

5-1-2015

# School Psychologists' Attention Deficit Hyperactivity Disorder Treatment Attitudes and Parent Communication About Complementary Health Approaches to Attention Deficit Hyperactivity Disorder

Sara Beth Knickerbocker

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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

SCHOOL PSYCHOLOGISTS' ATTENTION DEFICIT HYPERACTIVITY  
DISORDER TREATMENT ATTITUDES AND PARENT  
COMMUNICATION ABOUT COMPLEMENTARY  
HEALTH APPROACHES TO ATTENTION  
DEFICIT HYPERACTIVITY DISORDER

A Dissertation Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Philosophy

Sara Beth Knickerbocker

College of Education and Behavioral Sciences  
School of Applied Psychology and Counselor Education  
School Psychology

May 2015

This Dissertation by: Sara Beth Knickerbocker

Entitled: *School Psychologists' Attention Deficit Hyperactivity Disorder Treatment Attitudes and Parent Communication About Complementary Health Approaches to Attention Deficit Hyperactivity Disorder*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in College of Education and Behavioral Sciences in School of Applied Psychology and Counselor Education, Program of School Psychology

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## ABSTRACT

Knickerbocker, Sara Beth. *School Psychologists' Attention Deficit Hyperactivity Disorder Treatment Attitudes and Parent Communication About Complementary Health Approaches to Attention Deficit Hyperactivity Disorder*. Published Doctor of Philosophy dissertation, University of Northern Colorado, 2015.

Previous studies have investigated school psychologists' diagnostic role with regard to attention deficit hyperactivity disorder (ADHD) as well as school-based intervention and medication monitoring practices but no studies have explored complementary health approaches within the field. Although recommendations have been made about how school psychologists should perceive complementary approaches, there is a gap in the literature about the current practices of school psychologists related to complementary treatments of ADHD. To understand the complexities of school psychologists' attitudes toward three treatment approaches—pharmacological, behavioral, and complementary—and their communication with parents about complementary approaches in particular, a quantitative, exploratory study that employed a cross-sectional, web-based survey of 208 school psychologists from 32 states was conducted. The goal of the study was to determine if specific demographic factors such as personal experience with complementary approaches or school socioeconomic status predicted treatment attitudes and subsequently to explore whether these attitudes predicted school psychologists' parent communication about complementary approaches to ADHD. Data were analyzed using multiple and hierarchical linear regression. Results of this study revealed that school psychologists' personal use of complementary

approaches and perceptions of community acceptance of these treatments were correlated with positive attitudes toward complementary treatments for ADHD. Furthermore, positive attitudes toward complementary treatments predicted school psychologists' parent communication about this treatment option. School professionals will find this study useful because it provides information that enables them to be more effective in their work as evidence-based practitioners.

## ACKNOWLEDGEMENTS

I am deeply indebted to numerous people who have helped make this work possible. I would like to thank my committee members for their guidance and support. Thank you Dr. Athanasiou, Dr. Bardos, Dr. Johnson, and Dr. Gershwin-Mueller. I would be remiss if I neglected to appreciate previous committee members who also shaped my path to success: Dr. Black and Dr. Koehler-Hak.

My community at MSD—families and co-workers alike—has earned credit for the completion of this project through their endless understanding. I would also like to extend my heartfelt gratitude to my mentors, Dr. Julie Colwell, Dr. Mary Beth O’Hagan, and Dr. Kathie Koehler-Hak.

Numerous friends and personal supporters have brought this project to fruition. Thank you to all of my UNC classmates—from my original dissertation support group to those I will now walk with in graduation a decade after beginning this journey. To my friends, especially Brett, Rachel, and Holly, who might feel it has been a *lifetime* since we have seen each other--thank you for your patient support. Thank you to LuAnne and my Boulder community for all of the spiritual and energetic support.

I would not be who I am or where I am without the love and support of my family. To the Minnesota crew, I hope you will still love me once the graduate school residue fades away because you have only ever known me with this giant task looming over me. Thank you for providing the majority of the fun I have had over the past five years in particular. To my sister Karen, you remind me every day what it is to be selfless,

strong, supportive, and smart. Your pep talks and daily iPhone presence have made life bearable. Thank you Bridget for your humor and encouragement. You can start printing those t-shirts.

Mom and Dad, thank you for valuing my education over hobbies, fashion, home décor, and luxurious travel. I appreciate every sacrifice you made to keep me on the path that led to this accomplishment. And Dad, somehow, I found a way to study feelings with numbers. I hope you will approve and if not, we can just hug it out. I have never wanted anything more than for you to be proud of me.

To my beautiful wife Ryann; at last “two more years” have passed and we are at the end of this journey. You can have the “Ph” or the “D” because you have definitely earned it right alongside me. Thank you for believing I “looked good on paper” long enough for it to be true. You are the reason this took so long AND the reason I finished; I wouldn’t have it any other way. Thank you for all of the extra blood, sweat, and tears you put in at home while I was on the homestretch! I can’t wait to see what the next chapter brings.

To my perspicacious son Archer, I hope you will forget all of the time I missed out on as I was pounding away at the keyboard and you and Mama were seeing your first movie in a theatre, skiing, or running errands. I hope, however, you will always remember that the best reasons to set out on a challenging journey are to be of service to others and to surpass even your own expectations of yourself. With any luck, I will have accomplished both through this endeavor.

Finally, I dedicate this work to my *extraordinary* mother. You are my first and best teacher. You continue to be a source of inspiration and insight. You taught me



everything I know and value about doing what is right for kids, seeing the best in people, and questioning my own educational practices. There is no way I would rather spend time than not noticing that three hours has passed while we have been talking about how to help burnt out teachers, how to improve a situation with a child or colleague, or how to take over the world of education with our crazy opinions, which of course are always right. I love you and I pray each day that I can give my children the kind of unconditional love you have shown to my siblings and me. I am so grateful that God saw fit to make me your daughter, and to allow us to walk this particular graduate school path together from beginning to end.

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## **CHAPTER I**

### **INTRODUCTION**

School psychologists are dynamic education and mental health professionals whose professional practices continue to evolve with the times. No longer just test-kit-toting gatekeepers to special education, today's school psychologists provide myriad services including traditional assessment, school-wide positive behavioral support, special education case management, professional development, parent education, mental health therapy, consultation, intervention development and implementation, crisis management, and more (National Association of School Psychologists [NASP], 2010b). While a day in the life of a school psychologist might vary from place to place, a high likelihood exists that a school psychologist will encounter a child with attention deficit hyperactivity disorder (ADHD)--a disorder that affects 6.4 million children between the ages of 4 and 17 and represents a national prevalence rate of 11% in the United States (Centers for Disease Control and Prevention [CDC], 2013). Researchers and clinicians most widely accept the classification system for mental disorders known as the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association [APA], 2013). The DSM-5 defines ADHD as a neurodevelopmental disorder characterized by a pattern of inattentive, hyperactive, and/or impulsive behaviors that occur across settings (such as home and school). The

symptoms of ADHD are present before age 12 and cause significant impairment in social, professional, and educational settings (APA, 2013).

School psychologists' professional practices—assessment and diagnosis of ADHD, intervention activities for ADHD, and treatment monitoring for the disorder—are not without controversy. Parents, professionals, and school psychologists do not always share the same beliefs about whether the school psychologist is the right person to diagnose the disorder or provide treatment and intervention (American Academy of Child and Adolescent Psychiatry, 1997; American Academy of Pediatrics, 2000; Demaray, Schaefer, & Delong, 2003; Koonce, 2007). Despite these ambiguities, school psychologists are serving the needs of children with ADHD every day in the United States and are, in many regards, ideally poised to serve as consultants and interventionists for ADHD in the schools simply because of their proximity to and involvement with the children in need (Atkins & Pelham, 1991; Brock, Jimmerson, & Hansen, 2009; DuPaul, 1992; DuPaul & Stoner, 1994; Montague, McKinney, & Hocutt, 1994; Power, Atkins, Osborne, & Blum, 1994).

As the practices of school psychologists evolve, so too do treatment options for neurodevelopmental disorders such as ADHD. Multi-modal treatment of ADHD—comprised of psychopharmacological treatment, educational strategies, and behavioral support—has the strongest empirical foundation (Brock et al., 2009). However, complementary health approaches (CHA) are burgeoning fields of treatment for numerous ailments and disorders including ADHD. The National Institutes of Health (NIH; 1998) formed the National Center for Complementary and Integrative Health (NCCIH) in 1998 to address the growing need for information about these treatment

modalities. The NCCIH defines complementary health approaches as treatment that does not completely eschew conventional medicine but relies on the use of natural products, mind and body practices, or whole health systems (such as homeopathy or Ayurveda) to treat disease and disorder (NIH, 2014). Nearly 12% of children who were the subjects of the NIH's 2012 National Health Interview Survey had utilized a complementary health product or practice in the previous year. Attention deficit hyperactivity disorder was in the top five disorders for which CHA was used to treat children (NIH, 2014). The increasing use of CHA has implications for school psychologists in their efforts to provide effective services to all students, specifically those with ADHD (Shaw, Glaser, Chiu, & Sulin, 2010).

### **Rationale**

Numerous studies have examined the role of school psychologists in ADHD assessment, intervention, and case management (Borick, 2011; Cushman, LeBlanc, & Porter, 2004; Demaray et al., 2003; Goh, Teslow, & Fuller, 1981; Hutton, Dubes, & Muir, 1992; Koonce, 2007; Moore, DuPaul, & Power, 2005; Reid, Reason, Maag, Prosser, & Xu, 1998; Smith, 1999; Wilson & Reschly, 1996). In a national survey, 88% of school psychologists reported they felt well trained in the assessment and treatment of ADHD (Demaray et al., 2003). With regard to intervention, school psychologists reported they played an important role in treating children with ADHD primarily through parent training and behavioral approaches (Cushman et al., 2004). Despite the fact that behavioral-based interventions are among research-based practices for treating ADHD, school psychologists' involvement in these interventions has been variable with just over

half of school psychologists reporting they spent less than 25% of their time on behavioral interventions (Sullivan, Long, & Kucera, 2011).

The Multi-Modal Treatment of Attention Deficit Hyperactivity Disorder (MTA) Cooperative Group study is often credited as the most comprehensive study of ADHD interventions (MTA Cooperative Group, 1999). This study found a combination of behavioral treatment and medication was more effective at ameliorating ADHD symptomology than behavioral treatment alone. Additionally, the MTA study found that medication alone was a more effective treatment than therapy or community support. These findings are important for understanding the role of school psychologists with regard to medication management. Among NASP members surveyed, 54.5% reported that medication monitoring was an appropriate professional activity for a school psychologist even though 58.1% of the same group reported they had no formal training to do so (Cushman et al., 2004). Monitoring intervention efficacy, even when the intervention is rooted in a field outside of school psychology, is an endeavor already undertaken by school psychologists. Furthermore, medication did not fully remedy academic impairment; therefore, educational and psychosocial interventions were still warranted (Fabiano et al., 2007).

In perhaps the most recent and comprehensive study of ADHD assessment and intervention practices among school psychologists, Borick (2011) examined a national sample of 246 NASP members. Respondents in this study reported high confidence in their training and qualifications with regard to ADHD assessment and intervention-- 90.7% of the sample provided ADHD intervention and 77.2% of the sample conducted ADHD assessment. Borick's findings with regard to complementary health approaches



were especially germane to this study. Although the most frequently used interventions among school psychologists included positive reinforcement, behavior intervention plans, teacher support, and environmental modifications, participants in the study also endorsed interventions considered to be complementary health approaches. Respondents indicated they often recommended changes to diet and exercise routines (27.2%) as well as utilized biofeedback (8.5%) and neurofeedback (6.7%) techniques. Almost all of the respondents reported implementing an intervention that involved relaxation training (99.6%). The use of ocular motor exercises (7.5%) and vitamin/supplement treatment (11.7%) was also endorsed as interventions used by school psychologists with students who had ADHD.

Although school psychologists receive training about both ADHD assessment and intervention and are ethically obligated to be responsible research-based practitioners (NASP, 2010b), gaps in the research remain about the extent to which current research has informed practice, especially with regard to parent communication about complementary health approaches to treating ADHD. Examining communication practices and characteristics of school psychologists who work with students with ADHD is vital because this population represents up to a third of a school psychologist's caseload (Borick, 2011). Investigating the professional practices of school psychologists related to ADHD and CHA might be useful for guiding both ADHD treatment planning and professional development for both practicing and pre-service school psychologists.

The issue of school psychologists' practices related to CHA and ADHD has significant implications for home-school partnerships, a cornerstone of ethical practice (NASP, 2010a). Understanding current professional practices of school psychologists with regard to ADHD and CHA might increase the likelihood that practitioners in the

field are prepared to discuss emerging treatments with colleagues and families who are journeying together to help a child succeed in school and in life (Brock et al., 2009).

Identifying school psychologists' attitudes toward ADHD treatment and complementary approaches might be useful as the fields of CHA and school psychology continue to evolve. There is a gap in the literature about the relationship between the attitudes and practices of school psychologists. Additional research exploring the involvement of school psychologists in their numerous roles and practices could help bridge this gap (Sullivan et al., 2011).

In summary, school professionals who work with students with ADHD would find this study useful because it provides information that enables them to be more effective in their work with this population. How ADHD is understood in schools currently comes from one perspective--pathological/behavioral. This study provides a different perspective that expands practitioners' understanding of the disorder and its treatment. A complex relationship exists among school psychologists' attitudes toward ADHD treatment, their knowledge of the disorder's etiology and treatment, and their communication with parents of students with ADHD.

Consider, for example, the experiences of a family seeking guidance and support from their school psychologist who has skeptical views and scant knowledge of complementary treatments for ADHD. Juxtapose that hypothetical interaction with one between the same family and a school psychologist who engages in high levels of information seeking about emerging treatments for ADHD, whose understanding of ADHD evolves with the etiological research, and whose involvement in behavioral-based interventions provides data about student growth and progress. This study illuminates the

complicated dynamics of how attitudes, be they skeptical or open-minded, and experience inform the professional practices of school psychologists with regard to communication to parents about complementary health approaches to ADHD treatment.

### **Statement of the Problem**

The prevalence of ADHD in children in the United States has risen 3-5% since 1997 (Akinbami, Liu, Pastor, & Reuben, 2011). While parents are grappling with selecting the most appropriate ADHD treatment plan for their children, schools in the United States are faced with the complex task of educating in excess of six million children diagnosed with this neurodevelopmental disorder. School psychologists—key figures in the quest for effective school-family partnering—have reported that one-third of their caseload is comprised of students with ADHD (Borick, 2011). Previous studies have explored school psychologists' diagnostic role with regard to ADHD as well as school-based intervention approaches but no studies have analyzed the element of complementary health approaches. Furthermore, while 54.5% of school psychologists reported their involvement in monitoring pharmacological treatment of ADHD (Cushman et al., 2004) and 97.2% reported they delivered and monitored behavioral interventions for ADHD (Borick, 2011), there was limited research about whether school psychologists were involved with cases in which complementary health approaches were in use at significant levels (Borick, 2011).

Recent research on complementary health approaches revealed that ADHD was among the top five disorders for which CHAs were sought and approximately 12% of children were utilizing CHAs (NIH, 2014). Several studies of other professionals—doctors, nurses, clinical psychologists, and marriage and family therapists—were

completed to illuminate these workers' practices and beliefs related to CHA but there was no such study of school psychologists (Caldwell, Winek, & Becvar, 2006; Holroyd, Zhang, Suen, & Xue, 2008; Lee, Khang, Lee, & Kang, 2002; Nedrow et al., 2007; Sewitch, Cepoiu, Rigillo, & Sproule, 2008; Stange, Amhof, & Moebus, 2008; Wilson, Hamilton, & White, 2012; Yildirim et al., 2010). Although recommendations were made (Shaw et al., 2010) about how school psychologists should perceive CHAs within an evidence-based framework, there was a gap in the literature about current practices and experiences of school psychologists in this domain.

To understand the complexities of school psychologists' attitudes toward three ADHD treatment approaches—pharmacological, behavioral, and complementary—and their communication with parents about complementary health approaches in particular, a quantitative, exploratory study that employed a cross-sectional survey method was conducted. The goals of the study were to (a) determine if specific demographic factors such as personal experience with CHA or school socioeconomic status predicted ADHD treatment attitudes, and (b) explore whether these attitudes and demographic variables predicted school psychologists' parent communication about complementary health approaches to ADHD. Exploring the behaviors and beliefs of school psychologists about complementary health approaches to ADHD was a preliminary step in understanding if a gap existed between the growing phenomenon of CHA use to treat ADHD and school psychologists' competency and practice related to this area.

### **Research Questions**

This study sought to establish whether demographic variables such as personal CHA use, perceived community acceptance of CHA, and socioeconomic status of a

school setting predicted school psychologists' attitudes toward ADHD treatment approaches as well as whether these attitudes and demographic variables, in turn, predicted school psychologists' actual or intended parent communication about complementary health approaches to ADHD. Treatment attitudes were measured using researcher-developed, self-rating scales adapted from an established measure of attitudes toward complementary health approaches. Parent communication was also measured using a research-developed scale comprised of three parts: (a) examples of home-school communication behaviors, (b) specific complementary health approaches present in the literature, and (c) hypothetical CHA scenarios that might warrant parent communication. Descriptive data were also gathered for use in defining the sample of survey respondents. A discussion of the specific demographic data collected is presented in Chapter III.

- Q1 Do perceived level of community CHA acceptance, personal CHA use, and primary setting Free and Reduced Price Lunch (FRPL) rate predict school psychologists' attitudes toward CHA treatment of ADHD?
- Q2 Do perceived level of community CHA acceptance, personal CHA use, and primary setting FRPL rate predict school psychologists' attitudes toward medication treatment of ADHD?
- Q3 Do perceived level of community CHA acceptance, personal CHA use, and primary setting FRPL rate predict school psychologists' attitudes toward behavioral treatment of ADHD?
- Q4 Does attitude toward CHA treatment of ADHD, attitude toward medication treatment of ADHD, attitude toward behavioral treatment of ADHD, perceived level of community CHA acceptance, personal CHA use, primary setting FRPL rate, primary setting level, predict school psychologists' parent communication behavior about CHA as demonstrated by scores on the SP-PCB Survey?

### **Definition of Terms**

**Attention deficit hyperactivity disorder.** Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by a pattern of

inattentive, hyperactive, and/or impulsive behaviors that occur across settings such as home and school. The symptoms of ADHD are present before age 12 and cause significant impairment in social, professional, and educational settings. This definition is derived from the most widely accepted classification system of mental disorders known as the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM–5; APA, 2013).

**Behavioral treatment of attention deficit hyperactivity disorder.** A behavioral intervention is a systematic and intentional effort to help a child learn to change his or her behavior. Interventions are based on measurable, observable behaviors for which the function of the behavior has been identified. Elements of a behavioral intervention might include but are not limited to functional behavioral assessment, schedules of reinforcement, environmental modification, progress monitoring, and emotional education.

**Complementary health approaches.** Complementary health approaches are treatments that rely on the use of natural products, mind and body practices, or whole health systems (such as homeopathy or Ayurveda) to treat disease and disorder. Complementary health approaches are often used alongside rather than in place of traditional treatment options (NIH, 2014).

**Parent communication.** Parent communication includes any interaction a school psychologist has with a parent during which complementary health approaches is a topic. Examples of parent communication include email, face-to-face communication, parent education training, casual conversation, and meeting facilitation. Parent communication is an element of consultation and an essential element of school psychology practice.

**Pharmacological treatment of attention deficit hyperactivity disorder.** Two categories of medication are used to treat ADHD: stimulant and non-stimulant. Although the mechanism of action varies between stimulant and non-stimulant medications, the purpose of the medication is to increase catecholamine levels in the brain in order to improve pre-frontal cortical functioning (del Campo, Chamberlain, Sahakian, & Robbins, 2011). The terms *medication treatment* and *pharmacological treatment* are used interchangeably to describe the treatment of ADHD symptoms using a prescription provided by a medical doctor.

**School psychologist.** The NASP defines school psychologists as highly trained professionals in both psychology and education who have completed a minimum of 60 graduate credit hours to earn their specialist-level degree and meet ethical and training standards set forth for practice and service delivery. School psychologists meet certification and/or licensure requirements for the states where they work and might also be nationally certified by the National School Psychology Certification Board.

### **Assumptions**

Several assumptions accompany survey research. The first assumption of this study was all respondents would interpret survey items similarly. A second assumption made in this study was respondents would have both the literacy and technological skills typically required to complete a computer-based, self-administered questionnaire. Finally, respondents would provide thoughtful and honest responses to the survey items.

### **Limitations**

The first limitation of this study was the sample would not likely be representative because participants were solicited using state psychological associations and,

subsequently, through voluntary participants who gained access to the survey link through word of mouth. This study was more exploratory than theory-driven; for that reason, it was not deemed competitive for access by the NASP member database to obtain a random national sample. Additionally, since survey research is prone to response bias, it was a potential limitation in this study as respondents might have only participated if they had an interest in or knowledge of the subject, thus yielding biased results. This study was further limited by the lack of established reliability and validity information for the survey instrument developed for this study.

### **Delimitations**

In the research about complementary health approaches, prayer was sometimes listed among the approaches. Prayer is considered a CHA but was excluded from this study because most school psychologists practice in public schools where the separation of church and state would preclude the use of prayer as a treatment. Furthermore, participants who endorsed prayer as a CHA might have ultimately skewed the results since 58% of Americans reported they used prayer as part of their religious and spiritual beliefs (Pew Research Center, 2009). While research on the efficacy of prayer exists, prayer was omitted from this study because introducing prayer as an intervention for ADHD in public schools—the setting in which most school psychologists practice—would violate separation of church and state.

### **Summary**

This chapter delineated the value in examining the attitudes and practices of school psychologists with regard to ADHD treatment approaches and parent communication about complementary health approaches to treat ADHD. The concepts of



ADHD, ADHD treatment approaches, and parent communication were defined. Current practices of school psychologists when it came to ADHD assessment and intervention were highlighted. Students with ADHD and referrals related to attention concerns comprise a significant portion of a school psychologist's work in both the domains of assessment and intervention. School psychologists who work with students with ADHD might find this study useful because it provides information that enables them to be more effective in their work with this population. Research questions related to demographic variables, school psychologists' attitudes toward ADHD treatment approaches, and school psychologists' actual or intended parent communication about complementary health approaches to ADHD were presented in this chapter. Definitions of key terms and the study's assumptions and limitations were also outlined. Chapter II provides an overview and discussion of the literature that underpinned this study.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **Attention Deficit Hyperactivity Disorder**

The following literature review provides an overview of the history of ADHD including its etiology, prevalence, and treatment options. The role of schools and specifically school psychologists in the treatment of students with ADHD is also discussed. A general overview of three ADHD treatment approaches—pharmacological, behavioral, and complementary health approaches (CHA)--is provided along with a general exploration of complementary health approaches. A conceptual framework for viewing the elements of this study from an ecobehavioral systems perspective is outlined with specific emphasis on communication between school psychologists and parents.

#### **History of Attention Deficit Hyperactivity Disorder**

Attention deficit hyperactivity disorder has only been considered a psychiatric disorder for a few decades; however, an early indication of the disorder—albeit vague—can be traced to the late 18<sup>th</sup> century (Lange, Reichl, Lange, Tucha, & Tucha, 2010). A brief understanding of the historical evolution of the disorder is helpful when considering present day treatment planning and intervention for ADHD. In short, the disorder has evolved from being attributed to perceived moral and parental deficits to being detected through empirical means such as neuroimaging and genetic testing.

**Early depictions of inattention and hyperactivity.** In the late 18<sup>th</sup> century, a Scottish physician named Sir Alexander Crichton studied mental issues throughout Europe at a time when it was rare to theorize that the source of these problems could be medical or physiological (Lange et al., 2010). Crichton (as cited in Cadell & Davies, 2008) described patient behavior as “the incapacity of attending with the necessary degree of constancy to any one object” (p. 203). Subsequent to Crichton’s observations, depictions of children with ADHD-like symptoms appeared as part of a collection of fiction compiled by Heinrich Hoffman (1846), a German physician, in the mid-19<sup>th</sup> century. The characters he created through illustration and story—Fidgety Phillip and Johnny Look-in-the-air (Hoffman, 1985)—were characterized not as mildly impaired by motor overflow and distractibility, respectively, but rather as children with chronic symptoms that caused significant impairment in their functioning (Lange et al, 2010). Though not the product of scientific study, these two physicians’ entries in this history of childhood disorder suggested they encountered symptomology similar to what we characterize as ADHD today prior to the 20th century.

**Moral control defect.** At the turn of the 20<sup>th</sup> century, Sir George Still (1902) presented his conceptualization of “some abnormal psychical conditions in children” at the Goulstonian Lecture series—a forum sponsored by the Royal College of Physicians in London that is still active today. In his lectures, Still shared insights about children who had difficulty with attention, physical over-activity, aggression, and emotional regulation, which were derived from more than 40 case studies in his clinical practice. He posited that parenting practices were related to determining whether a child had this “moral control defect” (Still, 1902, p.1008) because only children who were found to have

sufficient support and guidance from parents and still evinced symptoms such as cruelty, dishonesty, poor self-control, and need for immediate gratification were included in his hypothesis (Barkley, 2006; Lange et al., 2010). Still described—without the benefit of the technology that has confirmed some of these factors today—a possible hereditary component, higher prevalence in males than females, and comorbidity with other conditions in addition to several other factors we have come to accept as part of the present-day ADHD profile (Barkley, 2006).

**Post-encephalitis outbreak phenomenon.** An encephalitis outbreak from 1917 through the late 1920s was somewhat of a turning point in research and understanding of symptoms related to ADHD. After the outbreak, children who survived were perceived as having brain damage that produced symptoms of abnormal behavior such as inattention, impulsivity, and hyperactivity. This hypothetical causal relationship between brain damage and distractible, hyperactive behaviors formally medicalized this atypical pediatric behavior (Lange et al., 2010). This revelation coupled with Still's (1902) earlier hypotheses about a potential heritable element of the disorder nudged the dysfunction out of the realm of a social or moral problem into the realm of medicine and physiology.

