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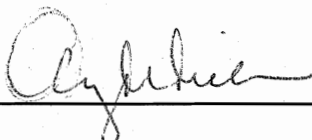
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**Attention Deficit Hyperactivity Disorder in Elementary School Children
In a Rural Illinois School District**

BY

Amy M. Miller

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Specialist in School Psychology

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

2009
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Running Head: ADHD IN RURAL ILLINOIS

Attention Deficit Hyperactivity Disorder in Elementary School Children
in a Rural Illinois School District

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Eastern Illinois University
Charleston, Illinois

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Abstract

Attention Deficit Hyperactivity Disorder (ADHD), one of the most commonly diagnosed childhood disorders, adversely affects children's academic, social, and emotional functioning. There were three purposes for this study. First, this study attempted to determine the number of students diagnosed with ADHD in the three elementary schools of a rural Midwestern school district as reported by parents. Secondly, the study attempted to discover discrepant practices in the methods of diagnosis and treatment of ADHD for students from a lower socioeconomic status than for those from the middle or upper class as reported by the parents. Thirdly, this study assessed teachers' knowledge and perception of ADHD in order to establish a link between their knowledge of ADHD and their rates of referral of children suspected of having ADHD for ADHD diagnostic evaluation and related special education support services.

Participants included 13 parents of children diagnosed with ADHD and 30 teachers from three elementary schools in rural Central Illinois. Data obtained were insufficient to conduct statistical analysis to answer the research questions or to establish any trends. However, 10% of responding parents (n=33) indicated that their children had an ADHD diagnosis, and medication was used in treatment. Further, based on qualitative data, it appears teachers need more education particularly about evidence-based diagnosis and intervention. A thorough review of the literature, the implications of the study and future directions are presented.

Attention Deficit Hyperactivity Disorder in Elementary School Children
in a Rural Illinois School District

This study attempted to identify the rate of Attention Deficit Hyperactivity Disorder (ADHD) in children, methods of diagnosis, and types of treatment in three elementary schools in a rural school district in Central Illinois. The relationship between teachers' perceptions and knowledge about ADHD and their rates of referral, the number of students they referred for special education evaluation, was also examined.

Attention Deficit Hyperactivity Disorder, one of the most commonly diagnosed disorders of childhood, adversely affects many areas of child psychosocial functioning including academic, social, and emotional adjustment (Barkley, 1990). Children with ADHD commonly have difficulty inhibiting behaviors, such as failing to remain seated, talking excessively, playing noisily, interrupting others, and fidgeting. The American Psychiatric Association (1994) defined ADHD as "a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than typically observed in individuals at a comparable level of development." Several theories have been proposed to account for the diversity of symptoms related to ADHD. Recent models consider the relation of executive function to behavioral inhibition and motor control systems (Mash & Barkley, 2003). These authors present a theory that unifies the many symptoms seen in those with ADHD by describing inhibition control deficits as they relate to four areas of executive function: poor nonverbal working memory, limited verbal working memory as in delayed internalization of speech, immature self-regulation of affect/motivation/ arousal, and impaired reconstitution, which refers to the ability to

analyze and use information to create a novel response and the ability to use flexible problem solving.

Prevalence Variability

Current prevalence rates reported by the Centers for Disease Control (CDC) showed that in 2003 approximately 7.8% of U.S. children aged 4-17 had been diagnosed with ADHD at some point. This study also cited that boys were 2.5 times more likely to be diagnosed than girls. Further, diagnosis rates increased with age. Diagnosis was also significantly higher among non-Hispanic, primarily English speaking children who have health insurance (Visser & Lesesne, 2005). Regional prevalence rates are extremely variable. For example, a study in Rhode Island found that 12% of third through fifth grade students had been referred for ADHD (Harel & Brown, 2003) and a similar study in Johnston County, North Carolina, found prevalence rates for grades 1-5 to be 10% (Rowland, et al., 2002b). Another study of Southeastern Virginia found an extreme difference in prevalence rates between two local school districts, one district with a diagnosis rate of 12% and the other with a diagnosis rate of 63% (LeFever, Dawson, & Morrow, 1999). It is important to note that wide ranges in prevalence estimates may reflect measurement differences as well as actual rates of the disorder. Differences in sampling, diagnostic thresholds, data collection methods, and time frames may have contributed to differences in estimates (Scahill et al., 1999; Rowland et al., 2002b). Regardless, from the foregoing, it is evident that there is no consensus on the prevalence rate of ADHD in children in the United States.

In order to better understand the impact that ADHD places on children and their

families, schools, and the public health system, and to better serve these children, schools must have current and accurate prevalence rates (Visser & Lesesne, 2005). As one of the most frequently diagnosed disorders in childhood, ADHD diagnoses should be consistent and reliable. However, research indicates that there is much variation in the diagnostic evaluation and treatment of ADHD (Olson, Rosenbaum, Dosa, & Roizen, 2005). Such variation is related to numerous factors, including differences in demographic, social/emotional development, gender, ethnic characteristics, differences in rates of comorbid disorders, and differences in understanding about ADHD symptoms (Sciutto, Nolfi, & Bluhm, 2004). Since ADHD involves substantial costs to families and society, the full public health dimensions of this disorder must be determined so as to provide adequate support and intervention. This information is revealed through accurate prevalence rates, the types of services used, and the services needed (Visser & Lesesne, 2005). Without such data, one cannot determine to what extent ADHD may be over or under diagnosed; likewise, one cannot determine whether the disorder is under or over treated. However, given the variability in the rate of prevalence, schools are left to figure out the number of children they are expected to serve and accommodate.

Public health dimensions of ADHD have received little attention (Rowland, Lesesne, & Abramowitz, 2002a). Students with ADHD use greater amounts of services in their schools and health care systems, and often still do not have their needs met (Kendall, Leo, Perrin, & Hatton, 2005). The disorder has been associated with strained relationships with families and peers (Visser & Lesesne, 2005), and parents of children with ADHD suffer greater stress in their parenting role (Harrison & Sofronoff, 2002).

Children with ADHD are more likely to affiliate with deviant peers, and ADHD has been identified as a risk factor in substance use (Diamantopoulou, Henriesson, & Rydell, 2005). Further, studies indicate that children with ADHD are more at risk for self-inflicted and other serious injuries. They are more likely to be involved in moving violations and traffic accidents (Rowland et al., 2002a). Given the peer and family relationship difficulties and at risk behaviors children with ADHD show, it is not surprising that they put high demands on public health services both at the school and community level. In addition, students with ADHD often are unable to reach their academic potential.

Taylor and Larson (1998) cite evidence that students with ADHD have a 50% retention rate of at least one grade level. Various social and affective deficits, such as low self-esteem, depression, mood swings, lack of emotional control, and anxiety, contribute to and result in academic achievement decline (Lerner & Lerner, 1991; Reeve, Schragg, Spessard, & Walker, 1995). With such serious implications of ADHD, it is imperative that school professionals, particularly teachers, have an accurate understanding of the disorder to help children reach their potential. However, as the following shows, the task is not that easy.

Differences Within the ADHD Population

Research indicates substantial variations in demographic, geographic, social, emotional, and intellectual characteristics of the ADHD population in the United States (Wolraich et al., 2005). While too few studies have been done to make broad generalizations, diagnostic and treatment differences can be seen across geographic area,

ethnicity, gender, and socioeconomic status (Harel & Brown, 2003; Rowland et al., 2002a; Holwenko & Pashute, 2000). Geographic and economic statuses have been implicated as also having an effect on treatment availability and integrity (Wolraich et al., 2005).

