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Nigerian Educators' Attention-Deficit Hyperactivity Disorder Knowledge and Classroom Behavior Management Practices

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This is to certify that the doctoral dissertation by

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Abstract

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Dissertation Submitted in Partial Fulfillment

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Abstract

This correlational study assessed Nigerian educators' knowledge about attention deficit/hyperactivity disorder (ADHD) and inclusive classroom management practices when serving students with ADHD. Specifically, the study examined the predictive correlation between teachers' demographic characteristics, including years of teaching experience, level of education, and knowledge about ADHD, as well as how their knowledge informed their choice of behavior management interventions. Teachers are accountable for pedagogical responsibilities including maintenance and management of a learning environment that promotes learning and inclusion. Further, they play a significant role in identifying and supporting students with learning impairments including ADHD. Thus, it is critical for teachers to have unambiguous knowledge about ADHD and evidence-based behavior management practices. One thousand teachers participated. The Knowledge of Attention Deficit Disorder Scale (KADDS) and the Teachers' Interventions for ADHD Students (TIAS) survey instruments were used for data collection. Descriptive statistics, multiple linear regression, and multinomial logistic regression were employed to analyze the data. Results indicated that teachers demonstrated high levels of misconception and limited knowledge regarding ADHD. Teachers' levels of education and years of teaching experience did not match or improve their cumulative knowledge of ADHD. Knowledge about ADHD predicted teachers' choice of behavior modification strategies for the characteristic behaviors of ADHD. Teachers implemented negative disciplinary consequences (consequence-based strategies) and multiple interventions for shaping specific negative behaviors associated with ADHD, indicating a lack of competence in classroom management practices. This study offers invaluable information on the status of Nigerian teachers' ADHD knowledge and classroom management practices and may inform decisions for the development and implementation of differentiated instruction strategies, teacher training, and academic curriculum to improve teachers' pedagogical competence and students' academic outcomes.

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Dedication

I dedicate this dissertation to my entire family for their invariable and unconditional love and support, and for their belief in me and in my dreams. I recognize their individual and collective sacrifices toward my achievement of this goal. I want to particularly show appreciation to my wife, Gina Ojionuka, for her constant encouragement even when things looked bleak. Baby, I did this for you, and I am indebted to you. I love and thank you.

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Barring my personal efforts, Divine Authority and many individuals contributed significant efforts in the completion of this dissertation. Preeminently, I could not have accomplished anything without the indefectible help of my Lord and Savior Jesus Christ, whose unfailing grace and inimitable inspiration guided my steps through this process.

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I remain highly indebted to Dr. Cheryl Tyler-Balkcom, my dissertation chair. I am grateful for her encouragement and commitment, as well as for believing in and insisting on the best of me throughout the process. I personally acknowledge the efforts and contribution of my committee and URR members, Dr. John Deaton and Dr. Jonathan Cabiria. They raised important questions, challenged my thoughts, and provided me with invaluable input.

Finally, my deepest love and appreciation go to my children, and most importantly to my wife, Gina, for her extraordinary sacrifices and unparalleled devotion to hold down the fort as I persevered through this long and rewarding research project. Her courage and commitment to stride both our organization and family management responsibilities were the driving force behind the success of this dissertation.

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Chapter 1: Introduction to the Study

Introduction

In 2008, Nigeria introduced the National Policy on Education, which embraces inclusive education in all classrooms for all students, including those with disabilities, regardless of the severity of their disabilities (Ajuwon, 2008). ADHD is prevalent among elementary and secondary school students in Nigeria (Adewuya & Famuyiwa, 2007; Bakare, 2012; Bakare, Ubochi, & Ebigbo, 2010; Ofovwe, Ofovwe, & Meyer, 2006). Consequently, in-class management of children presenting ADHD-characteristic behaviors has become an added responsibility for teachers.

ADHD is among the most common neurodevelopmental disabilities exhibited by children in the general education environment (Adewuya & Famuyiwa, 2007; Getahun et al., 2013). Barkley (2015) noted that an average of two students who exhibit symptomatic characteristics of ADHD, including inattention, hyperactivity, and impulsivity, or a combination of the three, are located in every classroom (American Psychiatric Association [APA], 2013). Teachers are responsible for maintaining learning environments that are responsive to the needs of all students; additionally, they play extraordinary roles in the referral of students for ADHD assessment (Alegría et al., 2012; Lee, 2014; Moldavsky, Groenewald, Owen, & Sayal, 2013; Ohan, Cormier, Hepp, Visser, & Strain, 2008; Vieira, Gadelha, Moriyama, Bressan, & Bordin, 2014).

Researchers have found an 8.7% prevalence rate of ADHD among the elementary and high school student population in Nigeria (Adewuya & Famuyiwa, 2007; Bakare, 2012; Bakare et al., 2010; Ofovwe et al., 2006; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014). The implementation of inclusive education policy in Nigeria has

resulted in additional challenges in the classroom, and teachers lack knowledge and competence or skills to address them (Adeosun, Ogun, Fatiregun, & Adeyemo, 2013; Ajuwon, 2008; Emmer & Stough, 2001; Wu, 2015). Studies indicate that most of the general educators in Nigeria hold negative perceptions and attitudes about ADHD and lack information about characteristic behaviors of students with ADHD (Abiodun et al., 2011; Adeosun et al., 2013; Bakare, 2012; Bella, Omigbodun, & Atilola, 2011). In order to enhance teachers' classroom management skills and assessment reports for students with ADHD as well as promote the students' positive academic outcomes and social development, teachers need to have better knowledge of ADHD and effective behavior management strategies for students with ADHD.

Chapter 1 contains background details about the consequences of educators' attitudes about ADHD and associated in-class behavioral modification interventions, in the context of social concerns and theoretical scholarly models. The problem statement highlights the need for this study and for assessment of Nigerian teachers' knowledge and attitudes as well as the nature of their behavior modification approach in response to the inherently negative and characteristic behaviors that students with ADHD may present in the classroom. Other topics contained in Chapter 1 include (a) the purpose and significance of the study, with details on the importance of the current study to the education field; (b) definitions of terms; and (c) the study assumptions, limitations, and delimitations.

Background of the Study

The Nigerian educational system has undergone various changes, including the introduction of the Universal Basic Education (UBE) scheme and the revision of the

National Policy on Education in 2008, in the pursuit of a set of educational policies that may cater to the learning needs of all Nigerian citizens (Ajuwon, 2008; Aluede, 2006; Okugbe, 2009; Oluwadare & Julius, 2011; Tsafe, 2013; UBE, 2006). The UBE scheme, which focused on Education for All (EFA) programs and the 2008 revised National Policy on Education, Section 7—Inclusive Education Policy, established a mandate that students with disabilities, including those with ADHD, regardless of severity, be integrated into the general education environment with their nondisabled peers (Ajuwon, 2008; Aluede, 2006; Bryant, Smith, & Bryant, 2008; Frankel et al., 2010; National Policy on Education, 2008; Okugbe, 2009; Spiker, Hebbeler, & Barton, 2011). The implementation of these policy changes occurred to ensure that all children with disabilities, including children who exhibit typical ADHD behaviors, receive free and appropriate public education in the least restrictive environment.

Researchers have reported that the characteristic presentation of ADHD students' inattention, hyperactivity, and impulsivity were in direct conflict with required classroom behavioral conduct, including on-task and self-regulatory behaviors, information processing and motivational demand (Imeraj et al., 2013; Wei, Yu, & Shaver, 2014). Studies have indicated that during class group teaching, ADHD children exhibited significantly less on-task behaviors, shorter on-task attention spans during academic tasks, and challenges with instructional transitions between tasks (Imeraj et al., 2013). Numerous studies have correlated ADHD behaviors with impaired social development as well as poor academic performance and achievement (Daley & Birchwood, 2010; Molina, Hinshaw, & Swanson, 2009; Wei, Yu, & Shaver, 2014; Wheeler, Pumfrey, &

Wakefield, 2009) in elementary and middle school (Langberg et al., 2011), high school (Kent et al., 2011), college, and finally into the career years (Kuriyan et al., 2013).

Teachers spend considerable time attempting to control disruptive behaviors in classrooms at the expense of academic instruction (Bettini, Kimerling, Park, & Murphy, 2015; Emmer & Stough, 2001). Lack of competence in classroom management strategies and effective approaches for addressing disruptive student behaviors presents teachers with extraordinary challenges in meeting the pedagogical demands of the classroom (Emmer et al., 2001; Wu, 2015), because they must concomitantly mediate academic deficits while effecting behavioral interventions all of which require pedagogical expertise in dual content areas, including academic interventions and evidence-based classroom management practices (Brownell et al., 2012; Conroy, Alter, Boyd, & Bettini, 2014). Thus, classroom behavior management is fundamental to the success of the inclusive classroom, especially in addressing the unique behavioral needs of ADHD students (DuPaul et al., 2006; Fabiano et al., 2010). Classroom management consists of all actions teachers take to promote order and effective use of time during class activities, including managing behaviors; maintaining a consistent, structured pedagogical environment; and applying differentiated instruction and strategies to a diversity of students (Dixon, Yssel, McConnell, & Hardin, 2014; Fabiano & Pelham, 2003; Freedman, 2015; Watts-Taffe et al., 2012). Many teachers receive insufficient training on classroom management strategies, have no significant experience in educating ADHD students, and lack effective intervention skills for shaping negative behaviors (Van Tartwijk & Hammerness, 2011; Westling, 2010). Research indicates that very few teachers who teach at general education levels implement these behavior modifications

(Coles, Owens, Serrano, Slavec, & Evans, 2015; Romi, Lewis, & Roache, 2013). Despite the availability of these school-based behavior intervention strategies, research suggests that most Nigerian general educators either do not have accurate knowledge regarding the interventions or have not received adequate training to implement them (Van Tartwijk et al., 2011)

Culture can play a role in teachers' perspectives on ADHD and impact what teachers know and how they perceive, interpret, and manage the behaviors of students with ADHD (Brown, Lake, & Matters, 2011; David, Richard, Dennis, & Stewart, 2014; Lee, 2014; Perold, 2010). Studies such as that of Rubie-Davies et al. (2012) have established teacher beliefs as the product of the cultural context from which they emerge. In that sense, teachers' professional responsibilities are both framed by and subservient to jurisdictional policies, educational models, and policy dogma pertaining to curriculum, pedagogy, and assessment (Brown et al., 2011). Therefore, it is plausible that teacher education experiences implicitly reflect this epistemology. For example, importantly, Rideout and Morton (2010) found that workshop socialization experiences share stronger correlative significance in predicting preservice teachers' beliefs regarding classroom regulation and management than other personal variables.

In South Africa, a qualitative study of teachers indicated that students with ADHD were regarded as disrespectful or challenging (Lopes, Eloff, Howie, & Maree, 2009). Adeosun et al. (2013) suggested that Nigerian teachers' knowledge and misconceptions about ADHD, instructional practices, and classroom behavioral management strategies are confounded by cultural differences and beliefs about typical characteristic behaviors of ADHD (Ajuwon, Ogbonna, & Umolu, 2014). Even

experienced teachers seem to lack knowledge and training about ADHD (Sciutto, Terjesen, & Frank, 2000).

Researchers in the United States found a correlation between teachers' instructional and classroom management strategies, knowledge about ADHD, and overall academic and social outcomes for ADHD students (Sherman, Rasmussen, & Baydala, 2008). Teachers are responsible for providing a responsive environment unique to the needs of individual students, including ADHD students, in the inclusive classroom (Kunter et al., 2013; Reyes, Brackett, Rivers, White, & Salovey, 2012). Teachers' greater insight into knowledge about ADHD and possession of appropriate skills needed for classroom management interventions are important to overall general education. It is likely that such knowledge and skill can enhance Nigerian educators' self-efficacy, confidence, and comfort in implementing differentiated instruction and effective pedagogic approaches to their ADHD students' unique learning needs (Dixon, Yssel, McConnell, & Hardin, 2014). Many teachers are unsure of their ability to control and modify behavior problems associated with ADHD that disrupt learning environments and pedagogical responsibilities (Vieira, Gadelha, Moriyama, Bressan, & Bordin, 2014). Teachers have also reported a lack of training regarding ADHD and behavior intervention strategies as the underpinning obstruction to their effectiveness in managing characteristic behaviors of ADHD (Koutrouba, 2013; West et al., 2005). Therefore, understanding Nigerian educators' level of knowledge about ADHD, attitudes toward the disorder, and use of in-classroom interventions for characteristic behaviors of ADHD can be fundamental for successful pedagogy, inclusive practices, and positive outcomes for Nigerian students.

Problem Statement

According to Frankel, Gold, and Ajodhia-Andrews (2010), inadequate planning for the implementation of inclusive education in Nigeria resulted in a lack of understanding of sociocultural and economic variables and assessment of teachers' pedagogical skills, knowledge, and readiness. When teachers lack adequate knowledge about ADHD (Guerra & Brown, 2012; Koutrouba, 2013; Ohan, Visser, Strain, & Allen, 2011; Rodrigo, Perera, Eranga, Williams, & Kuruppuarachchi, 2011; Sciutto, Terjesen, & Frank, 2000), they are prone to misconceptions and negative perceptions about their ADHD students (Sciutto et al., 2000). These misconceptions could lead to teachers' use of negative and disciplinary consequences as well as referrals (Bryan, Day-Vines, Griffin, & Moore-Thomas, 2012; Ergün, 2014; Ohan, Cormier, Hepp, Visser, & Strain, 2008; Tillery, Varjas, Meyers, & Collins, 2010; Westling, 2010). These consequences lead to increased frequency and intensity of maladaptive behaviors (Kaufman & Brigham, 2009), student resistance, and disengagement, as well as truancy and impaired chronic externalizing of behaviors (Romi, Lewis, Roache, & Riley, 2011; Sullivan et al., 2014).

A review of the existing literature indicates that Nigerian educators hold negative attitudes and misperceptions about negative behavioral characteristics of ADHD (Adewuya & Famuyiwa, 2007). Additionally, some studies conducted in countries other than Nigeria have shown that most teacher training curricula do not include information about ADHD (Van Tartwijk et al., 2011), and that when ADHD information is included in preservice special education programs, Children with ADHD are disproportionately overpathologized as inherently dysfunctional and destitute of constructive characteristics (Freedman, 2016). As such, most teachers rely on actual classroom teaching experiences

involving students who have confirmed diagnoses of ADHD to learn about the disorder. Additionally, child and adult mental health researchers in Nigeria (Abiodun et al., 2011; Bakare, 2012; Bella, Omigbodun, & Atilola, 2011; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014; Oshodi, Simoyan, Lesi, & Ibeziako, 2013) share the consensus that the Nigerian teacher training curriculum needs reformation to include, among other topics, information about ADHD. Unfortunately, there is a dearth of information about ADHD in Nigeria (Frank-Briggs, 2011) to inform such education and teacher training curricular reforms.

Although researchers (Adewuya & Famuyiwa, 2007; Bakare, 2012; Bakare, Ubochi, & Ebigbo, 2010; Ofovwe, Ofovwe, & Meyer, 2006; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014) have established the prevalence of ADHD among elementary and secondary schoolchildren in Nigeria, no researcher has examined the past and current state of Nigerian general educators' baseline knowledge about ADHD and their classroom management of inherently negative ADHD behaviors. The prevalence of ADHD and ADHD misperceptions among teachers in Nigeria highlight the need for educational interventions targeted toward improving teachers' knowledge of ADHD (Adeosun et al., 2013). With improved knowledge about ADHD, Nigerian general educators would be more likely to provide assistive and useful information toward the resolution of ADHD issues within the Nigerian context in order to ensure student success.

Taken together, Nigerian teachers' level of knowledge about ADHD and proficiency with behavioral management in the classroom are unknown in the literature (Adewuya & Famuyiwa, 2007). Therefore, additional research is needed to identify Nigerian teachers' knowledge about ADHD; demographic characteristics, including years

of experience dealing with students who exhibit ADHD behavioral characteristics; and the levels of education, to determine how these factors affect Nigerian teachers' choices of classroom management strategies.

Extensive research about ADHD currently exists. A majority of the research focuses on the developed world, including North America and some European countries (Adewuya & Famuyiwa, 2007). The external validity and utility of such research may be limited by cultural differences. While various studies have been conducted in countries other than Nigeria to demonstrate teachers' misconceptions about ADHD, level of knowledge about ADHD, and how to improve teachers' knowledge of the disorder and students' academic outcomes (Aguiar et al., 2012; Causton-Theoharis, 2009; Dupaul et al., 2006; Graham-Day, Gardner, & Hsin, 2014; Kozik, Cooney, Vinciguerra, Gradel, & Black, 2009), little is known about Nigerian teachers in this regard.

Purpose of the Study

The purpose of this quantitative, correlational study was to assess Nigerian educators' knowledge about ADHD and the nature of classroom management strategies they employ for the management of ADHD students. In Nigeria, there is limited or insufficient formal ADHD training for teachers. The body of literature has demonstrated that most researchers who have investigated child and adult mental health in Nigeria, including ADHD and other neurodevelopmental disorders, have advocated the development of training for mental health personnel and teachers, as well as the incorporation of research outcomes into the teacher training curriculum (Abiodun et al., 2011; Bakare, 2012; Bella, Omigbodun, & Atilola, 2011; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014; Oshodi, Simoyan, Lesi, & Ibeziako, 2013). Nigerian

teachers have reported common encounters with children with ADHD in their classrooms and the desire to have more training in areas that include knowledge about ADHD and appropriate classroom management of ADHD-related behaviors (Jones & Chronis-Tuscano, 2008; Koutrouba, 2013; Westling, 2010). Thus, uncovering teachers' knowledge and training will enable the development of appropriate classroom management practices for students diagnosed with ADHD.

Research Questions and Hypotheses

I assessed Nigerian teachers' knowledge about ADHD and teachers' classroom behavioral management strategies in a Nigerian school setting pertaining to the following research questions:

Research Question 1

What is Nigerian teachers' knowledge about ADHD (general awareness, etiology, intervention, and overall)?

Research Question 2

Do Nigerian teachers' years of teaching experience significantly predict their knowledge of ADHD?

$H_0$1: Nigerian teachers' years of teaching experience do not significantly predict their knowledge about ADHD.

H_A1: Nigerian teachers' years of teaching experience significantly predict their knowledge about ADHD.

Research Question 3

Does Nigerian teachers' level of education significantly predict their knowledge of ADHD?

***$H_0$2*:** Nigerian teachers' level of education does not significantly predict their knowledge about ADHD.

***H_A2*:** Nigerian teachers' level of education significantly predicts their knowledge about ADHD.

Research Question 4

Does Nigerian general educators' knowledge about ADHD significantly predict their choice of classroom behavior intervention (academic, consequent, antecedent) for inattentiveness, wandering, poor peer interaction, and speaking out of turn?

***$H_0$3*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding inattentiveness (Vignette 1).

***H_A3*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding inattentiveness (Vignette 1).

***$H_0$4*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding wandering (Vignette 2).

***H_A4*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding wandering (Vignette 2).

***$H_0$5*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding poor peer interaction (Vignette 3).

***H_A5*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding poor peer interaction (Vignette 3).

***$H_0$6*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding speaking out of turn (Vignette 4).

***H_A6*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding speaking out of turn (Vignette 4)

Theoretical Framework

Theory of Cultural Relativism

The theoretical framework for the study was based on Tennekes's (1971, as cited in Bothamley, 1993) cultural relativism theory. The assumptions of cultural relativism theory are based on culture-bound perceptions relating to culturally held ideologies, beliefs, values, and norms. Cultural relativism theory portends that these assumptions configure the cultural behaviors, attitudes, views, way of life, and existential experiences of the native citizens of the culture (Herskovits, 1973).

According to Tennekes (1971), cultural relativism theory suggests that each culture or ethnic group has its own values, shared ideals, and beliefs through which the group organizes its collective life, goal, attitude, and worldview, and therefore, each culture or group needs to be evaluated or understood on its own culture-specific terms. Tennekes also suggested that within a culture, a person's or group's attitude or perception may change because of certain factors, including the introduction of new information (Tennekes, 1971, as cited in Bothamley, 1993). In this sense, the introduction of new information includes Nigerian teachers' demographic characteristics: level of education

and years of professional in-service experience or classroom contact with children with ADHD.

The current study assessed what, if any, links exist between Nigerian educators' attitudes toward ADHD and students' in-classroom characteristics and the educators' use of behavioral interventions. Thus, in keeping with cultural relativism theory, a Nigerian cultural perspective will be the best predictor of Nigerian teachers' knowledge about ADHD and how that knowledge may inform the nature of the pedagogical and classroom management strategies that teachers adopt in inclusive classrooms for students with ADHD. Additionally, the Nigerian cultural perspective in relation to cultural relativism will offer the best delineation of how the educators' demographic characteristics relate to their knowledge about ADHD.

In Nigeria, inherent cultural beliefs configure attitudes toward and perceptions of disabilities as well as behaviors that are typical of ADHD Nigerian teachers' associated misconceptions about the behavioral characteristics of ADHD include the notion that these characteristics reflect the influence of malevolent spirits (Ajuwon, Ogbonna, & Umolu, 2014; Tolulope Eni-olorunda, 2008). In Nigeria, children who display characteristics typical of ADHD may be stigmatized, avoided, and perceived as being disturbed by demonic forces (Adeosun, Ogun, Fatiregun, & Adeyemo, 2013; Ajuwon et al., 2014). Nigerian cultural predispositions and negative perceptions of disabilities necessitate an assessment of Nigerian educators' level of knowledge about ADHD in order to develop psychoeducational interventions targeted toward improving teachers' knowledge of ADHD (Adeosun et al., 2013) and of instructional practices and behavior management strategies for inclusive classrooms.

