Diagnostic Criteria For Attention Deficit Hyperactivity Disorder

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## A. Either (1) or (2)

## Inattention

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

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

(2) Six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

## Appendix A (Cont.)

## Hyperactivity

- (a) often fidgets with hands or feet or squirms in seat.
- (b) often leaves seat in classroom or in other situations in which remaining seated is expected.
- (c) often runs about or climbs excessively in situations in which it is inappropriate. In situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness).
- (d) often has difficulty playing or engaging in leisure activities quietly.
- (e) is often “on the go” or often acts as if “driven by a motor”
- (f) often talks excessively.

## Impulsivity

- (g) often blurts out answers before questions have been completed.
  - (h) often has difficulty awaiting turn
  - (i) often interrupts or intrudes on other (e.g., butts into conversations or games).
- B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.
- C. Some impairment from the symptoms is present in two or more settings (e.g. at school or work and at home).
- D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not

## Appendix A (Cont.)

better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Code based on type:

314.01 Attention-Deficit/Hyperactivity Disorder, Combined Type: if both Criteria A1 and A2 are met for the past 6 months.

314.00 Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if Criterion A1 is met but Criterion A2 is not met for the past 6 months.

314.01 Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: if Criterion A2 is met but Criterion A1 is not met for the past 6 months.

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## Appendix B

**This survey is for practitioners who treat children between the ages of 6 and 12. If you do not treat children in this age group, please feel free to pass it along to a colleague who treats this population.**

**Please indicate your profession:**

- General Practitioner    Psychiatrist    Clinical Psychologist    Other \_\_\_\_\_
- Family Practitioner    Pediatrician    School Psychologist

**Age:**

- 25-34    35-44    45-54    55-64    65-74

**When did you graduate from medical or graduate school?**

- 2000-2008    1990-1999    1980-1989    1970-1979    1960-1969

**Highest degree completed:**

- M.D.    Ph.D.    Psy.D.    Ed.D.    M.A.    M.S.    M.Ed.    Ed.S.

**Which of the following best describes your practice setting?**

- Independent Practice    University/Medical School    Community Mental Health Center    Hospital

**The following set of statements are meant to assess your opinions about ADHD and its treatment in school age children unless otherwise stated. Please indicate on the scale provided the extent you agree or disagree with each of the following statements.**

***SD = Strongly Disagree   D = Disagree   N = Neutral   A = Agree   SA = Strongly Agree***

1) DSM diagnostic criteria for ADHD are too vague.	SD	D	N	A	SA
2) I make sure that all DSM-IV diagnostic criteria are met prior to making an ADHD diagnosis	SD	D	N	A	SA
3) Neuroimaging scans are considered good diagnostic tools for assessing ADHD	SD	D	N	A	SA
4) In the case of a chaotic home environment, I would be less likely to give an ADHD diagnosis even if DSM-IV criteria are met	SD	D	N	A	SA
5) Stimulants are appropriately prescribed to children.	SD	D	N	A	SA
6) If parents have poor coping skills for stress, I would be less likely to give an ADHD diagnosis even if DSM-IV criteria are met	SD	D	N	A	SA
7) Physicians are under pressure to prescribe medications.	SD	D	N	A	SA
8) Stimulants are the most effective treatment for ADHD.	SD	D	N	A	SA
9) ADHD is a biological condition caused predominantly by genetic factors.	SD	D	N	A	SA