Studies, like that done by Scahill et al., (1999), cite various demographic and social factors as influencing the diagnosis and treatment of ADHD in individuals: Students diagnosed with ADHD are more likely to come from a single parent household, live in an urban area, and receive some type of public assistance. They also found family dysfunction, low income, overcrowded living conditions, and maternal history of psychiatric treatment to be associated with ADHD symptomatology. Even when these variables were accounted for, male gender, low income, and family dysfunction remained significantly correlated with greater severity of ADHD. Other studies have shown environmental factors tied to ADHD diagnosis and treatment. For example, those diagnosed with ADHD are more likely to have a stepparent, have no siblings, have parents who did not complete college, and have mothers who smoked during pregnancy (Harel & Brown, 2003). While this type of study, that explores the psychosocial correlates of ADHD, has implications for both screening and prevention efforts, generalizations are often limited. For example, both of these studies were done in rural areas and the findings may not apply in more urban areas.

Furthermore, the variability indicated in the diagnosis and treatment of ADHD in children contradicts the current understanding of ADHD. Given Barkley's suggestion that ADHD is a neurobiological disorder (Ronald et al., 2002; Denney, 2001), it appears

the prevalence of ADHD in children should remain consistent across various subgroups. The implication of such variables as geographic location, gender, SES, and family structure may point to the contribution of the environment to ADHD. Thus, the implication of the above conflicting findings is that the diagnosis of ADHD is complex: A thorough assessment of the environment should occur for the purpose of excluding environmental factors. Such an effort should result in less misdiagnosis of ADHD in children. Finally, treatment should seek to modify the environment.

While there is no conclusive evidence, many studies indicate that there may not be true differences in the ADHD populations and those factors such as gender and ethnicity are confounding variables (Stevens, Harman, & Kelleher, 2004; Livingston, 1999; LeFever et al., 1999). These problems are further confused by differences in types and extent of treatment. Significantly smaller proportions of both African American and Hispanic children with ADHD are treated with stimulant medication when compared to white populations (Rowland et al., 2002a). Another study found that African American youth with Medicaid coverage showed distinctly lower rates of treatment with stimulant medication and other pharmacological agents than Caucasian youth covered by Medicaid (Zito, Safer, dosReis, & Riddle, 1998). The authors did not elaborate as to whether African American and Hispanic children were not prescribed medication, or if the parents refused to put their children on medication. Some research shows that ethnic minority families often are hesitant to use medication (Laurel et al., 2003).

While it is beyond the scope of this research project to present an exhaustive discussion of comorbid conditions with ADHD, it is important to note that research

indicates that there are a variety of comorbid and underlying conditions that often accompany ADHD. Disorders that are commonly comorbid with ADHD include: learning disabilities, oppositional defiant disorder, conduct disorder, Tourette's Syndrome, depression, anxiety disorders, and bipolar disorder (Rowland et al., 2002a). Differentiating between comorbid and other underlying conditions that mimic ADHD is problematic. Further, ADHD is classified into three distinct subtypes: hyperactive, inattentive, and combined. With such a variety of classifications and symptoms, it is unclear whether the same dysfunction is responsible for all of these symptoms. Consistent and stepwise diagnosis, which is described in further detail later, is necessary. Thus, it is unlikely that one treatment method, namely stimulant medication, is an appropriate treatment for all the variations of ADHD (Chhabildas, Pennington, & Willcutt, 2001). Accurate diagnosis and appropriate course of treatment of ADHD remain challenging.

Diagnostic Criteria for Assessing ADHD

Considerable variation in diagnostic evaluation has led to concerns regarding both the accuracy of diagnosis and treatment of ADHD in children. A standard case definition for Attention Deficit Hyperactivity Disorder has not been successfully established in practice. While the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition-Text Revision (DSM-IV-TR) has established criteria for making a diagnosis of ADHD and subtypes (APA, 2000), these criteria are not readily adhered to (Wolraich et al., 2005; Rowland et al., 2002a). Physicians often do not appear to use DSM-IV-TR diagnostic criteria when evaluating symptoms of ADHD (Rowland et al., 2002a). Even

though the American Academy of Pediatrics (AAP) developed guidelines for diagnosis and treatment of those evaluated for ADHD by primary care physicians (See Appendix A for a summary of recommendations), it is not known how many physicians actually adhere to these criteria in their diagnostic process (Wolraich et al., 2005). These guidelines stress the need for basing diagnosis on “careful collection of information from multiple sources” (Frisch, Moser, Hawley, Johnston, & Romereim, 2003). Research has documented improvements in adherence to these diagnostic criteria guidelines when a structured diagnostic approach to ADHD is implemented (Olson et al., 2005).

Further, many professionals who diagnose ADHD do not use a differential diagnosis method that is considerate of the developmental level of the child and supported by research. Often, diagnosis is based on information from a single informant, even though research indicates the need for multiple informants, for example teachers and parents, because they observe children in different settings, at home and at school, respectively. This can be an inferred cause of low to moderate correlations on rating scales completed by a parent and a teacher on the same child (Mitsis, McKay, Schulz, Newcorn, & Halperin, 2000).

Further, the lack of a measurable core deficit (Rowland et al., 2002a) and the substantial changes in the diagnostic construct of ADHD over the last few decades (Chhabildas et al., 2001) complicate the diagnostic classification process. It is then important to insure that this disorder is correctly diagnosed. Currently, a collaborative team approach, including parents, physician, psychologist, and other school professionals, is indicated (LaFleur & Northup, 1997). A multi-method team approach

using consistent and stepwise diagnosis reduces the likelihood of diagnostic errors by including information such as: relevant educational status, behavior ratings, parent and teacher reports, observations of the student in various settings, and information about the student's background and environments.

The foregoing highlighted the considerable variation in diagnostic evaluation that has cast doubt on both the accuracy of diagnosis and treatment of ADHD in children. Accurate prevalence rates for rural areas will allow school psychologists to assess where improvement is needed in their diagnostic approaches. Accurate prevalence rates may also expose barriers to implementation of guidelines (Olson et al., 2005).

Interventions for ADHD

Current treatment and interventions for ADHD generally include stimulant medications and/or behavioral therapy. The American Academy of Family Physicians (AAFP) adopted the six guidelines for treatment of ADHD from the AAP (See Appendix B for a summary of recommendations) with stimulant medications as the first line of treatment (Chatfield, 2002). The majority of those diagnosed with ADHD are treated with stimulant medication. Due to the consensus regarding the biological nature of ADHD, found in neuroimaging studies, genetic studies, and other etiological studies, this treatment seems efficacious in most situations, though it is not without risk. Stimulant medication is strongly supported as the primary treatment for those with ADHD without comorbid disorders (Rowland et al., 2002a; Denney, 2001). While this treatment is effective in alleviating the symptoms for many students, the long term impact of side effects that have been associated with stimulant medications is unknown (Visser &

Lesesne, 2005). Such side effects may include: sleep disturbances, reduced appetite, and suppressed growth.

Given the seriousness of side effects of stimulant medications, it is critical that only children who receive accurate diagnosis and do not respond well to other therapies (e.g., social skills training, self-management, and cognitive behavioral techniques) are considered for medication. Research has not established that medicinal interventions improve social, psychiatric, academic, and legal outcomes in later adolescence or adulthood (Kendall et al., 2005). Unfortunately, research does not support the effectiveness of behavioral and psychosocial treatments alone either (Pelham, 1999). Both medication and therapeutic techniques may be required for long term positive outcomes. Research indicates that behavioral and psychosocial treatments in conjunction with medication are the most effective form of treatment for ADHD (Kendall et al., 2005).

In summary, as the definition of ADHD, prevalence, diagnosis, and treatment are fraught with challenges, so is the role teachers play in referring children for ADHD diagnostic evaluation and related special education support services, as well as accommodating them in the classroom.