Consequently, based on the assumptions of cultural relativism theory relating to Nigeria's cultural belief system regarding disabilities, this study examined the nature of Nigerian educators' knowledge about ADHD. In addition, it sought the interaction between the outcomes of Nigerian teachers' knowledge or quantification of typical behaviors of ADHD and the nature of the classroom behavioral interventions the teachers implemented for ADHD. In addition, it sought to examine the correlation between Nigerian teachers' demographic characteristics and their knowledge about ADHD. Thus, in collaboration with the intrinsic cultural ideologies, beliefs, and the absence of formal training on ADHD for teachers in Nigeria, indicators of this study validated the likelihood of the educators' lack of appropriate knowledge about ADHD and their susceptibility to implementation of more negative and disciplinary consequences for shaping ADHD behaviors in the classroom. Further, the immediate outcomes from this study indicate that Nigerian teachers' current demographic characteristics may not improve or promote knowledge of ADHD. In addition, the impending outcomes of this study provide indicators that the nature of the Nigerian educators' choices of classroom management strategies and levels of proficiency are the product of their level of knowledge about ADHD and culture-driven perceptions regarding the disorder. Consequently, the constructs or indicators of this study remain assistive in locating the specific areas in which Nigerian educators need proficiency and improvement for effective pedagogy and inclusive education.

Nature of the Study

Quantitative (Nonexperimental, Cross-Sectional, and Survey Design)

I employed a quantitative correlational design to respond to the research questions and resolve the problem posed. A quantitative research method engenders postpositivist views with the belief that objective reality controls all social facts and provides identifiable variables for developing knowledge and measuring relationships (Creswell, 2009). Quantitative researchers state research hypotheses and theoretical assumptions, make inquiries using experiment and survey strategies, collect data on predetermined instruments, and analyze data to confirm assumptions by reducing data to numeric indices to derive deductive logic and inferential statistics (Creswell, 2009; Nastasi & Schensul, 2005). Correlational or predictive designs are appropriate when the researcher desires to measure the strength and direction of a relationship between two or more variables. More specifically, a prediction design measures the predictive effect that one or more independent variables have on a criterion variable (Creswell, 2009).

The current research employed both multiple linear and logistic regression to determine the relationship between the independent variables under consideration—participants' years of teaching experience and education—and the dependent variables—participants' self-reported knowledge about ADHD and classroom behavioral intervention used.

Instrumentation

I used the Knowledge about Attention Deficit Disorder Scale (KADDS) and the Teacher Interventions for ADHD Students (TIAS) survey instruments. Scuitto, Terjesen, and Bender-Frank (2000) developed the KADDS questionnaire. KADDS is a 39-

question scale intended to measure the overall knowledge and perceptions teachers have about ADHD. In addition, it consists of three subscales that measure teachers' knowledge of ADHD in specific areas: general awareness/ symptomatic characteristics, etiology, and intervention.

In addition, Conforti (2012) developed the Teacher Intervention for ADHD Students (TIAS). The TIAS is a 24-item scale addressing antecedent, academic, and consequent strategies that is designed to measure teachers' perceptions of the effectiveness of behavior management strategies. It is comprised of four vignettes that demonstrate negative ADHD-characteristic behaviors, including inattentiveness, wandering, poor peer interaction, and speaking out of turn. The items in the TIAS questionnaire scales provide two antecedent, two consequent, and two academic options for modifying negative ADHD behaviors.

Previous researchers employed KADDS and TIAS to assess teachers' knowledge about ADHD and teachers' perceptions of the effectiveness of classroom management interventions, respectively. Researchers such as Aguiar et al. (2012); Sciutto, Terjesen, and Bender Frank (2000); and Ohan, Viser, Strain, and Allen (2011) focused on variables related to teachers' teaching experience and teachers' highest level of education to assess teachers' knowledge about ADHD in terms of specific content areas and school-based behavioral interventions. The ADHD content areas include general knowledge/ characteristics, etiology, and intervention, as well as antecedent, consequent, and academic strategies for classroom behavioral management. Consequently, the current study used KADDS and TIAS to assess teacher attitudes and perceptions.

Definition of Terms

The definition of unique words and phrases in the current study promotes full understanding of the problem at hand:

Academic intervention: This is a behavioral management approach employed in an inclusive education environment to reduce negative ADHD behaviors and to promote on-task behavior (Dupaul, Weyandt, & Janusis, 2011). It includes peer tutoring, adapting student curriculum, and modifying pedagogical approach (Dupaul, Weyandt, & Janusis, 2006, 2011).

Antecedent intervention: Antecedent interventions are interventions teachers implement in the classroom to reward positive or target behaviors, and consequently to avert the occurrence of negative behaviors (Dupaul, Weyandt, & Janusis, 2006, 2011).

Consequent strategy: Consequent strategies are interventions executed subsequent to a target behavior to reduce the probability of the behavior's reoccurrence. Consequent strategies include loss of reinforcement, response cost, and verbal reprimand (Dupaul, Weyandt, & Janusis, 2006, 2011).

Cultural relativism: Cultural relativism suggests that each culture has its own values and norms with which it establishes related worldview and understands the world; therefore, each ethnic group need to be understood in its own culture-specific terms.

Disciplinary consequences or measures: Disciplinary consequences or measures are punitive interventions implemented in the classroom to shape negative ADHD behaviors. They include removal, referral, corporal, and manual punishments.

Inclusion: Inclusion refers to the integration of children with disabilities into regular classrooms throughout the duration of a school session.

Individual education plan (IED): Individual education plans are documents specifying the details of a student's academic goals and accommodation needs based on earlier assessments of the student (Gordon, 2006; Siegel, 2011).

Least restrictive environment (LRE): A least restrictive environment in inclusive classrooms requires that students with disabilities be provided with all ancillary support or aides and services necessary to ensure a level of comfort that parallels that experienced by their nondisabled peers in the classroom.

Assumptions

The assumptions of the current research included the following:

1. General educators have ADHD students in their classrooms and are familiar with in-class behaviors characteristic of students with ADHD.
2. Use of a survey is a passable technique for data collection when scrutinizing knowledge about ADHD and the interventions used to modify negative ADHD behaviors in regular or inclusive classrooms.
3. All of the teachers who participated in this research provided genuine and accurate responses to the survey questionnaires. To ensure genuineness and probity, anonymity and confidentiality were conserved and participants were volunteers who had the capacity to withdraw from the research at will and at any time.

Scope and Delimitations

A delimitation of the study involved collecting data only from general educators in the country of Nigeria. The focus of the study was gaining an understanding of general educators' knowledge about ADHD and of the in-class interventions general

educators use in shaping negative behaviors associated with ADHD in regular (inclusive) classrooms. Although the participating teachers in this research were taken from statewide-stratified groups of schools in the southeastern region of Nigeria, significant portions of the research outcomes may not be generalizable to other regions of the country because of cultural differences.

Limitations

The limitations of the study included lack of a reliable measure of participants' level of motivation to offer honest responses to the questions posed. Participants received no instrumental benefits other than the opportunity to contribute to the body of knowledge in the pedagogical profession. Another limitation related to cultural and ethnic differences between teachers and students, given that this research was conducted in the southeastern region of Nigeria, where cultural perceptions and practices may differ from those inherent in other regions of the country. Lack of cultural sensitivity on the part of teachers may influence how they perceive students' ADHD-characteristic behaviors and the nature of the interventions they use to shape perceived negative behaviors in the classroom.

Significance of the Study

Teachers are accountable for meeting the educational needs, fostering the social development, and promoting the academic gain of ADHD students in Nigerian integrated and inclusive classrooms (Kunter et al.,; Reyes, Brackett, Rivers, White, & Salovey, 2012). In this study, I carefully assessed Nigerian educators' general knowledge about ADHD and classroom behavioral management strategies. Also, I examined the predictive relationship between Nigerian educators' general knowledge about ADHD,

their choices of classroom management responses to the presentations of negative characteristics of ADHD in the classrooms.

The results of this study may inform policy-makers on the need for continuing education, training, and in-service programs to enhance teachers' knowledge about ADHD and the skills needed for responding effectively to students with ADHD with appropriate behavioral modification strategies. Teacher training may limit the disruptions that students with ADHD create for peers in the classroom and reduce the incidence of negative reprimands received by students with ADHD due to teacher frustration. The results from this study may guide the development of improved academic curricula for behavioral management that aligns with effective inclusive classroom practices in Nigeria. Similarly, the knowledge and information gathered from this study may promote greater understanding toward the pursuit of positive social change and may inform the implementation of teacher education curriculum and professional development programs addressing ADHD.

Summary

Previous research has indicated that ADHD is prevalent among students in Nigerian elementary and secondary schools (Adewuya & Famuyiwa, 2007; Bakare, 2012; Bakare, Ubochi, & Ebigbo, 2010; Ofovwe, Ofovwe, & Meyer, 2006). Teachers' inadequate knowledge about ADHD and lack of training and competence in managing negative and disruptive behaviors of students with ADHD in the classroom can lead to students' academic underperformance. When teachers lack adequate knowledge about ADHD (Guerra & Brown, 2012; Koutrouba, 2013; Ohan, Visser, Strain, & Allen, 2011; Rodrigo, Perera, Eranga, Williams, & Kuruppuarachchi, 2011; Sciutto, Terjesen, &

Frank, 2000), they are prone to misconceptions and negative perceptions about their ADHD students (Sciutto, Terjesen, & Frank, 2000). These misconceptions can lead to teachers' use of negative disciplinary consequences. These consequences may then lead to increased frequency and intensity of the maladaptive behaviors (Kaufman & Brigham, 2009), student resistance and disengagement, and truancy and impaired chronic externalizing behaviors (Sullivan et al., 2014; Zyngier, 2007).

Through this study, I sought to provide information to enhance Nigerian general educators' pedagogical effectiveness and in-class behavior management of ADHD students. The results of this study may inform policy-makers about the need for continuing education, training, and in-service programs to enhance teachers' knowledge of ADHD and skills needed to respond effectively to students with ADHD with appropriate behavioral modification strategies. Teacher training may limit disruptions in the classroom arising from ADHD. The results from this study may guide the development of improved academic curriculum on behavior management that aligns with effective inclusive classroom practices in Nigeria. Similarly, the knowledge and information gathered from this study may promote greater understanding toward the pursuit of positive social change and may inform teacher education curricular and professional development programs related to ADHD.

Chapter 2 includes literature pertaining to the research questions and the variables. The chapter begins with a historical overview and a discussion of current findings.

Chapter 2: Literature Review

Introduction

There is a need for educators to understand Nigerian teachers' choices of classroom management strategies related to their knowledge about ADHD in the inclusive classroom. This study explored current practice and identified areas in which teachers need support through in-service training and development of a more comprehensive teacher education curriculum. In Nigeria, students with ADHD in inclusive classrooms need help, structure, and management; thus, teachers' knowledge about ADHD and use of effective intervention strategies for modifying negative behaviors associated with ADHD are required to enhance and maximize ADHD students' learning and academic achievement.

The purpose of the current study was to assess Nigerian teachers' knowledge about ADHD, teaching experience, and levels of education, as well as to determine whether these factors help to determine their choices of classroom behavioral management strategies in Nigerian school settings. The objective of the study was to examine the following research questions:

1. What is Nigerian teachers' knowledge about ADHD (including general awareness, etiology, intervention, and overall)?
2. Do Nigerian teachers' years of teaching experience significantly predict their knowledge of ADHD?
3. Do Nigerian teachers' levels of education significantly predict their knowledge of ADHD?,

4. Does Nigerian general educators' knowledge about ADHD significantly predict their choice of classroom behavioral intervention?

The chapter includes a historical examination, discussion of both dissenting and concurring views on inclusive education, the nature of ADHD, a review of recent findings, description of gaps in the literature, teachers' knowledge about ADHD within the Nigerian cultural environment, behavioral intervention strategies, and the theoretical framework as it relates to the study. Summarily, the chapter provides a valuable review of the literature that is accessible to experts and nonprofessionals alike. Further, the chapter addresses a gap found within the existing body of literature.

Literature Search Strategy

I obtained the literature compiled for this review through comprehensive online library search methods. Among the journal databases searched, those that generated the most applicable results from the last 5 years were Google, EBSCOhost, ProQuest, ERIC, and ProQuest Dissertations. The search included the following keywords: *attention-deficit hyperactivity disorder (ADHD)*, *Nigerian inclusive education*, *inclusive education*, *ADHD behavior characteristics*, *behavior management*, *Nigerian cultural environment*, *Nigerian educational policy*, *classroom management*, *special education*, and *token economy*. I accessed a multitude of other databases in the search process as well. Prior to generating the results, the peer-reviewed feature was selected, ensuring that all of the literature generated would fit this designation.

I reviewed current literature containing empirical research in the relevant areas, which appeared in a wide range of publications, such as *Journal of Attention Disorders*,

Annual Review of Clinical Psychology, *Journal of Positive Behavior Interventions*, *Applied Neuropsychology*, and *Canadian Journal of School Psychology*.

Articles were identified through searches conducted through Academic Search Premier, Education Journals, Education Source, Educational Research Complete, and PsycARTICLES, with a preference for peer-reviewed journals. Additionally, once I identified key authors in this way, the corpus of their work was reviewed for other relevant research, and other works cited by those authors were similarly reviewed. Further, I reviewed identified journals, especially in specifically themed issues, for other relevant work.

Emergence of Inclusive Education

The Macpherson Constitution of 1950 granted autonomy to regional houses to formulate laws in education in Nigeria (Oluwadare & Julius, 2011; Oyelere, 2010; Tsafe, 2013). As the leader of the western region, Chief Obafemi Awolowo introduced his concept of a comprehensive education developmental plan and policy. In 1955, Chief Awolowo introduced the Universal Primary Education (UPE) policy (Oluwadare et al., 2011; Oyelere, 2010; Tsafe, 2013). This education system focused on the notion that comprehensive education is the foundation for the achievement and security of future socioeconomic progress, political stability, and human advancement. By the late 1950s, the eastern region under the leadership of Dr. Nnamdi Azikiwe and the Federal Territory adopted the UPE policy (Oluwadare et al., 2011; Oyelere, 2010; Tsafe, 2013).

Subsequently, in 1976, the Federal Government's National Policy on Education was established. This policy was created to address a disparity in educational development by ensuring that all the states maintain educational systems similar to the

UPE policy (Itedjere, 1997); the policy was implemented to eradicate illiteracy, superstition, and ignorance while uniting the nation, building self-reliance, and promoting justice and egalitarianism. Additionally, UPE focused on the achievement of a robust and dynamic economy for the nation, the attainment of a democratic society, and the promotion and provision of equal opportunities for all citizens (Itedjere, 1997). The UPE program, however, failed and was abandoned midway. The failure was attributed to several factors, including a sudden growth in population; an exponential increase in school enrollments, which elicited an unexpected demand for new schools; and a shortage of qualified teachers (Ajuwon, 2008; Aluede, 2006; Okugbe, 2009). Due to the failure to implement the UPE program and the subsequent educational fallout associated with the end of this period of educational reform, the hope of establishing an efficient, all-inclusive system where all were guaranteed the right to a beneficial education was put on hold. This failure set back inclusive education within Nigeria, resulting in a failure to establish educational norms and guidelines for accommodating included students, among other factors.

In 1977, Nigerian policy-makers amended the National Policy on Education to include Section 8 (Federal Ministry of Education, 1977, p. 1). The purpose of Section 8 was to equalize educational opportunities for all children and adults without regard to physical and emotional disabilities, and to address the needs of exceptionally gifted children to encourage their skills and progressive development at their own individual pace. In 1999, as a spiritual successor to UPE, President Obasanjo restructured the National Policy on Education and introduced the Universal Basic Education (UBE) system. The UBE's main emphases were education for all (Okugbe, 2009; Oluwadare et

al., 2011; Oyelere, 2010; Tsafe, 2013) and the guarantee that Nigerian citizens and school-aged Nigerian children would have access to 9 years of free, formal basic education (UBE, 2006). This was revised to include Section 7—Inclusive Education (National Policy on Education, 2008). The purpose of inclusive education is to integrate children and other youth with special needs into regular schools and classrooms (Ajuwon, 2008; National Policy on Education, 2008). The National Policy on Education mandated all State Universal Basic Education Boards (SUBEB) to ensure that special-needs children receive nondiscriminatory and equal access to education in the least restrictive environment. The paradigm of inclusive education involves the concept that all children have the right to education without regard to personal disability, ethnicity, religion, language, or gender (National Policy on Education, 2008).

Despite the revisions regarding inclusive education within the Nigerian educational setting, there are still obstacles facing both educators and students; these challenges, as previously outlined, range from setbacks from decades of rapidly growing populations, unchecked growth in school enrollments, and a shortage of qualified teachers to address the new challenges of implementing inclusive education within the past decades. One of these challenges, for both educators and students alike, in the implementation of inclusive education within the Nigerian education environment is the high prevalence of ADHD among schoolchildren and less appropriate awareness and management of ADHD within the teacher population.

Attention Deficit/Hyperactivity Disorder (ADHD)

Attention-deficit hyperactivity disorder (ADHD) is considered one of the most commonly diagnosed neurodevelopmental and childhood disorders (APA, 2013;

Alloway, Elliot, & Holmes, 2010;). According to the DSM-5 (APA, 2013), the symptomatic nature of ADHD is delimited by importunate and prominent levels of inattention, hyperactivity-impulsivity, or both that contrive impairment in the affected child's life and level of functioning.

ADHD: Etiology and Prevalence

The causes of ADHD are unknown; however, the body of literature implicates both genetic (Akutagava-Martins, Rohde, & Hutz, 2016; Han et al., 2015; Ilott, Saudino, Wood, & Asherson, 2010; Nikolas & Burt, 2010) and environmental factors, including prenatal alcohol consumption, exposure to alcohol and environmental tobacco smoke (Han et al., 2015), situational events, circumstances, and diet. Inherent in these environmental factors is the elicitation of adverse variables that include toxic stress, physical and sexual abuse, chronic familial violence, neglect, poverty, malnourishment, and natural disaster. These constructs affect neurological development in children in ways that may elicit ADHD behaviors (American Academy of Child and Adolescent Psychiatry [AACAP], 2011; Burke, Hellman, Scott, Weems, & Carrion, 2011; Garner et al., 2012). Similarly, while indicators from a study by Pearce (2015) noted the increased risk of ADHD for children of adverse biological predisposition, including maternal hyperthyroxinemia in pregnancy, researchers Thapar, Cooper, Eyre, and Langley (2013) performed a critical evaluation of ADHD putative genetic and environmental risk factors, connection with ADHD, and the causal or etiological roles of these risk factors for ADHD conditions. Results from the research suggested that genetic and environmental factors present covariant and interdependent contributions to the etiological risks of ADHD.

Based on a survey, the average prevalence rate of ADHD globally is approximately 5.0% for children and 2.5% for adults (APA, 2013). ADHD has been identified as a cross-cultural mental health disorder with significant psychiatric comorbidity in which more than 50% of affected children exhibit one or more characteristics of a psychiatric disorder (APA, 2013; Bauermeister, Canino, Polanczyk, & Rohde, 2010; Thomas, Sanders, Doust, Beller, & Glasziou, 2015), with comorbid conditions including behavioral, social, or learning disorders (Humphrey, Aguirre, & Lee, 2012; Wheeler, Pumfrey, & Wakefield, 2009).

ADHD conditions are pervasive; approximately 30%-50% of individuals diagnosed with ADHD in childhood continue to manifest the symptomatic behaviors in adulthood (Barbaresi, Weaver, Voigt, Killian, & Katusic, 2015; Gao et al., 2015). Past research has shown that approximately 4.0% of the U.S. adult population, and up to 6.0% of adults in other nations, struggle with inattention, hyperactivity, and impulsiveness—the primary symptoms of ADHD (Wheeler et al., 2009). Alarmingly, the body of literature also places the rate of ADHD prevalence in the child population at about 3-7% globally and indicates ADHD as the most common psychiatric disorder diagnosis in the child population (APA, 2013; Willcutt, 2012).

According to Barkley and Murphy (2006), researchers have conducted over 2,000 studies since 1979 on the characteristics and behaviors of students exhibiting ADHD characteristics. In addition, Trout et al. (2007) determined that over 80% of students diagnosed with ADHD who exhibit diminished learning skills are an integral part of the general educational primary and secondary learning environment, and between 1 and 3 of such students are located in each classroom (Barkley, 2015). For example, in a study

involving 964 male participants, Alloway et al. (2010) investigated the prevalence of ADHD among the male student population in the mainstream general education system in the United Kingdom. The results of the study presented an 8.0% prevalence rate among boys in the population, of which 5.0% were unremarkable for hyperactive and impulsive conditions. Through this study, Alloway and associates proposed that prescreening children for ADHD offers inherent benefits by enhancing teachers' preparedness in organizing appropriate classroom behavioral and academic interventions for students.

ADHD Prevalence in Nigeria

While information about ADHD in Nigeria remains limited, contrary to the inference that ADHD is a social construct and culturally bound phenomenon (Bauermeister, Canino, Polanczyk, & Rohde, 2010; Thomas, Sanders, Doust, Beller, & Glasziou, 2015), a seminal work by Ofovwe, Ofovwe, and Meyer (2006) investigated the prevalence of ADHD among elementary school students in Nigeria and found significant prevalence of the disorder in Nigeria. The study included 1,384 elementary-school students between the ages of 6 and 13 taken from six elementary schools in Benin City, Nigeria. Ofovwe et al. used the Disruptive Behavior Disorder (DBD) rating scale, which focuses on assessing the presence and degree of ADHD-related symptoms. The researchers reported an 8.0% prevalence rate of ADHD among the primary school children in Nigeria (Ofovwe et al., 2006). Other researchers (Bakare, 2012; Bakare, Ubochi, & Ebigbo, 2010) have documented the pervasive nature of ADHD in the region; recently, Chidi, Chidi, Ebele, and Chinyelu (2014) documented comorbidity of ADHD and epilepsy among Nigerian inpatient children at the University of Nigeria Teaching

Hospital Enugu. However, educators' levels of knowledge about the disorder as well as their competence with behavioral management strategies are unknown in the literature.