## Appendix B (Cont.)

10) There is research evidence of stimulant efficacy and safety for school-age-children.	SD	D	N	A	SA
11) There is research evidence of stimulant efficacy and safety for pre-school children.	SD	D	N	A	SA
12) Diagnostic procedures are available that are well supported by research.	SD	D	N	A	SA
13) If medication is not effective with a child, I would recommend behavior management training	SD	D	N	A	SA
14) Continuous performance tests (TOVA, Gordon Diagnostic Test, Conner's CPT) have been proven to be valid ADHD assessment tools	SD	D	N	A	SA
15) I ensure that I assess that ADHD symptoms are present across settings (e.g., school or work) before making an ADHD diagnosis	SD	D	N	A	SA
16) I ensure that children exhibited ADHD symptoms prior to age 7 before making an ADHD diagnosis	SD	D	N	A	SA
17) There is pressure from parents to use medications to treat ADHD.	SD	D	N	A	SA
18) There is pressure from teachers to use medications to treat ADHD.	SD	D	N	A	SA
19) Parents and children do not have time for other treatments aside from medication.	SD	D	N	A	SA
20) It is important to rule-out behavior disorders such as Conduct Disorder before making a diagnosis of ADHD.	SD	D	N	A	SA
21) ADHD is caused by brain damage/compromised brain functioning.	SD	D	N	A	SA
22) Other than medication, there are few resources for other interventions for ADHD.	SD	D	N	A	SA
23) Behavior management training combined with stimulant training is the most effective treatment for ADHD	SD	D	N	A	SA
24) Research findings indicate that antidepressants can be safely prescribed To children.	SD	D	N	A	SA
25) Children diagnosed with ADHD should be referred for behavior management training.	SD	D	N	A	SA
26) ADHD is the result of prenatal influences/health of mother.	SD	D	N	A	SA
27) I am aware of the number of referral sources available for behavior management training.	SD	D	N	A	SA
28) I am comfortable with the number of referral sources available for psychological testing.	SD	D	N	A	SA
29) I have a sufficient number of referral sources available for medication treatment for school-age children with ADHD available to me.	SD	D	N	A	SA
30) I have a sufficient number of referral sources available for medication treatment for pre-school children with ADHD available to me.	SD	D	N	A	SA
31) I am comfortable with the training received in mental/behavioral disorders in children.	SD	D	N	A	SA
32) I ensure that I rule-out pervasive developmental disorders such as Autistic Disorder or Asperger's Syndrome when making an ADHD diagnosis.	SD	D	N	A	SA
33) It is OK to prescribe stimulant medication, if a child does not meet ADHD criteria, but still benefits from medication.	SD	D	N	A	SA
34) I ensure that I rule-out anxiety disorders when making an ADHD diagnosis	SD	D	N	A	SA
35) Observation of a child's behavior in your office is a good indicator of the presence of ADHD symptoms.	SD	D	N	A	SA

## Appendix B (Cont.)

36) I would refer for behavior management if there is evidence of lack of structure or discipline in the home	SD	D	N	A	SA
37) A positive response to stimulant medication confirms the diagnosis of ADHD.	SD	D	N	A	SA
38) I ensure that I rule-out behavior disorders such as Oppositional-Defiant Disorder and Conduct Disorder.	SD	D	N	A	SA
39) Children should be referred for behavior management training prior to making a diagnosis of ADHD.	SD	D	N	A	SA
40) Families of children with ADHD should be referred for family counseling.	SD	D	N	A	SA
41) Referral for physical exam is important prior to making an ADHD diagnosis.	SD	D	N	A	SA
42) I ensure that I formulate individualized goals or target behaviors for children diagnosed with ADHD.	SD	D	N	A	SA
43) ADHD symptoms are exhibited when a child has a small cerebellum	SD	D	N	A	SA
44) ADHD may be caused by low birth weight	SD	D	N	A	SA
45) ADHD may be caused by prenatal exposure to drugs and alcohol.	SD	D	N	A	SA
46) I would be less likely to diagnose ADHD if a child's mother is diagnosed with a mental illness	SD	D	N	A	SA
47) ADHD is influenced by limited support in parenting	SD	D	N	A	SA
48) ADHD may be caused by traumatic injury to the brain.	SD	D	N	A	SA
49) I would be less likely to diagnose ADHD if the child's family experiences chronic family conflict even if DSM-IV criteria are met	SD	D	N	A	SA
50) ADHD may be caused by exposure to environmental toxins such as lead.	SD	D	N	A	SA
51) ADHD may be caused by deficits in functioning of the frontal lobe area of The brain.	SD	D	N	A	SA
52) I ensure that I rule-out possible learning problems that could be Exacerbating or causing the child's symptoms.	SD	D	N	A	SA
53) I would be less likely to diagnose ADHD if there is a lack of structure and discipline at home and/or school and DSM-IV criteria are met.	SD	D	N	A	SA
54) ADHD is best defined as something that a child does, rather than something that he/she has.	SD	D	N	A	SA
55) ADHD is at times caused only by parental attention to overly active behavior.	SD	D	N	A	SA
56) I ensure that I rule-out depression when making an ADHD diagnosis.	SD	D	N	A	SA