Teachers' Perceptions of ADHD

ADHD has become a common disorder associated with children. It is not uncommon for a casual observer to suggest that an over active child may have ADHD. This increased awareness has led to more referrals and diagnosis when no specific pattern of impairment actually exists (Goldstein, 1999). However, a key component to the

diagnosis and treatment of ADHD comes from the perceptions regarding this disorder. Sciutto, Terjesen, and Bender-Frank (2000) argue that parents and teachers have the most exposure to children, making their knowledge of ADHD imperative to accurate referrals. Pizzitola-Jarratt, Riccio, and Siekierski (2005) cite several studies that suggest that teachers have a poor understanding of Attention Deficit Hyperactivity Disorder, including misconceptions about interventions. Findings in this study of teacher knowledge and misconceptions about ADHD included: (1) teachers were most knowledgeable about symptoms/criteria as outlined in the DSM-IV, while general knowledge and treatment knowledge were much lower; (2) misperceptions about ADHD were resistant to change; and (3) overall knowledge of ADHD was related to past experience with children with ADHD. In addition, the authors suggest that cognitive ability of students affected teachers' perceptions. Another study found that teachers may have difficulty differentiating among various externalizing disorders (Oppositional Defiant Disorder, Conduct Disorder, etc.), learning disabilities, and ADHD (Mioduser, Margalit, & Efrati, 1998). The authors also found that the teachers' experience and status in the school system was positively correlated with their ability to differentiate ADHD from other disorders.

Are referrals, diagnosis, treatment choices, and outcomes influenced by the level of knowledge and type of perception one has about ADHD? Several studies found results that indicate that teachers are often not aware of the true symptoms of ADHD, nor do they understand the methods of diagnosis and the need for accurate measurement of symptoms (Silver et al., 2005; Pizzitola-Jarratt et al., 2005; Mioduser et al., 1998; Smelter,

Rasch, Fleming, Nazos, & Baranowski, 1996). Fortunately, more information is becoming available, written to the teaching professional, to address the need for an accurate understanding of ADHD (Kirkpatrick, 2005; Taylor & Larson, 1998). In order to continue to address such needs for education, school psychologists must determine which teachers are lacking in necessary knowledge or are operating under false perceptions.

Statement of the Problem

While Attention Deficit Hyperactivity Disorder is a widely researched topic, there are still unanswered questions and a lack of agreement regarding issues of the prevalence of this disorder and treatment. Some of these unanswered questions result from a lack of comprehensive and representative research to establish prevalence rates, strict standards for diagnosis, and outcome based treatment protocol.

Current literature suggests that the prevalence rates for ADHD differ over a variety of demographic and geographic populations. In a recent study by Visser and Lesesne (2005), a lack of generalizability of previous prevalence estimates was found suggesting a need for additional research to describe the patterns that exist across various populations. These inconsistent results are problematic, because there is no way of assessing the impact that ADHD has on communities, schools, and families (Kendall et al., 2005).

The problem is further complicated by misconceptions about the nature and course of ADHD particularly among teachers; variations in the rate of prevalence exist that may be based on differing perceptions and a lack of knowledge about ADHD.

Because teachers have daily exposure to children in clinically relevant situations (Sciutto et al., 2000), they may be in a position to first observe ADHD in their students. Thus, teachers' knowledge of ADHD may be critical to eventual diagnosis and treatment of this disorder. In order for communities, particularly schools, to work with children with ADHD and support families, it is important that they have reliable estimates of needs for services (Hoagwood, Kelleher, Feil, & Comer, 2000).

Therefore, the primary purposes of this study were threefold: First, the study attempted to identify the number of children with the diagnosis of ADHD in the three elementary schools of a large rural Midwestern school district. Secondly, the study attempted to identify the criteria for the diagnosis and treatment protocol of ADHD in these children as reported by parents. This information can be used to show if there are discrepant practices toward lower socioeconomic and middle or upper class groups. Third, the study assessed teachers' knowledge and perception of ADHD in order to determine if a link between teachers' knowledge of ADHD and their rates of referral of children suspected of having ADHD for ADHD diagnostic evaluation and related special education support services.

Hypotheses

The following three predictions are made:

1. The elementary schools included in this study would follow a similar prevalence rate to the national prevalence estimate of 7.8% determined by the CDC in 2003 (Visser & Lesesne, 2005). Various trends established in that study, more boys diagnosed with ADHD than girls, for example,

would be seen in these elementary schools.

2. Children, suspected of having ADHD, whose families are non-traditional and from low socioeconomic groups are referred for special education evaluation mainly by classroom teachers. It may be the case that disadvantaged families are less able to recognize symptoms and, therefore, rely on the school system for identifying deficits. Families with low socioeconomic status are more likely to be less educated and, therefore, are less likely to understand ADHD symptoms (Harrison & Sofronoff, 2002), and they are unlikely to refer their children for evaluation themselves. Because classroom teachers have daily exposure to children in clinically relevant situations (Sciutto et al., 2000), they are more apt to refer disadvantaged children for ADHD evaluation.
3. Teachers' with accurate knowledge and perceptions of ADHD would have more accurate referrals for ADHD diagnostic evaluation of children suspected of having ADHD. A key component to the diagnosis and treatment of ADHD comes from the perceptions regarding this disorder. Pizzitola-Jarratt et al., (2005) cite several studies that suggest that some teachers have a poor understanding of ADHD contributing to inappropriate referral and diagnosis; and Sciutto et al., (2000) add that parents and teachers have the most exposure to children making their knowledge of ADHD imperative to accurate referrals.

Method

Participants

Participants included 13 parents of children with ADHD and 30 teachers recruited from three elementary schools in a rural Central Illinois school district. Parent respondents and the teachers surveyed were predominately women and Caucasian, which is consistent with the demographic characteristics of the rural Midwest population (National Association of Counties, 2008). Total district enrollment at the time was 2,911 students. All of the district's teachers were Caucasian and 83% were women.

Participating Parents. Of the initial parent letters (Appendix C) sent home with each child in the three elementary schools asking parents ($n=968$) to identify whether or not they have children with ADHD enrolled in this particular school, 313 (32%) were returned. Two hundred and eighty parents indicated that none of their children were diagnosed with ADHD and 10% ($n=33$) indicated that their child was diagnosed with ADHD. Thirty parent questionnaires, *Parent Experience with ADHD* (Appendix D), were mailed to these parents; three parents chose not to participate. Thirteen completed questionnaires were returned.

Participating Teachers. All district elementary school teachers ($n=50$) received the teacher questionnaire, *Teacher Experience with ADHD* (Appendix E), and responses were received from 30 reflecting a 60% rate of return. All of the respondents were Caucasian females. Fifty-eight percent ($n=17$) had earned a B.A., 35% ($n=11$) a M.A., and 8% ($n=2$) a M.S.ED. Years of experience teaching ranged from one year (12%) to 21 years (46%). The median years of experience was 16. The average years of experience was 14.27. Almost 90% of respondents taught regular education and a few ($n=4$) were

special education teachers.

Instruments

A letter and two questionnaires were used to collect data. Through the letter, parents identified whether or not they currently have children diagnosed with ADHD in the school system. The first questionnaire, *Parent Experience with ADHD*, was completed by parents of students diagnosed with ADHD to gather data pertaining to demographic information (including type of health-care coverage), personal experiences with referral, diagnosis, and types of treatment of students with ADHD. Teachers completed the second questionnaire, *Teacher Experience with ADHD*, to assess their perceptions and knowledge of ADHD. Scores on the teacher questionnaire were based on a total possible correct score of 19. Questions in both measures were based on similar questions from surveys that have been used in previous research (Harel & Brown, 2003; Holowenko & Pashute, 2000; Scitutto et al., 2000; Vereb & DiPerna, 2004; Diamantopoulou et al., 2005) to gather data in both national and regional populations. Both questionnaires were developed by this researcher. Individual consent was obtained from each party completing a questionnaire.

Initial Letter to Parents. This letter described the study and invited parents to participate in the study if any of their children had been diagnosed with ADHD. If parents had children diagnosed with ADHD and agreed to participate, they identified the child with ADHD and provided contact information to receive the follow up questionnaire. The Initial Letter to Parents yielded parent report of the number of children who were formally diagnosed with ADHD and attended the three schools.