**From injury to damage or dysfunction.** The 1930s and 1940s yielded several new discoveries about both potential causation and treatment of the disorder we now call ADHD. German researchers Kramer and Pollnow (as cited in Lange et al., 2010) labeled the disorder “a hyperkinetic disease of infancy” characterized primarily by purposeless motor activity but also by aggression, emotional dysregulation, mood instability, and even periods of hyperfocus (p. 247). At this juncture, the use of medication—specifically Benzedrine—to treat the evolving disorder was advocated by several physicians

including Charles Bradley (1937). Bradley reported the positive effects of medication for children receiving treatment at the Emma Pendleton Bradley Home, the first neuropsychiatric hospital for children in the United States. Because psychoanalysis was the zeitgeist of the time, Bradley's research was minimized for nearly 25 years (Rothenberger & Neumarker, as cited in Lange et al., 2010). It was not until 1944 when Leandro Panizzon (as cited in Lange et al., 2010) created the compound we now know as Ritalin (methylphenidate) that broader acceptance and continued research on the use of stimulant medications to treat ADHD symptoms was gained. Concurrently, research about the source of dysfunction led some to conclude that minimal brain injury was the cause of children's behavioral abnormalities (Levin, 1938; Strauss & Lehtinen, 1947). This theory was short-lived because there was no evidence of brain injury in many cases and yet the brain dysfunction remained apparent.

In the late 1950s and 1960s, the categorization of this cluster of symptoms continued to evolve. Researchers defined the disorder as minimal brain damage and they assumed the damage was present solely with the presence symptoms of hyperactivity despite the fact that there were no objective data—medical records, reports of head trauma, or pre/post-natal injury—to support that hypothesis (Barkley, 2006). Moving from brain injury to brain damage, the next evolution of the disorder moved beyond brain injury or assumed brain damage and was generalized as minimal brain dysfunction (Ross & Ross, 1976) with many researchers using terminology such as “hyperkinetic impulse disorder” (Laufer, Denhoff, & Solomons, 1957, p. 38). Terminology aside, the primary focus of this stage of discovery shifted even further away from environmental and social factors and clarified that children with minimal brain dysfunction had average or above

average intelligence and showed signs of impairment in attention, impulse control, and motor function (Clements, 1966). For the first time, in 1968, the second edition of *Diagnostic and Statistical Manual of Mental Disorders* (DSM-II; APA, 1968) included a new diagnosis for children showing symptoms such as short attention span, over-activity, restlessness, and distractibility called “hyperkinetic reaction of childhood disorder” (Lange et al., 2010, p. 251).

### **Iterations of the *Diagnostic and Statistical Manual* diagnostic criteria.**

Although hyperactivity had been the focus of decades of research, the 1970s emphasized attentional problems as a key feature of the disorder that was more significant than hyperactivity (Douglas, 1972). The third edition of the *Diagnostic and Statistical Manual of Mental Disorders* responded in course by changing the label to Attention Deficit Disorder With Or Without Hyperactivity (APA, 1980) and Attention Deficit Hyperactivity Disorder in the revised third edition (APA, 1987). The primary change from one edition to the next was the three symptom lists and cut scores were replaced by a single symptom list covering inattention, impulsivity, and hyperactivity as well as a single cut off score that simplified diagnosis (based on the presence or absence of hyperactivity). Diagnostic criteria were refined using research and rating scales so ADHD was then classified with Conduct Disorder and Oppositional Defiant Disorder in the category of disruptive behavior disorders (Borick, 2011; Lange et al., 2010). Other significant developments in the evolution of ADHD through the 1980s included new theoretical perspectives related to motivation, effort, and anxiety, which provided different models for assessment and treatment of ADHD (Quay, 1988a, 1988b, 1997). Assessment for the disorder also advanced in the 1980s when more rating scales, better

norms, behavioral observation guidelines, and continuous performance tests became more standard procedures for identifying children with ADHD (Borick, 2011). One more important development in the late 1980s was the formation of parent support groups who worked on advocacy efforts to remedy the problem created by the Education of All Handicapped Children Act of 1975, which did not include children with ADHD in the criteria for students who qualified for special education services (Barkley, 2006).

In the 1990s, neuroimaging strengthened the belief that genetic and neurological factors played a role in ADHD. Once again, the *Diagnostic and Statistical Manual of Mental Disorders* (4<sup>th</sup> ed., DSM-IV; APA, 1994) revised the diagnostic criteria for the disorder to require that clinicians consider symptoms across multiple settings and validate that children were experiencing significant impairment in a major domain of functioning. Diagnostic options were refined to provide for various subtypes of the disorder including ADHD-Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type, Combined Type, and Not Otherwise Specified. Research in this era also supported the notion that motivational factors and the internal feedback loop called reinforcement mechanisms showed impairment in children with ADHD (Barkley, 2006). It was also in the 1990s that clinicians recognized more formally that ADHD persisted into adulthood as a disorder--it was no longer purely a childhood malady. These 20th century insights into ADHD illuminated the complexity of the phenomenon.

#### **Attention deficit hyperactivity disorder as a neurodevelopmental disorder.**

Understanding of ADHD continues to advance in the 21<sup>st</sup> century. After no revision to the ADHD diagnostic criteria in the DSM-IV-TR, the most recent release of the manual, the *Diagnostic and Statistical Manual of Mental Disorder* (5<sup>th</sup> ed., DSM-5; APA, 2013),

now categorizes ADHD as a neurodevelopmental disorder, reflecting an increased understanding of the neurological influences on the manifestation the disorder.

According to the recently revised DSM-5, onset of symptoms must occur prior to the age of 12 and be present in the six months prior to diagnosis. Individuals diagnosed with ADHD after the presence of at least six symptoms in one or both of the domains are categorized in one of three ways: Primarily Inattentive Presentation, Primarily Hyperactive Presentation, or Combined Presentation. Some of the inattentive symptoms include making careless mistakes in schoolwork, struggling to hold attention during tasks or play, and avoiding tasks that require sustained mental effort. Hyperactive symptoms include fidgeting, acting as if driven by a motor, talking excessively, and interrupting or intruding on others. Children with a combined presentation meet six or more criteria in both inattentive and hyperactive-impulsive domains. For a diagnosis of ADHD to be made, symptoms must interfere with or reduce an individual's functioning with work, school, and relationships (APA, 2013). At the beginning of the 21<sup>st</sup> century, ADHD is one of the most widely studied childhood disorders and one of the primary referral issues when a child is struggling in school (Barkley, 2006). The historical evolution of this disorder—from social-moral problem to physiological impairment to neurodevelopmental atypicality—provides a framework for exploring the etiology and treatment options for ADHD.

### **Etiology of Attention Deficit Hyperactivity Disorder**

Attention deficit hyperactivity disorder cannot be attributed to one single causal factor at this point in the research. Rather, ADHD is the product of intricate interactions among genetic, neurobiological, and socioenvironmental factors (Barkley, 2006; Brock et



al., 2009; Tharpar, Cooper, Eyre, & Langley, 2013). The prevailing theories about the etiology of ADHD are explored below including genetic research such as family and twin studies, environmental considerations, and neurobiological research.

**Genetics.** Genome, candidate gene, family, adoption, and twin studies all supported the current etiological hypothesis for ADHD--that genetics are a powerful contributor to ADHD symptomology (Brock et al., 2009). Although no solitary gene has been isolated as an indicator for ADHD, studies have begun to associate genes with symptoms of ADHD (Comings et al., 2000). The following three categories of genetic study—family studies, twin studies, and genome/candidate gene studies—have contributed to our current understanding of the heritability of ADHD.

**Family studies.** A family history of ADHD is a key variable in identifying new cases of the disorder. Strong evidence exists to support a genetic link to ADHD in immediate, biological family members of children with ADHD (Biederman, Faraone, Keenan, Knee, & Tsuang, 2005; Daley, 2006; Faraone, Biederman, Jetton, & Tsuang, 1997; Faraone et al., 1993; Mick & Farone, 2008; National Institutes of Mental Health [NIMH], 2006; Van der Oord, Boomsma, & Verhulst, 1994). The incidence rate of ADHD in children with parents who have ADHD is 55% (Biederman et al., 1995). Several studies of families with adopted children have confirmed that biological children within a family are more likely than adopted children to demonstrate symptoms of ADHD (Brock et al., 2009).

**Twin studies.** Twin studies are important because they rule out environmental factors. Twin studies compare identical twins—who share 100% of their genes—to fraternal twins who share only 50% of their genes like any other sibling pair. For

example, among fraternal twins, one study of ADHD found that the risk of both twins having ADHD was no greater compared to non-twin siblings even though both twins developed in the same maternal environment (Gilger, Pennington, & DeFries, 1992). While prevalence ratings of ADHD in identical twins vary, the consistent result is that the heritability of ADHD ranges from 64-80%. The most recent metanalysis of ADHD twin studies indicated the rate could be as high as 90% (Barkley, 2006; Tharpar, Harrington, Ross, & McGuffin, 2000; Faraone et al., 2005).

***Genome and candidate gene studies.*** The quest to identify a genetic marker for ADHD assumes that somewhere in the 23 pair of chromosomes that make up each human's genome is a specific gene or gene combination that is linked to ADHD symptomology. Over 30,000 combinations of genes on each chromosome provide the blueprint for human development so subtle changes or damage to one gene could affect normal development of the numerous gene combinations on any given part of the chromosome (Brock et al., 2009). Genetic researchers examined commonalities among families that included members with ADHD to find differences in the genetic code of members with and without ADHD. A review of the genetics of ADHD provided by Waldman and Gizer (2006) indicated there were three chromosomal regions that might share common links related to ADHD. Another review of the literature on candidate genes—genes that are theorized to be related to the phenomenon in question—provided by Mick and Faraone (2008)—indicated that genes related to the functioning of the frontal lobe and the processing of brain chemicals such as dopamine might be related to ADHD. Genes connected to novelty seeking, dopamine reception and transmission, and serotonin processing could be associated with genetic vulnerability to ADHD (Mick &

Faraone, 2008). The study of genetic links to ADHD, though promising, is highly complex and far from absolute. Thus, the most conservative way to conceptualize the genetic element of the disorder is as a dynamic process mediated by several different genes (Brock et al., 2009).

**Environment.** Genetics does not explain all of the variability in ADHD symptom presentation (Barkley, 2006) and environmental variables have historically been part of the discussion about the etiology of ADHD (Das Banerjee, Middleton, & Faraone, 2007; Tharpar et al., 2013). Environmental variables commonly explored in the ADHD etiology literature included pre- and post-natal factors, exposure to toxins, dietary factors, and psychosocial adversity (Brock et al., 2009; Tharpar et al., 2013). Maternal stress and smoking increased the risk for negative outcomes including ADHD in offspring (Glover, 2011; Grizenko, Shayan, Polotskaia, Ter-Stepanian & Joobar, 2008); however, evidence that these factors caused ADHD was inadequate (Tharpar & Rutter, 2009). Pesticide exposure is another risk factor for ADHD. Studies of detectable urinary dimethyl alkylphosphate levels in adolescents revealed that those with levels above the average had twice the likelihood of carrying an ADHD diagnosis than those with levels that were untraceable (Bouchard, Bellinger, Wright, & Weisskopf, 2010). Additional studies of exposure to pesticides, toxic industrial products, and lead suggested that neurological impairment from these substances could be associated with ADHD but the level of support to conclude they caused ADHD was inadequate (Tharpar et al., 2013). While nutritional deficiency is a known cause of developmental interference (Sinn, 2008), nutritional factors have not been established as causal factors in the discussion about the etiology of ADHD (Tharpar et al., 2013).

Another environmental variable related to ADHD causation has been termed psychosocial factors or psychosocial adversity (Brock et al., 2009; Tharpar et al., 2013). Family conflict, low income, child maltreatment, and negative parent-child interactions have been discussed as variables that could relate to ADHD but acknowledging that it is unclear whether these factors are the cause or consequence of ADHD is essential (Pheula, Rohde, & Schmitz, 2011; Tharpar et al., 2013). Psychosocial factors do not cause ADHD but the expression of symptoms of ADHD is often related to these stressor variables (Brock et al., 2009).

**Neurobiology.** The recent increase in brain imaging research has enabled researchers to better understand and validate the neurobiological foundation for ADHD; simply put, neurotransmitter deficits and dysfunction in the prefrontal cortex point to a physiological basis for ADHD (Barkley, 2006; Brock et al., 2009). Minor structural differences in brains of those with and without ADHD have been identified in the prefrontal cortex--the part of the brain that mediates activities such as behavioral inhibition, executive functioning, attention, and impulse control. These are areas of deficit for a person with ADHD (Barkley, 2006). The foci of functional brain imaging using MRI, PET scans, and other technologies have included overall brain size, prefrontal cortex measurements, basal ganglia damage and size, and cerebellum abnormalities (Brock et al., 2009). Furthermore, the way the brains of those with ADHD process neurotransmitters such as dopamine and norepinephrine, and subsequently how they respond to medications to manipulate this process, suggests a neurochemical basis for ADHD (Brock et al., 2009; DuPaul & Stoner, 2003). Finally, reduced cerebral blood

flow to several parts of the brain including the frontal lobe has also been identified in the brains of those with ADHD (Hendren, De Backer, & Pandina, 2000).

The overwhelming conclusion about the etiology of ADHD is the factors that contribute to the disorder are highly complex and vary from person to person. As such, dispensing with a dichotomous conceptualization of the disorder—nature vs. nurture—is essential to developing an effective treatment plan (Tharpar et al., 2013).

### **Prevalence**

According to the DSM-5 (APA, 2013), the incidence of ADHD in the general population of children in most cultures is 5% (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007). The Centers for Disease Control's (2013) National Center on Birth Defects and Developmental Disorders reported that in the United States, prevalence ratings varied considerably by region--Nevada had the lowest prevalence at 5.8% and Kentucky reported the highest rating at 18.7%. The CDC indicated that 6.4 million children between the ages of 4 and 17 were diagnosed with ADHD as of 2011, representing a national prevalence rate of 11% in the United States (CDC, 2013). Prevalence estimates varied due in part to the method by which the estimate was established. Some of the methods used to establish prevalence estimates included use of teacher rating scales, review of school records, and use of clinical diagnostic criteria (Polanczyk et al., 2007).

Several demographic characteristics have influenced ADHD prevalence including sex, ethnicity, geographic region and socioeconomic status. Males are at least twice as likely as females to be diagnosed with ADHD. This difference could be due to lower thresholds of ADHD symptomology in females, especially aggressive behaviors

(Barkley, 2006). With regard to ethnicity, cultural interpretations and ratings of childhood behaviors have varied (Mann et al., 1992; Miller, Nigg, & Miller, 2009). In their 2008 study of racial and ethnic differences in childhood ADHD, Pastor and Reubens reported that African American and Latino children had lower rates of ADHD even after adjusting for racial and ethnic disparities often seen in children's physical health outcomes related to variables such as birth weight, income, and insurance coverage. In the clinical identification of ADHD, Caucasian populations tended to have higher identification rates than African American and Latino populations (Froehlich et al., 2007; Kessler et al., 2006; Miller et al., 2009). Low socioeconomic status has also been studied as a risk factor for ADHD but there is some question as to whether low socioeconomic status is a causal factor or, conversely, a consequence of low parental academic achievement and subsequent low earning potential if one or both parents have ADHD (Wells et al., 2000). Finally, it is important to note that ADHD is often comorbid with other disorders such as reading disabilities, speech and language problems, motor incoordination, autism spectrum disorders, lower IQ, and other mental health disorders (Taylor, 2011; Willcutt et al., 2013).

### **Functional Consequences of Attention Deficit Hyperactivity Disorder**

Attention deficit hyperactivity disorder significantly impairs a person's functioning in numerous ways including socially, academically, professionally, and medically (Barkley, 2006). People with ADHD are more likely to experience interpersonal conflict, have negative family interactions, and be subject to peer rejection (Barkley et al., 2002; Willcutt, 2012). In addition to social discord, those with ADHD experience significant school problems including poor performance and reduced

academic skill acquisition, which can lead to high rates of dropping out (Barkley et al., 2002; Frazier, Youngstrom, Glutting, & Watkins, 2007; Willcutt, 2012). Across their lifespan, adults with ADHD have a higher likelihood of periods of unemployment (Barkley et al., 2002; Kessler et al., 2006). The physical and medical consequences of ADHD were also well supported in the research. People with ADHD have a higher risk of developing other disorders such as conduct disorder and antisocial personality disorder along with a still debated increased risk of substance abuse (Klein et al., 2012; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1998). Studies indicated that people with ADHD were more injury and accident prone (Merrill, Lyon, Baker, & Gren, 2009; Pastor & Reubens, 2008; Willcutt, 2012). Obesity rates among those with ADHD were also higher (Cortese et al., 2008; Fuemmeler, Østbye, Yang, McClernon, & Kollins, 2011). These significant consequences unfold in communities beginning in childhood; thus, exploring ADHD in schools is a relevant issue.

### **Schools and Attention Deficit Hyperactivity Disorder**

All children living in the United States have a right to a free and appropriate public education (FAPE) as outlined in the most recent reauthorization of the Individuals with Disabilities Education Act (IDEA; 2004). This law provides for children with disabilities so they receive the services and accommodations necessary to access the educational opportunities granted to all children in the United States. While there is often controversy over what services should and should not be provided by publically funded school districts, the system currently meets the requirements of FAPE using processes that result in an individualized education plan (IEP) or a Section 504 plan (Section 504 of the Rehabilitation Act of 1973). These documents outline modifications and

accommodations—and services in the case of an IEP—an individual student should be granted to meet his or her individual educational needs. A multidisciplinary team comprised of a student’s parents and several education professionals (e.g., special and general education teachers, occupational and physical therapists, speech pathologists, administrators, and school psychologists) works together to assess student needs and determine the best plan for the child. Attention deficit hyperactivity disorder is one of the disorders that may make a student eligible for this level of support in a public school.

### **Role of the School Psychologist**

As a member of the multidisciplinary team, the school psychologist plays a variety of roles in this special education process. School psychologists conduct cognitive testing, gather observational data, collect input via surveys and questionnaires, and provide case management services and mental health counseling (NASP, 2010b). The role of the school psychologist varies depending on the needs of a child and the model of support in a given district or school. However, in the case of a student about whom there are attention concerns, the school psychologist plays a vital role in screening for ADHD (Borick, 2011). By developing and implementing school-based interventions and building partnerships with families of the students, they serve to create an atmosphere of collaboration for the child as a family pursues treatment both in and out of the school setting. In this regard, the school psychologist is poised to assist families who are exploring treatment options beyond the walls of the school building (Barkley, 2006). The National Association of School Psychologists (2005) clarified the role of school personnel in the following excerpt from their position statement titled *Diagnosis and Treatment of Attention Disorders: Roles for School Personnel*:



When a medically-based condition is suspected, it is the responsibility of all trained school personnel to provide parents with information to help them determine the need for a medical evaluation, and to provide the family and physician with relevant information to assist in any diagnosis or treatment plan. (para. 6)

Although a school psychologist cannot recommend specific treatment approaches outside of the district's resources, he or she is often the staff member with the most training and expertise in scientific research and thus can play a pivotal role in assisting parents as they consider the validity of and research about both proven and emerging treatments for ADHD (Brock et al., 2009).

### **School-Family Partnering: An Ecobehavioral Framework**

Although parent involvement in the special education process is legally mandated by the IDEA (2004), a signature on an IEP or parental presence at a meeting does not equate to true partnership between parents and school personnel. A theoretical framework for home-school partnerships is outlined below.

**Ecological-systems theory.** Bronfenbrenner's (1977) ecological model of human development provided a useful lens through which to view the variables under investigation in this study. Bronfenbrenner postulated that humans are influenced by multiple systems that can be envisioned as concentric circles around an individual. Most closely influencing a person's development are the microsystems: institutions and groups that most immediately and directly influence a person such as family, school, and health services. Mesosystems are the interactions and relationships among the microsystems. For example, when a child takes a field trip into the community, the microsystems of school and community interact or when parents and special educators meet for an IEP meeting, the family and school microsystems interact.

Outside of the dynamic micro- and meso-systems where a person directly interacts with systemic influences, the exosystem links social settings that indirectly affect a person. Examples of exosystemic influences on a person's development might include something as complex as legal reform or something more straightforward such as a spouse or parent receiving a promotion at work that increases a family's income but decreases the time they have to be together. Beyond the exosystem, the macrosystem is comprised of the culture in which an individual lives and grows. Abstract influences such as ideology and values reside in this layer of impact along with culture and socioeconomic status. Finally, the chronosystem represents major life changes that influence human development across time such as having a child or moving to a new state.

Ecological influences on child development are widely accepted but it is also important to note that maturing adults are still *influencing* and being influenced *by* these systems. Although the extent to which adults remain vulnerable to the influences of these interrelated systems beyond childhood is unknown, an underlying assumption of this study was that parents and school psychologists were once, and might likely still be, subject to the complex interactions outlined in Bronfenbrenner's (1977) theory even as they become agents of influence within the model for a developing child.

**Attitude within systems theory.** Societal attitudes are a component of the macrosystem--an abstract and outer layer of influence within Bronfenbrenner's (1977) model. Individual attitudes, however, are the result of mesosystemic influences that can be attributed to the individual over the course of his/her lifespan. The construct of attitude is widely explored in social psychology literature (Fazio and Roskos-Ewoldsen,

2005; Rosenberg & Hovland, 1960; Smith & Mackie, 2007; Visser, 2010). One prevailing theory of attitude—the ABC model—posits there are three components of attitude: affect, cognition, and behavior (Rosenberg & Hovland, 1960). The question of whether and to what extent people’s attitudes inform their behavior is still the subject of research. LaPiere’s (1934) germinal study of the relationship between attitude and behavior revealed the two were not always predictably linked. Some theories suggested that personal experience, subject matter expertise, and expectations of favorable outcomes were more likely to inform behavior aligned with a person’s attitude (Hockenbury & Hockenbury, 2007; Smith & Mackey, 2007). As such, it could be concluded that mesosystemic interactions—such as gaining information through formal schooling or experiencing a phenomenon for oneself—are agents of attitude formation.

### **Ecobehavioral Consultation**

Within the practice of school psychology, the attitudes of practitioners become especially relevant within the context of ecobehavioral consultation--a model of consultation attributed to Gutkin (1993) but described elsewhere in the literature (Conoley & Conoley, 1992; Kantor, 1924). The indirect delivery of psychological services to children occurs through consultation where the school psychologist offers professional expertise to other adults—generally parents and teachers—as part of a problem solving process (Bonner, 2005).

The underpinnings of this model of consultation drew from both ecological systems theory (Bronfenbrenner, 1977) and behavioral theory (Skinner, 1953; Watson, 1924). One important aspect of the ecological element within this consultative model is that attitudes and cognitions are part of the interdependent ecologies that influence a

child. As such, a school psychologist's attitudes toward various treatments are likely to inform the professional expertise shared with parents during the consultative process (Bonner, 2005). The behavioral aspect of this model attributes human behavior to antecedents and consequences. Regardless of treatment approach, a school psychologist can only decipher treatment efficacy through measurable, observable behaviors exhibited by the child in the school environment. The interdependent and recursive process of engaging in consultation from an ecobehavioral systems perspective requires school psychologists to engage in meaningful communication with parents.

**School Psychologists' Parent  
Communication: An  
Essential Professional  
Practice**

The professional imperative for school psychologists to engage in effective home-school partnerships is rooted both in ethical guidelines as well as research about positive learning outcomes for all students. The NASP (2010b) *Blueprint for Training and Practice* implored school psychologists to invest in overcoming barriers to effective family engagement because home-school partnerships and influencing families systemically are essential to their role. Furthermore, the ethical standards ascribed to by NASP members clearly outline the duty of school psychologists to collaborate with parents in intervention development while taking into consideration cultural values and alternatives both within and beyond the school setting:

School psychologists encourage and promote parental participation in designing interventions for their children. When appropriate, this includes linking interventions between the school and the home, tailoring parental involvement to the skills of the family, and helping parents gain the skills needed to help their children. School psychologists discuss with parents the recommendations and plans for assisting their children. This discussion takes into account the ethnic/cultural values of the family and includes alternatives that may be

available. Subsequent recommendations for program changes or additional services are discussed with parents, including any alternatives that may be available. Parents are informed of sources of support available at school and in the community. (NASP, 2010a, Standard II.3.10, p. 8)

These professional and ethical obligations are captured in the notion of a shared responsibility orientation--an approach in which parents and school psychologists work together to develop shared goals in the endeavor to create a successful culture of learning that yields positive educational outcomes (Christenson, 2003). School psychologists are urged to consider that trust in the home-school partnership—which likely changes as children develop—is built over time with interactions that emphasize a positive nature more than intense frequency (Adams & Christenson, 2000; Hill & Tyson, 2009).

These codified recommendations for fostering school-family partnering were further enhanced by research about how parental involvement enhanced student outcomes. Despite conclusive research that students whose parents are involved in their education were likely to have higher grades and test scores, better school attendance, more effective social skills, and higher rates of secondary school attainment (Fan & Chen, 2001; El Nokali, Bachman, & Votruba-Drzal, 2011; Henderson & Mapp, 2002), the specific interactions between families and school psychologists were not well represented in the literature.

#### **School-Family Partnering: School Psychologists' Parent Communication Behavior**

Despite the paucity of research about school psychologists' parent communication, studies indicated that families perceived some specific professional behaviors as important and would apply to collaboration with school psychologists. In a

cross-professional analysis exploring how 900 parents of children with emotional disorders viewed professional behaviors of psychologists, social workers, counselors, and psychiatrists, 90% of parents reported that working with a psychologist who was honest with them was very important (Friesen, Koren, & Koroloff, 1992). In this same study, 67% of parents reported it was very important for psychologists to provide information about available treatment methods for their child and to follow-up to see how things worked out (Friesen et al., 1992). In a recent survey of parents about their perceptions of their relationships with educators, 88% of parents reported they saw their children's teachers as partners in school success but only 48% of the same group felt there were sufficient opportunities to conference with teachers (National Education Association, 2012). This desire extended to school psychologists with parents reporting their preference for face-to-face meetings and consultation with school psychologists was strong and was in the top-third of parental involvement activities about which parents were surveyed (Christenson, Hurley, Sheridan, & Fenstermacher, 1997). More recent recommendations about how school psychologists should communicate with parents suggested that initiating varied formats for communication—such as formal and informal meetings, various forms of written communication, telephone contact, and communication via technology—were effective ways to improve school-family partnering (Hornby, 2011).

School psychologists similarly valued these opportunities for communication. In a study examining parent communication practices of approximately 400 school psychologists, 96% of respondents who were practicing school psychologists reported that consulting with families about ways parents could support learning and behavior at

school was the most important family-school partnership activity in their professional practice (Pelco, Ries, Jacobson, & Melka, 2000). Other professional practices school psychologists participated in and valued as important included “planning, coordinating, and monitoring interventions implemented by parents and teachers” and “facilitating conferences to create more cooperation between parents and educators” (Pelco et al., 2000, p. 243). Both groups of stakeholders—parents and school psychologists—indicated that communication was a key element of their partnership. Moreover, parent communication has been an essential professional practice in the discussion of CHA for ADHD because CHA intervention is most likely to be delivered outside the school setting; but just like other ADHD intervention approaches, it might require collaboration with school personnel to monitor treatment outcomes.