Similarly, in an earlier study, Adewuya and Famuyiwa (2007) established ADHD prevalence as a cross-cultural construct and a non-culture-bound phenomenon. In their study involving 1,152 elementary school student participants from 16 elementary schools, the researchers assessed the prevalence of ADHD and comorbid conditions among Nigerian elementary school students using the Vanderbilt Attention-Deficit Hyperactivity Disorder Parent Rating Scale (VADSPRS). Indicators from the study were comparable to those found by Ofovwe, Ofovwe, and Meyer (2006), whereas the prevalence of ADHD among the Nigerian school-aged children was 8.7%. Additionally, Adewuya and Famuyiwa reported cross-culturally indiscriminate subtypes of ADHD, including inattentiveness, hyperactivity, and impulsiveness, as well as the comorbid susceptibility of characteristic subtypes with other behavior disorders, such as externalizing behaviors; oppositional defiant disorder (ODD), conduct disorder, (CD), and internalizing behaviors; anxiety and depression. According to Adewuya et al. (2007), anxiety and depression may be comorbid with the inattention characteristic of ADHD, while CD and ODD co-occur with the hyperactivity and impulsivity characteristics of ADHD. In addition, ODD has high prevalence among elementary school students in Nigeria (Frank-Briggs, Angela, & Alikor, 2013) at a 1:4 girl-to-boy ratio, thus necessitating adequate knowledge among teachers about the complexities of ADHD and teachers' competence in managing the disorder in inclusive classrooms.

ADHD: Subtypes and Diagnostic Criteria

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; APA, 2013) delineates the diagnostic features of ADHD and the criteria for its subtypes. The subtypes of ADHD include predominately inattentive type, predominately hyperactive-impulsive type, and combined type. The general criteria for ADHD include the occurrence of some hyperactive-impulsive or inattentive symptoms before age 12 (Criterion B). These symptoms must manifest in more than one setting or environment (Criterion B). Concrete evidence exists that symptoms of ADHD interfere with or reduce developmentally apposite social, academic, or occupational functioning (Criterion D), and that the symptoms do not manifest exclusively during the course of schizophrenia or other psychotic disorders and cannot be better explained by another psychiatric disorder (Criterion E).

According to DSM-5 (APA, 2013), the criteria for presentation of predominantly inattentive type (Criteria A1) require that an individual exhibit the persistence of six of the nine symptoms for at least 6 months, such as failing to pay close attention to details or making careless mistakes at work often. Other signs include the individual having difficulty focusing on tasks, seeming to ignore commands when spoken to directly, not following instructions, failing to complete duties in the workplace, and having difficulty organizing tasks and activities. Additionally, these signs are coupled with symptoms such as the avoidance of activities that promote cognitive demand and distraction by extraneous stimuli.

The criteria for the hyperactive-impulsive type (Criteria A2) are met when the persistent occurrence of six of the nine symptoms is noted in an individual for at least 6

months. These symptoms include the individual often expressing the inability to sit still. In addition, the individual expresses impatience and excessive talking, has difficulty waiting for his or her turn, and interrupts or intrudes on others. Summarily, regardless of the criteria, the associated behaviors of ADHD can create distractions, particularly within the educational setting.

ADHD and Pedagogical Environment

Researchers confirmed that children exhibiting behavioral characteristics associated with ADHD lacked attentiveness, impulse control, self-regulation of activity intensity, and organizational skills (Avisar & Shalev, 2011; DuPaul, & Stoner, 2014; Humphrey, 2009; Imeraj et al., 2013). For example, in a study that examined executive function (EF) in 202 school aged children with clinically diagnosed ADHD and/or DBD (disruptive behavior disorder), Schoemaker, Bunte, Wiebe, Espy, Dekovic´, & Matthys (2012) found association between deficit executive function, impaired inhibition, and ADHD condition. In addition, previous research has shown that these qualities have adverse effects on the presenting student's social functioning, ability to concentrate on schoolwork and lessons, thus limiting the students' academic success potentials and can lead to in-class problems (Barkley, 2015; Bruin, Bogels, Formsma, & Weijer-Bergsma, 2012).

Clearly, ADHD symptoms contrive significant adversities in academic functioning of the affected individuals, including inability to complete schoolwork, changing school, school suspension, and expulsion (Martin, 2014); as well, the symptoms present management challenges in the classrooms. According to Silva, Colvin, Glauert, Stanley, Srinivasjois, and Bower (2015), children with ADHD, regardless of gender

(Yoshimasu et al., 2010), are predisposed to a higher risk of literacy and numeracy underachievement as well as numeracy and reading benchmark failures. Compared to their peer without ADHD, Silva, et al. (2015) found significantly poor reading, writing, and spelling performances for Children with ADHD. However, higher prevalence of the phenomenon is unremarkable amongst ADHD boy population (Yoshimasu et al., 2011). Nevertheless, a study by Elkins, Malone, Keyes, Iacono, McGue (2011) found that while ADHD boys and girls experience similar difficulties in all areas of learning, girls with ADHD experience greater negative academic difficulties. Thus, according to Sayal et al. (2010) and Wolraich et al. (2011), children with clinical diagnosis of ADHD should be afforded comprehensive education assessments, targeted intervention, and individualized behavior management strategies. These discoveries are relevant to encourage teachers' knowledge about ADHD and to empower their classroom management and pedagogical practices in ways that are responsive to ADHD characteristics, collateral support, and promote increased learning in the ADHD student.

One of the diagnostic conditions for ADHD in children includes the persistence of the disorder across multiple contexts (DSM-5, 2013); however, the ADHD symptoms can exacerbate in certain settings. Classroom environment has been noted as a primary context for the expression of negative behaviors of ADHD conditions in children (Imeraj et al., 2013). According to Sarraf, Karahmadi, Maaarasy, and Azhar (2011), ADHD-related behaviors are the most observed causes of in-class anomalies and problems. In an observational study that employed Disruptive Behavior Disorder Rating Scale (DBDRS) to investigate classroom on-task behavior of ADHD students involving 25 ADHD and 31 control students, Imeraj et al. (2013) found that during independent work and whole class

group teaching, but not during small group work, Children with ADHD exhibited significantly less on-task behaviors than the control. As well, the Children with ADHD displayed significant shorter on-task span during academic tasks, including mathematics, language, and science, and instructional transitions between tasks. In another related study that investigated the impact of contextual factors, such as classroom "idle time"—periods, when students are waiting for tasks or not actively engaged with activity, Imeraj et al. (2013) reported that hyperactivity and disruptive noisy behaviors were significantly elevated in children with ADHD than in their normal peers. Teachers' Lack of competent skills with classroom management strategies and effective approaches for addressing students' counterproductive behaviors present teachers with extraordinary challenge in meeting the pedagogical demand of the classroom (Emmer & Stough, 2001; Westling, 2010; Wu, 2015). As a result, teachers spend considerable time in attempts to control disruptive behaviors at the expense of academic instruction.

In addition, studies have found positive correlations between ADHD behaviors and impaired social development, poor academic performance and achievement in the presenting children (Daley & Birchwood, 2010; Kent et al., 2011; Kuriyan et al., 2013; Langberg, et al., 2011; Molina, Hinshaw, & Swanson, 2009; Wei, Yu, & Shaver, 2014; Wheeler, Pumfrey, & Wakefield, 2009). Therefore these children required structured behavior management plan (Anderson, Watt, Noble, & Shanley, 2012; Daley et al., 2014; Barnes, 2014; Dupaul & Wyendt, 2006; Trout et al., 2007; ; Vannest, Davis, Davis, Mason, & Burke, 2010) in the inclusive classrooms and the teachers need adequate knowledge of the disorder and competence with the in-class behavioral management strategies.

Teachers are the first to report that they are not prepared enough to work with ADHD students, and only those teachers who are educated or experienced working with these types of students feel comfortable in making educational changes and have the ability to apply differentiated instructions to fit these students' needs. Many researchers agreed that teachers report incompetent skills for managing disruptive classroom behaviors (Koutrouba, 2013; Westling, 2010) and use more of ineffective punishment and punitive reprimands—referral, removal, suspension, and parent-teacher conference (Vieira, Gadelha, Moriyama, Bressan, & Bordin, 2014). As well, previous research, including Sutherland, Lewis-Palmer, Stichter, and Morgan (2008), and Kauffman and Brigham (2009) shared the consensus that teachers use less of positive reinforcement—praise and reward for shaping challenging and exigent classroom behaviors.

Recently, a South Australian study (Sullivan, Johnson, Owens, & Conway, 2014) investigated the relationship between students' behavior and teachers' perception of the behavior as challenging (Sullivan et al., 2014). In the study using a web-based survey: the Discipline in Schools Questionnaire (DiSQ), teachers were asked to identify the behaviors that they observed or encountered within the school environment from a range of behaviors: minor misdemeanors, acts of abuse, bullying to physical violence. The teachers were also asked to indicate why they perceived the behavior as challenging and difficult to manage. The outcome of the study showed that all categories of disruptive behavior occurred in classrooms, but disengaged behavior and low-level disruptive behavior were more frequent; however, teachers expressed management difficulties in all categories of classroom unproductive and disruptive behaviors. As concerned the management of negative behaviors in classroom, the study suggested that teachers used

strategies that locate the problem with the student and may proceeded with remediating the behavior with disciplinary measures, which in turn may exacerbate the behavior and lead to disengaging and externalizing behavior (Koutrouba, 2013).

Studies have consistently reported a lack of classroom management component in teacher education curriculum (Van Tartwijk et al., 2011), that unproductive classroom behaviors and management of the behaviors remained the major challenges for teachers, and that teachers were less optimistic of their skills for management of negative classroom behaviors (Levin & Nolan, 2010; Roache & Lewis, 2011; Romi, Lewis, Roache, & Riley, 2011; Roorda, Koomen, Spilt, & Oort, 2011; Westling, 2010). Seemingly, practices for classroom environment management may have implications for student's behavioral responses and perception of fit in the classroom environment in manners that could enhance students' social skills and academic gain or exacerbate disruptive behaviors. An enabling classroom environment offers emotional support, differentiated instruction, student autonomy, and present clear expectations to influence student academic self-concept and subjective task values (Wang & Eccles, 2013). A recent multidimensional study from the District of Columbia, U. S.A., investigated the correlation between 1157 adolescent-middle school students' perceptions of the school environment, achievement motivation, and school engagement (Wang & Eccles, 2013). With indicators from the students' self-report, Wang et al. (2013) found that students' perception of the school environment influenced their achievement motivation and subsequently influenced their behavioral, emotional, and cognitive engagement.

In a related study, Sakiz, Pape, and Hoy (2012) found that students' perception of teacher affective support and affective climate within the classroom promoted students'

academic enjoyment, sense of belongingness, academic self-efficacy, and academic effort in cognitive demanding tasks such as mathematics. These findings paralleled the outcomes of Danielsen, Wiium, Wilhelmsen, & Wold (2010) study which showed that perceived classmate support influenced students' academic initiative at the individual level, and perceived pedagogical caring and autonomy support influenced students' academic initiative at the class level. Several other studies in different domains have supported these assumptive findings (e.g., Allen, Robbins, & Tracey, 2012; Tak, 2011; Tracey; Pals, Steg, Dontje, Siero, & van der Zee, 2014). These findings highlight need for a more robust classroom management skill within the teacher population for effective pedagogy and management of unproductive behaviors, particularly ADHD characteristics, in the inclusive classrooms.

Summarily, despite students' in-class behavioral presentations and the misperceptions the teachers may have about the behaviors, data suggest that teachers play an important role in referring children to medical professionals for evaluation and diagnosis and are obligated with the responsibility of classroom environment that promotes increased learning. Consequently, many research outcomes have the consensus that general educators are the most frequent referral source for assessment of ADHD in children (Alegría et al., 2012; Lee, 2014; Moldavsky, Groenewald, Owen, & Sayal, 2013; Vieira, Gadelha, Moriyama, Bressan, & Bordin, 2014). Therefore, it is imperative that teachers are provided with adequate information regarding ADHDs, possess effective classroom management practice, and have positive attitudes towards the disorder to prevent labeling these students.

Educators' Misperceptions of ADHD Behaviors

Ohan et al. (2008) stated that a lack of knowledge or misperception about ADHD could lead to teachers' insensitivity to or failure to notice behaviors indicative of a child in need of help. Consequently, this failure to notice or insensitivity could cause teachers to respond with inappropriate behavior modification consequences (Blotnicky-Gallant et al. 2014; Sherman, Rasmussen, & Baydala, 2008), and could cause the teachers to provide inaccurate data to mental health or medical practitioners regarding the effects of medication. In addition, it has been established that teachers' beliefs about and attitudes towards ADHD directly influence their behaviors and pedagogical approach; consequently, such beliefs have implications for students' classroom behaviors and learning (Brown, Harris, & Harnett, 2012; MacFarlane, & Woolfson, 2013; Rubie-Davies, Flint, & McDonald, 2012). According to Bornman and Donohue (2013) teachers are the driving force behind enacting educational policies, as they are the caretakers of classroom climates. Depending on teacher attitudes toward inclusive practices, they can either hinder or promote the success of inclusive education. If they recognize a policy's pedagogical merit, teachers can commit to making an effective effort. With positive attitudes, teachers can dedicate extra intensity to instructional work and time with students who have educational barriers.

Meanwhile, within Nigeria specifically, Frank-Briggs (2011) acknowledged that there is dearth of information and literature about ADHD, and affirmed that the disorder is common in the Nigerian environment. In his study, Frank-Briggs delineated the symptomatic characteristics, etiology, and treatment of ADHD and from the review of the literature confirmed ADHD as a cross-cultural neurodevelopmental disorder (Frank-

Briggs, 2011). The prevalence of ADHD is at 8.7% among Nigerian elementary and high school students (Adewuya & Famuyiwa, 2007; Ofovwe, Ofovwe, & Meyer, 2006; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014). At the same time, in Nigerian cultural setting, children with disabilities or exhibiting characteristic behaviors; particularly those behaviors associated with ADHD, are stigmatized, avoided, and perceived as being troubled by demonic forces (Adeosun, Ogun, Fatiregun, & Adeyemo 2013; Frank-Briggs, 2011). Consequently, inadequate understanding and improper management of ADHD behaviors coalesce and can manifest poor teacher attitude, negatively impact pedagogy, students' academic progress, learning environment, and the effectiveness of inclusive education system in Nigeria.

Teachers' Knowledge About ADHD

Knowledge About ADHD, Prior Training, and Experience

Despite the reasons presented in the body of literature demonstrating the necessity for teachers to have a greater knowledge about ADHD (DSM-5, 2013;; Kos, Richdale, Hay, 2006; Ohan, Cormier, Hepp, Visser, & Strain, 2008; Sherman, Rasmussen, & Baydala, 2008; Soroa, Balluerka, and Gorostiaga, 2012), various studies have proven that overall, teachers have only limited knowledge of ADHD (Canu & Mancil, 2012; Graczyk, et al., 2005; Kos et al., 2004; Moldavsky, Groenewald, Owen, & Sayal, 2013; Sciutto, Terjesen, & Bender, 2000; Spiel, Evans, & Langberg, 2014)). Therefore, a need exists to increase this level of knowledge. Previously, researchers have reported that teachers demonstrate a general lack of knowledge or have misconceptions regarding the nature, course, consequences, etiology, and treatment of ADHD (Canu et al., 2012; Guerra & Brown, 2012; Perold, Louw, & Kleynhans, 2010; Sciutto, Terjesen, & Bender,

2000). In some studies, data from questionnaires designed to measure teachers' knowledge about ADHD have shown that the percentage of questions that teachers answered correctly did not exceed 53% (Alkahtani, 2013; Guerra et al., 2012; Perold et al., 2010; Schmiedeler, 2013; Soroa et al., 2012).

A study by Alkahtani (2013) revealed a positive correlation between teachers' level of knowledge of ADHD, and prior training and experience with ADHD. Additionally, the study showed a positive correlation between teachers' level of knowledge about ADHD and their level of confidence in teaching or managing students with ADHD in the classroom. In a similar study, Schmiedeler (2013) assessed 353 elementary and middle school teachers' knowledge and misconceptions about ADHD symptoms including diagnosis, causes, and intervention, using an adapted version of KADDS. Consequently, indicators from the study showed that teachers had 54.2% correct, 16.9% incorrect, and 28.8% "do not know" responses to questions about ADHD. Schmiedeler also reported that the teachers hold a significant misconception about ADHD. Unlike previous researchers (Jerome, Gordon, & Hustler, 1994; Kos, Richdale, & Hay, 2006; Sciutto, Terjesen, & Bender, 2000), Schmiedeler did not find a correlation between teachers' professional experiences and knowledge of ADHD; however, he did find a positive correlation between professional development and in-services training and knowledge about ADHD. According to Kos et al., (2006) the variations in results may be related to methodological and measurement concerns pertaining to scale development and construction definitions.

Meanwhile, many researchers shared the consensus that general educators lack adequate knowledge, hold misconception, and negative perception about ADHD students

(Aguiar et al., 2012; Guerra, & Brown, 2012; Ohan, Visser, Strain, Allen, 2011; Rodrigo, Perera, Eranga, Williams, & Kuruppuarachchi, 2011; Sciutto, Terjesen, & Frank, 2000). As well, majority of these researchers espoused that adequate knowledge about ADHD was necessary for and influential in the effectiveness of teachers' pedagogical instructions and behavior intervention decisions in the inclusive classroom. Consequently, teachers may benefit from in-service training (Causton-Theoharis, 2009; Dixon, Yssel, McConnell, & Hardin, 2014; Gardner, & Hsin, 2014; Graham-Day, Kozik et al., 2009). For example, in a recent study, Blotnicky-Gallant, Martin, McGonnell, and Corkum (2014) investigated teachers' knowledge and belief about ADHD and the correlation between knowledge, belief, and teachers' classroom management strategies of 113 teachers from six schools across Nova Scotia using. The indicators of the study showed that the teachers highest mean score was only 68% on knowledge about symptoms/diagnosis subscale, and they scored poorly on the etiology—causes and intervention scales of ADHD. As well, teachers who held slightly more positive than negative belief about ADHD reported occasional use of evidence-based intervention in their classroom (Blotnicky-Gallant et al., 2014). Also Blotnicky-Gallant and associates reported correlative relationship between teachers' belief about ADHD and teachers' use of effective classroom intervention with ADHD students. Another study, (Topkin, Roman; 2015), which assessed 200 South African primary school teachers' ADHD knowledge using KADDS, documented overall inadequate knowledge about ADHD, including knowledge regarding etiology, diagnostic symptoms, prognosis or intervention, for majority 55% of the teachers. These findings share collaboration with the indicators from Guerra and Brown (2012) study in South Texas.

As well, in an earlier study, Ohan et al. (2008) grouped a sample of Australian teacher-participants of the research into high, average, and low categories of knowledge as reflected by their responses to an ADHD knowledge survey questionnaire. The data obtained through the survey showed that teachers who reported high levels of knowledge on ADHD were more prone to seek referrals for their pupils and rate ancillary services as beneficial for children with ADHD; teachers who reported low knowledge of ADHD were not as likely. In addition, teachers in the high and average knowledge categories demonstrated a higher likelihood of perceiving ADHD as having negative impacts on the students' academic outcomes and social relationships than did the teachers in the low knowledge category. Nevertheless, teachers in the low knowledge category expressed more confidence in managing behavior problems without support than did the teachers in the high and average knowledge groups.

The Ohan and associates' findings illustrated that adequate knowledge about ADHD may enhance teachers' awareness of the inherent risk factors in ADHD. As a result, teachers become predisposed to seeking support services for the students, which in turn, may contribute to a positive outcome for the Children with ADHD in their classrooms. Similarly, Goldstein, Naglieri, and DevVries (2011) supported that these teachers were knowledgeable about ADHD and were more prepared to practice differentiated instruction and offer assistance and support to children with ADHD in the classroom. Alternatively, the high confidence reported by the teachers in the low knowledge group regarding their ability to contain the characteristic negative and disruptive behaviors of ADHD presentations in the classroom may reflect the teachers' unintentional incompetence and naïveté to the needs of students with ADHD. Several

researchers, including Kos et al. (2004), showed that almost 100% of teachers conceded that they could benefit from more training on ADHD and behavior management.

Classroom-Behavior Management Strategy Decisions

According to the body of literature, a correlational relationship exists between teachers' knowledge about ADHD and teachers' choice of classroom-behavior management strategy (Blotnicky-Gallant et al., 2014; Sherman, Rasmussen, & Baydala, 2008). Therefore, it is imperative that teachers' have knowledge of effective behavior management strategies for shaping negative ADHD behaviors in an inclusive classroom for optimal student academic performance and outcomes. Previous research has found that teachers' knowledge about their students' ADHD characteristics influenced the teachers' responses to the students' classroom behavioral presentations (Blotnicky-Gallant et al., 2014; Sherman, Rasmussen, & Baydala, 2008). The research suggested that teachers' use more negative and disciplinary consequences, such as referral, removal from class, manual labor, and corporal punishment with ADHD behaviors than other more effective in-class behavioral management strategies (Ergün, 2014; Ohan , Cormier, Hepp, Visser, & Strain, 2008). Use of these punitive strategies for shaping ADHD behaviors leads to increased frequency and intensity of the negative behaviors (Kaufman & Brigham, 2009), student resistance and disengagement, and truancy and chronically impaired externalizing and internalizing behaviors (Sullivan et al., 2014; Zyngier, 2007).

According to researchers (Carlson, Pritchard, & Dominelli, 2013), given the inherent externalizing and internalizing behaviors in ADHD conditions, an ADHD student with hyperactivity and impulsivity type is prone to low punishment sensitivity. Such student may fail to respond to environmental cues appropriately, and therefore,

becomes vulnerable to continuous punishment. In turn, the students' externalizing behaviors, including aggression, will intensify. ADHD students who present with inattentive types are prone to high reward sensitivity and display negative affects when expected reward fails to be proximal from interpersonal situations. In turn, expected reward failure exacerbates internalizing behavior, which may increase aggressive and depressive tendencies (Carlson et al., 2013) and other related comorbid behavioral disorders. Inappropriate use of consequence-based intervention, such as punishment used to shape negative ADHD behavior, may worsen the behavior and increase the frequency of both externalizing and internalizing behaviors, including substance use, abuse, and dependence disorder tendencies (Lee, Humphreys, Flory, Liu, & Glass, 2011; Molina & Pelham Jr., 2014; Van Voorhees et al., 2012).