Parent Experience with ADHD. This questionnaire was given to the parents of students diagnosed with ADHD and contained questions with a list of answers from which to choose, such as the age the child was diagnosed with ADHD, the child's gender, the professional that diagnosed the child (e.g., family physician or pediatrician), the type of treatment the child received (medication and psychosocial), the type of health care coverage (personal insurance or Medicaid), and so on. Questions regarding type of health care coverage and parents' level of education were included to measure socioeconomic status (SES). This information would allow comparison between the results of the current study and previous research, especially in regard to SES influence.

Teacher Experience with ADHD. This questionnaire, developed by this researcher, assessed teachers' perceptions of ADHD and knowledge about the disorder. The 19 item questionnaire contained statements that required participants to respond "True", "False" or "Don't Know." "True" responses were considered correct and both "False" and "Don't Know" responses were considered incorrect. The questionnaire assessed teachers' knowledge of ADHD and the total possible correct responses were used for assessing the relationship between teachers' knowledge of ADHD and their rate of referral of children for ADHD diagnostic evaluation.

For the purpose of this study, eleven of the questions on the *Teacher Experience with ADHD* questionnaire were adopted from the Knowledge of Attention Deficit Disorders Scale (KADDS) that was designed for use in a study by Scitutto et al., (2000). The scale was designed to measure what teachers believe incorrectly about ADHD (misconceptions) and what they do not know about ADHD (lack of knowledge). The

authors listed the internal consistency of this scale to be .81. The survey yielded descriptive statistics as well as characteristics of teacher knowledge regarding ADHD. Another instrument, the Knowledge of ADHD Rating Evaluation (KARE), a teacher survey with questions in four domains (Knowledge of ADHD, Knowledge of Treatments, Medication Acceptability, and Behavior Management Acceptability) was also incorporated into the *Teacher Experience with ADHD* questionnaire. Four questions on the *Teacher Experience with ADHD* questionnaire were adopted from the KARE. The survey, consisting of 49 items, was scored on a 4 point Likert scale. The aim of this survey was to investigate the relationship between teacher knowledge of ADHD and teacher knowledge of ADHD treatments and to determine whether or not teachers' experience was related to their level of knowledge (Vereb & DiPerna, 2004). While internal consistency estimates ranged from .58 to .81 and test-retest reliability ranged from .76 to .80, the authors cautioned that the reliability results for the Knowledge of Treatments Scale were mixed and the results obtained from that scale should be interpreted with caution (Vereb & DiPerna, 2004; Diamantopoulou et al., 2005). "All students with ADHD should receive special education services" and "The cause of ADHD is biological in nature" are examples of items from the KARE that were added to the KADDS to assess teachers' perception and knowledge of ADHD.

Although both the KADDS and the KARE show good reliability and validity, both Harel & Brown (2003) and Holowenko & Pashute (1999) noted that results could be skewed as the diagnosis of the children identified with ADHD was taken at face value. Further, the surveys are not based on a solid operational definition for ADHD; and for the

current study, in which the questionnaires were developed by this researcher, some of the KADDS and the KARE items were combined further adding to the questionable psychometric properties of the questionnaires.

Procedure

To obtain permission from schools, a letter (Appendix F) was delivered to the administration office of the participating school district. The letter identified the nature of the study and asked permission from the superintendent to conduct the research in the three elementary schools in the district. Enclosed with this letter were a sample of the initial letter to be sent home with each student asking parents whether or not they have children with ADHD attending the school (the research site), a copy of the informed consent form, and the two questionnaires (*Parent Experience with ADHD and Teacher Experience with ADHD*) used to gather data for this study. The primary researcher received via U.S. Mail a letter of approval from the school district to conduct the study. Permission was then sought and obtained from the Institutional Review Board at Eastern Illinois University.

Finally, the primary researcher met with the principal of each participating school to identify the number of teachers in each school and the number of students in each classroom. A packet was prepared for each teacher that consisted of the following materials for potential participating parents and teachers.

1. A letter to the teachers (Appendix G) thanking them for their assistance and asking them to (1) distribute the initial letter to parents of each student to take home by April 1, 2008, and (2) instructing them to place the signed teacher

consent form (Appendix H), the completed teacher questionnaire, and the returned initial letters from parents in the envelope provided and to seal the envelope before delivering them to the school secretary.

2. Initial (cover) letter to parents describing the study and inviting them to participate in the study if any of their children had been diagnosed with ADHD. Attached to this letter was the parent consent form (Appendix I) for the parents to sign agreeing to participate in the study, identifying the child with ADHD, and providing contact information for follow up purposes.
3. A consent form for the teacher to sign agreeing to participate in the study.
4. *Teacher Experience with ADHD* Questionnaire.

All of the above listed items were put in a manila envelope with the teacher's name. The same envelope was also used to return the items listed above. The manila envelopes were delivered to the principals of participating schools who put the packets in the teachers' mailboxes. Sealed packets were returned to the school secretaries who held them in a designated box. One week after the packets were distributed, the primary researcher collected the packets from the school office, followed by a second collection a week later. Packets were collected on Fridays so that they were not left in the office over the weekend.

A list of the children whose parents consented to participate in the study was maintained for follow up purposes. Each student was assigned a number, and only the researcher had access to this list which was kept in a locked cabinet. The parent questionnaire, along with a self-addressed and stamped envelope to return the

questionnaire directly to the researcher, was mailed to each participating family that returned the signed consent form. This direct mailing of the completed questionnaire further assured confidentiality. Ten days later, the researcher identified the families that had not yet returned the completed questionnaire. A telephone call was placed to those participating families who had not yet returned the questionnaire, and the primary researcher offered a replacement questionnaire if necessary.

Finally, all participants received a letter thanking them for their participation (Appendix J). Again, a signed informed consent was required for all participants. Participation was voluntary and confidential. To protect the identity of participants, only aggregate data are reported.

Results

Quantitative (frequencies, correlations, and t-tests) and qualitative data were utilized to determine the number of children diagnosed with ADHD in three schools, to assess if there were discrepant practices in the referral, diagnosis, and treatment of ADHD based on socioeconomic status, and to assess the relationship between teachers' knowledge and perception of ADHD and their rates of referral of children for ADHD evaluation and related special education support services.

Parents Experience with ADHD

Regarding the number of children diagnosed with ADHD in the three schools, 33 parents reported having a child with ADHD diagnosis, 17 boys and 8 girls. Eight did not report gender. Therefore, 10% of the student sample ($n=33$) had a diagnosis of ADHD. Five of the 13 respondents (38%) were uninsured or on Medicaid. Six of the 13

respondents (46%) listed a high school diploma as their highest level of education.

The data obtained were insufficient to conduct statistical analysis to assess if children with ADHD from middle or upper-class receive a more multimethod diagnosis and treatment than children from low socioeconomic background (e.g., those receiving Medicaid insurance) as predicted. Regardless, the experiences of these children seemed to parallel the literature in terms of who diagnosed them and the recommendation of the American Academy of Pediatrics in terms of treatment. Parents reported that family doctors or pediatricians diagnosed all but two of the students, and all but two of the students were treated with medication. About half of the parents ($n=7$) reported that their child received some type of school based treatment (behavior modification or counseling) in addition to medication.

Participating Teachers

It was predicted that there would be a relationship between teachers' knowledge and perception of ADHD and their rate of referral of children for evaluation of ADHD. Ninety three percent ($n=29$) of participating teachers reported referring 0-2 students. Interestingly, one special education teacher reported referring 8 students. Regarding teachers' knowledge and perception of ADHD, the mean number of correct responses was 11.07 out of 19.