**The approximate percent of parents with unruly children, including ADHD symptoms, who come to me seeking medication for their children is \_\_\_\_\_%.**

**I am comfortable making the initial diagnosis in children between the ages of 6 and 12.**

Yes  No

## Appendix B (Cont.)

Once you have made or are ruling out the diagnosis of ADHD, how often do you refer to each of the following:

	Never	Rarely	Sometimes	Often	Always
Pediatrician	N	R	S	O	A
Neurologist	N	R	S	O	A
Psychiatrist	N	R	S	O	A
Psychologist	N	R	S	O	A
Social worker	N	R	S	O	A
Speech Pathologist	N	R	S	O	A

Please rate each type of information on how important you view each as being when considering a diagnosis of ADHD.

**1 = Not Important; 2 = Of Minimal Importance; 3 = Important; 4 = Very Important; 5 = Required for Diagnosis**

Parent/caregiver verbal report	1	2	3	4	5
Parent/caregiver standardized rating scale	1	2	3	4	5
Teacher/observer standardized rating scale	1	2	3	4	5
Teacher Verbal Report	1	2	3	4	5
DSM-IV criteria	1	2	3	4	5
Psychological testing	1	2	3	4	5
Neurological testing	1	2	3	4	5
Symptoms displayed by child during office visit	1	2	3	4	5

## Appendix B (Cont.)

**Please check the most inclusive description of your training in childhood emotional/behavioral disorders:**

- Discussion of a chapter or series of lectures regarding childhood disorders.
- A course in which childhood disorders was the primary focus.
- At least two courses in which childhood disorders was the primary focus.
- A practicum or rotation involving working directly with children with emotional and behavioral disorders.
- An internship or residency which involved specialized in seeing children with emotional and behavioral disorders.

**Please check each rating scale that you commonly use to assess for ADHD**

- ADHD Rating Scale – IV (ADHD-IV)
  - Behavior Assessment System for Children- Monitor
  - Conners' Rating Scale
  - ADHD Symptom Checklist – 4
  - ADD-H Comprehensive Teacher's Rating Scale (ACTeRS)
  - Child Behavior Checklist (CBCL)
  - Behavior Assessment System for Children – Second Edition (BASC-2)
  - Other (Please list) \_\_\_\_\_
-

## Appendix C

*Seven Factors*


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Factors derived from Practitioner's Attitudes	Rotated Factor Loadings
Factor 1 (Best Practice)	
If medication is not effective with a child, I would recommend behavior management training.	.465
I ensure that I assess that ADHD symptoms are present across settings (e.g., school or work) before making an ADHD diagnosis.	.686
It is important to rule-out behavior disorders such as Conduct Disorder before making a diagnosis of ADHD.	.581
Behavior Management training combined with stimulant training is the most effective treatment for ADHD	.489
Children diagnosed with ADHD should be referred for behavior management training.	.574
I ensure that I rule-out pervasive developmental disorders such as Autistic Disorder or Asperger's Syndrome when making an ADHD diagnosis.	.713
I ensure that I rule-out anxiety disorders when making an ADHD diagnosis.	.619
I would refer for behavior management if there is evidence of a lack of structure or discipline in the home.	.697
I ensure that I rule-out behavior disorders such as Oppositional Defiant Disorder and Conduct Disorder.	.782
I ensure that I formulate individualized goal or target behaviors for children diagnosed with ADHD.	.492
I ensure that I rule-out possible learning problems that could be exacerbating or causing the child's symptoms.	.503
I ensure that I rule-out depression when making an ADHD diagnosis.	.497

## Appendix C (Cont.)

## Factor 2 (Environment)

In the case of a chaotic home environment, I would be less likely to give an ADHD diagnosis even if DSM-IV criteria are met. .684

If parents have poor coping skills for stress, I would be less likely to give an ADHD diagnosis even if DSM-IV criteria are met. .653

I would be less likely to diagnose ADHD if a child's mother is diagnosed with a mental illness. .619

I would be less likely to diagnose ADHD if the child's family experiences chronic family conflict even if DSM-IV criteria are met. .740

I would be less likely to diagnose ADHD if there is a lack of structure and discipline at home and/or school and DSM-IV criteria are met. .780