In addition to disruption of classroom and pedagogical instructions, these negative behaviors promote teacher burnout, job dissatisfaction, and attrition (Day et al., 2006; Johnson et al., 2012). Moreover, a correlation has been found between teachers' instructional and classroom management strategies, knowledge about ADHD, and overall academic and social outcome for ADHD students (Allen, Gregory, Mikami, Lun, Hamre, & Pianta, 2013; Fauth, Decristan, Rieser, Klieme, & Büttner, 2014; Mitchell & Bradshaw, 2013; Reyes, Brackett, Rivers, White, & Salovey, 2012; Sherman, Rasmussen, & Baydala, 2008). Consequently, researchers have investigated the various classroom behavior strategies and have established the effectiveness and the appropriate applications of the various classroom behavior interventions in the inclusive classroom including antecedence-based, consequence-based, and academic-based (Anderson, Watt,

Noble, & Shanley, 2012; Dupaul & Wyendt, 2006; DuPaul, Weyandt, & Janusis, 2011; Trout et al., 2007).

In summation, despite the amount of literature dedicated to the phenomena, Nigerian educators still have a limited understanding of ADHD and there is a definite need to address this. In order for teachers to become truly effective educators, they must dedicate themselves to key pedagogical growth in which they are not only comfortable in assisting students with ADHD, but are also effective in maintaining a beneficial and effective inclusive environment. Because negative punishment towards ADHD behavior begets negative feelings about their occupations, educators must be willing to undertake effective classroom management strategies in the attempt to address included students' needs. The following section of the chapter discusses inclusive education as a whole as well as its implication within the Nigerian educational system and culture.

Inclusive Education

Gordon (2006) described inclusion as the assignment of special need students to regular classrooms and homerooms in a general education setting. In addition, Waitoller & Artiles, 2013) conceptualized inclusion as students' receipt of academic instruction from a regular-education setting, special day-class environment, or resource specialist room. Researchers, like Erten and Savage (2012), determined that inclusion concerns the provision of a regular education environment to students with disability for the entirety of classroom instructional day. Those who espouse full inclusion perceive that the teachers' primary responsibility within the general education setting is to assist special needs students in acquiring the necessary social skills for functioning effectively in society as adults. Characteristically, a full inclusion setting departs from the expectations of grade

level curriculum and focuses on a curriculum that reflects the student's ability level. A fully inclusive setting focuses on the primary objective to amplify the special needs student's interaction with peers and coworkers (Waitoller & Artiles, 2013). Furthermore, the summary garnered from researchers indicated that inclusive education seeks to help the student acquire increased quality of life, develop positive microsystem and familial relationships, and other social capacities (Erten et al., 2012; Waitoller et al., 2013).

Teachers' knowledge about ADHD and effective classroom management strategies are essential components for successful inclusive education (Dupaul et al., 2011). Therefore, to derive positive outcomes for the students within the inclusive classroom arrangement, educators must have the attitudes and beliefs that all students have the capacity to learn, as well as the appropriate training and knowledge about the inherent characteristics of the various disabilities. Specifically, teachers must be proficient with the application of effective classroom behavioral interventions.

Some researchers (Goodfellow, 2012; Ryndak, Jackson, & White, 2013; Penny Lacey, & Jeanette Scull, 2015) presented the argument that there is no absolute consensus that inclusive education serves the best purpose for children with special needs, and as a result, the debate lingers and questions remain on how and whether inclusive classroom instruction should be implemented. There are failures of teachers and the IEP plan in an inclusive classroom to accommodate academic needs of the special needs students in ways that incorporate intervention for primary behavioral concerns and evidence-based strategies (Spiel, Evans, & Langberg, 2014). Consequently, teachers' failures are due to the lack in the training and skills required for effective accommodation of the educational needs of classroom of students with diverse special needs.

Inclusive Education in Nigeria

Researchers (Ajuwon, 2008; Aluede, 2006; Okugbe, 2009; Oluwadare & Julius, 2011; Tsafe, 2013) highlighted the importance and inherent benefits of inclusive education in Nigeria; however, these researchers and authors also assessed and underscored poor planning, mismanagement, implementation gaps, and other complications that undermined the successful execution of the Universal Basic Education program (UBE) within the Nigerian education environment. Ajuwon (2008) pointed out two important elements affecting the organization of inclusive education in Nigeria's current setting: the lack of rigorous and necessary research identifying and individualizing the educational needs of students within the inclusive arrangement, and the failure to assess the impact of inclusionary practices on the general education environment, including teacher qualifications.

Researchers (Ajuwon, 2008; Kurth, Morningstar, & Kozleski, 2014) concurred that the purpose of inclusive education was to improve the outcomes and opportunities for children with disabilities by improving their academic achievement and social skills. These improvements are achieved by ensuring that schools offer free and appropriate public education to the individual child in the least-restrictive environment, and by default, educators and teachers own this responsibility (Gordon, 2006; Siegel, 2011). With this objective in focus, the review of the literature revealed need for competent teachers and appropriate assessment of students' unique needs, including level of functioning.

Gordon (2006) and Siegel (2011) noted that prior to being immersed in an inclusive public education setting, the child is assessed, and an individualized education

plan (IEP) is planned ancillary support team that includes support staff, teachers, and administrators. This ensures that he or she receives free and appropriate public education in the least restrictive environment (Gordon, 2006; Siegel, 2011). The IEP contains myriad statements that reflect the child's situation within the inclusive classroom. The plan reflects the child's current academic performance, quantifiable yearly goals, unique education needs, and other ancillary services and support to be afforded to the student, the degree of the child's participatory and non-participatory limitations with the nondisabled peers in the inclusive classroom, and any exclusive adaption in administrative assessment required for the student to participate in assessments. The plan also projects the needed dates for services and modifications, as well as the frequency, location, and duration of those services and modifications.

Gordon (2006) reported that the inclusive education program determines the child's placement and learning goals. These goals are the direct outcome of the child's assessment and observed academic achievement and social skills. The teacher receives the IEP document, which serves as a guide for a unique classroom, and learning needs or challenges of the child, which assists the teacher in meeting the child's individual goal (Gordon, 2006).

Thus, Ajuwon, (2008) suggested that the Nigeria's current inclusive education system lacks the procedural arrangement to provide effective pedagogical instruction, implement appropriate behavior modification strategies, and maintain a classroom environment that meets the unique needs of each student, much to the chagrin of teachers. Furthermore, it was indicated that consensus among researchers suggests that constructs such as attitude, perception, and organizational procedures are imperative to the success

of inclusive education (Ajuwon, 2008). Taken together, despite the Nigerian education system's best efforts to include all students, including students with ADHD, in the general education environment, there are multiple barriers preventing inclusive education from taking place in the classroom setting.

Perceptions of Inclusive Education and Students in Nigeria

According to Labedo (2005), teacher ineffectiveness and lack of appropriate training were among the important contributors to the failure of inclusive education in Nigeria. Labedo (2005) specifically stated that Nigerian educators cited job dissatisfaction, frustration, lack of commitment, and negative attitudes toward their profession due to inadequate resources and support. Although reliable data on the attrition rate of teachers in Nigeria is scarce, conventional knowledge established that teachers often exit the profession early for upward mobility due to poor working conditions (Labedo, 2005) all of which adversely affect special need students' educational needs and success of inclusive education system in Nigeria.

A United State study, Levin and Nolan (2010), corroborated the preceding premise and reported the anxiety and fears expressed by practicing teachers and in-training teaching students and their feelings of inadequacy and lack of skills necessary for assisting special needs students in an inclusive classroom. The pre-service teaching students attributed these anxieties and fears to insufficient college coursework. In addition, Darrow (2009) and Gokdere (2012) reported that some of the negative attitudes which in-service teachers hold towards students with disabilities might be due to past discomfiting experiences and a lack of appropriate information and knowledge concerning the characteristics of the students' disabilities. As an example, Ohan, Visser,

Strain, and Allen (2011) demonstrated that ADHD-specific training is resistant to labeling bias, and promotes teachers' objectivity, intervention skills, and willingness to engage treatment options.

In Nigerian cultural setting, those who oppose inclusive education or welcome it with mixed-feelings have argued that it is not an option for the special needs students, nor does it resolve the chronic problems inherent in the Nigerian educational system (Ajuwon, 2008). These problems include overcrowded classrooms, lack of basic infrastructures, inadequate learning materials, absence of support systems and teaching aids, unmotivated teachers, inadequate teacher training, and an overall lack of the knowledge and skills necessary to effectively make classrooms inclusive (Aluede, 2006; Ladebo, 2005).

Not all negative perceptions of inclusive education in Nigeria are rooted in teacher dissatisfaction and ineffectiveness. Many Nigerians approach inclusive education system in Nigeria with skepticism purely for lack of adequate scientific grounding relating to necessary studies in child and adult mental health to inform teacher education curriculum and education reforms (Abiodun et al., 2011; Bakare, 2012; Bella, Omigbodun, & Atilola, 2011; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014; Oshodi, Simoyan, Lesi, & Ibeziako, 2013). As well, in the Nigerian cultural setting, individuals with disabilities and other atypical behaviors, such as ADHD, are perceived with superstitious belief to be under the influences of malevolent spirits (Ajuwon, Ogbonna, & Umolu, 2014; Adeosun, Ogun, Fatiregun, & Adeyemo 2013; Tolulope Eni-olorunda, 2008).

Influences of Cultural Beliefs

Ethnocentric beliefs, norms, and cultural relativism play great roles on Nigerian collective society's perception of disabilities and inclusive education. According to Tolulope Eni-olorunda (2008), virtually all ethnic groups in Nigeria have one belief or another against persons with special needs or disabilities. Some believe that they are reincarnated beings, while others believe they are a result of the sins committed by their parents to the "gods of the land" (Ajuwon, Ogbonna, & Umolu, 2014; Tolulope Eni-olorunda, 2008). Due to these misconceptions, the general society treats ADHD students with insensitivity and as outcasts; consequently, these students do not receive appropriate education and differentiated instructions in the inclusive classrooms. In view of the perceived problems, accurate assessment of teachers' knowledge about the nature of the various neurodevelopmental and childhood disorders, including ADHD, teachers' classroom-behavior management skills necessitates the need for exhaustive, precise, and in-depth research (Adewuya & Famuyiwa, 2007; Ofovwe, Ofovwe, & Meyer, 2006; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014). Additionally, the literature has shown that inclusive education in Nigeria is plagued with significant problems due to lack of appropriate disability knowledge, as overt expression of negative attitudes toward disabled individuals is common practice (Adeosun et al., 2013).

In a study involving general education teachers in Nigeria (N =144), which investigated teachers' attitudes toward ADHD students, Adeosun, Ogun, Fatiregun, and Adeyemo (2013) found gross misconceptions about and negative attitudes toward ADHD students. Results of the study showed that only 0.09% and 16.7% of the participants conceded that ADHD could be managed successfully with pharmacotherapy and

psychotherapy interventions, respectively (Adeosun et al., 2013). In addition, the study found that 25% of Nigerian general educators confirmed that they would circumvent any relations with an ADHD child or student, while 35.4% expressed unwillingness to admit a student with ADHD in their class (Adeosun et al., 2013). This study provided great insight into the prevalence of teachers' gross misconceptions and the terse knowledge about ADHD among teachers in Nigeria. The results of the study also highlighted the uncertainty regarding the efficacy of Nigerian educators' classroom management strategies to address ADHD maladaptive behaviors.

According to Darrow et al. (2009) and Gökdere (2012), in general, teachers lack positive attitudes toward the inclusion policy. These negative attitudes toward the inclusion policy were due to the educator's inexperience and unpreparedness to manage the negative behavior characteristics of ADHD successfully in traditional classroom. In effect, such negative attitude can make it difficult for the teacher to educate the students. A successful learning environment requires that the teacher present a positive attitude toward inclusion. In addition, the teacher should have the capacity to recognize each student's strengths and weaknesses and incorporate this knowledge to enhance implementation of differentiated instruction and behavioral intervention in the classroom (Darrow, et al., 2009). Therefore, teachers' classroom management strength is dependent on their knowledge and effective application of the appropriate behavioral intervention strategies (Westling, 2010). Regardless of the beliefs and attitudes of these educators, inclusive education is needed in Nigeria; however, the policy-makers need concrete data from studies to support effective organization and implementation of the inclusive education policy.

Organization of Inclusive Education Classes in Nigeria

It has been established that the organizational pattern of inclusive education system in Nigeria lacks in the standard necessary for effective inclusive learning environment (Ajuwon, 2008; Labedo, 2005); hence, most of the criteria outlined in the succeeding discuss are absent. Firstly, many researchers, Dupaul and Wyendt (2006), Causton-Theoharis (2009), Graham-Day, Gardner, and Hsin (2014); and Kozik, Cooney, Vinciguerra, Gradel, and Black (2009, agree that teachers' training and professional development involving classroom management skills are inevitable for teacher effectiveness and success of the inclusive environment. Elements of classroom management skills are not limited to designing intervention approaches for behavior and academic learning, but include collaborative engagements with support staff and parents, differentiated instruction, recognition of successes, and management of administrative support (Weiner, 2003). Weiner (2003) posited that the primary foundation for a successful inclusive environment hinges on the provision and implementation of pedagogy that demonstrates objectivity and positive attitudes. According to Weiner (2003), inclusive schools are normally categorized in three compartments: Level I, II, and III.

Level I schools offer negligible academic assistance and teachers who provide little responsibility towards student achievement (Weiner, 2003). Teachers in Level I schools depend on support personnel to meet students' individualized education plan (IEP) and behavioral needs; they are unable to differentiate instruction or provide a medium that tasks their students to pursue academic success (Weiner, 2003). The in-service trainings and professional development these teachers receive are unrelated and

unresponsive to the diverse needs of students in the inclusive learning environment (Weiner, 2003).

Level II schools exhibit a better inclusive environment. Teachers in Level II schools own responsibility for the inclusive classroom needs and utilize the standardized test results to guide their instructional strategies (Weiner, 2003). They teach to the standards, and collaborate with support personnel as needed (Weiner, 2003).

Level III school environments possess all the characteristics necessary for commitment to the success of special needs students within the inclusive classroom (Weiner, 2003). Teachers exhibit consciousness, remain sensitive to IEPs, employ a multimodal academic learning plan, and offer support materials as needed (Weiner, 2003). The support team collaborates to construct a successful learning environment and germane academic content materials and there is ubiquitous evidence of active learning with measurable progress (Weiner, 2003).

Teachers who embark on inclusive education endorse this process because of the availability of the support necessary for success. Inclusionists proffer that the integration of ably challenged students with their nondisabled peers increases social skills, self-esteem, understanding of disabilities in nondisabled peers, and improves academic gain (Ajuwon, 2008; Gordon, 2006). The growing trend on inclusion for students with ADHD has placed more demand on teachers. Teachers expend every effort to implement differentiated instructions and to successfully shape the negative behaviors of the ADHD students (); however, this can be very challenging without adequate knowledge, training, and a structured environment(Roache, J. E., & Lewis, R. (2011); Romi, Lewis, Roache, & Riley, 2011; Roorda, Koomen, Spilt, & Oort, 2011). Therefore, it is critical that

teachers have the capacity to accurately recognize the characteristics of ADHD and employ appropriate and effective classroom behavior modification interventions.

Notably, researchers have investigated the various classroom behavior strategies and have established the effectiveness of appropriate classroom interventions for ADHD (Anderson, Watt, Noble, & Shanley, 2012; Dupaul & Wyendt, 2006; DuPaul, Eckert, & Vilardo, 2012; DuPaul, Weyandt, & Janusis, 2011; Trout et al., 2007). However, studies have also demonstrated teachers' lack of appropriate knowledge about ADHD (Aguiar et al., 2012; Sciutto, Terjesen, & Bender Frank, 2000). Subsequently, researchers have reported that teachers' training about ADHD and professional development involving classroom management skills were directly correlated with teachers' effectiveness and success of the inclusive environment (Aguiar et al., 2012; Dupaul & Wyendt, 2006; Causton-Theoharis, 2009; Graham-Day, Gardner, & Hsin, 2014; Kozik et al., 2009;). In addition, a correlation has been found between teachers' instructional and classroom management strategies, knowledge about ADHD and overall academic and social outcome for ADHD students (Sherman, Rasmussen, & Baydala, 2008).

ADHD Knowledge and In-Service Training

Specific and reliable psychometric instruments are available for assessment of teachers' knowledge about ADHD. The 36-item Knowledge of Attention Deficit Disorders Scale (KADDS) developed by Sciutto, Terjesen, and Frank (2002) is one of the instruments designed to measure teachers' knowledge and perceptions of ADHD. The items in the KADDS questionnaire provide both negative and positive signs of ADHD. The author piloted the original questionnaire twice, and modified the items following each administration. Bender (2000, as cited in Sciutto, et al.) recorded superior internal

consistency for KADDS ($\alpha = .81$) as well as pre-post change significance for educational interventions, indicating preliminary evidence of validity for the KADDS. Data was assessed for overarching responses regarding the specific reasons that a teacher chooses specific classroom management strategies in relation to their knowledge about ADHD.

Studies that have used the KADDS scale to demonstrate the average knowledge about ADHD for in-service teachers' shows that knowledge about ADHD ranges from 76.3% (Ohan et al., 2008) to 77% (Jerome, Gordon, and Hustler, 1994) to 82.4% (Anderson, Watt, Noble, & Shanley, 2012; Bekle, 2004). These studies placed in-training teachers' knowledge about ADHD at a subordinate range from 75-76% (Bekle, 2004) to 77% (Jerome, Washington, Laine, & Segal, 1999) below the practicing teachers. However, to reduce the probability of a respondent correctly guessing the answer (true or false), Sciutto, Terjesen, and Frank (2000) expanded the response options to three, including true, false, and don't know, to improve the methodology and accuracy of scores. In addition, Sciutto et al. categorized the items of knowledge about ADHD into three subscales, subsuming characteristics/symptoms, general information and causes, and treatments. Findings from a study that administered Sciutto et al.'s scale (KADDS) showed that the overall average knowledge among the teachers was 47.81%. This suggests a significantly inferior knowledge compared to studies that administered Jerome, Gordon, and Hustler's (1994) questionnaire. However, Jerome, Gordon, and Hustler's (1994) scale might have overrated the knowledge of ADHD because of its true-false response approach. Furthermore, results from Sciutto, Terjesen, and Frank's (2002) scale showed that teachers' 62.78% mean knowledge about ADHD symptoms was

significantly superior to their 42.83% mean knowledge of ADHD treatment and their 42.87% mean knowledge about causes of ADHD.

West, Taylor, Houghton, and Hudyma (2005), expanded Sciutto, Terjesen, and Frank's (2000) scale to 67 items in an Australian study. West et al. (2005) findings recorded high-quality internal consistency, with Cronbach's alphas of 0.91 and 0.93 for teachers and parents samples, respectively. In addition, the alphas for the subscales, causes, characteristics/symptoms, and treatments were 0.86, 0.80, and 0.79, respectively for teachers, and for parents, the alphas were 0.85, 0.84, and 0.84, respectively. For the 256 in-service-teacher participants in the study, the mean percentage was 57.33%, indicating a score of about 10.0% more than Sciutto et al.'s results, albeit lower than that found with Jerome, Gordon, and Hustler's (1999) scale. It was assumed that cultural differences in perception and understanding of the behavioral characteristics of ADHD or the different uncontrollable difficulties inherent with each scale account for the incongruity of results from Sciutto et al.'s (2000) American sample and West et al.'s (2005) Australian sample. With 65.20% mean knowledge about ADHD etiology, West et al.'s findings suggested teachers have more knowledge about the causes of ADHD than they do knowledge about characteristic symptoms of ADHD, with a mean score of 59.80% and treatment for ADHD, with mean score of 47.80%. These results support the heterogeneous nature of knowledge about ADHD, and subsequently, call for use of subscales when determining knowledge about ADHD. This coincides with the current literature on the gaps and strengths, or the lack thereof, in teachers' knowledge about ADHD within the Nigerian Universal Basic Education program and inclusive classroom environment.

Teachers' Perceived and Objective Knowledge About ADHD

Researchers (Ohan et al., 2011) agree that both perceived knowledge and objective knowledge about ADHD correlate positively with the nature of teachers' decisions and behaviors including behavioral responses, attitudes, beliefs, and emotions in the classroom, and students' academic and social outcomes, with knowledge being the predictor of attitude and behavior. According to Ohan and associates, teachers who possess average or higher knowledge about ADHD reported positive behaviors towards ADHD students, and had stronger positive attitudes towards ADHD interventions than those with low knowledge of ADHD. Additionally, Ohan et al.'s (2011) study found a correlation between high levels of knowledge and teachers' superior prediction of classroom disturbances that emanate from characteristic behaviors of Children with ADHD, teachers' willingness to implement class-based behavioral interventions, and an increased willingness to refer and seek mental health services for the student (Ohan, Visser, Strain, & Allen (2011). In a similar study that utilized the Theory of Planned Behavior (TPB) to investigate the connections between teacher attitudes and behavior toward children with social, emotional, and behavioral difficulties (SEBD) amongst 111 elementary school teachers, MacFarlane and Woolfson (2013) discovered that teachers who experienced more exposure to frequent in-service training exhibited greater positive feelings about children with SEBD. On the other hand, teachers with more teaching experience exhibited less preparedness to work with children with SEBD. This phenomenon may have certain implications for perceived knowledge.

Researchers Kos, Richdale, and Jackson (2004) stated that perceived knowledge refers to an individual's subjective evaluation of personal knowledge on specific issues.