### **Attention Deficit Hyperactivity Disorder Intervention**

There are numerous interventions for ADHD in children and some of them are controversial. A review of the literature about ADHD intervention revealed a primary focus on pharmacological treatment with additional attention given to behavioral and educational approaches (Barkley, 2006; Brock et al., 2009; Mayes, Bagwell, Erkulwater, 2009). Intervention for ADHD may include medication, behavior modification, biofeedback training, conflict resolution training, parent education, social skill training, dietary restrictions, vitamin and supplement use, study skill training, homework support, play therapy, computer-based instruction, psychotherapeutic approaches and more (Barkley, 2006; Connor, 2006; DuPaul & Stoner, 2003). The MTA Cooperative Group (1999) study has often been credited as the most comprehensive study of ADHD interventions. This study found that a combination of behavioral treatment and

medication was more effective at ameliorating ADHD symptomology than therapy alone. Additionally, the MTA study found that medication alone was a more effective treatment than therapy or community support alone. While there have been countless studies of ADHD intervention, many treatment options have not proven to be effective. The following is an overview of literature in three categories of intervention for ADHD in children: medical, behavioral, and complementary.

### **Medical Intervention for Attention Deficit Hyperactivity Disorder**

The most common treatment for ADHD has been pharmacological (Antshel et al., 2011). A CDC study (2014) found that 69% of children currently diagnosed with ADHD were taking medication. Two categories of medication were used to treat the disorder: stimulant and non-stimulant. Stimulant medications increase attention and decrease hyperactivity and impulsivity by increasing dopamine transmission in the brain. Common stimulant medications include Ritalin, Vyvanse, Adderall, and Daytrana. Non-stimulant medications such as Strattera and Intuniv modulate norepinephrine activity that affects focus and concentration. Although the mechanism of action varies between stimulant and non-stimulant medications, the purpose of the medication is to increase catecholamine levels in the brain to improve pre-frontal cortical functioning (del Campo, et al. 2011). Side effects of medication are generally mild (Connor, 2006) and vary widely but can include dry mouth, difficulty sleeping, reduced appetite, headache, low blood pressure, and drowsiness. Among children who have been accurately diagnosed, 70-80% responded positively to treatment with stimulant medication and faced a minimal risk of substance abuse compared to non-medicated peers (Ameringer & Leventhal, 2013; Connor, 2006).



Deleterious side effects, along with concerns about long-term physical growth outcomes, are often at the core of parental reluctance to choose medication as treatment for a child with ADHD (Charach, Skyba, Cook, & Antle, 2006; Jackson & Peters 2008; Taylor, O'Donoghue, & Houghton, 2006). Many parents prefer not to use medication as a treatment for their child with ADHD (Pisecco, Huzinec, & Curtis, 2001; Power, Hess, & Bennett, 1995). Despite parental reluctance to medicate children with ADHD, well-documented outcomes in the body of evidence support pharmacological treatment. School psychologists report that they engage in monitoring medication efficacy (Gureasko-Moore, DuPaul, & Power, 2005).

### **Behavioral Intervention for Attention Deficit Hyperactivity Disorder**

The only non-pharmacological treatment for ADHD with a solid scientific foundation of empirical validation is behavioral intervention, specifically behavioral school intervention and behavioral parent training. Elements of behavioral intervention include external reinforcement, self-monitoring, token economies, and response-cost programs.

Parents prefer behavioral treatment to medication (Pelham, as cited in Barkley, 2006). To implement behavioral interventions in the home, parent training is an accepted approach (Chronis, Chacko, Fabiano, Wymbs, & Pelham, 2004). However, the evidence supporting parent training “has been anything but systematic” (Anastopoulous, Rhoads, & Farley, as cited in Barkley, 2006, p. 453).

**Behavioral intervention for attention deficit hyperactivity disorder in schools.** More students are getting support and services for ADHD than ever before in the history of our schools (Pfiffner, Barkley, & DuPaul, 2006). Numerous school-based

interventions for ADHD are evident in the literature including modifications to the physical arrangement in the classroom, matching academic tasks to student's abilities and inabilities, using more computer-based instruction, academic skill improvement, teacher response to appropriate and inappropriate behavior (e.g., tokens, reprimands, time-outs, and attention), maintaining focus on success beyond the setting where the intervention is taking place, enlisting peer support for academic and behavioral gains, collaborating with families on reinforcement strategies, developing self-monitoring strategies, and modifying approaches using developmental considerations (Pfiffner et al., 2006; Schultz, Storer, Watabe, Sadler, & Evans, 2011). Practical classroom management strategies (e.g., establishing clear procedures and routines, responding appropriately to negative and positive behaviors, and giving clear instructions) are generally helpful in reducing disruptive behaviors of students with ADHD (Pelham & Fabiano, 2008).

More intensive approaches that have varying levels of support include the use of daily report cards (Riley-Tillman, Chafouleas, Sassu, Chanese, & Glazer, 2008) and token economies (Wolraich, Drummond, Salomon, O'Brien, & Sivage, 1978). Modifications and accommodations in the educational environment can be an essential component of treating ADHD in children. School-based interventions might include modifying the duration or difficulty of a task, providing direct instruction, implementing peer tutoring increasing novelty of materials or tasks, providing structure and organization, utilizing visual cues and reminders, modifying schedules, allowing for an element of choice, allowing for physical movement in the classroom, and minimizing distractions (Brock et al., 2009). All of these interventions are based in behavioral

theories and require accurate assessment of the problem behaviors, desired behaviors, and function of the behaviors in question.

**School psychologists and behavioral-based intervention involvement.** With regard to intervention, school psychologists reported they played an important role in treating children with ADHD primarily through parent training and behavioral approaches (Cushman et al., 2004). Despite the fact that behavioral-based interventions are among research-based practices for treating ADHD, school psychologists' involvement in these interventions has been variable with just over half of school psychologists reporting they spent less than 25% of their time on behavioral interventions (Sullivan et al., 2011). In a dissertation study of school psychologists' ADHD assessment and intervention practices (Borick, 2011), survey respondents reported high confidence in their training and qualifications with regard to ADHD intervention; 90.7% of the sample reported they provided ADHD intervention in the course of their duties as school psychologists. The most frequently used interventions among school psychologists included positive reinforcement and behavior intervention plans. Behavioral-based intervention involvement appeared to be a professional practice school psychologists were already engaging in to varying degrees because of the training and knowledge they possessed about behavioral intervention as an effective treatment for ADHD. An increased understanding of treatment efficacy appeared to lead school psychologists to prioritize behavioral intervention with a majority reporting they provided ADHD interventions (Borick, 2011). How or if behavioral intervention involvement relates to attitudes toward CHA is unknown. Just as knowledge of treatment efficacy has positioned behavioral intervention prominently in the school psychologists' professional

repertoire, so too could knowledge of CHA influence practice. But to receive new knowledge, one must have an appropriately credulous attitude.

### **Complementary Interventions for Attention Deficit Hyperactivity Disorder**

Prior to exploring the research about complementary interventions for ADHD, it is important to be aware of the development of complementary health approaches and the agency in the United States that was developed to address this emerging practice.

Following a brief overview of CHA, studies related to specific complementary approaches to ADHD are explored including mind and body practices (e.g., karate, yoga, biofeedback, and facilitative intervention training), natural products (e.g., Omega-3 supplementation, vitamins, herbs, and dietary approaches), and whole health systems such as Ayurveda, homeopathy, and Chinese medicine.

**Complementary health approaches.** In 1991, NIH formed a branch of their organization called the National Center for Complementary and Integrative Health (NCCIH, formerly the Office of Alternative Medicine). The organization offered the following mission and vision statement:

The mission of NCCIH is to define, through rigorous scientific investigation, the usefulness and safety of complementary health approaches and their roles in improving health care. NCCIH's vision is that scientific evidence will inform decision-making by the public, by health care professionals, and by health policymakers regarding use and integration of complementary health approaches. (NIH, 2012)

The NCCIH has defined three primary categories of complementary health approaches: mind and body practices, natural products, and whole health systems. Mind and body practices “focus on interactions among the brain, mind, body and behavior, with the intent to use the mind to affect physical functioning and promote health” (NIH, 2012, p.

2). Mind and body practices also include body-based manipulation approaches such as massage therapy and spinal manipulation (NIH, 2012). Natural products include botanical supplements, vitamins and minerals, as well as dietary approaches that emphasize natural foods without additives and preservatives (NIH, 2012). Whole health systems, the final category of CHA explored in this literature review, are “complete systems of theory and practices that have evolved over time in different cultures and apart from conventional or Western medicine” (NIH, 2012, p. 4).

The NCCIH defines complementary health approaches as treatment that does not completely eschew conventional medicine but relies on the use of natural products, mind and body practices, or whole health systems (such as homeopathy or Ayurveda) to treat disease and disorder (NIH, 2014). Nearly 12% of children who were the subject of NIH’s (2014) National Health Interview Survey had utilized a complementary health product or practice in the previous year. Attention deficit hyperactivity disorder was in the top five disorders for which complementary health approaches (CHA) were used to treat children (NIH, 2014). In addition to the rising use of CHA among children with ADHD, it is important to note that CHA use was more prevalent among women and those with higher education and income (Clarke, Black, Stussman, Barnes, & Nahin, 2015). The increasing use of CHA has implications for school psychologists in their efforts to provide effective services to all students, specifically those with ADHD (Shaw et al., 2010).

**Complementary health approaches for attention deficit hyperactivity disorder intervention.** Previous survey research of parents of children with ADHD indicated that some complementary health approaches or nontraditional treatments for the

disorder were commonly used and considered helpful by some parents (Concannon & Yang, 2005; Stubberfield, Wray, & Parry, 1999). In one Italian study, the majority of parents of children affected by ADHD were reported to have resorted to CHA (di Sarsina, Vannacci, Costa & Meuti, 2010). However, research on treatments for ADHD using alternative or complementary approaches was limited. The following is a review of research in the areas related to the treatment of ADHD.

***Mind and body practices.*** Numerous mind and body practices have been explored as possible treatments for ADHD. Among them are movement techniques such as yoga, karate, and tai chi as well as mindfulness/meditation techniques and biofeedback such as attention training, working memory training, and neurofeedback (Sarkis, 2014). The notion that exercise is helpful in managing the symptoms of ADHD has been generally accepted (Gapin, Labban, & Etnier, 2011; Hallowell & Ratey, 2011). A study of eurythmy therapy, an active physical movement therapy in which participants move in sync with specific sounds, proved helpful for participants with ADHD when combined with art therapy (Hamre et al., 2010). The combination of therapies in this study, however, made it impossible to discern which therapy actually affected the participants. Researchers of yoga as a treatment for ADHD found that parent rating scales indicated better functioning from pre-test to post-test after a 20-session yoga intervention (Jensen & Kenny, 2004). Studies of Tai Chi, a martial art, found immediate relief for participants but limited evidence of lasting effects (Hernandez-Reif, Field, & Thimas, 2001; Pang, Brody, & Fassler, 2010). The limitation of these studies was the results were unclear about whether the positive results could be attributed to engaging in disciplined physical

activities such as yoga, karate, and tai chi or could be connected to the specific activity itself.

*Biofeedback.* Another area of mind-body practice that investigates the treatment of ADHD is cognitive training through biofeedback, specifically neurofeedback. Recent studies indicated that neurofeedback was probably efficacious as a treatment for ADHD (Lofthouse, Arnold, Hersche, Hurt, & DeBeus, 2011). Both biofeedback and neurofeedback, rooted in behavioral concepts of operant conditioning, have shown some promise in the treatment of ADHD (Monastra et al., 2005). Recipients of biofeedback treatment are connected to electrodes that provide data about electrical activity in the brain. By obtaining these data in real time through visual, auditory, or tactile means, the treatment recipients retrain the brain to regulate itself (Lofthouse et al., 2011).

Biofeedback is further defined as a “mind-body therapy using electronic instruments to help individuals gain awareness and control over psychophysiological processes” with neurofeedback seen as a specialty within the field that aims to “control electro-chemical processes in the human brain” (Yucha & Gilbert, 2004, p. 3). Ultimately, this treatment could be considered behavioral but since researchers still indicate there are significant limitations to current studies on neurofeedback, this intervention is still an emerging approach that could be categorized as complementary to traditional treatments.

*Facilitative intervention training.* In addition to the emerging practices related to biofeedback, other types of cognitive training classified as facilitative intervention training (FIT)—that do not include direct connection to electrodes—have also aimed to retrain cognitive abilities such as working memory, attention, and sensory processing (Rapport, Orban, Kofler, & Friedman, 2013; Sarkis, 2014). Facilitative intervention

training programs target specific executive functions such as working memory, shifting attention, and maintaining focus.

Children with ADHD often have deficits in their working memory--one of the key executive functions that occurs in the frontal lobe of the brain. Working memory allows students to temporarily store information to manipulate and process it so they can generate new output such as the solution to a mathematical story problem. Several studies using functional MRI have found that children and adults have reduced activation in the area of the brain responsible for working memory (Berquin et al., 1998; Bussing, Grudnik, Mason, Wasiak, & Leonard, 2002; Castellanos, 2001; Mostofsky, Reiss, Lockhart, & Deckla, 1998; Valera, Faraone, Biederman, Poldrack, & Seidman, 2005). When a person with ADHD receives working memory training, he or she completes tasks that train verbal and visuospatial working memory on a computer program comprised of increasingly difficult tasks. In a study of one such FIT program, 50 participants (90% male) ages 7-12 completed either a low intensity or high intensity working memory training program (Klingberg et al., 2005). Students who completed the high intensity program showed gains in working memory skills and reduction of ADHD symptoms in their home environment based on parental ratings both immediately following the intervention and in a three month post-intervention follow up. Attention deficit hyperactivity disorder symptom ratings completed by children's teachers were not significant for group differences, suggesting the results did not generalize to the classroom (Klingberg et al., 2005).

Although used colloquially, the term *attention* is comprised of numerous complex cognitive processes. A class of ADHD interventions is aimed at training the brain to



attend in various ways including sustaining attention, shifting attention from one stimulus to another, dividing attention among multiple stimuli, and selecting stimuli to which to attend. Programs such as Play Attention, Cog-Fun, Learning Rx, and Brain Train were evident in the literature as cognitive training programs that attempted to improve functioning for children and adolescents with ADHD; however, the level of empirical support for these programs was inadequate (Hahn-Markowitz, Manor, & Maeir, 2011; Pfister, 2012, Rabiner, Murray, Skinner, & Malone, 2010; Steiner, Frenette, Rene, Brennan, & Perrin, 2014; Steiner, Sheldrick, Gotthelf, & Perrin, 2011). A 2013 meta-analysis by Rapport et al. (2013) of these and other brain-training programs concluded that despite claims from the developers of FIT programs, there was no empirical evidence to support symptom reduction or academic/behavioral improvement for those with ADHD who completed these training programs.

*Bodywork.* Complementary health approaches that involved bodywork such as massage, acupuncture, and chiropractic treatment were also investigated as ADHD interventions (Sarkis, 2014). In a study of children and adolescents with ADHD, a treatment group that received 20 minutes of massage twice a week for one month showed improvements in teachers' ratings of classroom behavior as well as improved self-ratings of mood when compared to a control group (Khilnani, Field, Hernandez-Reif, & Schanberg, 2002). Chiropractic treatment, although not specifically geared toward treating ADHD, purported to alter and enhance the communication between the body and the brain (Sarkis, 2014). In a study of nine adults with attention problems (although not all formally diagnosed with ADHD), participants showed improved performance on a continuous performance task after eight weeks of twice weekly chiropractic treatment

(Pauli, 2007). There was no evidence that acupuncture was an effective treatment for ADHD (Li et al., 2011). These physical bodywork approaches to treating ADHD—while common complementary health approaches—lacked empirical support as effective interventions for effectively reducing ADHD symptomology.

***Natural products.*** Natural products such as herbs, vitamins, and supplements are another category of complementary health approaches that have been utilized to treat ADHD despite little evidence supporting their efficacy (Sawni, 2008). One study of a natural product approach to ADHD treatment examined the outcomes of 54 children—half were treated with an herb called St. John’s Wort and half received a placebo (Weber et al., 2008). There were no group differences in hyperactivity or focus after eight weeks of treatment (Weber et al., 2008). Deficient levels of fatty acids have been identified in people with ADHD; therefore, supplementation with Omega-3 fatty acids is a complementary approach garnering the attention of researchers (Antalis et al., 2006; Gow & Hibbeln, 2014; Schuchardt, Huss, Stauss-Grabo, & Hahn, 2010). Several studies have shown some preliminary indications that supplementation with Omega-3 fatty acids might improve attention-related performance and/or reduce ADHD symptoms (Gow & Hibbeln, 2014; Johnson, Östlund, Fransson, Kadesjö, & Gillberg, 2008; Sinn, 2008; Transler, Eilander, Mitchell, & van de Meer, 2010).

***Diet.*** Dietary treatments for ADHD were evident throughout the intervention research. Popularized by Dr. Feingold’s historic assertion that food additives were part of the problem in a 1976 paper on the subject, dietary approaches have been embraced by families who believe diet affects hyperactivity (Bussing, Gary, Mills, & Garvan, 2003; dosReis et al., 2003; Singh, 2003). Over the past five decades, further studies of the

relationship between food and ADHD have illuminated a higher prevalence of allergies and food sensitivities among those with ADHD (Almog, Gabis, Shefer, & Bujanover, 2010; Pelsser, Buitelaar, & Savelkoul, 2009; Suwan, Akaramethathip, & Noipayak, 2011). Additional research into the relationship between food and ADHD also revealed that removing food additives as a treatment for ADHD was not an effective primary or solitary intervention (Kanarek, 2011) but an elimination diet might be recommended if conventional treatment was unsuccessful (Stevens, Kuczek, Burgess, Hurt, & Arnold, 2010). Dietary treatments for ADHD are actually eating approaches that would benefit everyone, not just people with ADHD. Thus, they are unlikely to be at the forefront of research for complementary approaches to treating ADHD despite the fact they are at the forefront of many parents' thinking when it comes to nonpharmacological approaches to managing the disorder (Sarkis, 2014).

***Whole health systems.*** The final category of complementary health approaches is whole health systems. A complete review of each of the whole health systems mentioned in the literature was beyond the scope of this study but selected examples were included to provide background information for application to other sections of this study. Whole health systems are often rooted in a cultural tradition such as Chinese medicine or Ayurveda, an ancient Indian system for understanding health. To understand how interventions for ADHD work in each of these systems, a thorough understanding of the cultural view of disease is necessary but was beyond the scope of this study. Studies of Ayurveda showed that treatment with ayurvedic herbal medicines might be efficacious in improving the reaction time of children with ADHD but the research was far from establishing empirical support for this approach (Singhal, Neetu, Kumar, & Rai, 2010).

Traditions such as homeopathy and naturopathy are also whole health systems. Through limited research, homeopathy has been found to be ineffective at mitigating symptoms of ADHD (Heirs & Dean, 2008). Traditional healers from other cultures might also be considered part of a whole health system to treatment.

### **Parents and Complementary Health Approaches**

Studies of parental perspectives of CHA use for ADHD specifically and other educational-related disabilities were limited and came primarily from non-U.S. countries and cultures. However, the National Institutes of Health (2007) reported that 12% of children under the age of 18 had been given a complementary health treatment or practice. Parents reported confusion about the path of ADHD treatment they should pursue for their children because they received conflicting messages; ultimately, many families preferred to find alternatives to medication (Charach et al., 2006). This confusion was compounded by the fact that what a parent believed about the etiology of ADHD was associated with the choice of treatment (Johnston, Seipp, Hommersen, Hoza, & Fine, 2005) and parents did not always have the scientific background to call upon in the decision-making process (Lazaratou, Anagnostopoulos, Alevizos, Haviara, & Ploumpidis, 2007).

Parents provided numerous reasons for seeking alternatives or additions to pharmacological or behavioral treatments. Among 75 Australian families with a child diagnosed with ADHD, parents reported choosing CHA to minimize ADHD symptoms, avoid negative side effects, and add benefit to conventional treatments already being implemented (Sinha & Efron, 2005). In a qualitative study of British families with a child receiving ADHD treatment, parents expressed that they valued natural, non-

manufactured treatment products and were influenced by personal experience, scientific credibility, and cultural acceptance of CHA when making treatment decisions (Nichol, Thompson, & Shaw, 2011). These studies elucidated the perspectives that might be universally shared by parents of children with educational disabilities who seek to ameliorate symptoms that interfere with learning.

### **School Psychologists and Complementary Health Approaches**

There has been no published research within the field of school psychology related to CHA. The three most prominent sources related to this study included an unpublished dissertation on school psychologists' assessment and intervention practices related to ADHD (Borick, 2011), a NASP Communiqué article (Shaw, 2008) in which an overview of CHA within the field of school psychology was provided, and an article from *School Psychology Forum* (Shaw et al., 2010) that provides practice suggestions to build on the topic overview provided by the same author in 2008. In light of this absence of empirical studies of school psychologists' practices and attitudes related to complementary health approaches, the aforementioned publications as well as related studies from other fields (e.g., medicine, psychology, and marriage and family therapy) are explored to provide additional context for the present study.

### **School Psychologists' Complementary Health Approach Intervention Practices**

In a 2011 dissertation, Borick studied the assessment and intervention practices of school psychologists related to ADHD. Although CHA was not a focus of this study, some of the survey items included topics related to school psychologists and CHA treatment of ADHD. Among the 246 survey respondents, the most frequently used

interventions included positive reinforcement, behavior intervention plans, teacher support, and environmental modifications. However, participants in the study also endorsed interventions considered to be complementary health approaches. Respondents indicated they often recommended changes to diet and exercise routines (27.2%) as well as utilized biofeedback (8.5%) and neurofeedback (6.7%) techniques. Almost all of the respondents reported implementing an intervention that involved relaxation training (99.6%). The use of ocular motor exercises (7.5%) and vitamin/supplement treatment (11.7%) were also endorsed as interventions used by school psychologists with students who had ADHD. The implications of these frequencies were not addressed in the dissertation but suggested that in this national sample of school psychologists, the issue of CHA treatment for ADHD was evident.

In a NASP Communiqué article, the authors outlined practical considerations for school psychologists with regard to CHA (Shaw et al., 2010). The first consideration addressed was the role of school psychologists as scientist-practitioners. Specifically, to shape how schools develop practices around the use of CHA, Shaw et al. (2010) suggested that school psychologists should stay current on developing research in this area by reading relevant literature. Second, school psychologists should be part of developing research support for CHA by monitoring data using single-case designs when students are undergoing a trial of a CHA. Third, school psychologists should educate parents through discussions about the research and efficacy of CHA as well as their influence on overall child development. In addition to serving as scientist-practitioners, the authors posited that school psychologists could develop their expertise and respect for CHA as part of their commitment to cross-cultural practice, school-family partnering, and

participation on multi-disciplinary teams (Shaw et al., 2010). Although school psychologists are not typically trained as complementary health approach providers, their expertise could be utilized to make referrals and work collaboratively with CHA professionals. The current study gathered information about whether school psychologists' current professional practices reflected the recommendations of Shaw et.al—specifically, engaging in evidence-based practice and increasing school-family partnering.

### **Complementary Health Approaches Among Medical Professionals**

Although there is a gap in research about school psychologists and complementary health approaches, studies of medical professionals around the world have explored attitudes and use of complementary health approaches both in general as well as related to specific diseases and conditions (Haltermann-Cox, 2006; Holroyd et al., 2008; Lee et al., 2002; Nedrow et al., 2007; Sewitch et al., 2008; Song, John, & Dobs, 2007; Stange et al., 2008; Yildirim et al., 2010). Among Korean doctors, those with Western medical training were more likely to have negative attitudes toward CHA than those with oriental medicine training (Lee et al., 2002). More than half of those surveyed in a study of German physicians reported favorable attitudes toward CHA, supported implementation of CHA in their practice, and integrated CHA training in the education of medical students (Stange et al., 2008). A literature review of 21 surveys of Canadian and American medical professionals (including social workers, dietitians, nurses, pharmacists) indicated all providers were seeking more information about CHA (Sewitch et al., 2008). Doctors in these studies showed more negative attitudes toward CHA compared with other health professionals but positive attitudes did not necessarily

correlate with referral patterns (Sewitch et al., 2008). In a survey of the Johns Hopkins Medical School, 93% of faculty, nurses, and students who responded to a survey disseminated via email bulletin board favored teaching about CHA in standard medical school curriculum (Song et al., 2007). This study found that knowledge of CHA was significantly correlated with personal use of these modalities and that nurses were most likely to recommend a complementary health approach (Song et al., 2007). Finally, in an unpublished thesis about attitudes and knowledge of CHA among first and second year medical students, medical student respondents indicated that basic knowledge of CHA was a requirement for effective patient communication; when survey respondents had negative attitudes toward CHA, their skepticism about the empirical basis for the treatment approach remained even when they were given more information about the modalities (Halterman-Cox, 2006). These studies of professionals within medical communities suggested that CHA attitudes influenced professional practice.

### **Complementary Health Approaches Among Psychologists and Marriage and Family Therapists**

Psychologists and marriage and family therapists (MFTs) are experiencing an increase in awareness and use of CHA in their professions (Bassman & Uellendahl, 2003). In a study of 426 MFTs, slightly less than half of the respondents indicated they made referrals to CHA practitioners with whom they had a professional relationship. Reasons for referrals to CHA professionals included depression, anxiety, stress, and other emotional and mental health impairments. In this study, respondents reported their knowledge of CHA occurred primarily through personal exploration (Caldwell et al., 2006). More recently, the behavioral intentions of psychologists in training have been



studied to determine whether new practitioners intended to integrate CHA into their practice. Aspiring practitioners who were strong intenders were more likely to perceive positive outcomes of integrating CHA while weak intenders were more skeptical of integration. Recommendations from this study included focusing on increasing positive attitudes toward CHA when policy and education initiatives were developed to promote CHA as something that could and should be integrated into the practice of psychology (Wilson et al., 2012).

Although there are currently no studies of school psychologists and CHA, the findings from studies of related professions—namely medicine and psychology—suggest that the attitudes and practices of various helping professionals as they relate to CHA, as well as their own personal experiences with CHA, are part of a global trend with significant implications. School psychologists work with families who have elected to incorporate CHA into their child’s treatment plan and, as such, they must be prepared to address these approaches in their conferencing and intervention development. Just as school psychologists reported participating in medication monitoring (Cushman et al., 2004) and behavioral intervention involvement (Borick, 2011), so too should they engage in treatment by monitoring emerging interventions. Exploring the attitudes and practices of school psychologists highlights the potential need for efforts to improve attitudes toward CHA, supplements the knowledge base school psychologists possess to aid in effective communication with parents, and illuminates other professional implications.

### **Summary**

This chapter provided an overview of research related to the history of ADHD from early depictions of inattention and hyperactivity in the 18<sup>th</sup> century to the current

diagnostic criteria and conceptualizations outlined in the DSM-5 (APA, 2013).