## Factor 3 (Pressure)

Physicians are under pressure to prescribe medications. .605

There is a pressure from parents to use medications to treat ADHD. .607

There is pressure from teachers to use medications to treat ADHD. .585

ADHD is influenced by limited support in parenting. .481

## Factor 4 (Biological Influence)

ADHD symptoms are exhibited when a child has a small cerebellum. .471

ADHD may be caused by birth weight. .585

ADHD may be caused by prenatal exposure to drugs and alcohol. .678

ADHD may be caused by traumatic injury to the brain. .580

ADHD may be caused by exposure to environmental toxins such as lead. .700

ADHD may be caused by deficits in functioning of the frontal lobe area of the brain. .488

## Factor 5 (Medication)

Neuroimaging scans are considered good diagnostic tools for assessing ADHD. -.527

Stimulants are the most effective treatment for ADHD. .507

There is research evidence of stimulant efficacy and safety for school-age children. .541

Research findings indicate that antidepressants can be safely prescribed to children. .489

## Appendix C (Cont.)

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 Factor 6 (Response)

Other than medication, there are few resources for other interventions for ADHD. .457

It is OK to prescribe stimulant medication, if a child does not meet ADHD criteria, but still benefits from medication. .479

A positive response to stimulant medication confirms the diagnosis of ADHD. .671

## Factor 7 (Referral)

I am comfortable with the number of referral sources available for psychological testing. .482

I have a sufficient number of referral sources available for medication treatment for school-age children with ADHD available to me. .647

I have a sufficient number of referral sources available for medication treatment for pre-school children with ADHD available to me. .791

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**Vita****KRISTAL D. JENKINS****EDUCATIONAL HISTORY:**

Marshall University Psy.D. Program (August 2008)  
Huntington, WV

M.S. Clinical Psychology (May 2002)  
Eastern Kentucky University  
Richmond, KY

B.A., Magna Cum Laude (May 2000)  
Area of Concentration in Psychology  
Morehead State University  
Morehead, KY

**EDUCATIONAL HONORS:**

Leadership Development Program (1996-2000)  
Psi Chi, Vice-President 1998-1999  
Gamma Beta Phi Honor Society 1997-2000  
Pi Gamma Mu Honor Society 1999-2000  
Dean's List

**EMPLOYMENT HISTORY:**

Graduate Assistant (January 2007- June 2007)  
Supervisor: Marianna Footo-Linz, Ph.D.  
**Duties:** Assisting senior psychology majors in developing and implementing community projects for senior capstone courses.

Teaching Assistant (August 2005 – December 2005)  
Marshall University  
Supervisor: Christopher LeGrow, Ph.D.  
**Duties:** Teaching General Psychology

Graduate Assistant (August 2004 – June 2005)  
Marshall University  
Supervisor: Steven Cody, Ph.D.  
**Duties:** Administered and scored assessments as part of neuropsychological evaluations.

Outpatient/School-Based Therapist (June 2002-July 2004)  
Mountain Comprehensive Care Center  
Supervisor: Thomas Crotty, Ph.D.  
**Duties:** Met with children and adults individually to address disorders ranging from ADHD and depression to personality disorders. Consulted with patients' teachers to assess classroom behavioral and academic functioning and assisted in behavioral planning. Conducted intellectual assessments. Assisted in planning and organization of Summer Fun Camp for children and

adolescents with emotional and behavioral disorders. Led social skills groups and facilitated daily activities for camp.

### **Clinical Training:**

Doctoral Intern (July 2007-July 2008)

Alternative Community Resource Program, Everett/Johnstown, PA

Supervisors: Mary Berge, Ph.D., and Danielle Leighty, Psy.D.

**Duties:** Conducted clinical interviews and psychological assessments with children and adolescents with emotional and behavioral disorders. Conducted group therapy focusing on social skill development and self-esteem building with children ages 6-12. Conducted individual outpatient therapy to children and adults. Provided on-site supervision and assistance with ACRP's Summer Treatment Program. Attended administrative meetings and assisted with supervision of the agency's mobile therapists, behavior specialists/consultants, and therapeutic staff support team

Practicum Student/School Based Therapist (September 2006-June 2008)

Pretera Center/Lincoln County High School

Supervisor: Paul Mulder, Ph.D., and Pamela L. Mulder, Ph.D.