In the study, Kos et al. integrated the items from Jerome, Gordon, and Hustler's (1994) and Sciutto, Terjesen, and Frank's (2000) scales to create the objective knowledge scale. The outcome of the study showed that the 120 Australian in-service teacher participants in the study had a mean score of 60.70% correct responses and better knowledge about ADHD than the 45 final-year pre-service teachers, who scored a mean of 52.60% correct responses. The statistical data from the study promotes the understanding that teachers' knowledge about ADHD is evolutionary and continues to develop beyond in-service experience. Additionally, the outcome of a 10-cm visual analogue scale present in-service teachers as having measurably higher perceived knowledge than do pre-service teachers. The results demonstrated that each group has realistic perceptions of their knowledge (Anderson et al., 2012; Kos et al., 2004). Clearly, inconsistencies between teachers' objective and perceived levels of knowledge about ADHD may likely beguile decisions concerning classroom behavioral management and pedagogical approach for inclusive classroom.

In a similar study conducted in Australia, Anderson, Watt, and Noble (2012) compared in-service and pre-service teachers' knowledge about ADHD and attitudes towards teaching children with ADHD. The study involved pre-service teachers with and without teaching experience (n = 327) and in-service teachers (n = 127). Anderson et al. (2012) reported that the in-service teachers scored higher in overall knowledge about ADHD, as well as in the knowledge of symptoms/characteristics, and intervention for ADHD than did pre-service teachers with and without teaching experience. In addition, in-service teachers reported higher negative emotions about instructing Children with ADHD than did inexperienced pre-service; as well, the ins-service teachers reported

higher perceived knowledge about ADHD and maintain more constructive behavior than did experienced pre-service teachers (Anderson et al., 2012). However, Anderson and associates found no significant differences between the groups in the knowledge about the etiology of ADHD, stereotypical beliefs, belief about teaching children with ADHD, and overall attitudes toward Children with ADHD. Summarily, although this study indicates that the pre-service and in-service teachers performed equally in certain aspects of knowledge and attitudes regarding ADHD, it suggests that pedagogy experience or contact with ADHD students, otherwise ADHD training, may improve teachers' knowledge and competence in the management of ADHD students in the inclusive classroom environment.

Nevertheless, the growing policy on inclusion for students with ADHD has placed more demand on teachers. Teachers engage more effortful attempts to productively modify and shape the negative behaviors of the ADHD students, which can be very challenging without adequate knowledge, training, and a structured environment (Roache, J. E., & Lewis, R. (2011); Romi, Lewis, Roache, & Riley, 2011; Roorda, Koomen, Spilt, & Oort, 2011). Many teachers express their unpreparedness to handle the challenges associated with educating ADHD students. In a study that investigated 345 teachers' perspectives on their willingness and readiness to tackle behavioral exigencies in the inclusive classroom, Baker (2005) noted that middle and secondary school educators testified of being appreciably less competent and prepared to control exigent behaviors in the inclusive classroom than primary teachers. Consequently, teachers direct their lack in positive attitudes towards the inclusion policy because of their self-rated inexperience and unpreparedness to successfully restructure the negative

characteristics of ADHD and educate the students (Darrow et al. (2009). A successful learning environment requires that the teacher presents a positive attitude toward inclusion, has the capacity to recognize each student's strengths and weaknesses, and incorporates this knowledge to implement a differentiated instruction and behavioral intervention in the classroom (Darrow, et al., 2009).

Inclusive Classroom and In-Service Training

There appeared to be a scarcity of in-service programs dedicated to educating teachers about ADHD; however, the efficacies of such in-service programs have been correlated with improved teacher knowledge of the disorder and classroom management practices. Jones et al. (2008) conducted a seminal randomized, controlled study, which investigated the effectiveness of a brief ADHD in-service training on evidence-based assessment and treatment of ADHD in enhancing teacher knowledge about ADHD and implementation of evidence-based classroom-management approaches. With this study, Jones et al., (2008) posited that the ADHD in-service training would extend to improvement of teacher knowledge about ADHD and permit educators to account for as well as effect transformations in classroom behaviors.

Harlacher, Roberts, and Merrel (2006) paralleled Jones associates' findings of an in-service training study, which involved 142 teachers recruited from six elementary schools within Washington, DC area. The in-service training presented a general synopsis of ADHD and contained evidence-based treatment for ADHD as well as unambiguous classroom management techniques directed at promoting teachers' approval of the material (Harlacher et al., 2006). The approach to the delivery of the in-service training mimicked practical, hands-on schools settings. Preceded by the training,

teachers responded to a survey questionnaire requiring responses to a 25 true-false questions. With a point increase in the mean score of teachers' knowledge, the outcome of the study yielded a moderately significant improvement in teacher knowledge about ADHD (Harlacher et al., 2006).

Similarly, in a more recent study, which used a convenience sample of 37 first to fourth-grade teachers in Porto Alegre, Brazil, Aguiar et al. (2012) examined the impact of a psychoeducational awareness intervention on teachers' knowledge about ADHD. The researchers administered a questionnaire instrument containing 20 "true," "false," and "I don't know" questions to the teachers. They evaluated the teachers' pre-intervention—Time-1 (T1) and post-intervention—Time-2 (T2) knowledge about ADHD with the instrument. The outcomes of the Aguiar et al (2012) study in Brazil and Syed and Hussein's (2009) study in Pakistan involving 49 teachers were in consensus that in-service training and brief interventions are effective in, and necessary for, the improvement of teacher knowledge about ADHD and their approach to classroom behavioral management.

In spite of the rich discoveries about ADHD, most of the studies reviewed so far are geographically specific or conducted within the context of the developed world, and therefore, the study's external validity or generalizability may be limited by cultural differences. In addition, although Adewuya and Famuyiwa (2007) and Ofovwe, Ofovwe, Meyer (2006), and Ndukuba, Odinka, Muomah, Obindo, and Omigbodun (2014) have comprehensively established the prevalence of ADHD amongst elementary and secondary school-children in Nigeria, information regarding the level of Nigerian teachers' knowledge about ADHD and their competence with in-class behavior

interventions is unknown in the literature. Therefore, a vacuum exists in the literature regarding these and other ADHD concomitant variables about Nigerian general educators and, necessitates the need to fill the identified gap.

Ubiquitously, inclusive education in Nigeria is undermined by poor planning, mismanagement, implementation gaps, and other complications that undermined the successful execution of the Universal Basic Education program (UBE) within the Nigerian education environments. Teachers often exit the profession early for upward mobility due to poor working conditions, which adversely affect special need students' educational needs and success of inclusive education system in Nigeria. Nigerian inclusive education system is also plagued with significant problems due to lack of appropriate disability knowledge, as overt expression of negative attitudes toward disabled individuals is common practice. Despite the negative views held by the generality of Nigeria society about disabilities, inclusive education continues throughout the country. The next section presents the analysis of behavioral interventions used by teachers to manage negative ADHD behaviors within the classroom.

Classroom Behavioral Interventions

According to Worlraich and Dupaul (2010), children exhibiting ADHD behavioral characteristics experience academic problems beginning in the elementary years. While research showed that most of these children possess inherent capabilities for academic knowledge, a negative correlation existed between their performance and skill levels, including poor test performance and academic achievement scores (Langberg, et al., 2011; Schultz, Evans, Serpell, 2009; Wolraich & Dupaul, 2010). Researchers Abikoff (2009) and Pfiffner, Villodas, Kaiser, Rooney, and McBurnett

(2013) conceded to the effectiveness of school-based interventions, but argued that these interventions lack systematic application of strategies to generalize treatment gains in different settings. The researchers claimed that these interventions do not offer efficient regulation for the specific, multiple social and academic impairments related to ADHD including parenting risk factors (Abikoff, 2009; Pfiffner et al., 2013). Consequently, researchers believe that school-based interventions for ADHD engender delimited improvements for participating students (Wolraich & Dupaul, 2010). Additionally, the outcome of Fabiano et al.'s (2009) meta-analysis of behavioral interventions, including classroom modification, parent training, and those that target skill building (Evan et al., 2009) suggested that these interventions do improve ADHD symptoms, academic performance, organizational skills, school work, and academic functioning. However, Pfiffner et al. (2013) argued that non-school personnel developed and administered these interventions in controlled conditions, and not in a naturalistic school environment. As a result, Pfiffner et al. (2013) introduced an intervention that incorporates a daily report card (Fabiano et al., 2010), behavioral parent training (Pelhame & Fabiano, 2008), and child social and life skills training () administered simultaneously over a 12-week intervention period. Nevertheless, the results of Pfiffner and associates' (2013) treatment outcomes coincide with research that suggests that school-based interventions offer teachers the advantage to respond with immediacy and specificity with the application of interventions according to the students' unique individualized education plan (IEP). In a related study, Daley et al. (2014) conducted a meta-analysis of randomized controlled trials across multiple outcome domains of behavioral interventions, which provided additional empirical validation to Fabiano et al.'s (2009) earlier findings. For the study,

Daley and associates selected and analyzed thirty-two of 2,057 non-duplicated screened records, and reported that behavioral interventions significantly improved parenting quality, parenting self-concept, child ADHD conduct problems, social skills, and academic performance.

Teachers' Training and Classroom Management Strategies

Pedagogical approaches to inclusive classrooms necessitates the need for teachers to be masterful and to deliver quality and differential instruction to accommodate the students whose disruptive and off-task behaviors impede learning in the classroom (Martinussen, Tannock & Chaban, 2011). This can be challenging (Westling, 2010; Wu, 2015), especially with the understanding that active instructional time has a positive correlation with student achievement (Blank, 2013). Behavior that disrupts classroom flow constricts knowledge gain and academic outcomes. Thus, in order to maximize student commitment and augment the chances of academic success, teachers must possess effective classroom management skills and rely on classroom behavioral interventions (Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011). Accordingly, researchers have reported that teacher training relating to ADHD and other professional development involving classroom management skills were inevitable, and had a higher correlation with teachers' effectiveness and success of inclusive environment (Aguiar et al., 2012; Causton-Theoharis, 2009; Dupaul et al., 2006; DuPaul et al., 2011; Graham-Day, Gardner, & Hsin, 2014; Kozik, Cooney, Vinciguerra, Gradel, & Black, 2009). However, studies have shown that many teachers do not possess adequate training in classroom management, especially inclusive classroom practices, prior to engaging in an in-service teaching career. These teachers experience struggles

with classroom management along with their pedagogical responsibilities (Roache, J. E., & Lewis, R. (2011); Romi, Lewis, Roache, & Riley, 2011; Roorda, Koomen, Spilt, & Oort, 2011) and often need continued in-service training to support and improve their knowledge about ADHD, and consequently, their classroom-management skills (Simonsen, Myers, & DeLuca, 2010).

While there could be those others who dispute the sufficiency of in-service training and claim that it lacked fidelity and durability, many researchers (Brriere, Simonsen, Myers, & Sugai, 2013; Cater & Van Norman, 2010; Cheung, 2013), insisted on the responsiveness of in-service training and noted that effective training in classroom management consists of one that focuses on professional development and incorporates self-management, performance feed-back, consultation, and coaching. Myers et al. (2011) and Simonsen et al. (2014) proposed use of a multi-tiered support (MTS) framework to sustain educators' pedagogical and classroom practices. The MTS framework employs multi-tiered prevention procedures, otherwise known as Response to Intervention (RI), to categorize professional development support for classroom management. According to Simonsen et al. (2014), the MTS function in tiers (a) ensures all teachers receive training in classroom management (Tier 1), (b) ensures identification of the teachers who need additional help through generalized screening (Tier 2), (c) provides support to those teachers identified (Tier 3), (d) maintains continuous monitoring of teachers' classroom management and adjustments as necessary (Tier 4). It is noteworthy to mention that a gap in the literature exists concerning the validity and effectiveness of MTS and its measures (Simonsen et al., 2014).

According to Kauffman and Brigham (2009), teachers tend to focus on the negative ADHD behavioral characteristics students exhibit. These students receive more reprimands (Kauffman & Brigham, 2009); as well, other researchers, Sutherland, Lewis-Palmer, and Morgan (2008) concur that ADHD student receive less instruction, less teacher praise, and less response opportunities from teachers. However, according to Haydon et al. (2010) positive classroom management practices consist of granting students' increases in response and participatory opportunities during classroom instructions, instituting positively designed guidelines and assumptions for behavior and learning; Others include frequent feedback (Rajwan, Chacko, & Moeller, 2012), increases in teacher response and attention to apposite conduct (Rusby et al., 2011) as well as teacher behavior towards students that include contingent praise statements, appropriate reprimand, reciprocal and responsive interactions with the students (Myers, Simonsen, & Sugai, 2011). Thus, teachers' classroom management strength is dependent on their knowledge about ADHD and effective application of the appropriate behavioral intervention strategies.

School-Based Classroom Intervention Strategies

Research has shown that children with ADHD present unparallel behaviors to those required in classrooms; hence, ADHD students have trouble with self-organization, on-task, and social behaviors (Imeraj et al., 2013). Thus, behavior interventions are indispensable for a successful learning environment and inclusive practice, whereas ADHD student require consistent and structured management plan, frequent, and conspicuous positive consequences (Barnes, 2014; Flannery, Fenning, Kato, & McIntosh, 2014; Turtura, Anderson, & Boyd, 2014). Researchers have investigated the various

classroom behavior strategies, and have established the effectiveness of appropriate classroom-based interventions, including behavioral, academic, and social (Anderson, Watt, Noble, & Shanley, 2012; Daley et al., 2014; DuPaul, Eckert, & Vilardo, 2012; Dupaul & Wyendt, 2006; Trout et al., 2007; Vannest, Davis, Davis, Mason, Burke, 2010). As well, various researchers have correlated effective and successful inclusive classroom—well-structured classroom with environmental cues (Jordon, Glenn, & Mcghie-Richmond, 2010), effective implementation of academic, behavioral, social interventions, and found these interventions to enhance student achievement, positive self-identity, improve prosocial behaviors, and skills for enduring and autonomous learning (Weyandt, & Janusis, 2011; Jones, & Chronis-Tuscano, 2008).

Particularly, many researchers (DuPaul, Eckert, & Vilardo, 2012; DuPaul, Weyandt, & Janusis, 2011; Evans, Owens, & Bunford, 2014; Fabiano et al., 2009; and Daley et al., 2014; Walker-Noack, Corkum, Elik, & Fearon, 2013), have established the effectiveness of school-based classroom interventions. For enhanced outcome, teachers are advised to use functional behavioral analyses to assess and identify maladaptive behavior prior to implementing behavioral intentions (Dupaul & Weyandt, 2006). Seemingly, the utility of functional analysis keeps the teacher in focus and aware of individual student behaviors, and provides the teacher the ability to construct a plan for addressing the behavior with appropriate behavioral interventions. Summarily, behavioral interventions are a collection of stratagems that employ philosophy of reliable conduct supervision; these include academic, consequent, antecedent, and self-management strategies (DuPaul, Weyandt, & Janusis, 2011).

Antecedent-Based Strategies

Antecedent-based strategies are manipulative actions, effects, and events that precede targeted behavior in an effort to preclude the occurrence of problematic behavior (Dupaul & Weyandt, 2006). These strategies increase the chances for alternative, appropriate, and on-task attention to occur. Several antecedent-based interventions have been employed to forestall the occurrence of inattentive and disruptive behaviors; these subsume insistent and dynamic instructions on classroom rules, choice making, and reduction in assignment of tasks (Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011). For effective classroom management, teachers must remain proactive in teaching and maintain continuous reiteration of classroom rules. These rules should be simple, few in number, phrased in a positive manner, and posted in full view of all students (Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011).

According to researchers (Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011), choice-making intervention has been shown to increase rate of task engagement and to reduce frequency of disruptive behaviors in classroom sessions. Choice-making intervention grants students the privilege to choose from two or more concomitantly presented classroom activities. Thus, it assists in minimizing frequency of disruptive behaviors as well as encourages on-task and prosocial behaviors.

Another antecedent-based strategy frequently used for modifying disruptive behavior in ADHD students is to reduce or modify content and length of task assignment (DuPaul & Stoner, 2003; Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011). The underpinning notion is that a reduction in the length of an assignment will correlate with ADHD student's attention span, and thus, reduce off-task and disruptive behavior.

For greater efficacy, DuPaul, Weyandt, and Janusis (2011) espoused this strategy should be coupled with teacher praise contingent on task completion. As students succeed in completing shorter assignments, the length of subsequent assignments may be gradually increased, thereby shaping task-related behaviors to parallel classroom models (DuPaul et al., 2011).

Consequent-Based Strategies

Consequent-based strategies are interventions that manipulate environmental events subsequent to specific or target behavior to alter the frequency of specific behaviors (Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011). Alteration of behavior frequency includes the attempts to increase incidences of adaptive behavior or to decrease the probability for the occurrence of problematic behavior. Verbal reprimand from teachers and/or removal from the classroom is most commonly used consequent-based strategy for disruptive behavior in the classroom environment. According to Dupaul and Stoner (2003), exclusive use of punishment-based strategy has shown ineffectiveness for Children with ADHD and related disruptive behavior disorder; however, other consequent-based strategies have empirical support and include prudent reprimand, token reinforcement or economy, and response cost.

Teachers frequently use reprimands in response to disruptive behavior; however, this approach is often punitive and rarely delivered in ways that achieve positive behavioral change in Children with ADHD (Dupaul & Weyandt, 2006). Nevertheless, Dupaul and Stoner (2003) proposed use of prudent reprimand and conditions under which use of reprimand-based intervention may be effective. This includes teachers specifically communicating the concerns regarding the student and consistently communicating the

concerns immediately following the first occurrence of problem behavior(s). The reprimand should be delivered in brief, calm, and quiet comportment, and preferably in private while maintaining eye contact with the child. Time-out intervention, when viewed from positive reinforcement perspective, yields enhancing utility as a consequent-based strategy for problem behavior change (Barnes, 2014).

Token reinforcement is a contingent positive reinforcement-based intervention for shaping behavior. Various researchers, (Dupaul, Weyandt, & Janusis,2011; Trout, Lienemann, Reid, & Epstein, 2007), have acknowledged the utilities and success rate of and recommended token reinforcement as a behavior management intervention for restructuring inherent negative presentations of ADHD characteristics. In token programs, students earn immediate reinforcers such as stickers, exchangeable points, teacher's praise, poker chips, or treats for meeting behavioral expectation or for completing assigned work (Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011). The token economy provides consistent, immediate positive reinforcement without interruption, which is a requisite constituent in ADHD behavior restructuring (Carnett et al., 2014; Coelho, et al., 2015; DuPaul, Weyandt, & Janusis, 2011). As Dupaul and Weyandt (2006) pointed out that because impaired and delayed responses to environmental events appears to be the primary deficit that underpins most of the ADHD behavior presentations, effective behavior change requires that contingencies be immediate and frequent.

Furthermore, Barnes (2014) and DuPaul, Weyandt, and Janusis (2011) outlined the effective guidelines for administering reinforcement-based intervention. First, because children with ADHD presentations may have trouble sustaining consistent

behavior when dispensation of reinforcement follows partial or intermittent schedules, administration of reinforcement should be frequent and consistent. Second, rewards should be customized to fit each student's preferences and interests and should be varied over time to ensure that children do not become complacent of the same reinforcers. Finally, reinforcement should be administered as quickly as possible when the target behavior occurs.

As a consequence-based intervention, token economy is distinguished as an effective strategy for shaping negative ADHD behaviors. Various studies show that token intervention strategies can modify disruptive characteristics of ADHD conditions and enhance on-task behaviors (Carnett et al., 2014; Coelho, et al., 2015; Dupaul, Eckert, & Vilardo, 2012; DuPaul, Weyandt, & Janusis, 2011; Marafao, Cruz, & Bertelli, 2013), particularly when combined with a public approval like oral commendation, or corporal sign of endorsement (Diane, Myers, Simonsen, Sugai, 2011; Dupaul et al., 2011). Fabiano and Pelham's (2003) case study involving token-economy intervention showed a decrease in out-of-seat behavior, talking back, teasing, and noncompliance. In their study, Fabiano and Pelham (2003) focused on an eight-year-old, African American third grader diagnosed with ADHD who habitually displayed behavior problems in class. The researchers observed the presenting students and other comparison students routinely twice each day for about an hour during various school related learning, classroom, and social activities (Fabiano & Pelham, 2003). During the observation, observed behaviors relating to destruction of property, talking back to adults, teasing peers, using materials inappropriately, verbally intruding on the class, being out of their seat, or acting aggressively towards others were noted for each child, and coded as disruptive (Fabiano

& Pelham, 2003). The observer coded disruptive and on-task behaviors in 15-minutes intervals. The teacher provided immediate feedback when the children violated rules and rewarded the student with points for positive behaviors. The students then exchanged the points for computer game time. In their study, Fabiano and associate recorded significant reduction in negative behaviors from 29.86% to 10.33% (Fabiano & Pelham, 2003).

Academic-Based Strategies

Oftentimes, ADHD conditions are correlated with academic impairment; therefore, improvement in ADHD student's academic skills should be targets of effective intervention. Academic intervention includes teacher-mediated instruction, peer-tutoring, modification of student curriculum, and computer-mediated instruction. According to Dupaul, Weyandt, and Janusis (2011), computer-mediated instruction in mathematics and reading provided similar responsive effects on on-task behaviors and academic performance as that achieved in seatwork condition. As well, the teacher's modification of teaching style to accommodate students' specific academic deficit and learning style has been effective across age groups and disability populations. Modification of academic curriculum, including seating arrangements, tasks, and instructional presentation may improve ADHD students' academic performances (Dupaul & Weyandt, 2006; DuPaul, Weyandt, & Janusis, 2011). Peer tutoring is another aspect of academic intervention found effective in shaping behavior, social skills, and academic performance (Bowman-Perrott, 2009; Dupaul, Weyandt, & Janusis, 2011). Peer tutoring consists of a pair of students working collaboratively on a pedagogic assignment wherein one learner offers help and facilitates learning for the other. Through peer tutoring, the student-facilitator models positive academic behaviors by providing academic instruction and

feedback to enhance competent behavior and confidence, and to improve social and collaborative skills in the one another (Bowman-Perrott, 2009).