A Pearson's r was conducted on the teacher knowledge of ADHD scores and referral rates. At an alpha level of .01, results indicated that there was no significant correlation between the total number of correct responses and rates of referral, $r(30) = .043, p = .41$ (one-tailed).

T-tests for independent means were conducted on each of the 12 true and 7 false survey questions and mean referral numbers (see Table 2). At an alpha level of .01, results show that there were no significant differences between the referral rates of those who answered the questions correctly and those who answered the questions incorrectly (two-tailed). Thus, the prediction was not supported.

Although results were not significant, interesting qualitative information was observed regarding the most common “*correct*”, “*incorrect*”, and “*don’t know*” responses. Teachers appeared to recognize the basic symptoms of ADHD, such as inattentiveness and hyperactivity. On the other hand, some teachers held false ideas about ADHD or they acknowledged not having the knowledge. For instance, “*Symptoms must not be present before age 7 for a child to be diagnosed with ADHD*” is a false statement. Some teachers agreed with this statement or said they did not know whether it was correct or not. Table 1 presents teachers’ knowledge of ADHD.

Discussion

The purpose of this study was to determine the number of students diagnosed with ADHD in three schools, and to assess whether there were disparities in the methods of diagnosis of ADHD for students from a lower socioeconomic status than for those from the middle or upper class as reported by the parents. Further, this study sought to establish a link between teachers’ knowledge of ADHD and their rates of referrals of children for special education services.

Parents Experience with ADHD

The 313 parents who responded to the initial letter reported that 10% of their children had a diagnosis of ADHD. This number is above what was reported by the Center for Disease Control (CDC): "In 2003, 7.8% of school-aged children were reported to have an ADHD diagnosis by their parent." However, in a footnote, Lesesne et al., (2000) pointed out, "Although the DSM-IV-TR cites a prevalence rate of 3-5% of school age children, methodological issues in epidemiological research and the evolving dynamics of the disorder have led to wide variations of reported prevalence estimates that range from approximately one percent to nearly twenty percent of school age children." Further, as discussed earlier, regional prevalence rates have been found to be extremely variable; for example, in one study in Johnston County, North Carolina, researchers found prevalence rates for grades 1-5 to be 10% (Rowland et al., 2002a). A similar study in Southeastern Virginia found an extreme difference in prevalence rates between two local school districts, one district with a diagnosis rate of 12% and the other with a diagnosis rate of 63% (LeFever et al., 1999). Thus, the result of this study is consistent with the varying national data. It is interesting to note that ADHD is one of the most frequently diagnosed disorders in childhood and currently the focus of research, but a consistent and reliable prevalence rate is still lacking (Olson et al., 2005).

Although the sample size was small and only a third of the parents responded to the questions of whether or not any of their children were diagnosed with ADHD, parents reported more boys than girls (two to one) had a diagnosis of ADHD. This is consistent with the national prevalence rate, which shows ADHD is diagnosed approximately two to

three times more often in boys than girls (Visser & Lesesne, 2005). Although many reasons are offered for why girls are diagnosed with ADHD less often than boys, results of a controlled study by Biderman et al., (2002) suggested that girls with ADHD were more likely than boys to have the predominantly inattentive type of ADHD, and less likely to show oppositional defiant disorder or conduct disorder than boys with ADHD. This lower likelihood for girls to manifest disruptive behaviors than boys could result in gender-based referral bias unfavorable to girls with ADHD. In their study, Biderman and his colleagues found a discrepancy in the male-to-female ratio between clinic-referred (10 to 1) and community (3 to 1) samples of children with ADHD.

In regard to the diagnosis and treatment of ADHD, participating parents indicated that their children's experience may not be different from the typical practice. Family doctors or pediatricians diagnosed all but 2 of the 13 students; and a great majority was treated with medication and also received some type of school-based treatment (behavior modification or counseling) in addition to medication. This practice is similar to the guideline of the American Academy of Pediatrics for the treatment of ADHD, which states that because ADHD is a neurobehavioral disorder, medication is the first-line of treatment. Recent research suggests that combining medication with behavioral therapies is more effective for treating ADHD (Hinshaw et al., 2007; Kendall et al., 2005).

As stated elsewhere, because of the small number of respondents, statistical analysis to assess the possibility of discrepant practices in the diagnosis and treatment of ADHD based on socioeconomic status could not be completed. It is important to understand what aspects of poverty, for example, stress or modeling (poor parenting),

contribute to the onset of ADHD in children with a neurobiological predisposition. Such knowledge may lead to early intervention and prevent long term consequences.

It is critical to reiterate that only 313 parents (32%) responded to the initial letter that sought to identify the number of children with the diagnosis of ADHD in the study site; and only 10% reported having children with ADHD diagnosis. Because, ADHD is a sensitive topic for some parents, it is possible that the participants, as well as parents who did not respond at all, chose not to report it.

Participating Teachers

The next question to be answered was whether or not there is a relationship between teacher referral rate of students for ADHD evaluation and teachers' knowledge and perception of ADHD. According to Sciutto et al., (2000), knowledge of ADHD among parents and teachers may affect both assessment and intervention. In other words, lack of information or misconceptions may lead to inaccurate referrals, bias in reporting problem behaviors, or resistance to certain treatment options. Results of this study showed no relationship between either the total number of items correct on the survey or for any individual items on the survey and the teachers' rates of referral. Thus, the prediction was not supported.

Overall, teachers seem to know the most basic symptoms of ADHD and be aware of the variety of treatment options available. They were less likely to know which type of treatment was research based and proven effective. Although results were not significant, based on qualitative data, it appears that teachers may need more education, particularly about evidence based diagnosis and intervention. Eighty-seven percent of teachers

reported that electroconvulsive therapy and reducing dietary intake of sugar or food additives are effective treatments of ADHD. Chan (2002) reviewed Complimentary Alternative Medicine (CAM) for ADHD and concluded that although there are sporadic reports of perceived efficacy, medication and cognitive-behavioral therapies are the only outcome based therapies available to date. In addition, fifty-seven percent of teachers reported that behavioral treatment of ADHD focuses primarily on attention problems rather than noncompliant behaviors. These misconceptions may frustrate teachers who may prefer CAM to medication and also expect some sort of improvement in attentive behaviors.

In terms of diagnosis, fifty percent of teachers did not know that ADHD symptoms must be present before age 7 for a child to be diagnosed with ADHD and that in children diagnosed with ADHD, there is often a family history of ADHD (DSM-IV-TR, APA, 2002). This lack of awareness may interfere with screening and referral of children by teachers. Not only are the behaviors associated with ADHD that eventually lead to referral often first observed in a classroom setting, teachers also have to accommodate these students. In order to do both, it is important that teachers are aware of the basic diagnostic criteria and treatment options for ADHD. The importance of this knowledge was highlighted by Snider, Frankenberger, and Aspensen (2000) who found that teachers were involved in making the initial referral for ADHD evaluation nearly 60% of the time. This suggests that teachers play an important role in the initial screening for ADHD.

The small sample, the homogeneity of respondents, and difficulties with the psychometric properties of the measures adopted, discussed under *Instruments*, were some limitations of this study. The psychometric properties of the *Teacher Experience with ADHD* questionnaire, developed for this study, were not known; and the identification of socioeconomic status is complicated and was not clearly identified in the *Parent Experience with ADHD* questionnaire.

Based on the foregoing, it is evident that future studies may want to focus on understanding similarities and differences in ADHD symptoms between boys and girls, as well as better identification of girls. Left untreated, ADHD can have additional clinical implications, such as oppositional defiant disorder, depression, anxiety, or learning difficulties (Lerner & Lerner, 1991; Reeve et al., 1995). Future research may want to replicate studies that reported a correlation between low socioeconomic status and ADHD diagnosis (Wolraich et al., 2005; Scahill et al., 1999) and lack of treatment options for children from low SES background (Kendall et al., 2005; Hoagwood et al., 2000). These researchers suggested that students from disadvantaged families not only have higher rates of ADHD diagnosis, they also have less access to services for various reasons, including because some clinics may not accept Medicaid insurance.