Etiological considerations were also explored including genetic, environmental, and neurobiological influences and the prevalence and functional consequences of ADHD were described. The next portion of the chapter explored the role of schools and school psychologists in the treatment of ADHD. Bronfenbrenner's (1977) systems-ecological theory was offered as a theoretical frame in which this study took place. Three facets of ADHD intervention were desired: medical, behavioral/educational, and alternative via complementary health approaches. A general definition and overview of CHA was provided and then studies of various CHA used to treat ADHD were summarized. Practical recommendations for school psychologists related to CHA were delineated and then research from related fields that examined CHA and professional practices was explored. The next chapter provides an explanation of the methods used in this study.

## **CHAPTER III**

### **METHODS**

This study used a quantitative, non-experimental, exploratory research design that employed a cross-sectional survey method to study the relationships between school psychologists' attitudes toward ADHD treatment approaches and their parent communication about complementary health approaches (CHA) for attention deficit hyperactivity disorder (ADHD). This chapter describes the methods utilized in the study including (a) participants, (b) instruments, (c) procedures, and (d) data analysis.

#### **Participants**

School psychologists practicing in school settings were the target population of this study. Participants were solicited by contacting state school psychology associations in all 50 states, Puerto Rico, and Washington D.C. using the contact information available on the 2015 NASP website. Some state associations had general email addresses posted for correspondence while others listed specific email addresses for their various board members. In all cases, every publicly available email address on a state school psychology association website was added to the distribution database for this study. A total of 425 email addresses were collected in this manner for survey distribution.

Contacts collected through these professional associations were asked to participate in the survey, share the link with colleagues, and/or post a link on their

association homepage inviting participants to respond. Snowball and/or volunteer sampling occurred when association contacts (who might or might not have been participants) shared the survey link with colleagues. Additionally, specific solicitation emails were sent to 97 professional contacts who were acquainted with the researcher. A total of 32 states are represented in the sample but it is impossible to determine which states posted a survey solicitation or forwarded the request to their entire membership. One state association required payment for survey distribution and in an effort to meet the required sample size, a fee of \$150 was paid to the California Association of School Psychologists for 30 days of website presence and email distribution.

Although previous researchers have attempted to calculate an estimated response rate using total membership of state organizations divided by responses from that given state (Cochrane & Laux, 2008; Powers, Hagans, & Busse, 2008), the nature of an online survey distributed as described above did not lend itself to calculating such a rate with any certainty because the survey link could be disseminated to non-members. An additional consideration with this sampling method was non-response bias because some potential participants might have received the survey link but opted not to respond due to their own perceptions and beliefs about the survey topic. There was no way to determine the quantity or intention of non-responders. The lack of response rate, possible response bias, and non-representativeness of the sample are discussed as limitations of this survey in the results chapter.

All school psychologist interns and school psychologists currently practicing in school settings met the inclusion criteria for the study. Respondents who endorsed an early item indicating they were not school psychologists currently practicing in a school

setting were not permitted to proceed to the survey in Qualtrics. A power analysis using seven predictor variables indicated an  $N = 192$  was required for a medium effect size. The study yielded 260 participants, which was a large enough sample to complete the multiple linear regressions that addressed the research questions.

### **Instruments**

The survey instrument was constructed by the researcher using literature pertaining to complementary health approach attitudes, conventional ADHD treatment approaches, demographic variables that influenced CHA attitudes, and literature pertaining to school psychologists' communication with parents. The measure of attitudes toward ADHD treatment was adapted from an existing measure (Wilson & White, 2007) described in depth below. No existing reliability or validity information was available for the instrument as a whole but subsequent sections of this chapter address information that was gathered and considered to address this deficit.

The variables in this study were measured using a self-report survey in which participants were asked to report their attitudes toward three ADHD treatment approaches (medication, behavioral treatment, complementary health approaches), their parent communication behaviors about CHA, their personal experience with CHA, their perceived level of their community's acceptance of CHA, their primary practice setting, the free and reduced price lunch rate of their primary practice setting, and selected demographics. In sum, the attitudes measure was adapted from an existing measure and the remaining survey items were researcher-developed.

### **School Psychologist Attitudes Toward Attention Deficit Hyperactivity Disorder Treatment Approaches**

This section of the survey was comprised of items that addressed school psychologists' attitudes toward medication treatment of ADHD, behavioral treatment of ADHD, and complementary treatment of ADHD. The attitudes measure was based on The Psychologist Attitudes Toward Complementary and Alternative Therapies Questionnaire (PATCAT; Wilson & White, 2007), an 11-item, self-report questionnaire used to assess psychologists' attitudes toward complementary and alternative therapies. Because the language related to complementary treatment has shifted from complementary and alternative treatment to complementary health approaches, the abbreviation CHA was adopted throughout this study. The PATCAT items assessed psychologists' attitudes about whether complementary therapies were a threat to public health, whether training on complementary treatments should have been included in psychology training programs, and whether clinical care should integrate both conventional and alternative practices (Wilson & White, 2007). Internal consistency of the PATCAT was high (Cronbach's  $\alpha = .89$ ) on the sample of 163 participants used in the development of the scale. For the purposes of this study, some of the PATCAT items were modified by the researcher, which could have had an effect on reliability. Specifically, the term *school psychology/school psychologist* was substituted on items where the term *psychology* or *psychologist* was used. Because school psychologists work with *students* and *families*, this terminology was used in place of *clients*. Additionally, because the focus of this study was school psychologists' work with students with ADHD, this term was used in lieu of *psychological conditions*. A complete version of

the PATCAT items utilized in the development of the ADHD Treatment Attitudes Scale can be found in Appendix A.

To explore attitudes toward the two additional identified treatment approaches for ADHD, parallel items were written by the researcher for both medication treatment and behavioral treatment of ADHD, preserving the wording and intent of each item to the fullest extent possible. Respondents used a 5-point Likert-type scale to indicate the degree to which they agreed with each item: 0 = *Strongly Disagree*, 2 = *Neither Agree Nor Disagree*, 4 = *Strongly Agree*. Cronbach's alpha was calculated for this adapted and expanded measure of treatment attitudes to measure internal consistency of the items within each of the three treatment domains: medication, behavior, and CHA. Negatively worded items were reverse scored. High overall scores on each scale—calculated as a total sum of scale responses—indicated generally positive attitudes toward each of the treatment approaches.

**Personal experience with complementary health approaches.** School psychologists were asked to report their own level of personal experience with complementary health approaches by responding to a single question that asked them to rate the frequency with which they had utilized a complementary health approach ranging from *Never have used a CHA* (0) to *Very frequently used a CHA* (4). In the body of the question, participants were given an overall definition of CHA that entailed the three categories of Body/Mind Practices, Natural Products/Diet, and Whole Health Systems outlined by the National Institutes of Health (2013).

**Perceptions of community acceptance of complementary health approaches.** Participants were asked to report their perceptions of the acceptance of CHA within the

community where their school was situated by rating the CHA acceptance level from *Not at all accepted* (0) to *Highly accepted* (4) with a value of 2 representing a perception of neutrality toward CHA.

**Primary practice setting.** Participants were asked to report information about the setting in which they spent most of their work time. The two items in this area included level of primary practice setting (early childhood, elementary, and secondary) and free and reduced price lunch rate as defined by the National Center for Education Statistics (Kena et al., 2013). The free and reduced price lunch rate (FRPL) is a proxy measure for socioeconomic status within a school. The National Center for Education Statistics defines those with FRPL rates less than or equal to 25% as low poverty schools and those with FRPL rates greater than or equal to 75% as high poverty schools.

### **School Psychologist-Parent Communication Behavior Survey (SP-PCB)**

This section of the survey included items that addressed the frequency with which school psychologists communicated with parents about complementary health approaches in various professional contexts (IEP meetings, conferences, email communication, etc.). A 5-point Likert-type scale was used to gather frequency information (0 = *Never*, 4 = *Very Frequently*). In addition to addressing frequency of communication about CHAs in general, respondents to this portion of the survey were asked to provide data using the same Likert-type scale about the frequency with which specific CHAs were part of their parent communication. Examples of items related to specific CHAs included “I have discussed dietary changes with parents as a CHA for ADHD,” “I have discussed Omega-3 supplementation with parents as a CHA for ADHD,” and “I have discussed massage with parents as a CHA for ADHD.” The list of CHAs for this portion of the survey was



developed using research about the most commonly used CHAs for ADHD and feedback from the pilot study (Concannon & Yang, 2005; di Sarsina et al., 2010; NIH, 2014; Sarkis, 2014; Sinha & Efron, 2005; Stubberfield et al., 1999). Total scores on the SP-PCB were indicative of high levels of parent communication behavior exhibited by the school psychologist.

In addition to measuring the frequency of specific parent communication behaviors, participants were asked to indicate their level of agreement with statements about their intent to communicate with parents if they learned of a student receiving a CHA for ADHD with various levels of research support; one example item read “If I learned that a child in my school was receiving a CHA for ADHD with research suggesting it was a harmful treatment, I would initiate communication with the parent(s) to discuss the treatment approach.” These questions were answered using a 5-point Likert-type scale (0 = *Strongly Disagree*, 4 = *Strongly Agree*). Cronbach’s alpha was calculated to examine the internal consistency of this measure. The entire version of the SP-PCB Survey can be found in Appendix B.

### **Demographic Survey Items**

Participants were asked to respond to several demographic questions, the results of which were used to describe the overall sample. Items included respondents’ sex, race, state of residence, school psychology education level, setting level (early childhood, elementary, and secondary), and classification of primary practice setting (public/private).

### **Pilot Study**

A pilot study was conducted in November 2014. The purpose of the pilot study was to address survey design issues such as clarity of survey objective and wording, comfort with participation, and survey completion time. To gather feedback about the pilot participants' experience with the survey draft, they were asked to complete the survey and then complete a brief questionnaire about their experience with the survey instrument. The questionnaire was adapted from an existing instrument (Iraossi, 2006) to guide pilot participants' feedback using open-ended questions about issues such as whether any of the items required participants to think too long or hard before responding; if any items produced irritation, embarrassment, or confusion; and if the survey took too long to complete. The questionnaire can be found in Appendix B.

After receiving Institutional Review Board approval (see Appendix C), pilot participants ( $N = 11$ ) were solicited from a group of professional acquaintances of the researcher. Pilot participants received an email and follow-up phone call or text message from the researcher to ask for their participation in the study. Participants completed the survey electronically along with the feedback questionnaire. Data from the pilot study were examined to ensure they could be used for the required statistical analyses. Feedback from pilot participants was discussed with the researcher's advisor and some revisions were made. As a result of the pilot survey, items on the parent communication survey (SP-PCB) were split into two sections for separate analysis because one set of items focused on past behaviors and one set of items focused on future intended behaviors. The wording of one item was changed from "advise families" about treatment to "provide information" about treatment. Additionally, pilot participants indicated they

had also encountered yoga, Tai Chi, and mindfulness, all of which were included in the survey upon confirming the relevance of these options in the literature.

## **Final Study**

### **Procedures**

Prior to data collection, this study was submitted to the University of Northern Colorado's Institutional Review Board (IRB) for approval (see Appendix C). Once IRB approval was obtained, the researcher requested that the survey link be posted or distributed by contacting the school psychology state associations as described in the participant section. State associations who responded that they required membership, payment, or extensive paperwork to distribute the survey were considered on a case-by-case basis. Once state associations were contacted, the survey remained active for 20 days rather than the proposed 30 because the remaining 10 days coincided with a traditional winter break most schools took. Furthermore, the desired sample size had been met in that period of time. The researcher sent reminder emails after the initial request in an effort to remind potential participants of their opportunity to participate and increase response rate. These reminders were distributed at the discretion of the state associations so no guarantees could be made that those reminders reached the prospective participants. In addition to distributing the survey link to state associations, volunteer sampling occurred when the researcher sent the survey link to professional acquaintances for distribution and/or in cases when the survey respondents themselves forwarded the link to colleagues.

The web-based survey tool used for data collection was Qualtrics. Qualtrics was selected because it is the tool subscribed to by the University of Northern Colorado.

Before the survey itself began, participants were prompted to read and respond to informed consent information. Participants clicked an “Agree” button if they chose to participate, indicating they understood and agreed to participate in the study. Potential participants who chose ‘Disagree’ were not able to continue with the survey. In the consent section of the survey, participants were also informed their participation was voluntary, confidential, and anonymous because no identifying information was collected. Other instructions to the participants included a request to complete the survey independently without the aid of other people, written or electronic publications, or other materials that would provide information outside of the respondents’ immediate personal experience. Response time to complete the entire survey was estimated to be 20 minutes; the pilot study affirmed a range of completion times from 6 to 44 minutes with an average of 14 minutes. School psychologists who chose to participate clicked on the link provided in the email from their state association or visited their state association homepage where the study link was located. The full survey can be found in Appendix B.

All participants who completed surveys were directed to a screen where they could choose to enter a drawing for one of four \$25 Visa gift cards. Those who chose to participate in the incentive drawing were then directed to a screen where they were prompted to provide their name, email address, and phone number. The winners of the drawing were selected using random selection in a statistical software program. Personal information provided for the drawing could not be matched to participant surveys in any way. The gift card drawing took place after all of the data were analyzed; the winners were notified by email and asked to confirm their mailing address, at which time the gift

cards were mailed via U.S. mail. Personal information collected electronically for the drawing was destroyed after the winners were determined and no written or electronic record was kept of winners' mailing addresses.

Data collection took place from December 1 through December 20, 2014, at which time the survey on Qualtrics was closed. Although participants were not guaranteed confidentiality, they were essentially anonymous because they did not provide any unique identifiers. The survey program, Qualtrics, assigned an ID to each survey response so participants' data were protected. Although IP Addresses could be analyzed to prevent duplicate responses, the IP address could not be traced to a specific response. Furthermore, an individual other than the owner of the computer connected to the IP address could have been the respondent so there was minimal risk of ever associating a response with a respondent. Electronic data were securely stored on a password protected external drive in a locked file in the researcher advisor's office for the requisite three-year period and then will be destroyed. During the period of storage, only the research advisor will have access to the data. All expenses related to this study were paid exclusively by the researcher.

### **Data Analysis**

In order to describe the sample, descriptive statistics of the demographic items were reviewed and are reported. Data were cleaned up before further analyses including checking for missing data, examining responses to detect duplicate IP addresses, and examining relevant assumptions. To explore how closely the variables were related, intercorrelations for all variables were calculated. To answer the research questions, standard simultaneous entry multiple linear regressions and hierarchical multiple linear

regressions were conducted. All inferential statistical analyses were conducted with a significance level of .01, a Bonferroni adjustment implemented in cases where multiple tests were run on the same data to decrease the likelihood of a Type I error (Mundfrom, Perrett, Schaffer, Piccone, & Roozeboom, 2006). Cronbach's alpha was reported for the School Psychologist ADHD Treatment Attitude Scales and SP-PCB surveys. All statistical procedures were conducted using the Statistical Package for the Social Sciences, Version 22. All results are discussed in Chapter IV of this manuscript.

## **CHAPTER IV**

### **RESULTS**

The purpose of this study was to explore the attitudes of school psychologists toward various treatment approaches to ADHD as well as variables that influenced communication between parents and school psychologists about complementary health approaches (CHA) to ADHD. The characteristics of interest in this study included treatment attitudes toward ADHD (complementary, medication, behavioral), primary setting level (early childhood, elementary, secondary), primary setting free and reduced price lunch rate (FRPL rate), personal use of complementary health approaches, and perceived community acceptance of complementary health approaches. In addition to the results of the analyses, which explored the characteristics of school psychologists that predicted their ADHD treatment attitudes and parent communication about complementary approaches to ADHD, this chapter also discusses the descriptive statistics of the sample. Within this sample, several descriptive findings illuminated the current landscape of school psychology with regard to practitioners' attitudes and experiences of complementary approaches to treating ADHD.

#### **Sample**

The population targeted in this study was school psychologists practicing in school settings. A total of 260 participants responded to the Qualtrics survey and affirmed their informed consent but only 208 participants completed the entire survey.

Incomplete survey entries were expunged using listwise deletion. There was no discernible pattern of survey drop-out behavior, suggesting the missing data occurred completely at random with small numbers of respondents terminating participation at various points throughout the survey and suggesting that listwise deletion, a robust method for dealing with missing data, would be acceptable for preparing data for multiple linear regression (Allison, 2001). Results reported were based on the remaining 208 participants. A descriptive view of the sample is provided to illuminate both demographic and professional characteristics of the participant group.

### **Demographic Characteristics**

Simple descriptive statistics are provided to analyze the demographics of the sample. Demographic variables included degree level, years of experience as a school psychologist, primary setting level, primary setting free and reduced price lunch rate (FRPL rate), school type (public/private), and state in which participants practiced. Gender and ethnicity demographics were also gathered to address the representativeness of the study sample. Personal use of complementary health approaches and perceptions of community acceptance of complementary health approaches are also described in this section (see Appendix B for a complete version of the survey, which contains all demographic items). Table 1 summarizes all demographic frequencies.



Table 1  
*Demographic Frequencies*

	Frequency	Percent
Gender		
Other	31	14.9
Female	177	85.1
Ethnicity		
White	191	91.8
African American	5	2.4
Asian American	2	1.0
Hispanic	6	2.9
Others	4	1.9
Region of the Country		
West	75	36.0
North Central	27	13.0
North East	39	18.8
South	67	32.2
Years of Experience		
10 or more	78	37.5
5-10	50	24.0
1-5	61	29.3
Intern	19	9.1
Degree Level		
Doctoral	40	19.0
Non-Doctoral	168	81.0
FRPL Rate of Primary Work Setting		
Less than 25%,	42	20.2
25-75%	109	52.4
Greater than 75%	57	27.4
Setting Level		
Early Childhood	9	4.3
Elementary	142	68.3
Secondary	57	27.4
Total	208	100.0

The sample was 81% non-doctoral level school psychologists ( $n = 168$ ) and 19% doctoral level school psychologists ( $n = 40$ ). The largest percentage of participants reported they had 10 or more years of experience as a school psychologist (37.5%,  $n = 78$ ). The second largest group of participants was school psychologists with one to five years of experience (29.3%,  $n = 61$ ) followed by those with 5 to 10 years of experience (24%,  $n = 50$ ). Survey responses from school psychologists currently completing their internship as a school psychologist comprised 9.1% of the sample ( $n = 19$ ). The majority of respondents reported their primary setting was an elementary school (68.3%,  $n = 142$ ), 27.4% of the sample reported they practiced in a secondary setting (27.4,  $n = 57$ ), and 4.3% of the sample practiced in an early childhood level setting ( $n = 9$ ).

With regard to the free and reduced price lunch rate (FRPL) at schools where respondents worked, the results were normally distributed across the three ranges with 52.4% of respondents indicating they worked in a school with a free and reduced price lunch rate between 25-50% ( $n = 109$ ). Using the FRPL rate as a proxy for poverty level, the percentage of participants who worked at low poverty schools was 20.2% ( $n = 42$ ) and the remaining 27.4% of participants worked at high poverty schools ( $n = 57$ ).

School psychologists who worked in public schools accounted for the majority of the sample (98.1%,  $n = 204$ ). When compared to recent estimates of school psychology practice settings (Castillo, Curtis, & Gelley, 2012; Curtis, Hunley, & Grier, 2002; Curtis, Hunley, Walker, & Baker, 1999), this study sample underrepresented school psychologists practicing in private schools--only 1.9% of responses came from private school psychologists compared to the national average of 9% who worked in private schools.

All four major regions of the United States were represented in the study. The majority of the participants were from Western states (36.1%; AK, AZ, CA, CO, MT, NM, NV, OR, UT, WA, WY) and Southern states (32.3%; GA, KY, LA, NC, SC, TN, TX, VA). Participants from Northeastern states (MA, MD, ME, NH, NY, RI, VT) comprised 18.8% of the sample. School psychologists from North Central states (IA, MI, MN, ND, OH, SD, WI) made up 13.1% of the sample. There were no participants from the following states: AL, AR, CT, DE, FL, HI, ID, IL, IN, KS, MO, MS, NE, NJ, OK, PA, and WV.

Within the sample, most school psychologists (74%) reported they worked within a community they described as *neutral*, *accepting* or *very accepting* of complementary health approaches in general ( $M = 3.06$ ,  $SD = .93$ ). Only one-third of respondents reported they had *never* or *almost never* utilized complementary health approaches. The majority of participants (68%) endorsed *occasional* personal use of complementary treatments ( $M = 2.91$ ,  $SD = 1.02$ ). Participants reported generally favorable attitudes toward all three treatment approaches under investigation. There was a high degree of variability among participants' communication with parents about complementary health approaches for ADHD. Means and standard deviations for all research-developed instruments are reported in Table 2.

Table 2

*Means and Standard Deviations for Researcher-Developed Instruments*

Variable	<i>M</i>	<i>SD</i>
CHA Treatment Attitude Scale	26.512	4.788
Medication Treatment Attitude Scale	25.399	3.696
Behavioral Treatment Attitude Scale	29.168	3.817
SP-PCB (Reported) Scale	21.525	17.824
SP-PCB (Intended) Scale	8.710	2.960

Generally speaking, this study sample was predominantly Caucasian (91.8%,  $n = 190$ ) and female (85.1%,  $n = 176$ ). Recent estimates of demographic prevalence among school psychologists suggest this sample might under-represent non-female school psychologists (14.9%,  $n = 31$ ) and over-represent the experiences of doctoral level school psychologists (19%,  $n = 40$ ). Estimates of gender prevalence among school psychologists indicated approximately 70-77% of practicing school psychologists are female (Castillo et al., 2012; Curtis et al., 1999, 2002). Additionally, with 19% of the sample endorsing their education level as doctoral, this sample had a slightly higher prevalence than the national average of 13-16% (Castillo et al., 2012; Lewis, Truscott, & Volker, 2008).

With regard to the ethnicity of the sample, it was difficult to determine whether the sample was representative of minorities in practice because prevalence estimates varied in the literature depending on whether survey respondents were members of NASP. Non-NASP member school psychologists appeared to be a more diverse group

with an estimate of 18.9% minority practitioners (Yakimowski, 2013). In this study sample, 8.2% of the participants endorsed a minority category, which more closely aligned with the 9.3% estimate of minority demographics collected in the NASP membership survey (Castillo et al., 2012).

In summary, this sample was most representative of female, Caucasian, non-doctoral school psychologists practicing in Western and Southern regions of the United States. Although the sample was not random, the characteristics of participants closely aligned with demographic data about school psychologists as described. These demographic and descriptive factors should be considered when interpreting the results of this study.

#### **Descriptive Statistics Related to Complementary Health Approach Treatment Attitudes**

Although not the primary focus of the first research question, which explored relationships among variables, there was an exploratory component of this inquiry that revealed general ADHD treatment attitudes among the sample of school psychologists who participated in this study. When examining the descriptive statistics related to overall attitudes of school psychologists toward complementary health approaches to ADHD as measured by the CHA Treatment Attitudes Scale, purely descriptive findings suggested many school psychologists believed these approaches did not pose a threat to public health but should be subjected to more scientific testing before school psychologists accepted them. Furthermore, school psychologists in this study indicated traditional treatments of ADHD could benefit from ideas and methods present in complementary approaches and this blend of modalities should be present in school psychology services.

Although most school psychologists who responded to the survey indicated they agreed they should provide parents with information about the efficacy of CHA for ADHD and that knowledge of CHA was important to the work they did, only a small portion of school psychologists reported receiving training in their school psychology degree program about CHAs for ADHD. The majority of respondents reported the practice of school psychology should integrate the best of conventional and complementary practices in treating ADHD.

A brief review of CHA treatment attitudes based on years of experience within the field of school psychology indicated that recent graduates had lower scores on the scale, suggesting a slightly less favorable attitude toward complementary treatments than their more experienced peers. Table 3 provides the means and standard deviations for CHA Treatment Attitude scores based on years of experience.

Table 3

*Complementary Treatment Attitude Scale by Years of Experience*

Years of Experience	<i>M</i>	<i>SD</i>
> 10 years	26.74	4.87
5-10 years	26.90	4.85
1-5 years	26.44	4.86
Intern	24.84	3.95

Table 4 presents a complete overview of item responses. These descriptive findings are provided purely to highlight the attitudes represented within this sample but because they are non-inferential, the findings should not be overgeneralized.

Table 4

*Summary of Descriptive Statistics for Research Question 1*

CHA Scale Items	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
School psychologists should be able to provide families information about the efficacy of commonly used complementary health approaches to treating ADHD.	1.0	4.8	20.8	62.8	10.6
Information about complementary health approaches to treating ADHD should have been included in my psychology degree curriculum.	0.5	8.2	29.3	49.0	13.0
Information about complementary health approaches to treating ADHD was included in my psychology degree program.	24.0	46.6	13.5	13.9	1.9
Knowledge about complementary health approaches to treating ADHD is important to me as a practicing school psychologist.	0.5	4.3	21.2	63.0	11.1
School psychology services should integrate the best of CHA in ADHD treatment.	0.0	2.4	15.9	60.6	21.2
CHA to ADHD include ideas and methods from which conventional treatment modalities (such as medication and behavioral treatment) could benefit.	0.0	1.4	23.6	63.9	11.1
A number of CHAs hold promise for the treatment of ADHD.	0.5	10.6	51.4	32.7	4.8
CHAs to treating ADHD should be subject to more scientific testing before they are accepted by school psychologists.	0.0	6.3	18.3	51.9	23.6
CHA to ADHD treatment can be dangerous in that they may prevent people from getting proper treatment.	5.3	35.1	36.5	20.2	2.9
CHA to ADHD treatment represent a confused and ill-defined approach.	8.2	49.0	30.8	11.1	1.0
CHA to treating ADHD are a threat to public health.	26.4	60.1	11.5	1.4	0.5

### **Descriptive Statistics Related to Medication Treatment Attitudes**

Although not the primary focus of the second research question, descriptive statistics related to attitude survey responses were examined to explore attitudes among the sample of school psychologists toward medication treatment of ADHD. This portion of the analysis was exploratory with no hypothesis. School psychologists in this study agreed that possessing and providing information about the efficacy of pharmacological treatment to ADHD was an important part of their job. Most also reported that information about pharmacological treatment should have been included in their psychology degree program but a smaller number reported it was included in the curriculum. Participants reported that medication is a promising treatment for ADHD but more than half also reported pharmacological treatment of ADHD should be subjected to more testing to be further accepted within the practice of school psychology. Taking medication for ADHD was not perceived as an obstacle to proper ADHD treatment nor a threat to personal or public health. Table 5 presents a complete overview of item responses. These descriptive findings are provided purely to provide medication treatment attitudes represented within this sample but because they were non-inferential, the findings should not be overgeneralized.