Self-Regulation Intervention

Gawrilow, Morgenroth, Schultz, Oettingen, and Gollwitzer (2013) provided positive indications for the efficacy of self-regulation intervention in ADHD condition, as self-administered interventions, which seek to enhance self-control behaviors. Self-regulation strategies give Children with ADHD the autonomy to monitor and evaluate their progress in peer interactions, classroom behavior, and work performance with charts, Likert scales, or checklists at regular intervals. Teachers evaluate and record the same observations as the student using the same scale as the student. The student receives reinforcement based on his or self-evaluated performance and how proximal the student's self-evaluation ratings are to teacher ratings. As the student's self-evaluation ratings continue to parallel teacher ratings, the required frequency of matches to teacher ratings is reduced progressively to the extent that only self-ratings are used (DuPaul, Weyandt, & Janusis, 2011). Indicators from a meta-analytic work of Reid, Trout, and Schartz (2005) recorded significant positive effects for ADHD students' on-task behavior and academic performance. The underpinning effectiveness of self-management is inherent in educating ADHD students to monitor their own behaviors. Dupaul et al. (2011) explained that habitual practice of monitoring own behavior often leads to behavior improvement, including organizational skills.

To sum up this section of the chapter, behavioral interventions are a collection of stratagems that employ philosophy of invariable or reliable conduct supervision; these include antecedent, consequent, academic, and self-management strategies. Antecedent-

based strategies are manipulative actions, effects, and events that lead targeted behavior in an effort to preclude the occurrence of problematic behavior. Consequent-based strategies are interventions that manipulate environmental events subsequent to specific or target behavior to alter the frequency of specific behaviors. Academic intervention includes teacher-mediated instruction, peer-tutoring, modification of student curriculum, and computer-mediated instruction. Additionally, self-regulation strategies give Children with ADHD the autonomy to monitor and evaluate their progress in peer interactions, classroom behavior, and work performance with charts, Likert scales, or checklists at regular intervals. The next section of the chapter, the theoretical framework, outlines the framework used for the study and provides background on how Tenneke's (1971) theory of cultural relativism is aligned with this study in particular.

Theoretical Framework

Theory of Cultural Relativism

The theoretical framework for the study was Tennekes' (1971; as cited in Bothamley, 1993), cultural relativism theory. The assumptions of cultural relativism theory are based on culture-bound perceptions relating to culturally held ideologies, beliefs, values, and norms of a culture. Cultural relativism theory portends that these assumptions configure the cultural behaviors, attitudes, views, way of life, and existential experiences of the native citizens of the culture (Herskovits, 1973).

According to Tennekes (1971) cultural relativism theory suggests that each culture or ethnic group has its own values, shared ideals, and beliefs through which the group organizes its collective life, goal, attitude, and worldviews; therefore, each culture or group needs to be evaluated or understood on the basis of its own culture-specific

terms. Tennekes also suggested that within a culture, a person's or group's attitude or perception may change because of certain factors, including the introduction of new information (Tennekes, 1971; as cited in Bothamley, 1993). In this sense, an introduction of new information includes Nigerian teachers' demographic characteristics: level of education and years of professional in-service experience or classroom contact with children with ADHD.

The current study assessed what, if any, links exist between Nigerian educators' attitudes towards the ADHD and students' in-classroom characteristics and the educators' use of behavior interventions. Thus, in keeping with cultural relativism theory, Nigerian cultural perspective represents the best predictor of Nigerian teachers' knowledge about ADHD and how that knowledge may inform the nature of the pedagogical and classroom management strategies the teachers adopt in the inclusive classrooms for students with ADHD. As well, the Nigerian cultural perspective in relation to cultural relativism offers the best delineation on how the educators' demographic characteristics relate to their knowledge about ADHD.

In Nigeria, inherent cultural beliefs perverse attitudes toward and perception of disabilities, including the behaviors those are typical of ADHD (Ajuwon, Ogbonna, & Umolu, 2014; Tolulope Eni-olorunda, 2008). Accordingly literature has established that Nigerian teachers' associated misconceptions about the behavioral characteristics of ADHD include the influence of malevolent spirits, and that children who displayed disabilities typical of ADHD are stigmatized, avoided, and perceived as being disturbed by demonic forces (Adeosun, Ogun, Fatiregun, &Adeyemo, 2013; Ajuwon, Ogbonna, & Umolu, 2014; Lebowitz, 2016). The Nigerian cultural predisposition and negative

perception of disabilities necessitate a need to assess the Nigerian educators' level of knowledge about ADHD as well as highlight need for psychoeducational interventions targeted towards improving teachers' knowledge of ADHD (Adeosun et al., 2013), instructional and behavior management strategies for inclusive classrooms while recognizing the prevalent cultural belief.

Consequently, based on the assumptions of cultural relativism theory relating to Nigeria's cultural belief system regarding disabilities, this study examined the nature of Nigeria educators' knowledge about ADHD. As well, it sought the interaction between the outcomes of Nigerian teachers' knowledge or quantification of typical behaviors of ADHD, and the nature of the classroom behavioral intervention the teachers implement for ADHD. In addition, it sought to examine the correlation between Nigerian teachers' demographic characteristics and their knowledge about ADHD. Thus, given the influences of inherent cultural ideologies, beliefs in Nigeria, and the absence of formal training on ADHD for Nigerian teachers, indicators from this study may demonstrate that the educators are likely to exhibit inadequate knowledge about ADHD, and that they may employ more of negative and disciplinary consequences for shaping ADHD behaviors in the classrooms. As well, it is likely that the outcomes from this study will show that Nigerian teachers' current demographic characteristics may not promote significant knowledge of ADHD in the educators. In addition, it is likely that the outcomes of this study will show that the nature of the Nigerian educators' choices of classroom management strategies and level of proficiency are the product of their level of knowledge about ADHD and culture-driven perceptions regarding the disorder. Consequently, the constructs or indicators derived from this study will be assistive in

locating the specific areas the Nigerian educators need proficiency and improvement for effective pedagogy and inclusive education.

Conclusion

ADHD students have been located in the inclusive classrooms of the Nigerian general education environment (Adewuya & Famuyiwa, 2007; Ofovwe, Ofovwe, & Meyer, 2006; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014), and the significance of teachers' knowledge about ADHD cannot be overemphasized. However, many researchers have shown that teachers lack adequate knowledge and hold misconceptions about ADHD (Aguair et al., 2012; Gallant, Martin, McGonnell, & Corkum, 2014; Guerra, & Brown, 2012; Ohan, Visser, Strain, Allen, 2011; Rodrigo, Perera, Eranga, Williams, & Kuruppuarachchi, 2011; Sciutto, Terjesen, & Frank, 2000). At this same time, a successful inclusion of students with ADHD into an organized, structured general education environment embodies behavior-management strategies, academic, and social interventions (DuPaul, Weyandt, & Janusis, 2011; Jordon, Glenn, & Mcghie-Richmond, 2010). History on past research has shown that inclusive practices and implementation of appropriate behavior-management strategies can improve student achievement, promote strong social skills, augment positive self-identity and self-efficacy, and facilitate students' ability to develop the necessary knowledge and core skill sets for lifetime and autonomous learning (Barkley et al., 2006; Jones et al., 2008). Nevertheless, teachers' capacity to implement effective classroom behavior management strategies is dependent on the teachers' adequate knowledge about ADHD (Jordon, Glenn, & Mcghie-Richmond, 2010; Sherman, Rasmussen, & Baydala, 2008). Consequently, the synergetic combination of teachers' adequate knowledge about ADHD

and their competence in the implementation of effective classroom-behavior management can promote teachers' self-efficacy and pedagogical confidence (Dixon, Yssel, McConnell, & Hardin, 2014) as well as promote the success of ADHD students in the inclusive classroom. The current study focused on teachers' needs for support through in-service training and development of a more comprehensive teacher education curriculum to address ADHD characteristics behaviors in the classroom by asking the following research questions:

1. Do Nigerian teachers' years of teaching experience significantly predict their knowledge of ADHD?
2. Do Nigerian teachers' levels of education significantly predict their knowledge of ADHD?
3. Do significant differences exist between Nigerian general educators' knowledge about ADHD by their choice of classroom behavior intervention (academic, consequent, antecedent)?

Chapter 3 consists of the methodology used for the study, design of the study, research questions investigated, approach to accessing participants, sample size, instrumentation - the validity and reliability of the research design, data collection and analysis, and ethical consideration. Chapter 4 discusses the research findings and chapter 5 presents the interpretation of the findings; a well, it discusses the study's implication for social change and recommendations for future research.

Chapter 3: Research Method

Introduction

The focus of this study was the assessment of Nigerian teachers' knowledge about ADHD and the specific classroom-behavior management strategies (antecedent, consequent, or academic) they employed in shaping ADHD in-class behaviors. Researchers have shown that Nigerian teachers hold negative attitudes and misconceptions about typical characteristics of ADHD (Adeosun, Ogun, Fatiregun, & Adeyemo, 2013). This study helps in targeting areas in which teachers need support through in-service training and development of a more comprehensive teacher education curriculum. This chapter outlines the design method, the research population and sampling procedures, and operationalization of the independent and dependent variables. In addition, this chapter delineates factors associated with instrumentation, data analysis, informed consent, and ethical considerations.

Research Design and Rationale

The current study employed a quantitative, non experimental correlational design approach; a quantitative design was most applicable because the goal of the current research was to analyze the statistically significant associations among numerically measureable concepts (Howell, 2010). Additionally, given the nature of the study, personal interviews, observations, or application of a phenomenological approach would not have provided the dependability or credibility of anonymous surveys. In addition, interviews, focus groups, or observations would have added more to potential bias and inconsistency in the administration of the survey instrument. The focus of this research included the effects of Nigerian teachers' knowledge about ADHD on choices of

classroom management strategies. Knowledge about ADHD and choice of classroom management strategies were measurable by the operationalization of four variables of interest. These variables included Nigerian teachers' demographic characteristics—years of teaching experience, level of education, and level of knowledge about ADHD, and behavior management approach. The first independent variable, teachers' teaching experience, measured educators' total years of instructing students. The teaching experience variable was obtained with the demographic section of the Knowledge About Attention-Deficit Hyperactivity Disorder Scale (KADDS) and the Teacher Interventions for ADHD Students (TIAS) survey instruments. The second independent variable, teachers' level of education, indicated teachers' highest earned academic degree, and KADDS or the TIAS survey instrument was used for accessing the independent variable. The first dependent variable in this study corresponds to teachers' self-reported knowledge or perceptions about ADHD as measured by the KADDS instrument. This variable provided information on Nigerian teachers' knowledge about ADHD relative to the specific components of ADHD, subsuming general awareness, etiology, intervention, and overall perception. The second dependent variable in this study corresponded to teachers' behavioral management approaches as measured by the TIAS, which indicated the type and nature of classroom interventions—academic, consequent, and antecedent—that Nigerian general educators employed in shaping negative ADHD behaviors in the classroom.

Research Questions and Hypotheses

l assessed Nigerian general educators' knowledge about ADHD and their classroom behavioral management strategies in Nigerian school settings using the KADDS and TIAS survey instruments to answer the following questions:

Research Question 1

What is Nigerian teachers' knowledge about ADHD (general awareness, etiology, intervention, and overall), as measured by the KADDS?

To address Research Question 1, exploratory data analysis was used to examine Nigerian teachers' knowledge about ADHD as measured by scores on the KADDS instrument. Descriptive statistics included frequency and percentages as well as means and standard deviations. Frequencies and percentages were used to tabulate the number of *true*, *false*, and *don't know* responses. Means and standard deviations were used to analyze the composite scores. Graphical forms, such as frequency distributions and histograms, provided a method of organizing the data.

Research Question 2

Do Nigerian teachers' years of teaching experience significantly predict their knowledge of ADHD, as measured by the KADDS?

$\boldsymbol{H_0 1}$: Nigerian teachers' years of teaching experience do not significantly predict their knowledge about ADHD.

$\boldsymbol{H_A 1}$: Nigerian teachers' years of teaching experience significantly predict their knowledge about ADHD.

To address Research Question 2, four multiple linear regressions were conducted to examine the relationship between Nigerian teachers' years of teaching experience and

their knowledge of ADHD (general awareness, etiology, intervention, and overall perception). A multiple linear regression is the proper analysis to use when the goal of the research is to assess the extent of a relationship among a set of dichotomous, interval, or ratio predictor variables on an interval or ratio criterion variable (Tabachnick & Fidell, 2012). In this case, the independent variable, Nigerian teachers' years of teaching experience, contained five different levels (1–5 years, 6–10 years, 11–15 years, 16–20 years, > 20 years), and the variable was dummy coded to compare levels. The dependent variable, Nigerian teachers' self-reported knowledge about ADHD, was composed of four individual variables (general awareness, etiology, intervention, and overall).

Prior to conducting the multiple linear regression analysis, the assumptions were assessed—linearity, normality, homoscedasticity, and multicollinearity. The assumptions were checked for all four multiple linear regressions. Linearity assumes that there is a straight-line association between the predictor and criterion variables. Normality assumes that there is a normal bell curve distribution between the predictor variables and the criterion variable, while homoscedasticity assumes that scores are fairly equally distributed about the regression line. Linearity, normality, and homoscedasticity were assessed by the examination of scatterplots (Tabachnick & Fidell, 2012). A normal P-P plot was used to assess the normality of residuals between the predictor variable (years of teaching experience) and the dependent variable (knowledge of ADHD). Homoscedasticity was interpreted through the standardized prediction versus standardized residual regression scatterplot. The presence of a rectangular distribution, one with no recognizable pattern, indicates whether or not homoscedasticity is present. The absence of multicollinearity assumes that predictor variables are not too closely

associated and is assessed using variance inflation factors (VIF). VIF values over 10 suggest the presence of multicollinearity and subsequently a violation of the assumption (Stevens, 2009). Variables were evaluated based on what each one added to the prediction of the dependent variable. The *F* test was used to assess whether the set of independent variables collectively predicted the dependent variable. *R* squared—the multiple coefficient of determination—was reported and used to determine how much variance in the dependent variable could be accounted for by the set of independent variables. The *t* test was used to determine the significance of each predictor, and beta coefficients were used to determine the extent of prediction for each independent variable. For significant predictors, the dependent variable increased or decreased by the number of unstandardized beta coefficients for every one-unit increase in the predictor variable. Significance was evaluated at an alpha level of .05.

Research Question 3

Do Nigerian teachers' levels of education significantly predict their knowledge of ADHD, as measured by the KADDS?

$H_0$2: Nigerian teachers' level of education does not significantly predict their knowledge about ADHD.

H_A2: Nigerian teachers' level of education significantly predicts their knowledge about ADHD.

To address research question three, four multiple linear regressions were conducted to examine the relationship between Nigerian teachers' level of education and their knowledge of ADHD (general awareness, etiology, intervention, and overall perception). A multiple linear regression is the proper analysis to use when the goal of

the research is to assess the extent of a relationship among a set of dichotomous, interval, or ratio predictor variables on an interval or ratio criterion variable (Tabachnick & Fidell, 2012). In this case, the independent variable, Nigerian teachers' level of education, was an ordinal variable containing five different levels (high school education, some college education, bachelor's degree, master's degree, doctorate degree), and the variable was dummy coded to compare levels. The dependent variable was Nigerian teachers' self-reported knowledge about ADHD, which was composed of four individual variables (general awareness, etiology, intervention, and overall perception).

Prior to conducting the multiple linear regression analysis, the assumptions were assessed—linearity, normality, homoscedasticity, and multicollinearity. The assumptions were tested for all four multiple linear regressions. Linearity assumes that there is a straight-line association between the predictor and criterion variables. Normality assumes that there is a normal bell curve distribution between the predictor variables and the criterion variable, while homoscedasticity assumes that scores are fairly equally distributed about the regression line. Linearity, normality, and homoscedasticity were assessed by examination of scatter plots (Tabachnick & Fidell, 2012). A normal P-P plot was used to assess the normality of residuals between the predictor variable (level of education) and the dependent variable (knowledge of ADHD). Homoscedasticity was interpreted using a standardized prediction versus standardized residual regression scatterplot. The presence of rectangular distribution, one with no pattern, indicates whether homoscedasticity is present.

Variables were evaluated based on what each one added to the prediction of the dependent variable. The *F* test was used to assess whether the set of independent

variables collectively predicted the dependent variable. *R* squared—the multiple coefficient of determination—was reported and used to determine how much variance in the dependent variable could be accounted for by the set of independent variables. The *t* test was used to determine the significance of each predictor, and beta coefficients were used to determine the extent of prediction for each independent variable. For significant predictors, with every one-unit increase in the predictor, the dependent variable increased or decreased by the number of unstandardized beta coefficients. Significance was evaluated at an alpha level of .05.

Research Question 4

Does Nigerian general educators' knowledge about ADHD, as measured by the KADDS, significantly predict choice of classroom behavior intervention (academic, consequent, antecedent), as measured by the TIAS, for inattentiveness, wandering, poor peer interaction, and speaking out of turn?

***$H_0$3*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding inattentiveness.

***H_A3*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding inattentiveness.

***$H_0$4*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding wandering.

***H_A4*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding wandering.

***$H_0$5*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding poor peer interaction.

***H_A5*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding poor peer interaction.

***H_06*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding speaking out of turn.

***H_A6*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding speaking out of turn.

To address Research Question 4, four multinomial logistic regressions were conducted to determine whether there was a significant relationship between Nigerian general educators' knowledge about ADHD (overall) and their choice of classroom behavior intervention (academic, consequent, antecedent) among the four vignettes in the TIAS instrument. A multinomial logistic regression is an appropriate analysis to use when the goal of the research is to assess the extent of a relationship between a continuous or discrete independent variable and a categorical dependent variable with three or more groups (Stevens, 2009). The independent variable in this case was Nigerian general educators' overall knowledge about ADHD. The dependent variable was choice of classroom behavior intervention (academic, consequent, antecedent).

Logistic regressions overcome many of the restrictive parametric assumptions of linear regressions such as linearity, normality, and equal variances. Prior to conducting the analysis, there should be no outliers in the data. The elimination of outliers was achieved by converting the independent variables to a standardized *z* score, and any values outside of the range $\pm$ 3.29 were deleted (Tabachnick & Fidell, 2012).

Significance was evaluated at an alpha level of .05. The overall model significance for the multinomial logistic regression was examined by the collective effect

of the independent variables on the dependent variable, presented with a χ^2 coefficient. Individual predictors were assessed by examination of the Wald coefficient. Predicted probabilities of an event occurring was determined by Exp (*B*). If a significant predictor has a positive *B* value, then for every one-unit increase in the predictor variable, the odds of being in one group increase by Exp (*B*) percent in comparison to the reference group. If a significant predictor has a negative *B* value, then for every one-unit increase in the predictor variable, the odds of the being in one group decrease by 1 - Exp (*B*) percent in comparison to the reference group (Tabachnick & Fidell, 2012).

Research Methodology

As previously noted, researchers have found significant prevalence of ADHD among elementary, middle, and high school children in Nigeria (Adewuya & Famuyiwa, 2007; Ofovwe, Ofovwe, & Meyer, 2006; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014); however, the levels of Nigerian teachers' knowledge about ADHD and competence with school-based intervention are unknown in the literature (Adewuya & Famuyiwa, 2007). In the context of an inclusive environment, students who exhibit ADHD-characteristic behaviors are noted with an inability to remain on task and to sit still, lack of organization, impaired academic achievement, and poor peer interactions (APA, 2013; DuPaul, Weyandt, & Janusis, 2011; Imeraj et al., 2013). Thus, teachers' knowledge about ADHD and effective classroom-behavior management strategies is critical to the success of the inclusive classroom program, especially in addressing unique behavioral needs of ADHD students (Evans, Owens, & Bunford, 2014; Walker-Noack, Corkum, Elik, & Fearon, 2013). In this study, I assessed Nigerian educators' knowledge about ADHD as well as attempted to determine whether the general educators'

knowledge about ADHD had a significant relationship with their choice of classroom behavior interventions (antecedent, consequent, or academic). Additionally, I sought to resolve whether the teachers' years of teaching experience and level of education correlated with the level of their knowledge about ADHD.

Research Population

A prior analysis of the literature suggests that a lack in research regarding Nigerian teacher's attitudes toward the ADHD disorder as well as the nature of ADHD behavioral management techniques these educators employ for students who demonstrate ADHD characteristic behaviors in the classroom (Adewuya & Famuyiwa, 2007). As a result, the target population for the current study included all elementary, middle, and high school in-service teachers with special emphasis on Math, English, and Science courses. Part-time, substitute, and trained special-aid teachers were excluded from the study as these individuals' responses could have confounding effects on the variables of interest.

Sampling and Sampling Procedures

To conduct this study, I obtained permission from a southeastern state government in Nigerian and/or the various school districts within the 27 local government areas in the state as well as comprehensive lists of all the elementary, middle, and high schools in the state from the Ministry of Education in the state. Prior literature indicates that a majority of Nigerian classes have students with varying levels of ADHD students (Adewuya & Famuyiwa, 2007; Ofovwe, Ofovwe, & Meyer, 2006; Ndukuba, Odinka, Muomah, Obindo, & Omigbodun, 2014). Employing a stratified random sampling approach, the researcher selected representative schools from each of the

districts or 27 local government areas. Subsequently, the stratified schools and their teachers were randomly selected for research participation. I collected data from the elementary, middle, and high schools teacher population using the survey instruments. Thus, the teachers of varied grade levels, with different years of teaching experiences and levels of education were afforded voluntary participation opportunities in the survey study involving knowledge about ADHD and interventions used to modify characteristic behaviors of ADHD in the inclusive classroom. The independent variables were the teachers' levels of education, and years of teaching experience; the dependent variables included self-reported knowledge about ADHD and reported choice of in-class intervention strategies for ADHD behavior in the general education environment.

Sample Size

I took necessary steps to ensure statistical power, corresponding to the reasonable probability that the statistical tests employed in the study have fair chances of detecting a real effect or mean difference. Thus, to ensure reliable statistical power, the researcher considered factors relating to the effects of alpha level, effect size, and sample size.