This study highlighted (1) the difficulty related to establishing the rate of ADHD diagnosis in the schools and (2) the need for teacher education about ADHD. In order to plan resources for addressing the needs of children with ADHD, it is imperative that future research identify accurate prevalence rates, diagnostic criteria, and research based

interventions that address the biological, social, and educational functioning of children with ADHD.

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Table 1

The Most Correct, Incorrect, and Don't Know Responses of Participating Teachers' Knowledge of Attention

Deficit Hyperactivity Disorder

Responses	Percent
<i>Five Most Common Correct Responses</i>	
Children with ADHD are often distracted by extraneous stimuli.	100%
Children with ADHD often fidget or squirm in their seats.	97%
It is possible for an adult to be diagnosed with ADHD.	97%
Behavioral management techniques can improve a child's ability to pay attention in class.	97%
ADHD can be described to have two types of symptoms: inattentive and hyperactive.	87%
<i>Five Most Common Incorrect Responses</i>	
Electroconvulsive Therapy is an effective treatment for severe cases of ADHD. (false)	87%
Reducing dietary intake of sugar and/or food additives is effective in reducing the symptoms of ADHD. (false)	87%
Behavioral treatment of ADHD focuses primarily on attention problems rather than noncompliant behaviors. (false)	57%
Symptoms must not be present before age 7 for a child to be diagnosed with ADHD. (false)	50%
Teachers are responsible for informing parents when a child shows symptoms of ADHD.	47%
<i>Five Most Common Don't Know Responses</i>	
Electroconvulsive Therapy is an effective treatment for severe cases of ADHD. (false)	87%
ADHD occurs in approximately 15% of school age children. (false)	80%
There are three subtypes of ADHD.	73%
In children suffering from ADHD, there is often a family history of ADHD.	40%
Symptoms must not be present before age 7 for a child to be diagnosed with ADHD. (false)	23%

Table 2

*T-tests for Correct and Incorrect Responses of Teachers about their Knowledge of Attention Deficit**Hyperactivity Disorder*

Items	Mean Referral Rates of Respondents with Correct Answers	Mean Referral Rates of Respondents with Incorrect Answers	<i>t</i>	<i>p</i> *
1. Children with ADHD often fidget or squirm in their seats.	.89	.00	.56	.58
2. Children with ADHD are often distracted by extraneous stimuli. **	.87	--	--	--
3. Medication will help a child with ADHD achieve better grades.	.76	1.11	-.55	.59
4. It is possible for an adult to be diagnosed with ADHD.	.90	.00	.56	.58
5. To be diagnosed with ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school, ...).	1.05	.44	.96	.34
6. Behavior manag. techniques can improve a child's ability to pay attention in class.	.86	1.00	-.09	.93
7. There are three subtypes of ADHD.	.75	.91	-.24	.81
8. In children suffering from ADHD, there is often a family history of ADHD.	1.00	.71	.49	.63
9. Children with ADHD have more problems in new situations than in familiar situations.	.85	.90	-.08	.94
10. ADHD occurs in approximately 15% of school age children.	.00	.90	-.56	.58
11. Electroconvulsive Therapy is an effective treatment for severe cases of ADHD.	.25	.96	-.84	.41
12. ADHD can be described to have two types of symptoms: inattentive and hyperactive.	.96	.25	.84	.41
13. Symptoms must not be present before age 7 for a child to be diagnosed with ADHD.	.73	1.00	-.46	.65

Table 2 (continued)

Items	Mean Referral Rates of Respondents with Correct Answers	Mean Referral Rates of Respondents with Incorrect Answers	<i>t</i>	<i>p</i> *
14. Reducing dietary intake of sugar and/or food additives is effective in reducing the symptoms of ADHD.	.75	.88	-.16	.88
15. Behavioral treatment of ADHD focuses primarily on attention problems rather than noncompliant behaviors.	.69	1.00	-.53	.60
16. Teachers are responsible for informing parents when their child shows symptoms of ADHD.	1.19	.50	1.21	.24
17. ADHD can only be determined by a multi-method assessment.	.68	1.18	-.83	.41
18. ADHD's cause is biological in nature.	1.60	.72	1.15	.26
19. ADHD's cause is directly related to parenting skills and a child's home environment.	.88	.80	.10	.08

* $p < .01$, two-tailed test.

Note: **All respondents answered Item 2 correctly.

Appendix A

AAP Guidelines for Diagnosis and Treatment (AAP, 2000)

1. In the child 6 to 12 years old who presents with inattention, hyperactivity, impulsivity, academic underachievement, or behavior problems, primary care clinicians should initiate an evaluation for ADHD.
2. The diagnosis of ADHD requires that a child meet DSM-IV criteria.
3. The assessment of ADHD requires evidence directly obtained from parents or caregivers regarding the core symptoms of ADHD in various settings, the age of onset, duration of symptoms, and degree of functional impairment.
 1. Use of these scales is the clinical option when evaluating children for ADHD.
 2. Use of broadband scales is not recommended in the diagnosis of children with ADHD, although they may be useful for other purposes.
4. The assessment of ADHD requires evidence directly obtained from the classroom teacher (or other school professional) regarding the core symptoms of ADHD, duration of symptoms, degree of functional impairment, and coexisting conditions. A physician should review any reports from a school-based multidisciplinary evaluation where they exist, which will include assessments from the teacher, or other school-based professional.
 1. Use of these scales is the clinical option when diagnosing children for ADHD.
 2. Use of teacher global questionnaires and rating scales is not recommended in the diagnosing of children for ADHD, although they may be useful for other purposes.
5. Evaluation of the child with ADHD should include assessment for coexisting conditions.
6. Other diagnostic tests are not routinely indicated to establish the diagnosis of ADHD.

Appendix B

AAFP/AAP Treatment Guidelines (AAP, 2001)

1. Primary care clinicians should establish a management program that recognizes ADHD as a chronic condition.
2. The treating clinician, parents, and the child, in collaboration with school personnel, should specify target outcomes to guide management.
3. The clinician should recommend stimulant medication and/or behavioral therapy, as appropriate, to improve target outcomes in children with ADHD.
 1. For children on stimulants, if one stimulant does not work at the highest feasible dose, the clinician should recommend another.
4. When the selected management for a child with ADHD has not met target outcomes, clinicians should evaluate the original diagnosis, use of all appropriate treatments, adherence to the treatment plan, and presence of coexisting conditions.
5. The clinician should periodically provide a systematic follow-up for the child with ADHD. Monitoring should be directed to target outcomes and adverse effects by obtaining specific information from parents, teachers, and the child.

Appendix C

Initial Letter to Parents

Dear Parent or Guardian:

I would like to introduce myself and request the assistance of your family in a research project. I am completing a specialist degree in School Psychology at Eastern Illinois University in Charleston, Illinois. As part of my training, I will be doing research on the diagnosis and treatment of Attention Deficit Hyperactivity Disorder in rural Illinois. **This research is not affiliated with Effingham Community School District Unit 40 in any way, although explicit written permission has been granted for this study from the administration. Only aggregate results of this research and no individually identifiable information will be available to district personnel and/or participants who request research results. All information supplied by individual participants will be held completely confidential, only to be reported as group data.**

You are under no obligation to fill out the attached form indicating your child's diagnostic status, nor are you under any obligation to return the completed form to your child's teacher. I would greatly appreciate your participation by returning the attached letter to your child's classroom teacher by April 4, 2008; you will be greatly assisting me with this research and contributing to our knowledge regarding ADHD in Central Illinois.

If your child has been diagnosed with ADHD, I would like to send you an additional questionnaire and informed consent form via U.S. Mail along with a self-addressed stamped envelope with which to return the questionnaire after it is completed. The questions should take no longer than fifteen minutes to answer and all information

received will be held in the strictest confidence.