**Duties:** To provide school-based services to students. Meet with students for individual therapy and provide consultation and behavioral planning to staff.

Practicum Student (June 2006-August 2006)

Marshall University Psychology Clinic/River Park Hospital

Supervisor: Keith Beard, Psy.D., and Angela Via, M.A.

**Duties:** Met with adults for individual therapy in the Marshall University Psychology Clinic and performed learning disability assessments. Also, met with adults and adolescents in an in-patient psychiatric facility. Performed assessments with adolescents and co-lead therapy and chemical dependency treatment groups with adolescents and adult patients. Met individually with adults with substance abuse issues and major mental illness.

Practicum Student (January 2006-June 2006)

Pretera Center/Guyan Valley Junior/Senior High School

Supervisor: Paul Mulder, Ph.D.

**Duties:** Met with adolescents in grades 7-12 for individual and group therapy.

Practicum Student (August 2005-December 2005)

Pretera Center

Supervisor: Paul Mulder, Ph.D.

**Duties:** Met with children and adults for individual therapy and completed intake interviews in a community mental health care center.

Practicum Student (June 2005-August 2005)

Circle of Friends Preschool/Marshall University Autism Center

Supervisor: Cindy LeGrand, M.A.

**Duties:** Met with and supervised preschool-age children diagnosed with a Pervasive Developmental Disorder and performed Discrete Trial Training with preschool students.

Practicum student (January 2005 – August 2005)

University Psychiatric Associates

Marshall University Medical Center

Supervisors: Thomas D. Linz, Ph.D., and Steven Cody, Ph.D.

**Duties:** Met with children and adults for individual therapy. Administered psychological assessments and completed integrated reports. Administered assessments to the geriatric population at Hanshaw Geriatric Center. Provided consultation to children in the pediatric intensive care unit and their families. Observed multi-disciplinary assessments of children with autism spectrum disorders.

Practicum student (August 2004 – January 2005)

Marshall University Psychology Clinic

Supervisors: Marianna Footo-Linz, Ph.D., and Martin Amerikaner, Ph.D.

**Duties:** Met with patients for individual therapy. Administered psychological assessments, completed integrated reports, and provided feedback to clients.

Internship (January 2002-May 2002)

Intervention Specialist for Bridges Project

Supervisor: Vincent Dummer, Psy.D.

**Duties:** Met with students ages 4-18 individually to address emotional and behavioral issues. Consulted with teachers to assist in behavioral planning for students. Met with children and adolescents at a children's crisis unit to provide individual therapy.

Practicum student (August 2001-December 2001)

Eastern Kentucky University Counseling Center

Supervisors: Jonathon Brandon, Ph.D. and Don Beal, Ph.D.

**Duties:** Met with adults individually using cognitive-behavioral techniques for anxiety and depression, relaxation-training, and conducted intake interviews.

Practicum Student (January 2001-December 2001)

EKU Child and Family Clinic

Supervisors, Robert Brubaker, Ph.D, Myra Beth Bundy, Ph.D.

**Duties:** Met with patients and performed individual therapy using cognitive-behavioral techniques, relaxation training, and parent training. Conducted learning disability assessments, and led social-skills group for children.

Practicum Student (October 2001-December 2001)

Stress management for patients with Chronic Obstructive Pulmonary Disease, Patty A. Clay Hospital

Supervisor: Don Beal, Ph.D.

**Duties:** Co-led groups using cognitive-behavioral interventions with relaxation training

Practicum Student (October 2001-December 2001)

Social-Skills Group, White-Hall Elementary School

Supervisor: Robert Brubaker, Ph.D.

**Duties:** Performed social-skills training for second and third grade children.

Practicum Student (January-May, 2001)

United Methodist Home for Children and Youth

Supervisors: Stacie Catlett, M.S. and Don Beal, Ph.D.

**Duties:** Administered intellectual and psychological assessments and wrote integrated psychological reports. Met with clients for individual and group therapy. Led social skills and anger management groups. Conducted interviews with parents, as well as, 21-day review sessions with parents and other professionals involved with patients.

Undergraduate Practicum Student and counselor's assistant, Pathways, Inc.  
(August 1999–December 1999)

Supervisor, Jennifer Wilke, M.A.P.A.