In implementing the sampling method for this study, there was a need to involve a large pool of participants for the analyses. The current study utilized both linear regression and multinomial logistic regression analyses. The linear regression analysis requires larger number of participants and was thus used to determine the overall sample size requirement. Additionally, the researcher expected to discover a generally accepted medium effect size of 0.5 (Cohen, 1988). Finally, a general accepted power of .80, and an alpha level of .05 was utilized. The alpha level of .05 ensured that the researcher was 95% certain that significant findings were not due to random chance alone. Informed by

the above delineated parameters, G*Power 3.1.7 was used to calculate an appropriate sample to assure empirical validity. Based on these calculations, a sample of at least 55 participants was deemed sufficient for the study (Faul, Erdfelder, Buchner, & Lang, 2013).

Data Collection

I obtained permission from a Nigerian state government and/or the various school districts within the state prior to conducting the study. Data was gathered from the voluntary participants, elementary, middle, and high school teachers statewide, using the survey instruments in a central location on weekends, without impinging school day or academic activities. In order to gather a sample representative of the aforementioned population, the researcher employed stratified random sampling procedures to select schools from the state and subsequent participants for the surveys. Stratified samples are used when the researcher divides the population into separate groups (strata) based on shared characteristics, and then a random sample is drawn from each group. The teacher participant population for this research was drawn from all the state owned inclusive schools within the 27 local government areas of the State. Thus, while targeting the teacher population, the schools in each local government area will be stratified to represent those characteristics of the general population; subsequently, schools were randomly selected for research participation.

Data Analysis

Subsequently, I entered collected data into SPSS version 22.0 for Windows and generated descriptive statistics to describe the sample demographics as well as any research variables used in the analyses. Frequencies and percentages were calculated for

any categorical variables of interest, such as gender or ethnicity. Means and standard deviations were calculated for any continuous variables of interest, such as age (Howell, 2010).

Preanalysis Data Screening

I screened data for accuracy, missing data, and outliers or extreme cases. Descriptive statistics and frequency distributions were conducted to determine that responses were within the possible range of values and that outliers do not distort data. The presence of univariate outliers was tested by examination of standardized values. Standardized values were created for each composite score and outliers were examined, including values that fall above 3.29 and below -3.29 (Tabachnick & Fidell, 2012).

Instrumentation

The current study used two instruments for data collections; such data included the participants' – Nigerian teachers' self-reported knowledge about ADHD and classroom-behavior management strategies, as well as the teachers' demographic characteristics. The instruments include Knowledge about Attention-Deficit Hyperactivity Disorder Scales (KADDS) and Teacher Intervention for ADHD Students (TIAS). The KADDS and TIAS instruments offered numeric descriptions of the participant population, independent, and dependent variables, including teachers' years of teaching experience, level of education, teachers' knowledge about ADHD, and classroom behavioral interventions used. Utilizing the Statistical Package for the Social Sciences (SPSS), statistical analyses were conducted to determine whether there were significant relationships between the variables outlined in the research questions.

Validity and Reliability

A precise interpretation of a test result and the ability to make appropriate empirical inferences based on the test result are components of reliability and validity of the instrument used (Golafshani, 2003; Strangor, 2007). Reliability of a psychometric instrument refers to the stability and consistency of its measurement outcomes expressed as a reliability coefficient or correlation coefficient; thus, for a test to be reliable, its results must be replicable, and the test must demonstrate existence of internal consistency between the items used to measure the specific constructs within the instrument (Golafshani, 2003; Strangor, 2007).

In addition, the validity of the results generated from research is critical for accurate interpretation and application of outcomes. Internal (content) validity and construct validity of tests are crucial for interpretation of outcomes. Content validity refers to the degree to which a measurement reproduces or mirrors the domain of content. In other words, the test must demonstrate that its content-items include all the relevant characteristics necessary for evaluation of the targeted constructs (Carmines & Zeller, 1991). Content validity may be established and created from relevant literature and through expert ratings of the items. Similarly, construct validity is a demonstration of how effectively and accurately a test measures the theoretical construct of interest. Often, pre-and post-tests serve as the benchmark for the demonstration and verification of content validity of psychometric instruments, to ensure that a derived measurement is precise and does not incorporate other confounding variables (Carmines & Zeller, 1991; Sciutto, Terjesen, & Bender, 2000).

Teacher Intervention for ADHD Students (TIAS)

The TIAS consists of four vignettes. Each vignette consists of a student exhibiting negative ADHD characteristic behaviors presented in sequential order of inattentiveness, wandering, poor peer interaction, and speaking out of turn. The characters in the vignettes are males, because research indicators have shown that boys display ADHD at a rate of 3:1 ratio over girls (DSM-5, 2013).

As well, each vignette consists of intervention choices comprised of two consequent, two antecedent, two academic classroom strategies, and space for teachers' self-orientated approach. The survey required teachers to rate and prioritize the intervention strategies on a Likert-type scale: 1 = very poor, 2 = poor, 3 = unsure, 4 = good, 5 = very good. Consequently, the outcomes of the rating will be used to determine the nature of intervention the teachers employ to address similar ADHD scenarios in the classrooms.

Psychometric properties of TIAS. Dr. Darlene Conforti developed the Teachers' Intervention for ADHD (TIAS) for research to determine what classroom management interventions teachers perceive as most effective for addressing ADHD behaviors in the inclusive classroom. The survey instrument consists of four vignettes describing the most common ADHD characteristics classroom behaviors, including inattentiveness, wandering, poor peer interaction, and speaking out of turn. The setup of the vignettes requires a respondent to identify the category of behavior interventions – academic, consequent, or antecedent perceived as efficacious when implemented to modify negative characteristic behaviors of ADHD in the inclusive education environments. The content

of each vignette includes two antecedent, two academic, and two consequent intervention responses.

To order to establish the reliability and validity of the instrument, Conforti (2012) conducted a pilot study. With a sample of 15 elementary and middle school teachers drawn from certain Orange County school district for a pilot study, the author conducted a test-retest reliability and obtained median coefficient r = .87 for both measurements. Furthermore, Conforti obtained coefficients ranging from r = .65 to r = 1.00 for the 24 items in the scales – antecedent, academic, and consequent. In order to assess internal consistency, the author reported low Cronbach's alpha reliability coefficients for the three scales – academic ($\alpha = .3$), antecedent ($\alpha = .18$), and consequent ($\alpha = -.42$); thus proving that the six items in each scale did not receive homogenous ratings. In addition, this indicated that teachers' choice of intervention was dependent on the scenario content of the vignette.

To establish content reliability for the instrument, Conforti (2012) made deliberate effort to include only items that have empirical support from the literature relating to the use antecedent, consequent and academic classroom interventions. The author also utilized the expert assistance of two expert raters, one with a doctoral degree in psychology and nearly three decades of practice, school psychologist, and statistical analysis experiences and the other, with a master's degree in school psychology and more than a decade of experience as a school psychologist. Each expert validated the quality of the instrument using a Survey/Interview Validation Rubric form. Both experts gave high ratings for all the dimensions of the scales. Additionally, the author assessed and established face validity of the instrument through informal discussions with teachers

during the construction of the questionnaires; thus, establishing acceptable levels of face-validity and content validity.

The Knowledge About Attention-Deficit Disorder Scales (KADDS)

The KADDS consists of the 39 questions to measure teachers' knowledge and perceptions about ADHD. The KADD questionnaires items are categorized in three subscales—associated features, symptoms/diagnosis, and treatment. The survey questions will originally be coded to a Likert-type scale: 1 = true, 2 = false, and 3 = don't know. Once entered into SPSS 22.0 (Statistical Package for the Social Sciences), a tabulation of misconceptions will be conducted before recoding the responses as correct or incorrect. A misconception refers to an incorrect response, including a false response to a question for which the appropriate response is true. In this case, "don't know" is not considered a misconception. In order to obtain subscale and total scale composite scores, all correct answers will be recoded so that the correct answers receive a score of 1. Incorrect and don't know responses will receive a score of 0.

The researcher will aim to determine which intervention strategy (antecedent, consequent, or academic) is the most frequently used among Nigerian teachers in relation to their knowledge about ADHD.

Psychometric properties of KADDS. Professor Mark Sciutto developed the Attention-Deficit Disorder Scales (KADDS) in 2000. Currently, the KADDS is the most frequently used instrument for assessing teacher knowledge and misconceptions about ADHD. Various studies have demonstrated the psychometric properties – validity, reliability, and generalizability of the KADDS (Alkahtani, 2013; Guerra, & Brown, 2012; Perold, Louw, & Kleynhans, 2010; Sciutto, Terjesen, & Bender, 2000; Soroa, Gorostiaga,

& Balluerka, 2013). The instrument consists of 36 item rating scales framed in a true (T), false (F), and don't know (DK) format. The item consists of 18 positive and 18 negative questionnaire statements in three subscales. The three response format (True, False, don't know) was intentional to eliminate the limitations associated with the previously (True-False) dichotomous formats which aided the chances of guessing the correct response. The KADDS newest response format ensures that "incorrect guesses" do not guide inaccurate inferences about teachers' knowledge (Sciutto et al., 2000). Consequently, the new format promotes discriminant validity by effecting significant reduction in incorrect guesses as well as by distinguishing between what teachers do not know and what they believe incorrectly regarding ADHD. The KADDS measures knowledge and misconceptions of ADHD in three content areas, including ADHD symptoms/diagnosis, the treatment, and associated features, etiologies, and prognosis of ADHD).

To account for content validity, the authors designed the subscales to mirror content areas relevant to diagnostic decisions and educational interventions. When constructing the KADDS, Sciutto and associates determined which items fit in the respective subscales through a consensus of 40 doctoral students in Clinical and School Psychology. Thus, based on the description of the KADDS subscales, each participant assigned each item to one of the three KADDS sub-scales. Each item was judged as fitting in a subscale if at least 75% of the groups held consensus with the decision. The authors made a deliberate effort to include only the documented items with empirical support in the literature. Additionally, to promote discriminate validity, the KADDS items include both positive and negative indicators of ADHD to assess for a negative

response bias (i.e., characterizing ADHD with all negative behaviors). As a result, items in KADDS focus on measuring both the respondents' knowledge of what ADHD is and what it is not.

The authors conducted successive preliminary investigations to assess the reliability coefficients of the instrument. They administered the KADDS instrument consisting of 27 items with dichotomous (True, False) format to 73 pre-school and elementary school-teachers (Sciutto & Terjesen, 1994). The indicator from the study yielded a Cronbach's alpha of .38 for the KADDS total scale. Subsequently, the authors modified the items that had negative item-total correlations and incorporated a third response choice (don't know). Then, the authors administered the resulting scale to 46 undergraduate and graduate education students and obtained an overall coefficient alpha of 71 (Sciutto et al., 1994). To provide for adequate internal consistency reliability of the instrument, Sciutto and associates reformatted wordings of some of the items and constructed 9 new items resulting in the final 36-item KADDS instrument.

To expand the psychometric properties – reliability and validity evidence of KADDS, the authors of KADDS conducted additional studies including Sciutto and Terjesen (2004). Data from these studies indicated that the KADDS total scale with 36 items commands high internal consistency with a Cronbach's alpha coefficient alpha of .80 - .90, while the three subscales within the instrument (associated features, symptoms/diagnosis, and treatment) had modest ranges of internal consistency of Cronbach's coefficient alpha .52 - .75. With a sample of 185 college students, Sciutto and Terjesen (2004) conducted test – retest two weeks apart to assess the stability of the KADDS scale. During the period of two weeks, the participants were not exposed to any

form of psychosocial education regarding ADHD. Consequently, Sciutto et al. (2004) reported test-retest correlation scores of between r = .59 and r = .70 for the three subscales and between r = .59 and r = 79 for the total scale.

Several concepts can be applied in determining the (internal/content and construct) validity of KADDS. In assessing internal validity of the instrument, it is expected that participants' prior personal (direct and indirect) exposure to an ADHD child, as well as informational knowledge about the disorder would correlate with scores on the KADDS. As expected, Sciutto et al. (2000) reported that teachers with prior pedagogical experience with ADHD students performed appreciably better on the KADDS total scale and subscales than those who had never taught an ADHD student. In studies that involved elementary school teachers, Sciutto, Terjesen, and Frank (2000), Sciutto, and Terjesen (2004) reported a positive correlation between the number of children with ADHD taught and KADDS scores. Additionally, college students who had a close friend or family member with ADHD scored much higher on the KADDS total scale than participants who had no relations with an individual presenting with ADHD (Sciutto et al., 2004).

The constructs of KADDS measure knowledge about ADHD; therefore, increased knowledge, training, and experience related to ADHD should correlate with higher KADDS scores. Studies of teachers (Sciutto et al., 2004) and college students (Sciutto & Terjesen, 2004) have reported that participants who read more literature about ADHD before testing performed significantly higher on the KADDS. In addition, teachers who had limited training on ADHD scored lower on the KADDS (Herbet, Cirrenden, & Dalrymple, 2004; Ohan et al). Sciutto and associates administered pre-post tests to assess

the construct validity of KADDS by investigating possible changes in the scores on the KADDS scales caused by educational intervention between time–1 (T1) and time– 2 (T2). Aguair et al. (2013) and Sciutto et al. (2000) administered the KADDS to participants before and after ADHD instructions, the control groups in Sciutto and associates' study who received no information on ADHD showed no changes in knowledge scores. However, Sciutto and associates', and Aguair and associates' intervention groups showed significant increase in KADDS scores.

Operationalization of Variables

Independent variables. Years of teaching experience – Ordinal variable signifying Nigerian teachers' number of years of teaching experience (1 – 5 years, 6 – 10 years, 11 – 15 years, 16 – 20 years, and > 20 years).

Level of education – Ordinal variable signifying the highest level of academic degree completed by Nigerian teachers (high school education, some college education, bachelor's degree, master's degree, doctorate degree)

The demographic characteristic sections of the KADDS and the TIAS instruments will measure teachers' years of teaching experience and level of education.

Dependent variable. ADHD knowledge – Continuous variable corresponds to self-report Nigerian teachers have regarding ADHD, and was measured with the KADDS instrument.

Classroom behavior intervention – Categorical (nominal) variable corresponding to the classroom behavior intervention selected (academic, consequent, antecedent). The TIAS instrument measured teacher's choice of classroom behavior intervention.

Antecedent, Consequent, and Academic Strategies

Antecedent-based strategies consist of manipulative actions, things, and events that precede target behavior to foreclose problematic behaviors. More specifically, antecedent-based interventions relate to teachers' active teaching of classroom rules, availing of students with choice making options on equivalent classroom tasks, and reduction in assigned tasks to students. Consequence-based strategy consists of negative reinforcement- punishment (time-out, verbal reprimand, referral, removal from classroom, loss of token, or response cost) and positive reinforcement – reward, token economy, and prudent reprimand interventions. Academic-based strategy includes teacher-mediated instruction, peer-tutoring, modification of student curriculum, and computer-mediated instruction interventions.

Ethical Considerations

A researcher who conducts studies that utilize human subjects has an ethical responsibility to protect and inform the participants. When conducting this research study, the researcher followed the moral and ethical guidelines outlined by federal regulations and the Institution Review Board (IRB). The researcher interacted with human subjects during this study, and therefore informed and obtained the consent of the study participants. While in this study the participants were asked to complete survey instruments on the knowledge of ADHD and ADHD classroom-behavioral interventions, there were no known physiological or psychological risks, or unwanted intrusion of privacy associated with this research participation. However, the rights and confidentiality of the participants were protected by concealing the participants' names, personal information, and their local government school area or school district affiliation.

Honesty, integrity, and openness are key factors in the advancement of academic and psychology domains, consequently, the researcher assumed the responsibility for accurate and objective reporting, including the positive and negative outcomes and experiences of the study.

Informed Consent

The researcher provided an informed consent document as the framework for obtaining consent from study participants. The researcher introduced the study to the participant by explaining the purpose of the study, describing the procedures and research questions, disclosing the risks and benefits, establishing the role of the participant, and estimation of the total amount of time necessary. All relevant information was included on the informed consent form. The researcher informed subjects of the voluntary nature of their participation. Study participants were informed that no identifiable data will be used in the study and that they may elect to withdraw from the study at any time without penalty.

The study participants joining in this research were provided a personal copy of the informed consent document. This document included contact information for the researcher, the dissertation advisor, and the IRB. Participants were not allowed inclusion in the study without informed consent; however, as approved by the IRB, survey participants were waived from providing written consent. These participants indicated voluntary participation by completing the survey after being advised of the details of informed consent.

Data Storage, Retention, and Destruction to Protect Confidentiality

In accordance with IRB and federal guidelines, the researcher will safeguard all data and information in order to protect confidentiality. The safeguard measure for data storage is a locked file in the researcher's residence where the data will be retained securely for a period of five years after the research is complete. Upon expiration of the five-year retention period, the researcher will permanently destroy all research-related data and information pertaining to this study.

Threats to External Validity

Key threats to external validity correspond to portions of the sample that provide bias to the situational specifics of the study data collected, the measured results, or a specific researcher. Furthermore, the potential for varied and unintended variables to confound, contribute to and , account for, or alter the strength of relationships between the variables of interest is plausible (Howell, 2010); hence, it is not feasible to account and control the effect of every potential covariate, therefore, this will be accepted and acknowledged in the interpretation of the results. Summarily, the researcher will take additional caution in the interpretation of indicators from the study and will not assume that these results can be perfectly linked to the entirety of the population of interest or generalized (Creswell, 2005).

Threats to Internal Validity

Several potential limitations exist within the scope of quantitative research. First, because quantitative methodologies focus on numeric indices, they are able to examine research questions and subsequent hypotheses in ways that quantify statistical significance or relationship between variables numerically; however, they are unable to

measure the underlying experiences and perceptions of the subjects in comprehensive manner. As a result, the researcher will substitute the degree of richness within a qualitative study for a degree of statistical certainty that these relationships were not established by chance alone (Pagano, 2009).

In order to attain internal validity, causal inferences must be exhibited. Causal inferences can occur when the effect is generated by the cause. These inferences can also occur when there is no plausible explanation for why the effect exists. Consequently, the key threaten to internal validity can occur if the sequence of cause and effect are unclear or if there is bias in selection of the sample.

Conclusion

This chapter described the methods and procedures utilized to gain insight into understanding educators' attitudes towards the ADHD disorder and in-classroom characteristics towards behavior interventions. The problem, research design, research questions, sample population, conceptual framework, and instrumentation were presented. Additionally, the chapter discussed the data collection process, as well as the data analysis of the information attained. The presentation of this data in Chapter 4 will address the research questions, as well as the general demographic information collected. A summary and discussion of the findings, along with conclusions, implications for practice, and recommendations for future research form the content of Chapter 5

Chapter 4: Results

Introduction

The current study focused on assessment of Nigerian teachers' knowledge about ADHD and the specific classroom-behavior management strategies (antecedent, consequent, or academic) they employ in shaping ADHD in-class behaviors. For the assessments, two instruments—the Knowledge about Attention-Deficit Hyperactivity Disorder Scales (KADDS) and the Teacher Interventions for ADHD Students (TIAS)—were administered to the teachers. I screened the data for completion and outlier responses and used descriptive statistics to examine the data for trends in demographic characteristics as well as calculated means and standard deviations for the continuous variables. Finally, the research questions were answered using exploratory data analysis, linear regressions, and logistic regressions.

Pre-analysis Data Screen

One thousand teachers participated in the study. The data were checked for nonresponses. Before screening the data, the raw responses on the KADDS were recoded to calculate composite scores. Six participants were removed from the dataset for incomplete responses to the KADDS items. Four participants were removed for not responding to full sections of the TIAS. Subsequently, I calculated standardized values of the continuous variable to examine data for outliers. Any standardized values, or *z*-scores, falling outside the range of $\pm$ 3.29 standard deviations from the mean were expressed as outliers and were summarily removed from further analysis (Tabachnick & Fidell, 2012). As a result, I removed two participants for outliers in overall knowledge scores on the KADDS, two participants for outlier responses in the general

awareness/characteristics scores on the KADDS, and 11 participants for outliers in the etiology scores on the KADDS. Final analyses were conducted on 975 teachers.

Descriptive Statistics

Frequencies and Percentages of Demographics

A majority of the Nigerian teachers were female (n = 674, 69%). Many teachers taught in the 12th grade (n = 169, 17%). Many teachers had between 1 and 5 years of teaching experience (n = 271, 28%) or more than 20 years of teaching experience (n = 272, 28%). A majority of teachers' highest level of education was a bachelor's degree (n = 728, 79%). Table 1 presents the frequencies and percentages of the sample demographics.

Table 1
Frequencies and Percentages of Sample Demographics

Demographic	*n*	%
Gender		
Male	301	31
Female	674	69
Grade level teaching		
1–6	338	34
7–9	237	24
10–12	400	41
Years of teaching experience		
1–5 years	271	28
6–10 years	187	19
11–15 years	142	15
16–20 years	103	11
> 20 years	272	28
Level of education		
Bachelor's	768	79
Master's	157	16
PhD	50	5

Note. Due to rounding error, all percentages may not sum to 100.

Research Question 1

What is Nigerian teachers' knowledge about ADHD (general awareness, etiology, intervention, and overall), as measured by the KADDS?

To address Research Question 1, exploratory data analysis was used to examine Nigerian teachers' knowledge about ADHD as measured by responses to the KADDS instrument. The raw responses on the KADDS were first examined, and then the responses were recoded to compute a composite score. Table 2 presents the frequency distribution of teacher-participants' correct, incorrect, and don't know responses on the KADDS. The teachers responded correctly to 41.63% of the items, incorrectly to 38.08% of the items, and don't know to 20.26% of the items. There were only nine nonresponses to items on the KADDS.