Table 5

*Summary of Descriptive Statistics for Research Question 2*

Medication Scale Items	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
School psychologists should be able to provide families information about the efficacy of medication for ADHD treatment.	1.9	11.5	13.0	59.1	14.4
Information about medication for ADHD treatment should have been included in my psychology degree curriculum.	0.0	2.9	15.9	62.5	18.8
Information about medication for ADHD treatment was included in my psychology degree program.	3.4	18.3	14.9	54.8	8.7
Knowledge about medication for treating ADHD is important to me in my work as a practicing school psychologist.	0.5	1.0	7.2	66.8	24.5
School psychology services should represent only conventional treatments for ADHD.	13.0	61.1	21.6	3.8	.5
Medication holds promise in the treatment of ADHD.	0.5	0.0	17.8	64.9	16.8
Medication for treating ADHD should be subject to more scientific testing before being accepted by school psychologists.	1.0	20.2	29.3	41.3	8.2
Medication treatment of ADHD may be dangerous because it may prevent families from getting proper treatment.	10.1	49.0	26.0	13.9	1.0
Medication treatment of ADHD represents a confused and ill-defined approach.	13.0	57.7	24.5	4.8	0.0
Medication treatment of ADHD is a threat to public health.	24.0	54.3	16.8	4.3	.5

### Descriptive Statistics Related to Behavioral Treatment Attitudes

The following results are purely exploratory. Caution should be exercised in overgeneralizing the descriptive findings derived from this study's specific sample of school psychologists. Responses from school psychologists about their attitudes toward behavioral approaches to treating ADHD generally indicated favorable opinions of the

treatment approach. The majority of participants reported that behavioral intervention information related to ADHD should have been, and indeed was, included in their training program. Participants generally reported that these approaches were promising for treating the disorder without posing a threat to the individual receiving the treatment or to public health. Approximately one-third of responses suggested more scientific testing of behavioral approaches would be germane to the practice of school psychology. Table 6 provides a complete overview of item responses. Consistent with the caveat proffered for the previous two research questions, these descriptive findings about school psychologists' attitudes toward behavioral treatments for ADHD were purely exploratory and, as such, should not be overgeneralized.

Table 6

*Summary of Descriptive Statistics for Research Question 3*

Behavioral Treatment Scale Items	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
School psychologists should be able to provide families with information about the efficacy of behavioral treatment of ADHD treatment.	0.5	0.5	2.9	53.4	42.8
Information about behavioral treatment of ADHD treatment should have been included in my psychology degree program.	0.0	1.0	11.1	50.0	38.0
Information about behavioral treatment for ADHD treatment was included in my psychology degree program.	1.4	5.8	7.7	58.7	26.4
Knowledge about behavioral treatments for ADHD is important to me in my work as a practicing school psychologist.	0.0	0.0	1.0	44.7	54.3
Conventional treatments for ADHD should be the only treatments represented in school psychology services.	19.2	55.3	22.1	2.9	0.5
Behavioral approaches hold promise in the treatment of ADHD.	0.0	0.5	4.3	57.7	37.5
Behavioral approaches to treating ADHD should be subject to more scientific testing before being accepted by school psychologists.	5.3	29.8	31.3	28.4	5.3
Behavioral approaches to treating ADHD may be dangerous because it may prevent families from seeking proper treatment.	22.6	56.7	17.3	3.4	0.0
Behavioral treatment of ADHD represents a confused and ill-defined approach.	31.7	54.3	11.5	1.9	0.5
Behavioral treatment of ADHD is a threat to public health.	47.6	46.6	4.8	1.0	0.0

### **Descriptive Statistics Related to Reported Parent Communication**

Participants were asked to report the frequency with which certain general communications about CHA for ADHD had occurred in the previous 12-18 months. Generally speaking, school psychologists reported they were responding to parent-initiated communication about CHA for ADHD and were also initiating conversations about CHA. School psychologists reported the following CHA parent communication behaviors occurred at least *occasionally*, if not *frequently*, or *very frequently*: Attended an IEP meeting where CHAs for ADHD were discussed, attended a parent-teacher conference where CHAs for ADHD were discussed, gathered information about CHA for ADHD by parent request, gathered information about CHA for ADHD voluntarily, and shared research about CHA efficacy with parents. Remarkably, only 8.4% of respondents indicated they had been given guidance from their school or district about how to handle CHAs for ADHD with the parents in their school community. Table 7 provides an overview of the frequency with which school psychologists and parents communicated about CHAs for ADHD in general.

Table 7

*General Descriptive Statistics for Parent Communication*

SP-PCB Items	Percentage Endorsing Each Level of Frequency				
	0	1	2	3	4
I attended an IEP meeting where CHA for ADHD were discussed.	28.9	35.3	31.4	3.4	1.0
I attended a parent teacher conference where CHA for ADHD were discussed.	42.2	26.0	28.4	2.5	1.0
I have gathered information about CHA for ADHD to share with parents at their request.	58.8	19.6	18.6	2.0	1.0
I have gathered information about CHA for ADHD of my own accord to share with parents.	52.0	26.5	16.2	3.9	1.5
I have shared research about CHA efficacy for ADHD treatment with parents.	53.9	24.0	18.6	2.0	1.5
I have discussed CHA for ADHD in a phone call with a parent.	54.9	27.0	16.2	1.0	1.0
I have had email communication with a parent about CHA for ADHD.	69.1	20.6	8.3	1.0	1.0
I have received guidance from my school or district about how to handle CHA for ADHD with our parent community.	80.4	11.3	6.4	1.5	0.5
Parents have disclosed to me that they are using CHA for ADHD.	19.6	23.0	44.6	11.3	1.5
I have initiated conversations with parents about CHA for ADHD.	54.9	28.9	12.7	2.9	0.5
Parents have initiated conversations with me about CHA for ADHD.	25.5	28.9	37.3	7.8	0.5
I have encouraged parents to seek CHA support to treat their child's ADHD.	58.8	21.1	17.6	2.0	0.5
I have dissuaded parents from pursuing a CHA for ADHD.	82.4	13.2	3.9	0.5	0.0
I have been asked for information about a specific CHA for ADHD by parents in my school setting.	62.7	21.6	13.7	2.0	0.0
I have been asked for general information about CHA for ADHD by parents in my school.	55.4	24.5	17.2	2.5	0.5

More than a quarter of respondents indicated they had at least occasionally discussed with parents the following six specific CHAs for ADHD: cognitive training, dietary changes, martial arts, relaxation, yoga, and mindfulness training. School psychologists were least likely to have discussed culturally-based practices such as *jinja*, *shin jyutsu*, *Curanderismo*, *Ayurveda*, Chinese Medicine, Native American Medicine as CHAs for ADHD. More than 90% of respondents reported they had never discussed these treatments in the previous 12-18 months of practice. Table 8 provides an overview of the frequency with which school psychologists in this study discussed specific CHAs for ADHD with parents.

Table 8

*Specific Descriptive Statistics for Parent Communication*

SP-PCB Items	Percentage Endorsing Each Level of Frequency				
	0	1	2	3	4
I have discussed homeopathy.	72.5	21.6	4.9	1.0	0.0
I have discussed naturopathy.	77.0	18.6	3.9	0.5	0.0
I have discussed neurofeedback.	68.6	21.1	7.8	2.5	0.0
I have discussed biofeedback.	62.7	26.5	8.3	2.5	0.0
I have discussed cognitive training.	35.3	27.5	29.4	7.8	0.0
I have discussed herbal supplementation.	58.8	25.0	15.2	1.0	0.0
I have discussed dietary changes.	31.4	35.8	24.5	6.9	1.5
I have discussed omega-3 supplementation.	69.1	17.2	10.8	1.5	1.5
I have discussed massage.	84.3	10.8	4.9	0.0	0.0
I have discussed energy work.	81.4	6.4	6.9	4.9	0.5
I have discussed chiropractic treatment.	83.3	11.8	3.9	1.0	0.0
I have discussed martial arts.	46.6	21.1	26.0	6.4	0.0
I have discussed acupuncture.	88.7	7.8	2.9	0.5	0.0
I have discussed relaxation.	32.8	27.5	25.0	13.2	1.5
I have discussed <i>jin shin jyutsu</i> .	93.6	2.9	2.9	0.5	0.0
I have discussed <i>Curanderismo</i> .	97.1	2.0	1.0	0.0	0.0
I have discussed <i>Ayurveda</i> .	97.1	2.5	0.5	0.0	0.0
I have discussed Chinese Medicine.	95.1	4.4	0.5	0.0	0.0
I have discussed Native American medicine.	94.6	4.4	1.0	0.0	0.0
I have discussed a culturally specific approach.	83.8	9.8	5.9	0.5	0.0
I have discussed yoga.	54.4	20.6	20.6	3.9	0.5
I have discussed <i>tai chi</i> .	86.8	7.4	5.4	0.5	0.0
I have discussed mindfulness training.	50.0	20.6	20.1	8.8	0.5

0=Never, 1=Rarely, 2=Occasionally, 3=Frequently, 4=Very Frequently

### Descriptive Statistics Related to Intended Parent Communication

School psychologists in this study reported differing intentions about when they would initiate communication with a parent about a complementary health approach to ADHD. These results are reported purely to address the exploratory elements of this

study and as such have limited generalizability. Respondents agreed they were more likely to initiate communication if they were aware of a student receiving a CHA for ADHD with research indicating the treatment was harmful. However, only two-thirds of participants agreed or strongly agreed they would initiate communication in this case. Participants' responses suggested that as the research support for a CHA for ADHD increases (from harmful, to absent, to limited), their likelihood of initiating parent communication about the treatment approach decreased with only one quarter of respondents agreeing they would initiate communication in these cases. However, with evidence of solid treatment efficacy, likelihood of initiating parent communication among school psychologists in this sample increased once again with more than 40% of respondents agreeing they would initiate parent communication to discuss the treatment approach. This suggested the risk of harm to a student and the strength of research support were two factors that might influence whether the participants in this study initiated communication with parents to discuss complementary health approaches to ADHD. Table 9 displays the frequencies for each intended communication item.



Table 9

*Descriptive Statistics for Intended Parent Communication*

SP-PCB Items	Percentage Endorsing Level of Agreement				
	0	1	2	3	4
If I learned that a child in my school was receiving a CHA for ADHD with...					
research suggesting it was a harmful treatment, I would initiate communication with the parent(s) to discuss the treatment approach.	1.5	10.3	20.7	53.7	13.8
no research support for effectively treating ADHD, I would initiate communication with the parent(s) to discuss the treatment approach.	5.4	26.6	40.4	24.1	3.4
limited research support for effectively treating ADHD, I would initiate communication with the parent(s) to discuss the treatment approach.	6.4	24.6	45.8	20.7	2.5
strong research support for effectively treating ADHD, I would initiate communication with the parent(s) to discuss the treatment approach.	3.0	23.6	32.0	33.0	8.4
0=Strongly Disagree, 1=Disagree, 2=Neither Agree Nor Disagree, 3=Agree, 4=Strongly Agree					

**Statistical Analyses of Research Questions**

Reliability of the scales that made up the study survey was evaluated for internal consistency. Assumptions of linear regression were analyzed to ensure the validity of the statistical tests. Pearson correlations were completed and analyzed to identify preliminary relationships among variables. Subsequently, the research questions were answered by conducting simultaneous entry multiple linear regression and hierarchical linear regression analyses.

## **Preliminary Analyses**

Three treatment attitude scales were developed by the researcher and utilized to measure school psychologists ADHD treatment attitudes. The self-report scales were adapted from the PATCAT (Wilson & White, 2007) using similar wording for each of the three treatment approaches. Internal consistency was evaluated for each of the three scales using Cronbach's alpha. Although differing criteria existed for acceptable internal consistency (Lance, Butts, & Michels, 2006), a 0.7 cutoff was selected for this study as the level of acceptability for research purposes (Anastasi & Urbina, 1997; Kline, 1999; Nunnally, 1978; Schilling, 2002). Although higher alpha coefficients are desirable, especially for applied research, the exploratory nature of this study lent itself to a more liberal criterion.

The researcher-developed 11-item CHA Treatment Attitudes Scale was employed to measure the underlying attitudes of school psychologists toward complementary health approaches to treating ADHD. The researcher-developed 10-item Behavioral Treatment Attitudes Scale was employed to measure the underlying attitudes of school psychologists toward behavioral approaches to treating ADHD. The researcher-developed 10-item Medication Treatment Attitudes Scale was employed to measure the underlying attitudes of school psychologists toward medication treatment ADHD. Finally, the researcher-developed School Psychologist-Parent Communication Behavior Scale (SP-PCB) was divided into two parts: reported parent communication (38 items) and intended parent communication (four items) about complementary health approaches to ADHD. All instruments demonstrated acceptable internal consistency with the

exception of the Medication Treatment Attitudes Scale. Table 10 presents the corresponding coefficients alpha for all researcher-developed scales.

Table 10

*Coefficients Alpha for Researcher-Developed Scales*

	Cronbach's $\alpha$
CHA Treatment Attitudes Scale	.770
Medication Treatment Attitudes Scale	.591
Behavioral Treatment Attitudes Scale	.715
SP-PCB (Reported)	.953
SP-PCB (Intended)	.817

To address the poor internal consistency of the Medication Treatment Attitudes scale and explore possible reasons for the low Cronbach's alpha, additional analyses were conducted. Item total statistics were analyzed to explore whether the removal of any item(s) would improve the alpha coefficient but no item emerged as a clear influence on the poor reliability of the scale. Table 11 displays all of the item total statistics that were evaluated.

Table 11

*Pattern Matrix of The Attitudes Toward Medication Treatment of Attention Deficit Hyperactivity Disorder Scale*

Item	Medication Attitudes Scale Item Wording	Pattern Matrix		
		1	2	3
7	Medication for treating ADHD should be subject to more scientific testing before being accepted by school psychologists.	.446		-.511
8	Medication treatment of ADHD may be dangerous because it may prevent families from getting proper treatment.	.767		
9	Medication treatment of ADHD represents a confused and ill-defined approach.	.801		
10	Medication treatment of ADHD is a threat to public health.	.809		
1	School psychologists should be able to provide families with information about the efficacy of medication for ADHD treatment		.707	
2	Information about medication for ADHD treatment should have been included in my psychology degree program.		.791	
3	Information about medication for treating ADHD was included in my psychology degree program.		.458	
4	Knowledge about medication for treating ADHD is important to me in my work as a practicing school psychologist.		.753	
6	Medication holds promise in the treatment of ADHD.		.553	
5	School psychology services should represent only conventional treatments for ADHD			.868

*Note.* Extraction Method: Principal Component Analysis  
 Rotation Method: Oblimin with Kaiser Normalization  
 Rotation converged in 8 iterations.

In addition to examining potential omissions of scale items, a principal component factor analysis was conducted to determine if factor loadings could further illuminate issues related to reliability. Table 12 displays the results of the principal component rotated factor analysis pattern matrix with Promax rotation that revealed three factors. Only two of the factors had clean loadings, suggesting that items related to medication knowledge and medication risk did form two factors within the scale. The item regarding the inclusion of medication information in psychology degree programs loaded onto two components and thus could not be attributed to one factor. The item related to additional scientific testing of medications for ADHD as well as the item about school psychology services representing only conventional ADHD treatments were the two that loaded onto the third factor but with an eigenvalue of 1.1. It was concluded this was not in fact a true component within the medication attitudes scale.

Poor internal consistency on the medication scale could have resulted from inconsistent wording related to this treatment approach; because the wording was adapted from a scale measuring complementary approaches, some of the items might have seemed inflammatory or confusing when applied to a well-researched treatment modality. The dangers of making conclusions based on this measure were two-fold: (a) misunderstandings could arise about how medication attitudes influenced school psychologists' parent communication, and (b) uncertainty about what school psychologists' attitudes toward medication remained as well as what predicted those attitudes. It is possible the variables in the second research question predicted medication attitudes but because the attitude measure was weak, this was impossible to determine.

Table 12

*Item-Statistics Totals to Address Poor Internal Consistency of Medication Attitude Scale Items*

Medication Treatment Attitude Scale Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
School psychologists should be able to provide families with information about the efficacy of medication for ADHD treatment.	22.6731	10.695	.352	.542
Information about medication for ADHD treatment should have been included in my psychology degree program.	22.4279	11.521	.359	.547
Information about medication for treating ADHD was included in my psychology degree program.	22.9279	12.473	.025	.639
Knowledge about medication for treating ADHD is important to me in my work as a practicing school psychologist.	22.2596	11.758	.355	.551
School psychology services should represent only conventional treatments for ADHD.	24.2212	13.323	-.037	.629
Medication holds promise in the treatment of ADHD.	22.4231	11.443	.427	.536
Medication for treating ADHD should be subject to more scientific testing before being accepted by school psychologists.	23.7548	11.558	.195	.587
Medication treatment of ADHD may be dangerous because it may prevent families from getting proper treatment.	22.8654	10.668	.376	.535
Medication treatment of ADHD represents a confused and ill-defined approach.	22.6106	10.983	.444	.525
Medication treatment of ADHD is a threat to public health.	22.4279	11.096	.364	.541

### **Statistical Assumptions of the Research Questions**

An evaluation of the assumptions of multiple linear regression—independence, normality, linearity, homoscedasticity, absence of multicollinearity, absence of significant outliers, or influential points—was conducted by completing a variety of statistical tests and examining plots and histograms. Independence of the residuals was observed for all models with Durbin-Watson values of approximately two for all models (Montgomery, Peck, & Vining, 2001). Linearity, normality, and homogeneity of variances were all assessed using scatterplots, histograms, and normal probability plots. Studentized residuals were plotted against predicted values and residuals formed a horizontal band on the scatterplot, indicating the linearity assumption had been met. A normal curve was evident on the histograms, indicating the normality assumption was met. Additionally, the observed cumulative probability plot (normative P-P plot) of the regression standardized residuals also revealed the data to be equally spread out over the predicted values of the dependent variables, which suggested no problems with heteroscedasticity.

Additionally, correlation matrices and Tolerance/VIF values were examined to detect the presence of multicollinearity. The correlation matrices for all of the variables can be found in Appendix D. The absence of multicollinearity was confirmed through examination of collinearity statistics; no small tolerance values (all greater than .10) and no variance inflation factors (VIF) above 10 (Pallant, 2010) were observed. The data were also examined to identify any unusual cases or influential points using the Cook's distance statistic for all models. Values greater than one should be investigated to rule out outliers and influential points within a data set but all values fell within the range of

.00 to .079, suggesting no unusual cases should be eliminated prior to conducting and interpreting the analysis of the linear regression. Therefore, the assumptions for the multiple linear regression analyses were met for all models under investigation.

### **Pearson Correlations**

Prior to examining the regression analyses, correlation matrices were evaluated to identify relationships among the variables in the research questions. Correlation coefficients for all research questions can be found in Appendix D. Although none of the independent variables (perceived level of community CHA acceptance, personal CHA use, and primary setting FRLP rate) were significantly correlated with scores on the Behavioral Treatment Attitudes Scale or the Medication Treatment Attitudes Scale, there were several significant relationships among the variables related to the CHA Treatment Attitudes Scale. There was a moderate positive relationship between personal use of complementary health approaches and CHA scale scores,  $r(206) = .449, p < .01$ . Additionally, there was a small positive relationship between CHA acceptance and CHA scale scores,  $r(206) = .206, p < .01$ ) as well as CHA acceptance and CHA personal use,  $r(206) = .220, p < .01$ ). A moderate negative relationship existed between community acceptance of CHA and a FRPL rate of >75%, suggesting participants from high poverty schools had less favorable attitudes toward complementary health approaches,  $r(206) = .300, p < .01$ ).

In the final research question exploring school psychologists' communication with parents, several variables were significantly correlated. An increase in participants' parent communication behavior was moderately correlated with an increase in CHA



attitude scale scores,  $r(206) = .386, p < .01$ ); perceived CHA acceptance in participant communities,  $r(206) = .343, p < .01$ ); and personal CHA use,  $r(206) = .414, p < .01$ ).

### **Research Question 1**

Q1 Do perceived level of community CHA acceptance, personal CHA use, and primary setting FRPL rate predict attitudes toward CHA treatment of ADHD?

The purpose of this research question was to explore the relationship between three predictor variables--school psychologists' perceived levels of community acceptance of complementary health approaches, personal use of these approaches, free and reduced price lunch rate at the school in which they work—and the criterion variable of school psychologists' attitudes toward complementary health approaches to ADHD.

Multiple linear regression analysis revealed the independent variables (community CHA acceptance, personal CHA use, and primary setting FRPL rate) predicted the dependent/criterion variable of CHA treatment attitude as demonstrated by total scores on the CHA attitude measure. The linear combination of predictor variables was significantly related to attitudes toward complementary health approaches,  $F(4,203) = 15.264, p < .0005$ . The sample multiple correlation coefficient was .481, suggesting 23.1% of variance in CHA attitude could be accounted for by the linear combination of perceived community CHA acceptance, personal CHA use, and primary setting FRPL rate. Table 13 provides a summary of the regression model.

Table 13

*Summary of Regression for Research Question 1*

Variables	<i>B</i>	SEB	$\beta$
Personal CHA Use	1.965	.295	.420***
Community CHA Acceptance	.812	.346	.156**
School Poverty Level			
Low Poverty (<25% FRPL)	-.634	.772	-.053
High Poverty (>75% FRPL)	1.215	.726	.113
$R^2$	.231		
Adj. $R^2$	.216		
$F$	15.264	***	
$N = 208$ , * $p < .05$ ** $p < .01$ *** $p < .001$			

**Research Question 2**

Q2 Do perceived level of community CHA acceptance, personal CHA use, and primary setting FRPL rate predict attitudes toward medication treatment of ADHD?

The purpose of this research question was to explore the relationship among three independent variables--school psychologists' perceived levels of community acceptance of complementary health approaches, personal use of these approaches, and free and reduced price lunch rate at the school in which they worked--and the dependent variable of school psychologists' attitudes toward medication treatment of ADHD. In light of the issues with the internal consistency of the Medication Attitudes Scale, results related to that measurement should be interpreted with caution.

Multiple linear regression analysis revealed that the independent/predictor variables (community CHA acceptance, personal CHA use, and primary setting FRPL rate) did not predict the dependent/criterion variable of medication treatment attitude as

demonstrated by total scores on the medication treatment attitude measure. The combination of predictor variables was not significantly related to attitudes toward treating ADHD with medication,  $F(4,203) = .691, p < .599$ . The sample multiple correlation coefficient was .116, suggesting that only 1.3% of variance in medication treatment attitude could be accounted for by the linear combination of perceived community CHA acceptance, personal CHA use, and primary setting FRPL rate. Therefore, none of these variables was a significant predictor of school psychologists' attitudes toward the use of medication to treat ADHD. Table 14 presents a summary of the regression model.

Table 14

*Summary of Regression for Research Question 2*

Variables	<i>B</i>	SEB	$\beta$
Personal CHA Use	-.224	.258	-.062
Community CHA Acceptance	-.022	.302	-.006
School Poverty Level			
Low Poverty (<25% FRPL)	.956	.675	.104
High Poverty (>75% FRPL)	.147	.629	.018
$R^2$	.013		
Adj. $R^2$	-.006		
$F$	.691		
$N = 208, *p < .05 \quad ** p < .01 \quad *** p < .001$			

### Research Question 3

- Q3 Do perceived level of community CHA acceptance, personal CHA use, and primary setting FRPL rate predict attitudes toward behavioral treatment of ADHD?

The purpose of this research question was to explore the relationship among three independent variables--school psychologists' perceived levels of community acceptance of complementary health approaches, personal use of these approaches, and free and reduced price lunch rate at the school in which they work--and the dependent variable of school psychologists' attitudes toward behavioral treatment approaches to ADHD.

Multiple linear regression analysis revealed that the predictor variables (community CHA acceptance, personal CHA use, and primary setting FRPL rate) did not predict the dependent variable of behavioral treatment attitude as demonstrated by total scores on the behavioral treatment attitude measure. The combination of predictor variables was not significantly related to attitudes toward treating ADHD with behavioral treatment approaches,  $F(4,203) = .897, p < .466$ . The sample multiple correlation coefficient was .132, suggesting only 1.7% of variance in behavioral treatment scale scores was explained by this model. None of these variables—perceived community acceptance of CHA, personal use of CHA or percentage of students on free and reduced lunch—was a significant predictor of school psychologists' attitudes toward behavioral treatments for ADHD. Table 15 presents a summary of the regression model.

Table 15

*Summary of Regression for Research Question 3*

Variables	<i>B</i>	<i>SEB</i>	$\beta$
Personal CHA Use	.179	.266	.048
Community CHA Acceptance	-.203	.311	-.049
School Poverty Level			
Low Poverty (<25% FRPL)	-1.038	.696	-.109
High Poverty (>75% FRPL)	.043	.649	.005
$R^2$	.017		
Adj. $R^2$	-.002		
$F$	.897		
<hr/> N = 208, *p<.05    ** p<.01    *** p<.001			

**Research Question 4**

- Q4 Does attitude toward CHA treatment of ADHD, attitude toward medication treatment of ADHD, attitude toward behavioral treatment of ADHD, perceived level of community CHA acceptance, personal CHA use, primary setting FRPL rate, primary setting level predict school psychologists' reported and intended parent communication behavior about CHA as demonstrated by total scores on the subsections of the SP-PCB Survey?

The purpose of this research question was to explore the relationship among several predictor variables—ADHD treatment attitudes (CHA, behavioral, medication) perceived level of community CHA acceptance, personal CHA use, primary setting FRPL rate, and primary setting level—and the outcome variable of school psychologists' parent communication behaviors about complementary health approaches. The majority of the items asked participants to report past behaviors but four of the items asked for an

indication of intent to communicate. As such, two separate hierarchical regressions were conducted to illuminate school psychologists' parent communication behavior.

The first hierarchical linear regression was conducted to determine how much each set of variables uniquely added to the prediction of the dependent variable--school psychologists' reported parent communication behavior. Specifically, the sequencing of variables was chosen to determine if the addition of CHA variables (personal use and perceived community acceptance of CHA) and setting variables (level and FRPL rate) improved the prediction of school psychologists' parent communication behavior over and above their ADHD treatment attitudes alone. Table 16 presents a full overview of each regression model. The full model of ADHD treatment attitudes (CHA, medication, behavioral), personal CHA use, perceived community CHA acceptance, FRPL rate, and primary setting level to predict parent communication behavior by school psychologists was statistically significant,  $R^2 = .306$ ,  $F(4,194) = 9.491$ ,  $p < .0005$ ; adjusted  $R^2 = .273$ . The addition of the second block of variables—CHA acceptance and CHA personal use—led to a statistically significant increase in  $R^2$  of .129,  $F(2,198) = 17.955$ ,  $p < .0005$ .