Please complete the following form and return it to the classroom teacher. If your child has been diagnosed with ADHD and you choose to participate in this survey, you can expect to receive a packet containing the questionnaire in the mail in the next two weeks. If your child has never been diagnosed with ADHD, simply check the first line and return the form to your child's teacher.

Thank you for your help and cooperation in this research. If you have any additional questions or concerns, you may contact me at the telephone number or email address listed below.

Sincerely,

Amy M. Miller
School Psychology Intern
Eastern Illinois University
(217)343-1559
amiller@eiase.com

To be completed by parents: Please return the completed form to the classroom teacher.

_____ My son / daughter (please circle) has never been diagnosed with Attention Deficit Hyperactivity Disorder.

_____ My son / daughter (please circle) has been diagnosed with Attention Deficit Hyperactivity Disorder, but I choose not to participate in this research study.

_____ My son / daughter (please circle) has been diagnosed with Attention Deficit Hyperactivity Disorder and I will participate in this research study by completing a short questionnaire. Please send the questionnaire to the following name and address:

Name _____

Address _____

Phone _____

Appendix D

Parent Experience with ADHD Questionnaire

Please answer the following questions about yourself by checking the appropriate box or filling the blank.

Age: _____

Sex: Male Female

Marital Status: Single Married to child's father
 Married, but not to child's father
 Divorced Widowed

Ethnicity: African American Hispanic/Latino
 Caucasian East Asian
 Native American
 Other _____

What is your relationship to this child? parent guardian relative

How many years of education have you completed? 8 9 -12 16 more than 16 yrs.

How many people live in your household? 4 5 6 7 8 9-12

Does anyone in your household smoke? Yes No

Did the mother of the child suffering from ADHD
smoke while she was pregnant? Yes No

Please answer the following questions about your child diagnosed with ADHD by checking the appropriate box(es).

Age: _____

Grade:

- Preschool Kindergarten 1 2 3
 4 5 6 7 8 9-12

Sex:

- Male Female

Ethnicity:

- African American Hispanic/Latino
 Caucasian Asian Native American
 Other _____

What type of health care coverage does your child have?

- Private or employer provided insurance
 HMO Medicaid No insurance
 other _____

Who first suggested that your child had ADHD?

- Parent/Guardian Teacher Physician
 Other family member
 other _____

At what age was your child diagnosed with ADHD?

- 4 5 6 7 8 9-12

Who made the diagnosis?

- Family Physician Pediatrician
 Psychiatrist/Psychologist
 School Personnel
 other _____

The following information was collected to diagnose my child with ADHD.

- Interview by primary care physician
 Information from teachers, school personnel
 Information from parents/caregivers
 Ratings scales completed by teachers
 Ratings scales completed by parents/caregivers
 Grades and other indicators of academic performance
 Interview by primary care physician
 other _____

Does your child take medication for symptoms of ADHD?

- Yes No

If so, please describe the medication.

- Adderall (amphetamine)
 Adderall XR (amphetamine)
 Concerta (methylphenidate)
 Cylert (pemoline)
 Dexedrine (dextroamphetamine)
 Dextrostat (dextroamphetamine)
 Focalin (dexmethylphenidate)
 Metadate ER (methylphenidate)

Dosage:

- Ritalin (methylphenidate)
- Strattera (atomoxetine)
- antidepressant medication
- other _____
- less than 5mg 5 - 10mg 15 - 20mg
- 25 - 40 mg more than 40 mg

Did your child try several medications before finding one that works for him or her?

- Yes No

Did the physician explain the various types of treatments available for ADHD?

- Yes No

Does your child receive any other treatment or services for ADHD?

- Stimulant medication
- Parent Education / Behavior Plans for home
- Family Counseling
- Behavior Modification at school
- School Counseling
- Instruction Adaptation at school
- Social Skills Training
- Specific Diet Changes
- Biofeedback therapy
- other _____

Are there any services you feel that would be beneficial to your child that you don't receive?

- Stimulant medication
- Parent Education / Behavior Plans for home
- Family Counseling
- Behavior Modification at school
- School Counseling
- Instruction Adaptation at school
- Social Skills Training Specific Diet Changes
- Biofeedback therapy
- other _____

How did you learn about the nature of ADHD?

- Read magazine Read on the internet
- From my child's doctor From school personnel
- From my child's teacher
- other _____

Appendix E
Teacher Experience with ADHD Questionnaire

Please circle one response for each of the following statements about Attention Deficit Hyperactivity Disorder.

Children with ADHD often fidget or squirm in their seats.	True	False	Don't Know
Children with ADHD are often distracted by extraneous stimuli.	True	False	Don't Know
Medication will help a child with ADHD achieve better grades.	True	False	Don't Know
It is possible for an adult to be diagnosed with ADHD.	True	False	Don't Know
To be diagnosed with ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school, ...).	True	False	Don't Know
Behavior management techniques can improve a child's ability to pay attention in class.	True	False	Don't Know
There are three subtypes of ADHD.	True	False	Don't Know
In children suffering from ADHD, there is often a family history of ADHD.	True	False	Don't Know
Children with ADHD have more problems in new situations than in familiar situations.	True	False	Don't Know
ADHD occurs in approximately 15% of school age children.	True	False	Don't Know
Electroconvulsive Therapy is an effective treatment for severe cases of ADHD.	True	False	Don't Know
ADHD can be described to have two types of symptoms: inattentive and hyperactive.	True	False	Don't Know
Symptoms must not be present before age 7 for a child to be diagnosed with ADHD.	True	False	Don't Know
Reducing dietary intake of sugar and/or food additives is effective in reducing the symptoms of ADHD.	True	False	Don't Know
Behavioral treatment of ADHD focuses primarily on attention problems rather than noncompliant behaviors.	True	False	Don't Know
Teachers are responsible for informing parents when their child shows symptoms of ADHD.	True	False	Don't Know
ADHD can only be determined by a multi-method assessment.	True	False	Don't Know
ADHD's cause is biological in nature.	True	False	Don't Know
ADHD's cause is directly related to parenting skills and a child's home environment.	True	False	Don't Know

Please describe yourself by marking the appropriate box or by filling the blank.

Age: _____

Sex: Male Female

Ethnicity: African American Hispanic/Latino
 Caucasian Asian Native American
 Other _____

Highest Grade Level Completed: 16 more than 16 years

Years of Teaching Experience: 1-5 6-10 11-15 16+ years
 21+ years

Class taught currently: Special Education Regular Education

Grade Taught Currently: Preschool Kindergarten 1
 2 3 4 5 6
 7 8 9-12

Appendix F

Letter to School District Administration

Dear Dr. Clasby:

I would like to introduce myself and request the assistance of your school in a research project. I am completing a specialist degree in School Psychology at Eastern Illinois University in Charleston, Illinois. As part of my training, I will be doing research on the prevalence and treatment of Attention Deficit Hyperactivity Disorder in rural Illinois. I believe that your school could provide valuable information for my research.

With your permission, I would like to distribute surveys (see attached examples) to each of your school buildings this fall. All parents of students with ADHD will be invited to participate by completing the survey. Of course, participation will be completely voluntary and any data obtained will be kept with the strictest confidentiality. No additional work will be required of your staff except to distribute and then collect the initial invitation letter. The actual surveys will be mailed directly to the parents.

A second survey will be available to your teaching staff to assess their perceptions and knowledge of ADHD. Again, participation will be completely voluntary and all data obtained will be held in the strictest confidence. This survey would require less than fifteen minutes to complete.

I hope to obtain a letter of approval to conduct this study at your building. It is my aim that this study will provide valuable insight into the effect that ADHD has on our local schools and community and therefore, I urge you to participate. This study will be approved by the Internal Review Board at Eastern Illinois University and will be supervised by credentialed researchers from the Psychology Department at Eastern Illinois University. No names or information will ever be used regarding participants or the school district.