**Duties:** Attended and observed parenting skills classes. Coordinated a presentation regarding behavior modification contracts for a parenting skills class. Assisted with an after-school program for children with behavior disorders and severe emotional disturbance. Conducted two after-school groups (one art therapy and one dealing with self-esteem) for the K.E.D.S. program. Aided in billing, staff notes, treatment planning, and attended individual and group sessions with adults and children, as well as family sessions. Participated in a therapeutic rehabilitation day program for the chronic adult population. Observed group treatment for adult substance abusers.

Big Sandy Impact (June-July, 1998)

Supervisor, Stacey McQueen, M.S.

**Duties:** Aided with summer camp for severely emotionally disturbed children. Supervised children during recreation time, attended group therapy sessions, and assisted with team building and role compliance tasks.

### **RESEARCH EXPERIENCE:**

Doctoral Research Project:

Chair: Marianna Footo-Linz, Ph.D.

Project: "ADHD Assessment Practices Used by General Practitioners, Pediatricians, and Psychologists in West Virginia"

Research Assistant (August 1998-December 1998)

Advisor: Lynn Haller, Ph.D.

Project: "Metaphor Use by Children"

**Duties:** Coded videos for predetermined set of variables focusing on the interactions among children.

Research Assistant (January 1998-May 1998)

Advisor: Dale R. Dickson, Ph.D.

Project: "Perceptual Segregation of Real and Subjective Contours"

**Duties:** Recruited and ran subjects gathering data. Aided in planning of research materials.

### **PROFESSIONAL ACTIVITIES:**

Attended Dr. William Pelham's internationally recognized Summer Treatment Program training for children with ADHD and behavioral disorders. (June 8-11, 2008)

Attended the "Current Research and Practice in the Provision of Early Intervention Services for Children with Autism Spectrum Disorder – Part I" workshop presented by Rebecca Landa, Ph.D. (November 6, 2007)

Attended the "School-Based Health Conference" in Flatwoods, WV. (August 16-17, 2006)

Attended the "Legal Issues in Behavioral Health in West Virginia: Requirements, Trends, and Transformation" workshop presented by Thomas W. Smith, J.D., and Ted J. Johnson, M.A. (June 6, 2005)

Attended the “Achieve Both Efficacy and Metabolic Health with Atypical Antipsychotic Therapy” grand rounds presentation by Richard Granese, M.D. (June 1, 2005)

Attended the “Application of Dialectic Behavioral Therapy to Suicidal And Parasuicidal Behaviors” workshop presented by Peggy Polomsky, Psy.D. (April 16, 2005)

Attended the “Bridges: A School-Based Model” workshop presented by Courtney Mullins, M.S., L.P.A., Lisa Little, M.S. L.P.C.C., and Vicci May, M.S., L.P.C.C. (April, 2004)

Attended the “Parental Empowerment: Helping Parents with Challenging Children” workshop, presented by Matthew Johnson, Psy.D., MSW (March, 2004)

Attended the “Medication Issues in Mental Health Treatment of Children and Adolescents” workshop presented by Corazon Chua, M.D. (February, 2004)

Attended the AABT Convention in Boston, MA (November, 2003)

Attended the “Recognizing and Responding to Child Abuse” workshop, presented by Robin Gray, LCSW (November, 2003)

Attended the “Cultural Competency” workshop presented by Pat Plummer, M.A. (October, 2003)

Attended the “Interviewing and Therapy Techniques and Strategies Involving Young Children” workshop, presented by David Bliss, Psy.D. (September, 2003)

Attended the “Treating Children with Sexual Behavioral Problems” workshop, presented by Robin Gray, LCSW (May, 2003)

Attended the “Caring for Every Child’s Mental Health: Communities Can Conference” sponsored by Mountain Comprehensive Care Center (September, 2002)

Attended a workshop on Cognitive Processing Therapy for Sexual Abuse (CPT-SA) presented by Kathleen Chard, Ph.D. (April, 2001)

Attended the “ADHD Comprehensive Behavioral, and Combined Treatment: State of the Art in Evidence Based Treatments” workshop presented by William Pelham, Jr. Ph.D. (March, 2001)

Attended the “Effective Clinical Management of Domestic Violence and Stalking” workshop, presented by Carol E. Jordan, M.S. (February, 2001)