Table 16

*Summary of Hierarchical Regression for Research Question 4—Part 1*

	Model 1				Model 2				Model 3			
Variable	<i>B</i>	<i>SEB</i>	β		<i>B</i>	<i>SEB</i>	β		<i>B</i>	<i>SEB</i>	β	
Treatment Attitude Scales												
CHA Treatment	1.437	.241	.389	***	.818	.250	.221	***	.877	.255	.237	***
Medication Treatment	.362	.324	.075		.379	.300	.079		.334	.305	.069	
Behavioral Treatment	.188	.316	.040		.263	.293	.056		.295	.296	.063	
Personal CHA Use					4.551	1.172	.264	***	4.542	1.182	.263	***
Comm. CHA Acceptance					4.761	1.216	.244	***	4.053	1.275	.207	***
School Poverty Level												
Low Poverty (<25% FRPL)									2.063	2.879	.047	
High Poverty (>75% FRPL)									-3.369	2.613	-.085	
Setting Level												
Elementary									-2.845	5.358	-.074	
Secondary									-6.357	5.584	-.159	
<i>R</i> <sup>2</sup>	.158				.287				.306			
Adjusted <i>R</i> <sup>2</sup>	.145				.269				.273			
<i>F</i> Test	12.495	***			15.950	***			9.491	***		
Change in <i>F</i>					17.955	***			1.298			

$N = 208$ , \* $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

A final hierarchical linear regression was conducted to determine how much each set of variables uniquely added to the prediction of the dependent variable--school psychologists' intended parent communication about CHA for ADHD. Specifically, the sequencing of variables was chosen to determine if the addition of CHA variables (personal use and perceived community acceptance of CHA) and setting variables (level and FRPL rate) improved the prediction of school psychologists' intent to communicate over and above their ADHD treatment attitudes alone. Table 17 provides full details on each regression model. The full model of ADHD treatment attitudes (CHA, medication, behavioral), personal CHA use, perceived community CHA acceptance, FRPL rate and primary setting level to predict intended parent communication behavior by school psychologists was not statistically significant,  $R^2 = .048$ ,  $F(4,194) = 1.096$ ,  $p < .0005$ . Neither the addition of the second or third block of variables—community CHA acceptance and personal CHA use nor setting level and FRPL rate—led to a statistically significant increase in  $R^2$ .



Table 17

*Summary of Hierarchical Regression for Research Question 4--Part 2*

Variable	Model 1			Model 2				Model 3		
	<i>B</i>	<i>SEB</i>	$\beta$	<i>B</i>	<i>SEB</i>	$\beta$		<i>B</i>	<i>SEB</i>	$\beta$
Treatment Attitude Scales										
CHA Treatment	.039	.043	.063	.047	.048	.076		.048	.049	.078
Medication Treatment	.127	.057	.158	.129	.057	.161	*	.139	.058	.174
Behavioral Treatment	-.036	.055	-.047	-.042	.056	-.055		-.052	.056	-.067
Personal CHA Use				.062	.226	.022		.065	.228	.023
Comm. CHA Acceptance				-.331	.231	-.103		-.328	.244	-.102
School Poverty Level										
Low Poverty (<25% FRPL)								-.613	.546	-.084
High Poverty (>75% FRPL)								-.245	.508	-.037
Setting Level										
Elementary								.265	.444	.042
Secondary								.357	.584	.159
$R^2$	.026			.036				.044		
Adjusted $R^2$	.012			.012				.006		
$F$ Test	1.819			1.505				1.148		
Change in $F$				1.032				.571		

$N = 208$ , \* $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

### Summary

This chapter reported results of multiple linear regression and hierarchical regression to address the characteristics that predicted school psychologists' ADHD treatment attitudes and parent communication behaviors. The sample ( $N = 208$ ) was comprised primarily of female, Caucasian, non-doctoral school psychologists practicing in the Western and Southern regions of the United States. All statistical assumptions— independence, normality, linearity, homoscedasticity, absence of multicollinearity and absence of significant outliers—were met prior to conducting analyses. With regard to the first research question, multiple linear regressions revealed personal CHA use was the most significant predictor of CHA for ADHD treatment attitudes with perceptions of community acceptance also meeting the required significance level. School poverty level was not a significant predictor of CHA treatment attitude. None of the independent variables—personal CHA use, perceived community acceptance of CHA or school poverty level—predicted school psychologists' attitudes toward pharmacological or behavioral treatment to ADHD, suggesting that personal CHA use did not bias school psychologists against evidence-based treatments for ADHD.

Hierarchical regressions were conducted to explore the relationship between school psychologist variables and their communication with parents about CHA for ADHD. The independent variables that significantly predicted parent communication included personal CHA use, perceived community acceptance of CHA and high scores on the CHA Treatment Attitudes Scale. School psychologists' attitudes toward treating ADHD with behavioral supports or medication did not predict their parent communication about complementary treatment options. None of the independent

variables in this model—treatment attitude, personal CHA use, community CHA acceptance, school poverty level or setting level—predicted school psychologists' intent to communicate with parents about CHA for ADHD with varying levels of research support.

Descriptive statistics were reported to address the exploratory aspects of this study. While the findings from these non-inferential analyses have limited generalizability, the results provided additional context to consider when interpreting the results of the inferential analyses. General descriptive findings indicated participants in the sample possessed generally positive attitudes toward all three ADHD treatment approaches—CHA, pharmacological, and behavioral. Participants also reported they were communicating with parents about CHA for ADHD at IEP meetings and parent-teacher conferences. They also gathered CHA treatment information both upon request and of their own accord to differing degrees. More than a quarter of respondents indicated they had at least occasionally discussed with parents six specific CHAs for ADHD: cognitive training, dietary changes, martial arts, relaxation, yoga, and mindfulness training. Participants were most likely to contact parents in two extreme scenarios related to CHA for ADHD: (a) if they learned of information indicating the treatment was harmful and (b) if they learned there was strong research support for a CHA treatment they knew a student was receiving.

## **CHAPTER V**

### **DISCUSSION**

The primary purpose of this study was to investigate attention deficit hyperactivity disorder (ADHD) treatment attitudes of school psychologists and their communication with parents about complementary health approaches (CHA) to ADHD. Various characteristics including personal CHA use, perceived community acceptance of CHA, and socioeconomic status of practice settings were examined to explore whether these characteristics were related to school psychologists' attitudes toward three modes of ADHD treatment: pharmacological treatment, behavioral treatment, and complementary health approaches. Additionally, the same variables were explored to understand their influence on parent communication about complementary health approaches to ADHD. Percentages of school psychologists who reported various beliefs and experiences about the three ADHD treatment approaches within the context of their practice as a school psychologist as well as their communication with parents about CHA for ADHD were reported to address the exploratory aspects of this study.

This study adds to the limited body of research pertaining to complementary health approaches to ADHD within the practice of school psychology. This chapter reviews the methods and procedures utilized in this quantitative, non-experimental study that employed a web-based self-report survey. Discussion of the study findings as well

as related implications are explored in this chapter. The chapter concludes by addressing limitations of the study and presenting future areas for research.

### **Summary**

While a day in the life of a school psychologist might vary from place to place, a high likelihood exists that a school psychologist will encounter a child with ADHD, a disorder that affects 6.4 million children between the ages of 4-17 and represents a national prevalence rate of 11% in the United States (Centers for Disease Control, 2013). The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM; APA, 2013) defines ADHD as a neurodevelopmental disorder characterized by a pattern of inattentive, hyperactive, and/or impulsive behaviors that occur across settings such as home and school.

Multi-modal treatment of ADHD—comprised of psychopharmacological treatment, educational strategies, and behavioral support—has the strongest empirical foundation (Brock et al., 2009). However, complementary health approaches (CHA) are burgeoning fields of treatment for numerous ailments and disorders including ADHD. The National Institutes of Health (NIH; 2014) defines complementary health approaches as treatment that does not completely eschew conventional medicine but relies on the use of natural products, mind and body practices, or whole health systems (such as homeopathy or Ayurveda) to treat disease and disorder. Nearly 12% of children who were the subject of the NIH's National Health Interview Survey had utilized a complementary health product or practice in the previous year. Attention deficit hyperactivity disorder was in the top five disorders for which CHAs were used to treat children (NIH, 2014).

Although school psychologists receive training about both ADHD assessment and intervention and are ethically obligated to be responsible research-based practitioners (NASP, 2010b), there are gaps in the research about the extent to which current research has informed practice, especially with regard to parent communication about complementary health approaches to treating ADHD. Examining the communication practices and characteristics of school psychologists who work with students with ADHD is vital because this population represents up to a third of a school psychologist's caseload (Borick, 2011). Investigating the practices and attitudes of school psychologists related to ADHD and CHA might be useful for guiding ADHD treatment planning and ultimately could improve outcomes for children facing the impact of this disorder. Furthermore, understanding the current professional practices of school psychologists with regard to ADHD and CHA might increase the likelihood that practitioners in the field are prepared to discuss emerging treatments with colleagues and families who are journeying together to help a child succeed in school and in life (Brock et al., 2009).

#### **School Psychologists' Attention Deficit Hyperactivity Disorder Treatment Attitudes**

**Attitudes toward complementary health approaches treatment.** When examining the overall attitudes of school psychologists toward complementary health approaches to ADHD, many believed these approaches did not pose a threat to public health (84%) but should be subject to more scientific testing before school psychologists accept them (40%). Furthermore, school psychologists in this study indicated traditional treatments of ADHD could benefit from ideas and methods present in complementary approaches (72%) and this blend of modalities should be present in school psychology

services (72.8%). While most school psychologists who responded to the survey indicated they agreed they should provide parents with information about the efficacy of CHAs for ADHD (73%) and that knowledge of CHA was important to the work they did (73%), only a small portion of school psychologists (17%) reported receiving training in their school psychology degree program about CHAs for ADHD. These findings suggested school psychologists were open-minded when it came to non-traditional interventions for ADHD and as such there is room in the field for more training and discourse around the applicability of complementary health approaches.

School psychologists who had personally used complementary health approaches and who perceived their community as neutral or accepting toward CHA were more likely to have positive attitudes toward treating ADHD with a complementary approach. Within the sample, most school psychologists (74%) reported they worked within a community they would describe as *neutral*, *accepting* or *very accepting* of complementary health approaches in general ( $M = 3.06$ ,  $SD = .93$ ). Only one-third of respondents reported they personally had *never* or *almost never* utilized complementary health approaches; the majority of participants (68%) endorsed *occasional* personal use of complementary treatments ( $M = 2.91$ ,  $SD = 1.02$ ). The socioeconomic status of the setting in which a school psychologist practiced was not a significant predictor of school psychologists' attitudes toward complementary health approaches despite the fact that complementary health approaches were generally more accessible and more commonly utilized within more affluent communities (Clarke et al., 2015). Finally, school psychologists who were trained most recently and were completing their internship had the most cautious attitudes toward complementary health approaches ( $M = 24.842$ ,  $SD =$

3.95) with those in the 5-10 year range of experience demonstrating the highest scores on the CHA Treatment for ADHD scale ( $M = 26.9$ ,  $SD = 4.85$ ).

**Attitudes toward pharmacological and behavioral treatment.** Within the sample, school psychologists demonstrated the most favorable attitudes toward behavioral approaches ( $M = 29.168$ ,  $SD = 3.817$ ). This finding was likely due in part to the fact that of the three approaches under investigation, behavioral intervention was the only one rooted in the field of school psychology and, as such, participants likely had training and experience with this treatment approach. Results of the medication attitudes scale—while still suggesting positive attitudes toward the approach—had the lowest mean score ( $M = 25.399$ ,  $SD = 3.696$ ), indicating that although medication remained a preferred approach relative to the other treatment options, pharmacology was the least favorable approach to ADHD. This finding should be interpreted with caution due to the lack of internal consistency associated with the scale that measured attitudes toward medication. Furthermore, consideration must be given to the fact that school psychologists are not medical doctors. There is controversy about the discussion of medication by school personnel (American Academy of Child and Adolescent Psychiatry, 1997; American Academy of Pediatrics, 2000; Demaray et al., 2003; Koonce, 2007). Results on this scale could indicate that school psychologists experienced some internal conflict about their role with regard to medication—an intervention approach generally perceived as beyond their realm of influence with regard to initiation and modification of treatment.

School psychologists' personal experiences with complementary health approaches and perceptions of their community view of these approaches did not predict



their attitudes toward the established, conventional treatments for ADHD--behavioral supports and medication. Similarly, the socioeconomic status of the setting in which a school psychologist works did not predict their attitudes toward behavioral treatment or pharmacological treatment of ADHD. This suggested that despite personal use and acceptance of CHAs, school psychologists still favorably perceived evidence-based treatment options for ADHD exactly as competent scientist-practitioners should. Personal use of CHA among school psychologists did not bias them against pharmacological or behavioral interventions.

**Attitudes toward treatment knowledge.** Most respondents reported that information about conventional ADHD treatments was included in their psychology degree curriculum (pharmacological 63.5%; behavioral 85.1%) while the inclusion of complementary approaches in degree programs was only reported by one third of participants. Overall mean scores on all three scales, however, suggested generally favorable attitudes toward all three types of treatment. This finding was interesting because it suggested formal inclusion of treatment information in a training program was not the only factor that led to favorable attitudes toward ADHD interventions. Participants were not asked about their personal use or perceived community acceptance of traditional treatment approaches but it is possible these two variables, which could lead to the acquisition of treatment knowledge through informal and experiential means, could account for favorable treatment attitudes in the absence of formal training. Additionally, knowledge about the efficacy of each treatment also appeared to be valued with the highest percentage of school psychologists agreeing that complementary approaches need to undergo more research to be accepted within the field (75.5%). However, it was

interesting to note that almost half of the respondents said medication treatments for ADHD should be subject to further study and just over one third endorsed the same concern about behavioral treatments. This suggested research findings had a significant bearing on attitudes school psychologists brought to their practice. As such, more information and training--whether acquired formally or informally—could lead to more favorable ADHD treatment attitudes, which would then inform more effective, dynamic parent communication. Ultimately, the goal of this information gathering and collaboration was to create more favorable outcomes for children undergoing treatment for ADHD.

**Prediction of Parent Communication  
About Complementary Health  
Approaches Treatment for  
Attention Deficit  
Hyperactivity  
Disorder**

Within this sample, several descriptive findings illuminated the current landscape of professional practices among school psychologists with regard to attitudes and experiences of complementary approaches to treating ADHD. School psychologists reported that the following CHA communication behaviors occurred at least *occasionally* if not *frequently* or *very frequently*: attending IEP meetings where CHAs for ADHD were discussed (35.8%), attended a parent-teacher conference where CHAs for ADHD were discussed (32.9%), gathered information about CHAs for ADHD by parent request (22.6%), gathered information about CHAs for ADHD voluntarily (21.6%), and shared research about CHA efficacy with parents (22.1%). More than a quarter of respondents indicated they had at least occasionally discussed with parents the following six specific CHAs for ADHD: cognitive training (37.2%), dietary changes (32.9%), martial arts

(32.4%), relaxation (39.7%), yoga (25%), and mindfulness training (29.4%).

Remarkably, only 8.4% of respondents indicated they had been given guidance from their school or district about how to handle CHAs for ADHD with the parents in their school community. School psychologists were responding to parent-initiated communication about CHAs for ADHD (45.6%) and were initiating conversations about CHA as well (16.1%).

With regard to parent communication, the findings of this study indicated there was a strong belief that school psychologists should be able to provide information to parents on the efficacy of all three ADHD treatment approaches. Participants agreed most strongly that school psychologists should be well versed in the efficacy of behavioral interventions (96.2%), which was consistent with their training as behavioral-oriented practitioners rather than biological-or holistic-oriented practitioners who represented the other fields of treatment. School psychologists appeared to feel most competent and empowered to communicate with parents about the intervention approaches that emerged from within the psychological disciplines.

In addition to believing school psychologists should convey information about treatment efficacy, there were variables that related to the prediction of parent communication about CHA in particular. Favorable CHA treatment attitudes coupled with personal CHA experience and perceived community acceptance of CHA significantly predicted the frequency of parent communication about alternatives to pharmacological and behavioral treatments for ADHD. As school psychologists increased their personal use of CHAs and perceived higher levels of community support, so too did their communication increase with parents about these approaches. Neither the

setting level in which school psychologists practiced (early childhood, elementary, secondary) nor the socioeconomic status (low or high FRPL rate) were significant predictors of parent communication about CHAs for ADHD. Communication between parents and schools generally decreased as children developed through adolescence and took on more responsibility for school-related communication. Thus, it was interesting that setting level was not a significant predictor of parent communication in this study. Furthermore, it was surprising that school psychologists in low poverty schools did not appear to be engaging in more frequent parent communication about CHA despite affluence being a factor in seeking CHA treatments.

School psychologists in this study reported differing intentions about when they would initiate communication with a parent about a complementary health approach to ADHD. A small percentage (16.1%) of the sample reported initiating parent communication about CHA for ADHD over the past 12-18 months. When intention to communicate was explored, respondents agreed they were more likely to initiate communication if they were aware of a student receiving a CHA for ADHD, with research indicating the treatment was harmful; however, only 66.8% of participants agreed or strongly agreed they would initiate communication in this case. On the attitude survey, most respondents reported they did not feel CHA treatments were threatening or dangerous; however, this finding suggested that if given information that indicated a CHA was indeed harmful, one-third of school psychologists would not reach out to a child's parents to collaborate on a more advantageous approach to treatment. With regard to whether the level of research support for a CHA for ADHD would influence whether a school psychologist initiated parent communication about the treatment

approach, 41% of participants agreed or strongly agreed they would initiate parent communication in cases where there was strong research support for the CHA. Fewer respondents agreed they would initiate communication in cases where there is no research support (27%) or limited research support (23%). The purpose of initiating hypothetical future parent communication was not explored in this study but these results suggested some obstacles connected to home-school communication related to complementary health approaches.

### **Implications**

School psychologists, educators in school psychology training programs, complementary health practitioners, parents, and other special educators would be interested in the results of this study. The main conclusions drawn from this study were school psychologists were encountering CHAs in their practice and their own personal use of CHA and perception of whether their communities accepted alternative approaches to ADHD treatment predicted their attitudes toward CHA for ADHD. Subsequently, these CHA treatment attitudes predicted their professional practices when it came to communicating with parents about alternatives to traditional ADHD treatment.

### **Practical Implications**

Several implications can be derived from this study to inform school psychologists' professional and intervention practices.

**Professional practice.** The findings of this study informed professional practices of school psychologists as scientist-practitioners—experts in balancing research and practice. Shaw et al. (2010) outlined three duties of school psychologists related to encounters with CHA in their practice settings: review current research on CHA

treatment efficacy, generate research support via monitoring CHA treatment efficacy using single case design, and disseminate information to parents about the research and efficacy related to CHA. The findings of this study provided preliminary insight into the fact these practices have not yet been widely adopted by school psychologists.

School psychologists are expected to work as evidence-based practitioners (EBP; Kratochwill & Shernoff, 2004; NASP, 2010). Although NASP (2010) acknowledged the importance of research-based practice, it did not formally outline a definition for this term. The American Psychological Association (Anderson, 2006) defined an EBP as a professional who “integrates the best available research with clinical expertise in the context of patient characteristics, culture and preferences” (para.1).

In a professional fact sheet prepared by The Center for Evidence-Based Practice (Strain & Dunlap, 2014), behaviors and activities in which EBPs engage were outlined. The professional activities of evidence-based practitioners included the following:

- Maintain awareness of evidence-based practices through ongoing education including reading current professional journals, books, and other materials; accessing web sites devoted to evidence-base; and participating in workshops on evidence-based practices.
- Employ daily data collection systems that track children’s progress and use this information to plan and refine instruction.
- Provide families with support, information, and training sufficient to meet their desires for participation in their child’s educational program
- Remain open to changes in service delivery based on new ideas, new data, and trends in the field that are evidence-based.

- Promote the use of evidence-based practices by the staff you supervise.  
Supervisors should encourage staff to learn about evidence-based practices, try new evidence-based approaches, and engage in an array of continuous professional development activities (Strain & Dunlap, 2014).

School psychologists as evidence-based practitioners must engage in ongoing education, data collection system development, provision of family support, and modifications to service delivery. There are numerous facets to working as an evidence-based practitioner but one of the clear themes in the definitions and professional behaviors above was information seeking. Case (2012) highlighted that information-seeking behavior is a conscious endeavor to gather new information that evolves in response to a need or gap in knowledge with an ultimate purpose of reducing uncertainty or making sense. Less than a quarter of participants in this study reported seeking information about CHA for ADHD of their own volition (21.5%), which suggested practitioners were not staying current on the emerging body of research that supported the potential efficacy of complementary approaches to ADHD. The body of evidence related to school psychology is dynamic; thus, practitioners must seek information to guide their practice with the most current evidence available.

Intervention monitoring practices were beyond the scope of this study so it was impossible to determine from these results whether school psychologists were fulfilling the second practice implication by generating research about CHA treatment efficacy within the school setting. The NASP (2010b) acknowledged a disconnect between school psychology research and practice and declared that practitioners must not only to expand their competencies but also contribute to the body of original research:

Knowledge alone will not suffice. School psychologists must also possess a set of skills, including the ability to use problem-solving and scientific methodology to create, evaluate, and apply appropriate empirically validated interventions at both an individual and systems level. (Ysseldyke et al., 2006, p. 14)

Not only are school psychologists charged with staying current on research relevant to the field but they are also encouraged to become the generators of the information itself by conducting single case studies.

Furthermore, findings of this study suggested that practitioners are not consistently communicating with parents about this topic; only one-fifth of the sample (21.6%) reported they had responded to parent requests for CHA information and 22.1% had shared information about evidence of CHA treatment efficacy with parents in their school communities, leaving almost 80% of the sample who had *never* or *almost never* engaged in these essential parent-communication activities. Parents are increasingly seeking out treatment alternatives for their children with special healthcare needs including ADHD. Some reports indicated use of CHA for special health care needs ranged in prevalence from 30-70% (Kemper, Vohra, & Walls, 2008). School psychologists might not be keeping up with this treatment trend.

**Intervention practices.** When compared to previous findings related to the practices of school psychologists in the realm of complementary health approaches, the findings of this study suggested some form of professional encounter with complementary approaches might be occurring more frequently than previously believed in some cases. Although CHA was not a focus of Borick's (2011) study of school psychologists' assessment and intervention practices, some of the survey items addressed school psychologists' delivery and recommendations of CHA treatments for ADHD. The results of the current study indicated that communication between school psychologists



and parents about previously identified some complementary approaches occurred at least *occasionally* if not more frequently: dietary changes (32.9%), vitamin/supplement treatment (12.3-16.2%), biofeedback (10.3%), neurofeedback (10.8%), and relaxation (39.7%). Respondents ( $N = 246$ ) in Borick's study indicated they were involved in the same CHA interventions for ADHD at least *seldom* or more frequently: recommendation of dietary changes (27.2%), recommendation of vitamin/supplement treatment (11.7%), delivery of biofeedback (8.5%) and neurofeedback (6.7%) techniques, and delivery of relaxation training (54.3%). The purpose of the self-report scales in these two studies was different; the current study was seeking frequency of parent communication about CHA approaches and Borick's study sought insight into intervention involvement. However, comparison of these percentages was illuminating because it provided guidance about patterns in the trend of increased CHA use in the treatment of ADHD.

Six complementary practices about which school psychologists reported relatively high frequency of parent-communication (responses included in % range from *occasional* to *very frequent*) were cognitive training (37.2%), dietary changes (32.9%), martial arts (32.4%), relaxation (39.7%), yoga (25%), and mindfulness training (29.4%). These practices were also ones with evidence of emerging research support, suggesting it was not just personal experience and treatment attitudes that informed parent-communication behavior. Rather, familiarity with research support might have informed responses of those who endorsed higher levels of communication about these treatment approaches. As such, these six complementary treatments provided a useful starting point for school psychologists to educate themselves on the potential these interventions have to improve the prognosis of children with ADHD in their school settings.

## **Theoretical Implications**

Implications for school psychologists regarding CHA for ADHD can be found at the nexus of ecobehavioral theory and current research findings about complementary health approaches. To see how theory and practice intersect in this regard, an exploration follows of the research related to mindfulness interventions. Mindfulness is one category of treatment that comprises an emerging area known as contemplative science (Frank, Jennings, & Greenberg, 2013). Elements of a mindfulness intervention might include breathing techniques, habits of mind, and practice in sustaining focused attention. Mindfulness is a secularized approach to cultivating attention and awareness of what is occurring in each successive moment and is designed for use in nonsectarian settings such as schools, families, clinics, and communities (Roeser, 2013).

Historical attempts at conceptualizing ADHD relied on dichotomous tenets of nature and nurture when, in fact, there are highly complex and variable factors that influence the manifestation of the disorder from person to person (Tharpar et al., 2013). Furthermore, to embrace the potential of complementary approaches such as mindfulness, a school psychologist must dispense with another dualistic framework—that of mind and body—and instead rely on a more interconnected view of both typical and atypical human development. Juxtaposing a dualistic view of ADHD with a more multi-dimensional and interconnected viewpoint provides a more dynamic lens through which practitioners can view a disorder's etiology and potential treatments to optimize benefits for an individual child.

The ecobehavioral theory outlined as a conceptual framework for this study paralleled these foundational assumptions of interventions within the realm of

contemplative science. There are several theoretical underpinnings of contemplative science but two facets of this approach bear mentioning in exploring the implications of this research. First and foremost, mutually influential, individual-context relations are the fundamental engines of development (Roeser, 2013). Essentially, the interactions of the systems within Bronfenbrenner's (1977) model have both inter- and intra-personal ramifications. Secondly, neuroplasticity research confirmed the brain is adaptive and responsive to both education and experiences within social contexts (Davidson et al., 2012). Quite simply, school psychologists are influenced by their experiences and education—formal and informal—relating to CHA. Individual experiences and knowledge become inseparable elements integrated into the school psychologists' professional contexts and behaviors. These elements interact with and influence other people—namely, parents and children with ADHD. All three of the individuals—the school psychologist, the parent, and the child—are simultaneously products of and agents within their respective and connected ecologies.

Mindfulness interventions are designed to encompass this powerful interconnectedness of human development by delivering the treatment to both parents and their children. In a study of an eight-week mindfulness training delivered to parents and their 8-12 year old children with ADHD, parents reported decreased ADHD behaviors in themselves and their children while teachers did not report significantly different behaviors in the children receiving the treatment (Van der Oord, Bogels, & Peijnenburg, 2012). However, in another mindfulness study of older children (aged 11-15) with ADHD, parents, children, *and* teachers took part in an eight-week mindfulness training. All three groups reported observations of decreased attention and behavior

problems in the children along with increased executive functioning (van de Weijer-Bergsma, Formsma, Bruin, & Bogels, 2012).