If you have any questions, please feel free to contact me as listed. I thank you for your time and consideration and look forward to working with you on this important project.

Sincerely,

Amy M. Miller
School Psychology Intern
Eastern Illinois University
(217) 343-1559
amiller@eiase.com

Appendix G

Letter to Teachers

Dear Teaching Professional:

I would like to introduce myself and request the assistance of your classroom in a research project. I am completing a specialist degree in School Psychology at Eastern Illinois University in Charleston, Illinois. As part of my training, I will be doing research on the diagnosis and treatment of Attention Deficit Hyperactivity Disorder in rural Illinois. I believe that you and the parents of students in your classroom could provide valuable information for my research. I hope that this research will also be valuable to you and your students in the future as an additional source of information regarding this disorder.

Enclosed please find a letter that may be distributed to each student in your classroom. If you would please send these letters home with your students by April 1, 2008, and ask that that they are returned by April 4, 2008, your assistance would be much appreciated. If you have any questions, please feel free to contact me at the phone number or email address listed on the following page. Also enclosed, you will find a survey and informed consent form that I hope you will complete.

Please reuse the envelope provided for the completed survey, with signed consent form, and the returned letters from students. These may be placed in a box in the school office labeled "Research Surveys" located under the teacher mailboxes.

Thank you for your help with this project.

Sincerely,

Amy M. Miller
School Psychology Intern
Eastern Illinois University

Appendix H

Teacher Consent Form

CONSENT TO PARTICIPATE IN RESEARCH

ADHD in Rural Illinois

You are invited to participate in a research study conducted by Amy M. Miller (and Dr. Assege HaileMariam), from the School Psychology Department at Eastern Illinois University. Your participation in this study is entirely voluntary. Please ask questions about anything you do not understand, before deciding whether or not to participate.

PURPOSE OF THE STUDY

This study will identify the criteria used in the diagnosis of ADHD and common treatments used in ADHD management. This study will also assess area teachers' knowledge of ADHD.

PROCEDURES

If you volunteer to participate in this study, you will be asked to complete a questionnaire the will assess teachers' knowledge and perceptions regarding the diagnosis and treatment of ADHD. The questionnaire will take 15 – 30 minutes to complete.

POTENTIAL RISKS AND DISCOMFORTS

None

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

While you may not receive any direct benefit from this research, this research will contribute to the body of knowledge regarding ADHD.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Only aggregate results of this research and no individually identifiable information will be shared with Effingham School District.

The researchers listed above will be the only parties with access to any information obtained. Surveys may be kept up to three years after the completion of the research and then destroyed. All information will be kept in a locked file cabinet in the researcher's residence.

PARTICIPATION AND WITHDRAWAL

Participation in this research study is voluntary and not a requirement or a condition for being the recipient of benefits or services from Eastern Illinois University or any other

organization sponsoring the research project. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind or loss of benefits or services to which you are otherwise entitled. You may also refuse to answer any questions you do not want to answer. There is no penalty if you withdraw from the study and you will not lose any benefits to which you are otherwise entitled.

IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about this research, please contact Amy Miller at (217) 343-1559, amiller@eiase.com or Dr. Assege HaileMariam, Eastern Illinois University, 1450 Physical Sciences Bldg., 600 Lincoln Ave., Charleston, IL 61920, (217) 551-6615, ahailemariam@eiu.edu.

RIGHTS OF RESEARCH SUBJECTS

If you have any questions or concerns about the treatment of human participants in this study, you may call or write:

Institutional Review Board
Eastern Illinois University
600 Lincoln Ave.
Charleston, IL 61920
Telephone: (217) 581-8576
E-mail: eiuirb@www.eiu.edu

You will be given the opportunity to discuss any questions about your rights as a research subject with a member of the IRB. The IRB is an independent committee composed of members of the University community, as well as lay members of the community not connected with EIU. The IRB has reviewed and approved this study.

I voluntarily agree to participate in this study. I understand that I am free to withdraw my consent and discontinue my participation at any time. I have been given a copy of this form.

Printed Name of Participant

Signature of Participant

Date

I, the undersigned, have defined and fully explained the investigation to the above subject.

Signature of Investigator

Appendix I

Parent Consent Form

CONSENT TO PARTICIPATE IN RESEARCH

ADHD in Rural Illinois

You are invited to participate in a research study conducted by Amy M. Miller (and Dr. Assege HaileMariam), from the School Psychology Department at Eastern Illinois University. Your participation in this study is entirely voluntary. Please ask questions about anything you do not understand, before deciding whether or not to participate.

PURPOSE OF THE STUDY

This study will identify the criteria used in the diagnosis of ADHD and common treatments used in ADHD management. This study will also assess area teachers' knowledge of ADHD.

PROCEDURES

If you volunteer to participate in this study, you will be asked to complete a questionnaire about yourself and your child. This questionnaire will be mailed to your home address and a stamped envelope addressed to the principal investigator, Amy Miller, will be included so that you may easily return the questionnaire and *this signed consent form*. This survey will take 15 – 30 minutes to complete.

POTENTIAL RISKS AND DISCOMFORTS

None

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

While your son/daughter may not receive any direct benefit from this research, this research will contribute to the body of knowledge regarding ADHD.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Only aggregate results of this research and no individually identifiable information will be shared with Effingham School District.

The researchers listed above will be the only parties with access to any information obtained. Surveys will contain no identifying information. Addresses obtained will be destroyed after the surveys are mailed. Surveys may be kept up to three years after the completion of the research and then destroyed. All information will be kept in a locked file cabinet in the researcher's residence.

PARTICIPATION AND WITHDRAWAL

Participation in this research study is voluntary and not a requirement or a condition for being the recipient of benefits or services from Eastern Illinois University or any other organization sponsoring the research project. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind or loss of benefits or services to which you are otherwise entitled.

You may also refuse to answer any questions you do not want to answer. There is no penalty if you withdraw from the study and you will not lose any benefits to which you are otherwise entitled.

IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about this research, please contact Amy Miller at (217) 343-1559, amiller@eiase.com or Dr. Assege HaileMariam, Eastern Illinois University, 1450 Physical Sciences Bldg., 600 Lincoln Ave., Charleston, IL 61920, (217) 551-6615, ahailemariam@eiu.edu.

RIGHTS OF RESEARCH SUBJECTS

If you have any questions or concerns about the treatment of human participants in this study, you may call or write:

Institutional Review Board
Eastern Illinois University
600 Lincoln Ave.
Charleston, IL 61920
Telephone: (217) 581-8576
E-mail: eiuirb@www.eiu.edu

You will be given the opportunity to discuss any questions about your rights as a research subject with a member of the IRB. The IRB is an independent committee composed of members of the University community, as well as lay members of the community not connected with EIU. The IRB has reviewed and approved this study.

I voluntarily agree to participate in this study. I understand that I am free to withdraw my consent and discontinue my participation at any time. I have been given a copy of this form.

Printed Name of Participant

Signature of Participant

Date

I, the undersigned, have defined and fully explained the investigation to the above subject.

Signature of Investigator

Appendix J

Thank You Letter to Parents

Dear _____:

I would like to thank you for your time and support with the recent questionnaire that you received regarding my research on Attention Deficit Hyperactivity Disorder. Without your assistance, my project would not be possible. As stated in our previous correspondence, your child's name and all related information will be held in the strictest confidence.

In case you have not yet completed the questionnaire, I have enclosed another copy, including the necessary informed consent letter. Please read and sign the informed consent and complete the questionnaire at your earliest convenience.

Thank you for your help and cooperation in this research. If you have any additional questions or concerns, you may contact me at the telephone number or email address listed below.

Sincerely,

Amy M. Miller
School Psychology Intern
Eastern Illinois University
(217)343-1559
amiller@eiase.com