Through an ecobehavioral lens, myriad interactions and transactions reside at the intersection of etiology and treatment approach. While scientific findings about the etiology of ADHD should not be abandoned, conceiving of ADHD etiology more broadly—as part and parcel of a highly complex and interconnected system of human development—could lend itself to the acceptance of a wider range of treatment approaches.

### **Promising Practices in Complementary Health Approaches**

With this perspective in mind, the research revealed other promising practices for treating ADHD using complementary approaches. Some of the approaches—yoga, martial arts and relaxation—were included in the realm of contemplative science. Outside of this realm, research on cognitive training also suggested applicability to ADHD treatment within the school setting.

Mindful breath and movement interventions—such as yoga, martial arts, and relaxation—hold promise for treating ADHD. Studies of yoga as an intervention for ADHD underscore the importance of parent involvement--in some cases, including the parent in the intervention. Studies of yoga treatment delivered to both children and their parents indicated this intervention has potential to increase child participants' positive behaviors, self-esteem, and relationship quality (Harrison, Manocha, & Rubia, 2004). Yoga treatment for ADHD can be especially complementary for children already on stable doses of medication, especially in cases where the effects of the medication deteriorate as the evening wanes (Jensen & Kenny, 2004). Studies of yoga as a

complementary approach to ADHD suffer from methodological issues such as small sample size, treatment fidelity concerns, and inconsistent ratings among parent and teacher raters but show some promise for increasing time on task as well as subjective experiences of the intervention being beneficial according to child participant self-ratings (Harrison et al., 2004; Jensen & Kenny, 2004; Peck, Thomas, Kehle, Bray, & Theodore, 2005). Yoga might be of unique interest to school psychologists because with the right training and practice, it is an intervention that could be delivered with minimal cost within the school setting (Peck et al., 2005). In addition to yoga, elements of traditional martial arts hold promise in the treatment of ADHD because the complexity of the patterned movements build in complexity with advancement of belt level and require increasing demand for auditory attention, following of verbal commands, and integration of visual motor stimuli (Anthony, 2005; Torres, 2011).

Cognitive training—an intervention often delivered via a computerized platform—has also emerged as an intervention for working memory and attention even though it has limited empirical support (Hahn-Markowitz et al., 2011; Pfister, 2012, Rabiner et al 2010; Steiner et al., 2011, 2014). The most common weakness in studies of cognitive training interventions appeared to be generalizability (Green et al., 2012; Rabiner et al., 2010; Steiner et al., 2011). In other words, children with ADHD showed improved performance on working memory or attention tests but their parents and teachers did not notice a decrease in ADHD symptomology in the child's day-to-day life. School psychologists cannot deny the body of research supporting the fact of neural plasticity (Walcott & Phillips, 2013). Neurofeedback is already in use as a school-based intervention (Steiner et al., 2014). As with all emerging approaches, school psychologists

will need to engage in dedicated efforts to vet cognitive training programs already being advertised in common assessment and intervention catalogues.

An argument could be made that school psychologists are in a position to implement, monitor, and educate with regard to interventions that align with complementary health approaches to ADHD treatment.

### **Limitations**

Limitations of this study included issues related to methodology. Survey research lends itself to response bias and socially desirable responding. The sampling method was also a potential limitation because snowball and volunteer sampling occurred among members of state school psychology associations. Local leaders within school psychology organizations might have felt more inclined toward socially desirable responses or perceived issues within the field of school psychology differently than those removed from advocacy and leadership entities. Furthermore, the researcher-developed instruments lacked established reliability and validity as measurement instruments and some variables were measured with only one item, calling into question the validity of the variable. Confusion about terminology used in the survey could also have been a potential limitation because several of the CHAs explored were part of an emerging body of research evidence. As such, it was impossible to determine if respondents were conceptualizing some of the items (relaxation, biofeedback) as mainstream/conventional rather than alternative/complementary. Finally, the statistical analyses conducted in this study were purely designed to explore relationships among variables and not to determine or imply causality.

### **Future Research**

This study was exploratory in nature and as such, there is a vast array of future research opportunities related to complementary health approaches to ADHD within the field of school psychology. Qualitative case study and mixed-methodologies would lend themselves well to exploring the nuances of the school-family partnering process related to communicating about and progress monitoring of CHA interventions for ADHD. Single case studies of individual children undergoing a trial of a CHA would also add to the body of literature related to treatment efficacy. Additional research into the professional practices of school psychologists would also be illuminating, specifically to explore the extent to which they would be implementing Shaw et al.'s (2010) three-prong approach to addressing CHAs as scientist-practitioners: familiarity with the research, intervention monitoring, and parent communication.

Moreover, studies that examine the effects of providing CHA-related training to school psychologists could reveal the benefits of incorporating this information into training programs and post-graduate professional development opportunities. Exploring the element of treatment acceptability within a community setting is also an area for future research. Developing a more comprehensive measure of a community's acceptance of a treatment approach could reveal additional insights into how a school psychologist might be influenced within this treatment domain by the community in which he or she works. A greater understanding of teachers' and parents' experiences within schools as they pertained to the use of CHAs for ADHD would also be helpful in identifying and eliminating obstacles to communication and collaboration.

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## **APPENDIX A**

### **PSYCHOLOGIST ATTITUDES TOWARD COMPLEMENTARY AND ALTERNATIVE THERAPIES QUESTIONNAIRE ITEMS**



## PATCAT Scale Items

1. Psychology professionals should be able to advise their clients about commonly used complementary therapy methods.
2. Information about complementary therapy practices should be/should have been included in my psychology degree curriculum.
3. Knowledge about complementary therapies is important to me as a practicing clinical psychologist/student/future practicing health professional.
4. Clinical care should integrate the best of conventional and complementary practices.
5. Complementary therapies include ideas and methods from which conventional psychotherapy could benefit.
6. A number of complementary and alternative approaches hold promise for the treatment of psychological conditions.
7. Complementary therapies should be subject to more scientific testing before they can be accepted by psychologists.
8. Complementary therapies can be dangerous in that they may prevent people getting proper treatment.
9. Complementary therapy represents a confused and ill-defined approach.
10. Complementary medicine is a threat to public health.

**APPENDIX B**

**SCHOOL PSYCHOLOGIST-PARENT COMMUNICATION  
BEHAVIOR SURVEY**

## Default Question Block

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH  
UNIVERSITY OF NORTHERN COLORADO

Project Title: School Psychologists' ADHD Treatment Attitudes and Parent Communication About Complementary Health Approaches  
 Researcher: Sara B. Knickerbocker, School of Applied Psychology and Counselor Education  
 Phone Number: (303) 912-0594 Email: [knick4780@bears.unco.edu](mailto:knick4780@bears.unco.edu)  
 Research Advisor: Dr. Michelle Athanasiou (970) 351- 2356

I am researching school psychologists' attitudes toward ADHD treatments and their communication with parents about complementary health approaches that treat ADHD. As a participant in this research, you will be asked to complete an on-line questionnaire that asks you to share your opinions and experiences using a rating scale about your frequency of an experience (never, sometimes, often, always) or level of agreement (disagree, neutral, agree) with a statement. Additionally, you will be asked for some general information about the primary setting in which you work as a school psychologist such as the level of setting (elementary, secondary, etc.), approximate free and reduced lunch rate, and whether the school is public or private. You will also be asked about your own level of personal experience with complementary health approaches in general. It will take approximately 15-20 minutes to complete the survey.

On this survey, you will not provide your name or other identifying information, so responses are considered private. Results of the study will be presented in the form of group findings. Electronic data will be stored on an external drive in a locked university office. While confidentiality cannot be guaranteed, your privacy will be protected to the fullest extent possible.

There are no foreseeable risks from participating in this study. However, risks associated with this study are no greater than those normally encountered in a professional or educational setting like the one you work in everyday. You may experience some mild emotional discomfort examining and sharing your own attitudes toward ADHD treatment, complementary health approaches or your community. You may benefit from or be agitated by examining your own views on the subjects explored in this study, and may ultimately benefit from any findings that contribute to the field of school psychologists' professional practices. At the end of the survey, you will be given the opportunity to enter a random drawing for one of four Visa Gift Cards in the amount of \$25. Information collected for the purposes of the drawing cannot be tied to your survey responses and will be destroyed upon completion of the study.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please complete the questionnaire if you would like to participate in this research. **By completing the questionnaire, you give your permission to be included in this study as a participant.** You may print this form for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Ms. Sherry May, Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

I have read, understood, and printed a copy of, the above consent form and desire of my own free will to participate in this study.

- ☐ Yes  
☐ No

In what state do you work as a school psychologist?

What is the level of the primary setting where you work as a school psychologist?

- ☐ Early Childhood  
☐ Elementary  
☐ Secondary

☐ Secondary

How would you describe the school setting where you work as a school psychologist?

- ☐ Public
- ☐ Private

What is the Free and Reduced Price Lunch Rate at the primary school setting where you work as a school psychologist?

- ☐ <25%
- ☐ 25-75%
- ☐ >75%

How many years of experience do you have as a school psychologist?

- ☐ 10 or more years
- ☐ 5-10 years
- ☐ 1-5 years
- ☐ I am currently completing my school psychology internship.

What is the highest level of education you have completed in the field of school psychology?

- ☐ Master's Degree
- ☐ Educational Specialist
- ☐ Doctoral Degree

What is your gender?

The National Institutes of Health define three categories of complementary health approaches (CHA) : Mind and Body Practices, Natural Products, and Whole Health Systems.

Mind and body practices "focus on interactions among the brain, mind, body and behavior, with the intent to use the mind to affect physical functioning and promote health" (NCCAM, 2012, p.2). Mind and Body Practices also include body-based manipulation approaches such as massage therapy and spinal manipulation (NCCAM, 2012).

Natural Products include botanical supplements, vitamins and minerals as well as dietary approaches that emphasize natural foods without additives and preservatives (NCCAM, 2012). Examples include omega-3 supplementation herbal remedies, and dietary restrictions.

Whole Health Systems, the final category of CHA explored in this literature review, are "complete systems of theory and practices that have evolved over time in different cultures and apart from conventional or Western medicine" (NCCAM, 2012, p.4). Examples of whole health systems include naturopathy ( a system comprised of multiple treatment approaches including supplementation, herbs and dietary adjustments), homeopathy (a system that relies primarily on delivering homeopathic medication ), Ayurveda, and Chinese Medicine.

For the next question, consider the community in which your primary school setting is located.

	Very unaccepting	Unaccepting	Neutral	Accepting	Very Accepting
How would you describe the overall acceptance of complementary health approaches in the community in which your school is located?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For this question, consider your own personal use of any form of complementary health approach.

	Never	Almost Never	Sometimes	Frequently	Very Frequently
How would you describe the frequency with which you personally use complementary health approaches?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Indicate your level of agreement for each of the following statements.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
School psychologists should be able to advise families about commonly used complementary health approaches to ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information about complementary health approaches to ADHD should have been included in my psychology degree curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information about complementary health approaches to ADHD was included in my psychology degree program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge about complementary health approaches to ADHD is important to me as a practicing school psychologist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School psychology services should integrate the best of conventional and	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

complementary practices in ADHD treatment.	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Complementary health approaches to ADHD include ideas and methods from which conventional treatment modalities (such as medication and behavioral treatment) could benefit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A number of complementary and alternative approaches hold promise for the treatment of ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complementary health approaches to ADHD should be subject to more scientific testing before they are accepted by psychologists.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complementary health approaches to ADHD can be dangerous in that they may prevent people from getting proper treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complementary health approaches to ADHD represent a confused and ill-defined approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complementary health approaches to ADHD are a threat to public health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School psychologists should be able to advise families about commonly used medications for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information about medication for ADHD should have been included in my psychology degree curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Qualtrics Survey Software

3/15/15, 2:19 PM

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Information about medication for ADHD was included in my psychology degree program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge about medication for ADHD is important to me as a practicing school psychologist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School psychology services should represent only conventional treatments for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication holds promise for the treatment of ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication for ADHD should be subject to more scientific testing before it is accepted by psychologists.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication treatment for ADHD can be dangerous in that it may prevent people from exploring other treatment options.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication for ADHD represents a confused and ill-defined approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication for ADHD is a threat to public health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School psychologists should be able to advise families about commonly used behavioral approaches to ADHD treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information about behavioral treatment for ADHD was included in my psychology degree curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Information about behavioral treatment for ADHD should have been included in my psychology degree curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge about behavioral treatment approaches for ADHD is important to me as a practicing school psychologist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conventional treatments for ADHD should be the only treatments represented in school psychology services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behavioral treatment holds promise for the treatment of ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behavioral treatment should be subject to more scientific testing before it is accepted by school psychologists.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behavioral treatment for ADHD can be dangerous in that it may prevent people from exploring other treatment options.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behavioral treatment for ADHD represents a confused and ill-defined approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behavioral treatment for ADHD is a threat to public health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The National Institutes of Health define three categories of complementary health approaches (CHA) : Mind and Body Practices, Natural Products, and Whole Health Systems. Examples of CHAs include but are not limited to acupuncture, martial arts, dietary modifications and supplementation, naturopathy, homeopathy, massage, energy work, chiropractic, neurofeedback, biofeedback, and culturally-derived healing systems such as Ayurveda and Curanderismo.

For the following section, consider your work as a school psychologist over the past 12-18 months. Indicate the level of frequency you engaged in any of the following kinds of communication. Consider discussions that focused on alternatives to traditional western pharmaceuticals and conventional psychoeducational behavioral supports.



	Never	Rarely	Occasionally	Frequently	Very Frequently
I attended an IEP meeting where CHA for ADHD were discussed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I attended a parent teacher conference where CHA for ADHD were discussed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have gathered CHA information to share with parents at their request.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have gathered CHA information of my own accord to share with parents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have shared research about CHA efficacy for ADHD treatment with parents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed CHA for ADHD in a phone call with a parent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have had email communication with a parent about CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have received guidance from my school or district about how to handle CHA for ADHD with our parent community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
Parents have disclosed to me that they are using CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have initiated conversations with parents about CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
Parents have initiated conversations with me about CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have encouraged parents to seek CHA support to treat their child's ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently

I have dissuaded parents from pursuing a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have been asked for information about a specific CHA by parents in my school setting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have been asked for general information about CHA by parents in my school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed homeopathy with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed naturopathy with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed neurofeedback with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed biofeedback with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed cognitive training with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed herbal supplementation with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed dietary changes with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed omega-3 supplementation with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed massage with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed energy work with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently

I have discussed chiropractic treatment with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed martial arts with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed acupuncture with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed relaxation with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed jin shin jyutsu with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed Curanderismo with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed Ayurveda with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed Chinese Medicine with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed Native American medicine with parents as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently
I have discussed a culturally-specific approach as a CHA for ADHD.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Rarely	Occasionally	Frequently	Very Frequently

Indicate your level of agreement with each of the following statements.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
If I learned that a child in my school was receiving a CHA for ADHD with research suggesting it was a harmful treatment, I would initiate communication with the parent(s) to discuss the treatment approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If I learned that a child in my school was receiving a CHA with no research support for effectively treating ADHD, I would initiate communication with the parent(s) to discuss the treatment approach.

☐☐☐☐☐

If I learned that a child in my school was receiving a CHA with limited research support for effectively treating ADHD, I would initiate communication with the parent(s) to discuss the treatment approach.

☐☐☐☐☐

If I learned that a child in my school was receiving a CHA with strong research support for effectively treating ADHD, I would initiate communication with the parent(s) to discuss the treatment approach.

☐☐☐☐☐

Thank you for your participation. Do you wish to participate in the drawing for one of four \$25 Visa Gift Cards?

☐ Yes

☐ No

Please answer the following questions so that you can be included in the drawing for a gift card. This information will not be associated with your data.

First Name

Last Name

Email Address

Confirm Email Address

## **APPENDIX C**

### **INSTITUTIONAL REVIEW BOARD APPROVAL**



*Institutional Review Board*

DATE: November 9, 2014

TO: Sara Knickerbocker  
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [642682-2] School Psychologists' ADHD Treatment Attitudes and Parent Communication about Complementary Health Approaches

SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS

DECISION DATE: November 9, 2014

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

**Sara -**

**Thank you for making all of the recommended revisions so swiftly. No further modifications or amendments are necessary.**

**Best wishes with your research and please don't hesitate to contact me with any IRB-related questions or concerns.**

**Sincerely,**

**Dr. Megan Stellino, UNC IRB Co-Chair**

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or [Sherry.May@unco.edu](mailto:Sherry.May@unco.edu). Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

## **APPENDIX D**

**CORRELATION MATRIX OF COMPLEMENTARY HEALTH APPROACHES,  
MEDICATION, AND BEHAVIORAL TREATMENT ATTITUDE SCALES,  
COMMUNITY ACCEPTANCE, FREQUENCY OF USE, FREE AND  
REDUCED PRICE LUNCH RATE, AND SCHOOL  
PSYCHOLOGISTS' PARENT COMMUNICATION  
ABOUT COMPLEMENTARY HEALTH  
APPROACHES**

## CORRELATION MATRIX

		Community Acceptance of								
		CHA Scale	Medication Attitudes Scale	Behavioral Attitudes Scale	CHA	Personal CHA Use	<25% FRPL	>75% FRPL	Elementary	Secondary
SP-PCB Scale (Reported)	Pearson Correlation	.386**	.063	.076	.343**	.414**	.094	-.147*	.066	-.083
	Sig. (2-tailed)	.000	.371	.278	.000	.000	.182	.036	.351	.237
	N	204	204	204	204	204	204	204	204	204
CHA Scale	Pearson Correlation		-.061	.054	.206**	.449**	-.045	.071	-.075	.046
	Sig. (2-tailed)		.382	.435	.003	.000	.522	.309	.281	.509
	N		208	208	208	208	208	208	208	208
Medication Attitudes Scale	Pearson Correlation			.241**	-.008	-.059	.095	-.011	-.041	.004
	Sig. (2-tailed)			.000	.909	.395	.172	.875	.555	.958
	N			208	208	208	208	208	208	208
Behavioral Attitudes Scale	Pearson Correlation				-.057	.032	-.117	.052	.033	-.027
	Sig. (2-tailed)				.412	.643	.094	.455	.638	.697
	N				208	208	208	208	208	208
Community Acceptance of CHA	Pearson Correlation					.220**	.159*	-.300**	-.002	.006
	Sig. (2-tailed)					.001	.022	.000	.981	.928
	N					208	208	208	208	208
Personal CHA Use	Pearson Correlation						.045	-.029	.030	.013
	Sig. (2-tailed)						.519	.673	.667	.855
	N						208	208	208	208
<25% FRPL	Pearson Correlation							-.267**	.032	.123
	Sig. (2-tailed)							.000	.626	.061
	N							233	233	233
>75% FRPL	Pearson Correlation								.087	.025
	Sig. (2-tailed)								.185	.710
	N								233	233
Elementary	Pearson Correlation									-.711**
	Sig. (2-tailed)									.000
	N									233

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).



## **APPENDIX E**

### **ARTICLE**

**TITLE: School Psychologists' ADHD Treatment Attitudes and Parent  
Communication about Complementary Health Approaches**

**ABSTRACT**

Although recommendations have been made about how school psychologists should perceive complementary health approaches within an evidence-based framework, there is a gap in the literature about the current practices of school psychologists related to complementary treatments of attention deficit hyperactivity disorder (ADHD). To understand the complexities of school psychologists' attitudes toward three ADHD treatment approaches—pharmacological, behavioral, and complementary—and their communication with parents about complementary approaches in particular, an exploratory study that employed a web-based survey of 208 school psychologists from 32 states was conducted. The goal of the study was to (a) determine if variables such as personal experience with complementary approaches or school socioeconomic status predicted treatment attitudes and subsequently to (b) explore whether these attitudes predicted school psychologists' parent communication about complementary approaches to ADHD. Data were analyzed using multiple and hierarchical linear regression. Results of this study revealed school psychologists' personal use of complementary approaches and perceptions of community acceptance of these treatments were correlated with positive attitudes toward complementary treatments for ADHD. Furthermore, positive attitudes toward complementary treatments predicted school psychologists' parent communication about this treatment option. School professionals will find this study

useful because it provides information that enables them to be more effective in their work as evidence-based practitioners.

**KEYWORDS:** Complementary health, ADHD, school psychologists, evidence-based practice, school-family partnering

**AUTHOR BIOGRAPHY:** Sara B. Knickerbocker is a recent doctoral graduate of University of Northern Colorado where she focused her study of school psychology on evidence-based practice and school-family partnering.

## INTRODUCTION

School psychologists are dynamic education and mental health professionals whose professional practices continue to evolve. No longer just test-kit-toting gatekeepers to special education, today's school psychologists provide myriad services including traditional assessment, school-wide positive behavioral support, special education case management, professional development, parent education, mental health therapy, consultation, crisis management, and more (National Association of School Psychologists [NASP], 2010b). While a day in the life of a school psychologist might vary from place to place, a high likelihood exists that a school psychologist will encounter a child with attention deficit hyperactivity disorder (ADHD)--a disorder that affects 6.4 million children between the ages of 4 and 17 and represents a national prevalence rate of 11% in the United States (Centers for Disease Control and Prevention [CDC], 2013). Researchers and clinicians most widely accept the classification system for mental disorders known as the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association [APA], 2013). The DSM-5 defines ADHD as a neurodevelopmental disorder characterized by a pattern of inattentive, hyperactive, and/or impulsive behaviors that occur across settings (such as home and school) with the onset of symptoms occurring before age 12 (APA, 2013). As the practices of school psychologists evolve, so too do treatment options for neurodevelopmental disorders such as ADHD. Multi-modal treatment of ADHD—comprised of psychopharmacological treatment, educational strategies, and behavioral support—has the strongest empirical foundation (Brock, Jimmerson, & Hansen, 2009). However, complementary health approaches (CHA) are burgeoning fields of treatment

for numerous ailments and disorders including ADHD. The National Institutes of Health (NIH; 1998) formed the National Center for Complementary and Integrative Health (NCCIH) in 1998 to address the growing need for information about these treatment modalities. The NCCIH defines complementary health approaches as treatment that does not completely eschew conventional medicine but relies on the use of natural products, mind and body practices (such as yoga, meditation and massage), or whole health systems (such as homeopathy or Ayurveda) to treat disease and disorder (NIH, 2014). Nearly 12% of children who were the subjects of the NIH's 2012 National Health Interview Survey had utilized a complementary health product or practice in the previous year. Attention deficit hyperactivity disorder was in the top five disorders for which CHA was used to treat children (NIH, 2014). Increasing use of CHA has implications for school psychologists in their efforts to provide effective services to all students, specifically those with ADHD (Shaw, Glaser, Chiu, & Sulin, 2010).

Numerous studies have examined the role of school psychologists in ADHD assessment, intervention, and case management (Borick, 2011; Cushman, LeBlanc, & Porter, 2004; Demaray, Schaefer, & Delong, 2003; Goh, Teslow, & Fuller, 1981; Hutton, Dubes, & Muir, 1992; Koonce, 2007; Moore, DuPaul, & Power, 2005; Reid, Reason, Maag, Prosser, & Xu, 1998; Smith, 1999; Wilson & Reschly, 1996). Although school psychologists receive training about both ADHD assessment and intervention and are ethically obligated to be responsible research-based practitioners (NASP, 2010b), gaps in the research remain about the extent to which current research has informed practice with regard to complementary health approaches to treating ADHD. Exploring the behaviors and beliefs of school psychologists about complementary health approaches to ADHD in

this study was a preliminary step in understanding if a gap exists between the growing phenomenon of CHA use to treat ADHD and school psychologists' practice related to this area.

Attention deficit hyperactivity disorder cannot be attributed to one single causal factor. Rather, ADHD is the product of intricate interactions among genetic, neurobiological, and socioenvironmental factors (Barkley, 2006; Brock et al., 2009; Tharpar, Cooper, Eyre, & Langley, 2013). Attention deficit hyperactivity disorder is often comorbid with other disorders such as reading disabilities, speech and language problems, motor incoordination, autism spectrum disorders, lower IQ, and other mental health disorders (Taylor, 2011; Willcutt et al., 2013). Furthermore, the disorder significantly impairs a person's functioning in numerous ways including socially, academically, professionally, and medically (Barkley, 2006). As a disorder first identified in childhood, ADHD is often a component of a diagnosed child's entire educational journey.

By developing and implementing school-based interventions and building partnerships with families of students diagnosed with ADHD, school psychologists serve to create an atmosphere of collaboration for children as their families pursue treatment both in and out of the school setting. Although a school psychologist cannot recommend specific treatment approaches outside of a district's resources, he or she is often the staff member with the most training and expertise in scientific research and thus can play a pivotal role in assisting parents as they consider the validity of and research about both proven and emerging treatments for ADHD (Brock et al., 2009).

Furthermore, the ethical standards ascribed to by NASP members clearly outlined the duty of school psychologists to collaborate with parents in intervention development while taking into consideration cultural values and alternatives both within and beyond the school setting (NASP, 2010a, Standard II.3.10, p. 8). School psychologists were urged to consider that trust in the school-family partnership is built over time with interactions that emphasize a positive nature more than high frequency (Adams & Christenson, 2000; Hill & Tyson, 2009).

The primary focus of ADHD intervention literature was on pharmacological treatment with additional attention given to behavioral and educational approaches (Barkley, 2006; Brock et al., 2009; Mayes, Bagwell, & Erkulwater, 2009). The most common treatment for ADHD has been pharmacological (Antshel et al., 2011). A CDC study (2014) found that 69% of children currently diagnosed with ADHD were taking medication. The only non-pharmacological treatment for ADHD with a solid scientific foundation of empirical validation is behavioral intervention, specifically behavioral school intervention and behavioral parent training. Elements of behavioral intervention include external reinforcement, self-monitoring, token economies, and response-cost programs. Parents prefer behavioral treatment to medication (Pelham, as cited in Barkley, 2006) and report confusion about the path of ADHD treatment they should pursue for their children because they received conflicting messages; ultimately, many families prefer to find alternatives to medication (Charach, Skyba, Cook, & Antle, 2006). Attention deficit hyperactivity disorder is among the top five disorders for which CHAs are sought and approximately 12% of children are utilizing CHAs (NIH, 2014). The increasing use of CHA has implications for school psychologists in their efforts to

provide effective services to all students, specifically those with ADHD (Shaw et al., 2010).

### **THE PRESENT STUDY**

The main goal of the present study was to explore systemic variables that might influence school psychologists' ADHD treatment attitudes for three approaches: complementary, pharmacological, and behavioral, and then to explore whether these variables and potentially related attitudes predicted communication about CHA between school psychologists and parents.

#### **Participants**

Data for this study were collected from a non-random sample of school psychologists practicing in school settings. The sample represented 32 states with the majority of participants residing in Western and Southern states. The total sample was 208 (85.1% female, 14.9% other). In terms of racial/ethnic background, the participants described themselves as White--91.8%, African American--2.4%, Asian American--1.0%, Hispanic--2.9%, or Others--1.9%. The majority of participants in this study were non-doctoral (81%) school psychologists with five or more years of experience in the field (61.5%) who worked in public (98.1%) elementary school settings (68.3%) with low to moderate poverty levels (72.6%) as indicated by free and reduced price lunch rates (<75%). Three-quarters of respondents described their community as *neutral*, *accepting*, or *very accepting* of complementary health approaches. A similar proportion of participants endorsed personal use of CHA *sometimes*, *frequently* or *very frequently*.



## **Measures**

The variables in this study were measured using a self-report survey in which participants were asked to report their attitudes toward three ADHD treatment approaches (medication, behavioral treatment, complementary health approaches), their parent communication behaviors about CHA over the previous 12-18 months, their personal experience with CHA, their perceived level of their community's acceptance of CHA, their primary practice setting, the free and reduced price lunch rate of their primary practice setting, and selected demographics.

The attitude scales were adapted by the researcher from the Psychologist Attitudes Toward Complementary and Alternative Treatments (PATCAT; Wilson & White, 2007) using parallel wording for each item and modifying only the verbiage related to each of the three treatment approaches. Item examples included "School psychologists should be able to provide families information about the efficacy of complementary health approaches to treating ADHD" and "Knowledge about medication approaches to treating ADHD is important to me as a practicing school psychologists." Respondents used a 5-point Likert scale to indicate the degree to which they agreed with each item: 0 = *Strongly Disagree*, 2 = *Neither Agree Nor Disagree*, 4 = *Strongly Agree*. Negatively worded items were reverse scored. High overall scores on each scale—calculated as a total sum of scale responses—indicated generally positive attitudes toward each of the treatment approaches.

### **Personal Experience with Complementary Health Approaches**

School psychologists were asked to report their own level of personal experience with complementary health approaches by responding to a single question that asked

them to rate the frequency with which they had utilized a complementary health approach ranging from *Never have used a CHA* (0) to *Very frequently used a CHA* (4). In the body of the question, participants were given an overall definition of CHA that entailed the three categories of Body/Mind Practices, Natural Products/Diet, and Whole Health Systems outlined by the National Institutes of Health (2012).

### **Perceptions of Community Acceptance of Complementary Health Approaches**

Participants were asked to report their perceptions of the acceptance of CHA within the community where their school was situated by rating the CHA acceptance level from *Not at all accepted* (0) to *Highly accepted* (4) with a value of 2 representing a perception of neutrality toward CHA.

### **Primary Practice Setting**

Participants were asked to report information about the setting in which they spent most of their work time. Two items in this area included level of primary practice setting (early childhood, elementary, and secondary) and free and reduced price lunch rate as defined by the National Center for Education Statistics (Kena et al., 2014). The free and reduced price lunch rate (FRPL) is a proxy measure for socioeconomic status within a school. The National Center for Education Statistics defines those with FRPL rates less than or equal to 25% as low poverty schools and those with FRPL rates greater than or equal to 75% as high poverty schools.

### **School Psychologist-Parent Communication Behavior Survey (SP-PCB)**

This section of the survey included researcher-developed items that addressed the frequency with which school psychologists communicated with parents about complementary health approaches in various professional contexts (IEP meetings,

conferences, email communication, etc.). A 5-point Likert scale was used to gather frequency information (0 = *Never*, 4 = *Very Frequently*) about each of the communication behaviors. In addition to addressing frequency of communication about CHAs in general, respondents to this portion of the survey were asked to provide data using the same Likert scale about the frequency with which specific CHAs were part of their parent communication. Examples of items related to specific CHAs included “I have discussed dietary changes with parents as a CHA for ADHD” and “I have discussed Omega-3 supplementation with parents as a CHA for ADHD.” The list of CHAs for this portion of the survey was developed through a review of literature about the most commonly used CHAs for ADHD along with feedback from a pilot study (Concannon & Yang, 2005; di Sarsina, Vannacci, Costa, & Meuti, 2010; NIH, 2014; Sarkis, 2014; Sinha & Efron, 2005; Stubberfield, Wray, & Parry, 1999). Total scores on the SP-PCB were indicative of high levels of parent communication behavior exhibited by the school psychologist.

### **Demographic Survey Items**

Participants were asked to respond to several demographic questions, the results of which were used to describe the overall sample. Items included respondents’ sex, race, state of residence, school psychology education level, setting level (early childhood, elementary, and secondary), and classification of primary practice setting (public/private).

### **Procedures**

School psychologist participants were solicited to complete the study’s web-based self-report survey by gathering emails addresses from websites of state school

psychology associations in all 50 states using the contact information available on the NASP website (2015). A total of 425 email addresses were collected in this manner for survey distribution. Snowball and/or volunteer sampling occurred when association contacts shared the survey link with colleagues. Additionally, specific solicitation emails were sent to 97 professional contacts who were acquainted with the researcher.

## Results

### Preliminary Analyses

Internal consistency was evaluated for each of the researcher-developed scales using Cronbach's alpha. Although differing criteria existed for acceptable internal consistency (Lance, Butts, & Michels, 2006), a 0.7 cutoff was selected for this study as the level of acceptability for research purposes (Anastasi & Urbina, 1997; Kline, 1999; Nunnally, 1978; Schilling, 2002). Although higher alpha coefficients were desirable, especially for applied research, the exploratory nature of this study lent itself to a more liberal criterion. Table 1 presents the corresponding coefficient alphas for all researcher-developed scales.

Table 1

#### *Coefficient Alphas for Researcher-Developed Scales*

	Cronbach's $\alpha$
CHA Treatment Attitudes Scale	.770
Medication Treatment Attitudes Scale	.591
Behavioral Treatment Attitudes Scale	.715
SP-PCB (Reported)	.953
SP-PCB (Intended)	.817

An evaluation of the assumptions of linear regression—independence, normality, linearity, homoscedasticity, absence of multicollinearity, absence of significant outliers, or influential points—was conducted by completing a variety of statistical tests and examining plots and histograms. Means and standard deviations were also examined prior to conducting analyses. Table 2 displays means and standard deviations for the five scales used in the survey.

Table 2

*Means and Standard Deviations for Researcher-Developed Instruments*

Variable	<i>M</i>	<i>SD</i>
CHA Treatment Attitude Scale	26.512	4.788
Medication Treatment Attitude Scale	25.399	3.696
Behavioral Treatment Attitude Scale	29.168	3.817
SP-PCB (Reported) Scale	21.525	17.824
SP-PCB (Intended) Scale	8.710	2.960

### **Descriptive Findings**

Participants were asked to report the frequency with which certain general communications about CHA for ADHD had occurred in the previous 12-18 months. Generally speaking, school psychologists reported they were responding to parent-initiated communication about CHA for ADHD and were also initiating conversations about CHA. School psychologists reported the following CHA parent communication behaviors occurred at least *occasionally*, if not *frequently*, or *very frequently*: Attended an

IEP meeting where CHAs for ADHD were discussed, attended a parent-teacher conference where CHAs for ADHD were discussed, gathered information about CHA for ADHD by parent request, gathered information about CHA for ADHD voluntarily, and shared research about CHA efficacy with parents. Remarkably, only 8.4% of respondents indicated they had been given guidance from their school or district about how to handle CHAs for ADHD with the parents in their school community. Table 3 provides an overview of the frequency with which school psychologists and parents communicated about CHAs for ADHD in general. Table 4 provides an overview of the frequency with which school psychologists in this study discussed specific CHAs for ADHD with parents.

Table 3

*General Descriptive Statistics for Parent Communication*

SP-PCB Items	Percentage Endorsing Each Level of Frequency				
	0	1	2	3	4
I attended an IEP meeting where CHA for ADHD were discussed.	28.9	35.3	31.4	3.4	1.0
I attended a parent teacher conference where CHA for ADHD were discussed.	42.2	26.0	28.4	2.5	1.0
I have gathered information about CHA for ADHD to share with parents at their request.	58.8	19.6	18.6	2.0	1.0
I have gathered information about CHA for ADHD of my own accord to share with parents.	52.0	26.5	16.2	3.9	1.5
I have shared research about CHA efficacy for ADHD treatment with parents.	53.9	24.0	18.6	2.0	1.5
I have discussed CHA for ADHD in a phone call with a parent.	54.9	27.0	16.2	1.0	1.0
I have had email communication with a parent about CHA for ADHD.	69.1	20.6	8.3	1.0	1.0
I have received guidance from my school or district about how to handle CHA for ADHD with our parent community.	80.4	11.3	6.4	1.5	0.5
Parents have disclosed to me that they are using CHA for ADHD.	19.6	23.0	44.6	11.3	1.5
I have initiated conversations with parents about CHA for ADHD.	54.9	28.9	12.7	2.9	0.5
Parents have initiated conversations with me about CHA for ADHD.	25.5	28.9	37.3	7.8	0.5
I have encouraged parents to seek CHA support to treat their child's ADHD.	58.8	21.1	17.6	2.0	0.5
I have dissuaded parents from pursuing a CHA for ADHD.	82.4	13.2	3.9	0.5	0.0
I have been asked for information about a specific CHA for ADHD by parents in my school setting.	62.7	21.6	13.7	2.0	0.0
I have been asked for general information about CHA for ADHD by parents in my school.	55.4	24.5	17.2	2.5	0.5

Table 4

*Specific Descriptive Statistics for Parent Communication about CHA for ADHD*

SP-PCB Items	Percentage Endorsing Each Level of Frequency				
	0	1	2	3	4
I have discussed homeopathy.	72.5	21.6	4.9	1.0	0.0
I have discussed naturopathy.	77.0	18.6	3.9	0.5	0.0
I have discussed neurofeedback.	68.6	21.1	7.8	2.5	0.0
I have discussed biofeedback.	62.7	26.5	8.3	2.5	0.0
I have discussed cognitive training.	35.3	27.5	29.4	7.8	0.0
I have discussed herbal supplementation.	58.8	25.0	15.2	1.0	0.0
I have discussed dietary changes.	31.4	35.8	24.5	6.9	1.5
I have discussed omega-3 supplementation.	69.1	17.2	10.8	1.5	1.5
I have discussed massage.	84.3	10.8	4.9	0.0	0.0
I have discussed energy work.	81.4	6.4	6.9	4.9	0.5
I have discussed chiropractic treatment.	83.3	11.8	3.9	1.0	0.0
I have discussed martial arts.	46.6	21.1	26.0	6.4	0.0
I have discussed acupuncture.	88.7	7.8	2.9	0.5	0.0
I have discussed relaxation.	32.8	27.5	25.0	13.2	1.5
I have discussed <i>jin shin jyutsu</i> .	93.6	2.9	2.9	0.5	0.0
I have discussed <i>Curanderismo</i> .	97.1	2.0	1.0	0.0	0.0
I have discussed <i>Ayurveda</i> .	97.1	2.5	0.5	0.0	0.0
I have discussed Chinese Medicine.	95.1	4.4	0.5	0.0	0.0
I have discussed Native American medicine.	94.6	4.4	1.0	0.0	0.0
I have discussed a culturally specific approach.	83.8	9.8	5.9	0.5	0.0
I have discussed yoga.	54.4	20.6	20.6	3.9	0.5
I have discussed <i>tai chi</i> .	86.8	7.4	5.4	0.5	0.0
I have discussed mindfulness training.	50.0	20.6	20.1	8.8	0.5

0=Never, 1=Rarely, 2=Occasionally, 3=Frequently, 4=Very Frequently

**Pearson Correlations**

Prior to examining the regression analyses, correlation matrices were evaluated to identify relationships among the variables in the research questions. Although none of the independent variables (perceived level of community CHA acceptance, personal



CHA use, and primary setting FRPL rate) were significantly correlated with scores on the Behavioral Treatment Attitudes Scale or the Medication Treatment Attitudes Scale, there were several significant relationships among the variables related to the CHA Treatment Attitudes Scale. There was a moderate positive relationship between personal use of complementary health approaches and CHA scale scores,  $r(206) = .449, p < .01$ .

Additionally, there was a small positive relationship between CHA acceptance and CHA scale scores,  $r(206) = .206, p < .01$ ) as well as CHA acceptance and CHA personal use,  $r(206) = .220, p < .01$ ). A moderate negative relationship existed between perceived community acceptance of CHA and a FRPL rate of  $>75\%$ , suggesting participants from high poverty schools perceived less favorable attitudes toward complementary health approaches within the communities where their practice settings were located,  $r(206) = .300, p < .01$ ). In the final research question exploring school psychologists' communication with parents, several variables were significantly correlated. An increase in participants' parent communication behavior was moderately correlated with an increase in CHA attitude scale scores,  $r(206) = .386, p < .01$ ); perceived CHA acceptance in participant communities,  $r(206) = .343, p < .01$ ); and personal CHA use,  $r(206) = .414, p < .01$ ).

## **Results**

### **Regression Analyses**

Multiple linear regression analysis revealed the independent variables (community CHA acceptance, personal CHA use, and primary setting FRPL rate) predicted the dependent/criterion variable of CHA treatment attitude as demonstrated by total scores on the CHA attitude measure. The linear combination of predictor variables

was significantly related to attitudes toward complementary health approaches,  $F(4,203) = 15.264, p < .0005$ . The sample multiple correlation coefficient was .481, suggesting 23.1% of variance in CHA attitude could be accounted for by the linear combination of perceived community CHA acceptance, personal CHA use, and primary setting FRPL rate. Table 5 provides a summary of the regression model.

Table 5

*Summary of Regression for Variables Related to CHA Treatment Attitude*

Variables	<i>B</i>	SEB	$\beta$
Personal CHA Use	1.965	.295	.420***
Community CHA Acceptance	.812	.346	.156**
School Poverty Level			
Low Poverty (<25% FRPL)	-.634	.772	-.053
High Poverty (>75% FRPL)	1.215	.726	.113
$R^2$	.231		
Adj. $R^2$	.216		
$F$	15.264	***	
$N = 208, *p < .05$ ** $p < .01$ *** $p < .001$			

Multiple linear regression analysis revealed the independent/predictor variables (community CHA acceptance, personal CHA use, and primary setting FRPL rate) did not predict the dependent/criterion variable of medication treatment attitude as demonstrated by total scores on the medication treatment attitude measure. The combination of predictor variables was not significantly related to attitudes toward treating ADHD with medication,  $F(4,203) = .691, p < .599$ . The sample multiple correlation coefficient was

.116, suggesting only 1.3% of variance in medication treatment attitude could be accounted for by the linear combination of perceived community CHA acceptance, personal CHA use, and primary setting FRPL rate. Therefore, none of these variables was a significant predictor of school psychologists' attitudes toward the use of medication to treat ADHD. Table 6 presents a summary of the regression model.

Table 6

*Summary of Regression for Research Question 2*

Variables	<i>B</i>	SEB	$\beta$
Personal CHA Use	-.224	.258	-.062
Community CHA Acceptance	-.022	.302	-.006
School Poverty Level			
Low Poverty (<25% FRPL)	.956	.675	.104
High Poverty (>75% FRPL)	.147	.629	.018
$R^2$	.013		
Adj. $R^2$	-.006		
$F$	.691		

*N* = 208, \* $p < .05$     \*\*  $p < .01$     \*\*\*  $p < .001$

Multiple linear regression analysis revealed the predictor variables (community CHA acceptance, personal CHA use, and primary setting FRPL rate) did not predict the dependent variable of behavioral treatment attitude as demonstrated by total scores on the behavioral treatment attitude measure. The combination of predictor variables was not significantly related to attitudes toward treating ADHD with behavioral treatment approaches,  $F(4,203) = .897, p < .466$ . The sample multiple correlation coefficient was

.132, suggesting only 1.7% of variance in behavioral treatment scale scores was explained by this model. None of these variables—perceived community acceptance of CHA, personal use of CHA or percentage of students on free and reduced lunch—was a significant predictor of school psychologists’ attitudes toward behavioral treatments for ADHD. Table 7 presents a summary of the regression model.

Table 7

*Summary of Regression for Research Question 3*

Variables	<i>B</i>	<i>SEB</i>	$\beta$
Personal CHA Use	.179	.266	.048
Community CHA Acceptance	-.203	.311	-.049
School Poverty Level			
Low Poverty (<25% FRPL)	-1.038	.696	-.109
High Poverty (>75% FRPL)	.043	.649	.005
$R^2$	.017		
Adj. $R^2$	-.002		
$F$	.897		
<i>N</i> = 208, * $p < .05$ ** $p < .01$ *** $p < .001$			

Hierarchical linear regression was conducted to determine how much each set of variables uniquely added to the prediction of the dependent variable—school psychologists’ reported parent communication behavior. Specifically, the sequencing of variables was chosen to determine if the addition of CHA variables (personal use and perceived community acceptance of CHA) and setting variables (level and FRPL rate) improved the prediction of school psychologists’ parent communication behavior over

and above their ADHD treatment attitudes alone. Table 8 presents a full overview of each regression model. The full model of ADHD treatment attitudes (CHA, medication, behavioral), personal CHA use, perceived community CHA acceptance, FRPL rate, and primary setting level to predict parent communication behavior by school psychologists was statistically significant,  $R^2 = .306$ ,  $F(4,194) = 9.491$ ,  $p < .0005$ ; adjusted  $R^2 = .273$ . The addition of the second block of variables—CHA acceptance and CHA personal use—led to a statistically significant increase in  $R^2$  of .129,  $F(2,198) = 17.955$ ,  $p < .0005$ .

Table 8

*Summary of Hierarchical Regression for Research Question 4*

Variable	Model 1				Model 2				Model 3			
	<i>B</i>	<i>SEB</i>	$\beta$		<i>B</i>	<i>SEB</i>	$\beta$		<i>B</i>	<i>SEB</i>	$\beta$	
Treatment Attitude Scales												
CHA Treatment	1.437	.241	.389	***	.818	.250	.221	***	.877	.255	.237	***
Medication Treatment	.362	.324	.075		.379	.300	.079		.334	.305	.069	
Behavioral Treatment	.188	.316	.040		.263	.293	.056		.295	.296	.063	
Personal CHA Use					4.551	1.172	.264	***	4.542	1.182	.263	***
Comm. CHA Acceptance					4.761	1.216	.244	***	4.053	1.275	.207	***
School Poverty Level												
Low Poverty (<25% FRPL)									2.063	2.879	.047	
High Poverty (>75% FRPL)									-3.369	2.613	-.085	
Setting Level												
Elementary									-2.845	5.358	-.074	
Secondary									-6.357	5.584	-.159	
$R^2$	.158				.287				.306			
Adjusted $R^2$	.145				.269				.273			
$F$ Test	12.495	***			15.950	***			9.491	***		
Change in $F$					17.955	***			1.298			
$N = 208$ , * $p < .05$ ** $p < .01$ *** $p < .001$												

## Discussion

The primary purpose of this study was to investigate attention deficit hyperactivity disorder (ADHD) treatment attitudes of school psychologists and their communication with parents about complementary health approaches (CHA) to ADHD. Various characteristics including personal CHA use, perceived community acceptance of CHA, and socioeconomic status of practice settings were examined to explore whether these characteristics were related to school psychologists' attitudes toward three modes of ADHD treatment: pharmacological treatment, behavioral treatment, and complementary health approaches. Additionally, the same variables were explored to understand their influence on parent communication about complementary health approaches to ADHD. This study adds to the limited body of research pertaining to complementary health approaches to ADHD within the practice of school psychology.

When examining the descriptive findings about overall attitudes of school psychologists toward complementary health approaches to ADHD, many participants believed these approaches did not pose a threat to public health (84%) but should be subject to more scientific testing before school psychologists accept them (40%). Furthermore, school psychologists in this study indicated traditional treatments of ADHD could benefit from ideas and methods present in complementary approaches (72%) and this blend of modalities should be present in school psychology services (72.8%). While most school psychologists who responded to the survey indicated they agreed they should provide parents with information about the efficacy of CHAs for ADHD (73%) and that knowledge of CHA was important to the work they did (73%), only a small portion of school psychologists (17%) reported receiving training in their school psychology degree

program about CHAs for ADHD. These findings suggested school psychologists were open-minded when it came to non-traditional interventions for ADHD; as such, there is room in the field for more training and discourse around the applicability of complementary health approaches.

School psychologists who had personally used complementary health approaches and who perceived their community as neutral or accepting toward CHA were more likely to have positive attitudes toward treating ADHD with a complementary approach. Within the sample, most school psychologists (74%) reported they worked within a community they would describe as *neutral*, *accepting* or *very accepting* of complementary health approaches in general ( $M = 3.06$ ,  $SD = .93$ ). Only one-third of respondents reported they personally had *never* or *almost never* utilized complementary health approaches; the majority of participants (68%) endorsed *occasional* personal use of complementary treatments ( $M = 2.91$ ,  $SD = 1.02$ ). The socioeconomic status of the setting in which a school psychologist practiced was not a significant predictor of school psychologists' attitudes toward complementary health approaches despite the fact that complementary health approaches were generally more accessible and more commonly utilized within more affluent communities (Clarke, Black, Stussman, Barnes, & Nahin, 2015).

School psychologists' personal experiences with complementary health approaches and perceptions of their community view of these approaches did not predict their attitudes toward the established, conventional treatments for ADHD--behavioral supports and medication. Similarly, the socioeconomic status of the setting in which a school psychologist worked did not predict their attitudes toward behavioral treatment or



pharmacological treatment of ADHD. This suggested that despite personal use and acceptance of CHAs, school psychologists still favorably perceived evidence-based treatment options for ADHD exactly as competent scientist-practitioners should. Personal use of CHA among school psychologists did not bias them against pharmacological or behavioral interventions.

Within this sample, several descriptive findings illuminated the current landscape of parent communication practices among school psychologists with regard to attitudes and experiences of complementary approaches to treating ADHD. School psychologists reported the following CHA communication behaviors occurred at least *occasionally* if not *frequently* or *very frequently*: attending IEP meetings where CHAs for ADHD were discussed (35.8%), attended a parent-teacher conference where CHAs for ADHD were discussed (32.9%), gathered information about CHAs for ADHD by parent request (22.6%), gathered information about CHAs for ADHD voluntarily (21.6%), and shared research about CHA efficacy with parents (22.1%). More than a quarter of respondents indicated they had at least occasionally discussed with parents the following six specific CHAs for ADHD: cognitive training (37.2%), dietary changes (32.9%), martial arts (32.4%), relaxation (39.7%), yoga (25%), and mindfulness training (29.4%). Remarkably, only 8.4% of respondents indicated they had been given guidance from their school or district about how to handle CHAs for ADHD with the parents in their school community. School psychologists were responding to parent-initiated communication about CHAs for ADHD (45.6%) and were initiating conversations about CHA as well (16.1%).

In addition to believing school psychologists should convey information about treatment efficacy, there were variables that related to the prediction of parent communication about CHA in particular. Favorable CHA treatment attitudes coupled with personal CHA experience and perceived community acceptance of CHA significantly predicted the frequency of parent communication about alternatives to pharmacological and behavioral treatments for ADHD. As school psychologists increased their personal use of CHAs and perceived higher levels of community support, so too did their communication increase with parents about these approaches. Neither the setting level in which school psychologists practiced (early childhood, elementary, secondary) nor the socioeconomic status (low or high FRPL rate) were significant predictors of parent communication about CHAs for ADHD. Furthermore, it was surprising that school psychologists in low poverty schools did not appear to be engaging in more frequent parent communication about CHA despite affluence being a factor in seeking CHA treatments.

The findings of this study informed professional practices of school psychologists as scientist-practitioners—experts in balancing research and practice. Shaw et al. (2010) outlined three duties of school psychologists related to encounters with CHA in their practice settings: review current research on CHA treatment efficacy, generate research support via monitoring CHA treatment efficacy using single case design, and disseminate information to parents about the research and efficacy related to CHA. The findings of this study provided preliminary insight into the fact these practices have not yet been widely adopted by school psychologists. Less than a quarter of participants in this study reported seeking information about CHA for ADHD of their own volition (21.5%)

despite the fact that parents were disclosing the use of CHA for ADHD to school psychologists (%1.5%), which suggested practitioners were not staying current on the emerging body of research supporting the potential efficacy of complementary approaches to ADHD. The body of evidence related to school psychology is dynamic; thus, practitioners must seek information to guide their practice with the most current evidence available.

Six complementary practices about which school psychologists reported relatively high frequency of parent-communication (responses included in % range from *occasional* to *very frequent*) were cognitive training (37.2%), dietary changes (32.9%), martial arts (32.4%), relaxation (39.7%), yoga (25%), and mindfulness training (29.4%). These practices were also ones with evidence of emerging research support, suggesting it was not just personal experience and treatment attitudes that informed parent-communication behavior. Rather, familiarity with research support might have informed responses of those who endorsed higher levels of communication about these treatment approaches. As such, these six complementary treatments provided a useful starting point for school psychologists to educate themselves on the potential these interventions have to improve the prognosis of children with ADHD in their school settings.

Historical attempts at conceptualizing ADHD relied on dichotomous tenets of nature and nurture when, in fact, highly complex and variable factors influence the manifestation of the disorder from person to person (Tharpar et al., 2013). Furthermore, to embrace the potential of complementary approaches such as mindfulness, a school psychologist must dispense with another dualistic framework—that of mind and body—and instead rely on a more interconnected view of both typical and atypical human

development. Juxtaposing a dualistic view of ADHD with a more multi-dimensional and interconnected viewpoint provides a more dynamic lens through which practitioners can view a disorder's etiology and potential treatments to optimize benefits for an individual child. As such, more information and training--whether acquired formally or informally—could lead to more favorable ADHD treatment attitudes, which would then inform more effective, dynamic parent communication. Ultimately, the goal of this information gathering and collaboration was to create more favorable outcomes for children undergoing treatment for ADHD.

Limitations of this study included issues related to methodology. Survey research lends itself to response bias and socially desirable responding. The non-random sampling method was also a potential limitation because snowball and volunteer sampling occurred among members of state school psychology associations. Furthermore, the researcher-developed instruments lacked established reliability and validity as measurement instruments and some variables were measured with only one item.

This study was exploratory in nature; as such, there is a vast array of future research opportunities related to complementary health approaches to ADHD within the field of school psychology. Qualitative case study and mixed-methodologies would lend themselves well to exploring the nuances of the school-family partnering process related to consultation about and progress monitoring of CHA interventions for ADHD. Single case studies of individual children undergoing a trial of a CHA would also add to the body of literature related to treatment efficacy. Moreover, studies that examine the effects of providing CHA-related training to school psychologists could reveal the benefits of incorporating this information into training programs and post-graduate

professional development opportunities. A greater understanding of parents' experiences within schools as they pertain to the use of CHAs for ADHD would also be helpful in identifying and eliminating obstacles to parent communication.

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