Table 2
Frequencies and Percentages of Raw Responses on the KADDS

KADDS survey questions	Correct	Incorrect	Don't know	No response
1. Most estimates suggest that ADHD occurs in approximately 15% of school age children.	121	645	208	1
2. Current research suggests that ADHD is largely the result of ineffective parenting skills.	223	640	112	0
3. ADHD children are frequently distracted by extraneous stimuli.	774	102	99	0
4. ADHD children are typically more compliant with their fathers than with their mothers.	371	433	171	0
5. In order to be diagnosed with ADHD, the child's symptoms must have been present before age 7.	545	217	213	0
6. ADHD is more common in the 1st degree biological relatives (i.e. mother, father) of children with ADHD than in the general population.	522	185	268	0
7. One symptom of ADHD children is that they have been physically cruel to other people.	238	624	113	0
8. Antidepressant drugs have been effective in reducing symptoms for many ADHD children.	364	266	344	1
9. ADHD children often fidget or squirm in their seats.	615	199	161	0
10. Parent and teacher training in managing an ADHD child are generally effective when combined with medication treatment.	600	195	179	1
11. It is common for ADHD children to have an inflated sense of self-esteem or grandiosity.	163	609	203	0

(table continues)

KADDS survey questions	Correct	Incorrect	Don't know	No response
12. When treatment of an ADHD child is terminated, it is rare for the child's symptoms to return.	342	337	295	1
13. It is possible for an adult to be diagnosed with ADHD.	657	214	104	0
14. ADHD children often have a history of stealing or destroying other people's things.	188	667	120	0
15. Side effects of stimulant drugs used for treatment of ADHD may include mild insomnia and appetite reduction.	485	101	389	0
16. Current wisdom about ADHD suggests two clusters of symptoms: One of inattention and another consisting of hyperactivity/impulsivity.	673	83	219	0
17. Symptoms of depression are found more frequently in ADHD children than in non-ADHD children.	695	169	111	0
18. Individual psychotherapy is usually sufficient for the treatment of most ADHD children.	220	556	199	0
19. Most ADHD children "outgrow" their symptoms by the onset of puberty and subsequently function normally in adulthood.	238	612	125	0
20. In severe cases of ADHD, medication is often used before other behavior modification techniques are attempted.	528	220	227	0
21. In order to be diagnosed as ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school).	874	56	45	0
22. If an ADHD child is able to demonstrate sustained attention to video games or TV for over an hour, that child is also able to sustain attention for at least an hour of class or homework.	267	636	72	0
23. Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD.	303	303	369	0
24. A diagnosis of ADHD by itself makes a child eligible for placement in special education.	156	673	146	0
25. Stimulant drugs are the most common type of drug used to treat children with ADHD.	384	290	301	0
26. ADHD children often have difficulties organizing tasks and activities.	761	142	72	0
27. ADHD children generally experience more problems in novel situations than in familiar situations.	164	621	190	0
28. There are specific physical features which can be identified by medical doctors (e.g. pediatrician) in making a definitive diagnosis of ADHD.	200	557	216	2

(table continues)

KADDS survey questions	Correct	Incorrect	Don't know	No response
29. In school age children, the prevalence of ADHD in males and females is equivalent.	408	302	265	0
30. In very young children (less than four years old), the problem behaviors of ADHD children (e.g. hyperactivity, inattention) are distinctly different from age-appropriate behaviors of non-ADHD children.	127	638	209	1
31. Children with ADHD are more distinguishable from normal children in a classroom setting than in a free play situation.	819	110	46	0
32. The majority of ADHD children evidence some degree of poor school performance in the elementary school years.	778	134	63	0
33. Symptoms of ADHD are often seen in non-ADHD children who come from inadequate and chaotic home environments.	631	221	123	0
34. Behavioral/Psychological interventions for children with ADHD focus primarily on the child's problems with inattention.	193	623	159	0
35. Electroconvulsive Therapy (i.e. shock treatment) has been found to be an effective treatment for severe cases of ADHD.	223	270	482	0
36. Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD.	489	331	154	1
37. Research has shown that prolonged use of stimulant medications leads to increased addiction (i.e., drug, alcohol) in adulthood.	96	694	185	0
38. If a child responds to stimulant medications (e.g., Ritalin), then he/she probably has ADHD.	223	299	453	0
39. Children with ADHD generally display an inflexible adherence to specific routines or rituals.	173	509	292	1

Note. Due to rounding error, all percentages may not sum to 100.

Raw responses for general knowledge/characteristics. Teachers responded correctly to 42.08% of the general knowledge items, incorrectly to 42.05% of the general knowledge items, and don't know to 15.84% of the general knowledge items. There were only four nonresponses to general knowledge items on the KADDS.

Raw responses for etiology. Teachers responded correctly to 55.05% of the etiology items, incorrectly to 30.76% of the etiology items, and do not know to 14.19% of the etiology items. There were zero nonresponses to the etiology items on the KADDS.

Raw responses for intervention. The teachers responded correctly to 37.21% of the intervention items, incorrectly to 35.32% of the intervention items, and don't know to 27.44% of the intervention items. There were only four nonresponses to intervention items on the KADDS.

Descriptive statistics of continuous variables. I generated composite scores for the KADDS by taking the summation of the corresponding items that made up each component scale as well as calculated means and standard deviations for the KADDS component scales: overall knowledge, general knowledge/characteristics, etiology, and intervention. The scores for overall knowledge ranged from 2.00 to 26.00 with M = 16.24 and SD = 4.02. General knowledge scores ranged from 0.00 to 11.00 with M = 6.31 and SD = 1.97. Etiology scores ranged from 1.00 to 9.00 with M = 4.95 and SD = 1.38. Intervention scores ranged from 0.00 to 10.00 with M = 4.47 and SD = 2.10. Table 3 presents the descriptive statistics of scores on the KADDS by measures of central tendency. Figures 1–4 present the frequency distribution of scores on the KADDS.

Table 3
Descriptive Statistics of Continuous Variables (KADDS)

Continuous variables	*n*	Min.	Max.	*M*	*SD*
Overall knowledge	39	2.00	26.00	16.24	4.02
General knowledge	15	0.00	11.00	6.31	1.97
Etiology	9	1.00	9.00	4.95	1.38
Intervention	12	0.00	10.00	4.47	2.10

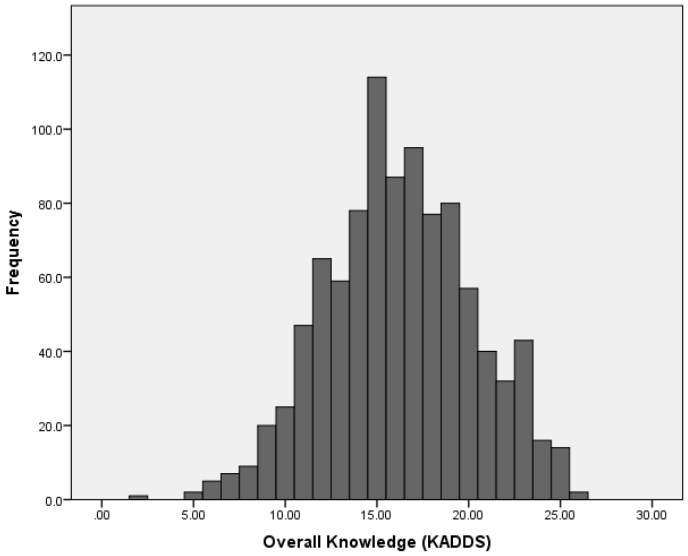

Figure 1. Bar chart for frequencies of overall knowledge scores as measured by the KADDS.

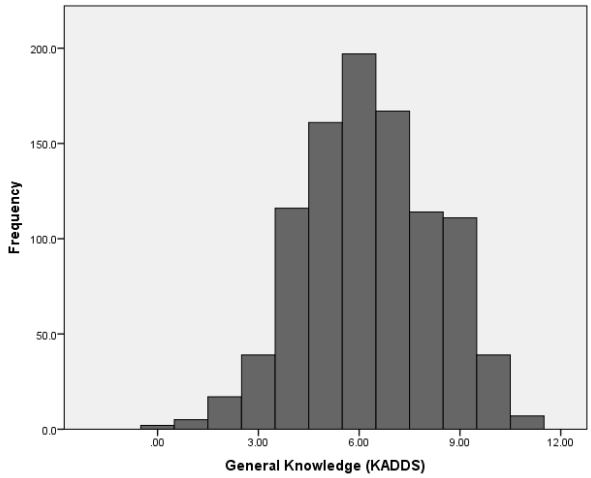

Figure 2. Bar chart for frequencies of general knowledge scores as measured by the KADDS.

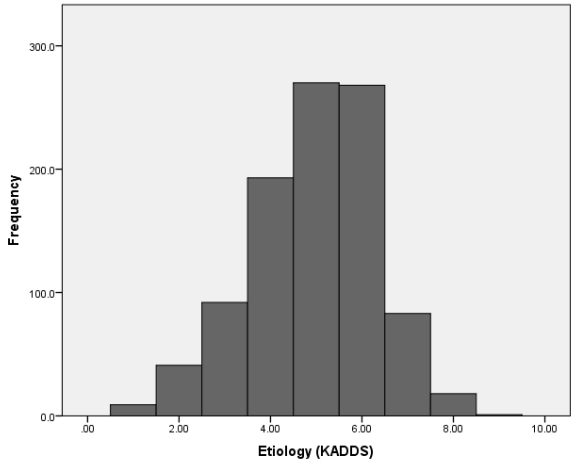

Figure 3. Bar chart for frequencies of etiology scores as measured by the KADDS.

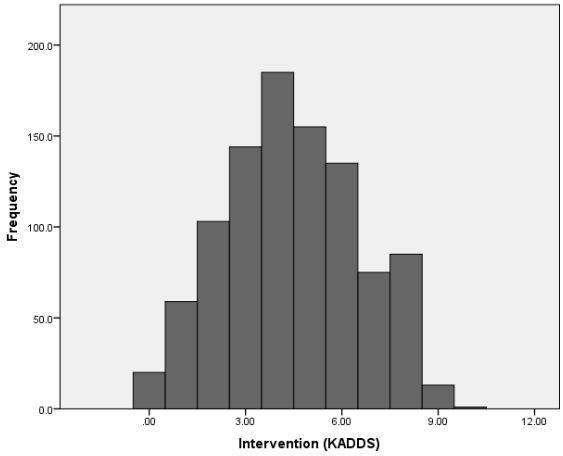

Figure 4. Bar chart for frequencies of intervention scores as measured by the KADDS.

Research Question 2

Do Nigerian teachers' years of teaching experience significantly predict their knowledge of ADHD, as measured by the KADDS?

$H_0$1: Nigerian teachers' years of teaching experience do not significantly predict their knowledge about ADHD.

H_A1: Nigerian teachers' years of teaching experience significantly predict their knowledge about ADHD.

To address research question 2, a series of multiple linear regressions was conducted to examine the predictive relationship between Nigerian teachers' years of teaching experience and their knowledge of ADHD (general awareness, etiology, intervention, and overall perception). A multiple linear regression is an appropriate statistical analysis when assessing the relationship between a group of predictor variables and a continuous criterion variable (Tabachnick & Fidell, 2012). The independent variable in this analysis corresponds to years of teaching experience, with five possible levels (1–5 years, 6–10 years, 11–15 years, 16–20 years, and > 20 years). The variable was dummy coded into four separate variables with 1–5 years of experience being the reference group. The continuous dependent variable corresponds to self-reported knowledge about ADHD with four individual scales—general awareness, etiology, intervention, and overall perception. Finally, I conducted one multiple linear regression for each scale of the KADDS.

Years of Teaching Experience and General Awareness

A multiple linear regression was conducted between years of teaching experience and general awareness, as measured by the KADDS. Before data analysis, the assumptions of normality, homoscedasticity, and multicollinearity were checked.

Normality. The assumption of normality was checked by examination of a normal P-P scatterplot (see Figure 5). The assumption was met, as the data closely followed the normality trend line.

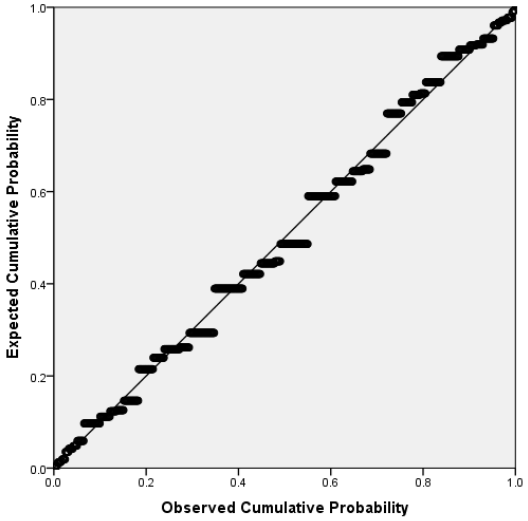

Figure 5. Normal P-P plot for general awareness subscale residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by the use of scatterplot between the standardized prediction values versus the standardized residual values (see Figure 6). The presence of a rectangular distribution or one without a recognizable pattern suggested that the assumption was met (Howell, 2010).

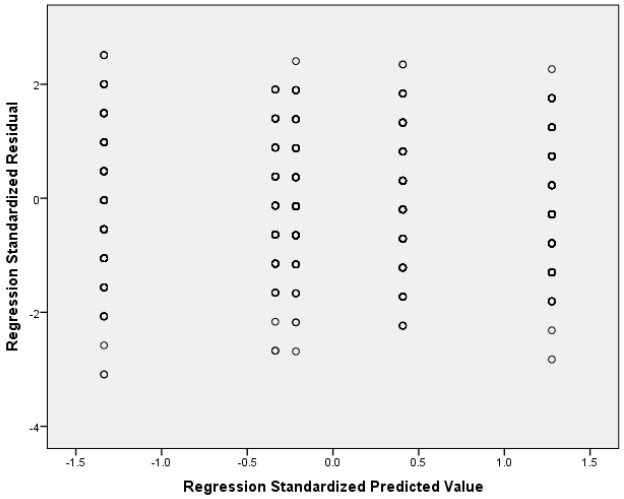

Figure 6. Scatterplot to interpret homoscedasticity assumption between years of teaching experience and general awareness.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. The assumption multicollinearity was checked by Variance Inflation Factors (VIFs), where values greater than 10 suggest the presence of multicollinearity and violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.45; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between years of teaching experience and general awareness of ADHD did not indicate statistical significance, $F(4, 969) = 2.18$, $p = .070$, $R^2 = .009$. The R^2 – coefficient of determination – value suggested up to 0.90% of the variability, in general awareness/characteristics, can be attributed to years of teaching experience. Due to the overall model not indicating significance, the individual predictors were not examined further. Table 4 presents results of the multiple linear regression.

Table 4

Results of Multiple Linear Regression between Years of Teaching Experience and General Knowledge of ADHD

Source	*B*	*SE*	β	*t*	*p*
Years of teaching experience (reference: 1–5 years)					
6–10 years	0.32	0.19	.07	1.73	.083
11–15 years	0.21	0.20	.04	1.02	.309
16–20 years	0.19	0.23	.03	0.82	.416
> 20 years	0.49	0.17	.11	2.88	.004

Note. Overall model: $F(4, 969) = 2.18$, $p = .070$, $R^2 = .009$.

Years of Teaching Experience and Etiology

A multiple linear regression was conducted between years of teaching experience and etiology, as measured by the KADDS. Before conducting the analysis, I checked for the assumptions of normality, homoscedasticity, and multicollinearity.

Normality. The assumption of normality was checked by examination of a normal P-P scatterplot (see Figure 7). The assumption was met as the data closely followed the normality trend line.

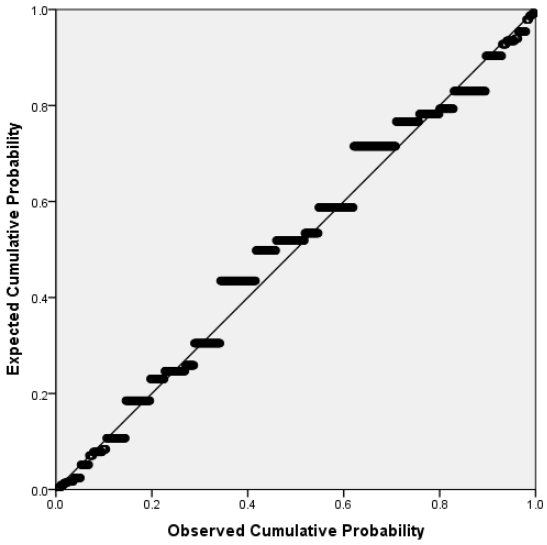

Figure 7. Normal P-P plot for etiology subscale residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by use of scatterplot between the standardized prediction values versus the standardized residual values (see Figure 8). The presence of a rectangular distribution or one without a recognizable pattern suggested that the assumption was met.

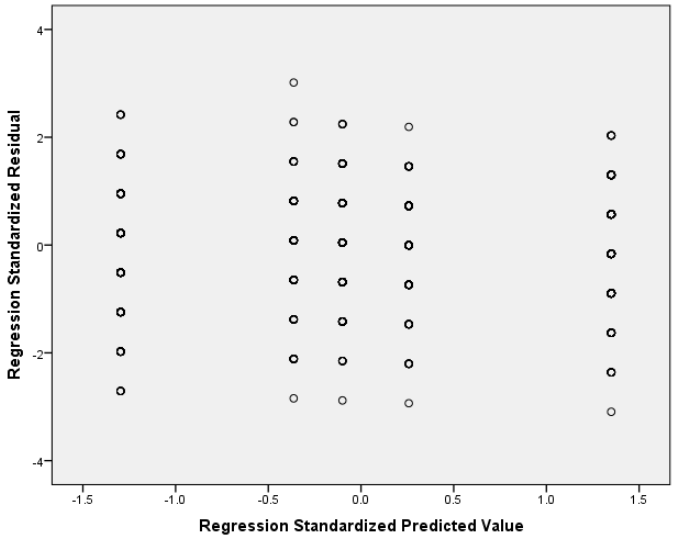

Figure 8. Scatterplot to interpret homoscedasticity assumption between years of teaching experience and etiology.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. The assumption was checked by Variance Inflation Factors (VIFs), where values greater than 10 suggest the presence of multicollinearity and a violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.45; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between years of teaching experience and etiology of ADHD did indicate statistical significance, $F(4, 969) = 5.34$, $p < .001$, $R^2 = .022$. The R^2 – coefficient of determination – value suggested up to 2.20% of the variability in etiology may be attributed to years of teaching experience. Years of teaching experience (11 – 15 years) was a significant predictor in the model, suggesting that teachers with 11 – 15 years of experience scored an average of 0.32 units higher on etiology scores than teachers who had 1 – 5 years of experience. Years of teaching experience (> 20 years) was a significant predictor in the

model, suggesting that teachers with more than 20 years of experiences scored an average of 0.54 units higher on etiology scores than teachers who had 1 – 5 years of experience. Table 5 presents results of the multiple linear regressions.

Table 5

Results of Multiple Linear Regression Between Years of Teaching Experience and Etiology

Source	*B*	*SE*	β	*t*	*p*
Years of teaching experience (reference: 1–5 years)					
6–10 years	0.25	0.13	.07	1.90	.058
11–15 years	0.32	0.14	.08	2.25	.025
16–20 years	0.20	0.16	.04	1.23	.219
> 20 years	0.54	0.12	.18	4.57	< .001

Note. Overall model: $F(4, 969) = 5.34$, $p < .001$, $R^2 = .022$.

Years of Teaching Experience and Intervention

A multiple linear regression was conducted between years of teaching experience and intervention, as measured by the KADDS. Before conducting analysis, the assumptions of normality, homoscedasticity, and multicollinearity were checked.

Normality. The assumption of normality was checked by examination of a normal P-P scatterplot (see Figure 9). The assumption was met as the data closely followed the normality trend line.

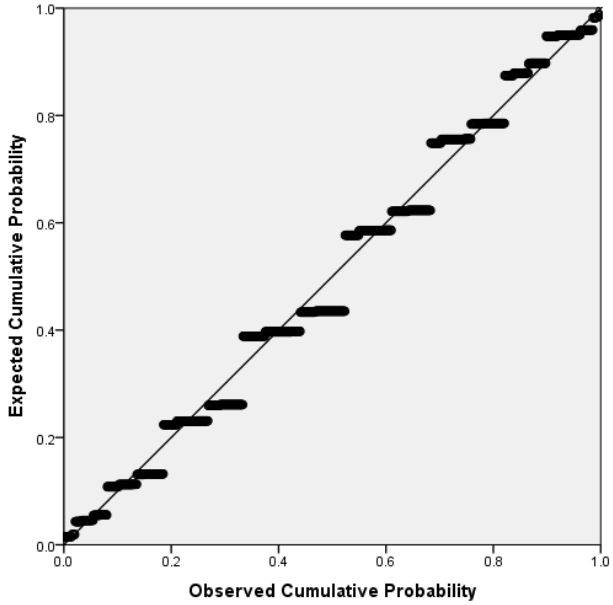

Figure 9. Normal P-P plot for intervention subscale residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by use of scatterplot between the standardized prediction values versus the standardized residual values (see Figure 10). The presence of a rectangular distribution, or one without a recognizable pattern suggested that the assumption was met.

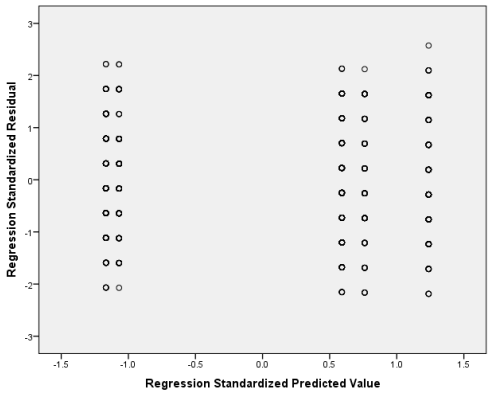

Figure 10. Scatterplot to interpret homoscedasticity assumption between years of teaching experience and intervention.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. The

assumption was checked by Variance Inflation Factors (VIFs), where values greater than 10 suggest the presence of multicollinearity and a violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.45; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between years of teaching experience and intervention did not indicate statistical significance, $F(4, 969) = 0.60$, $p = .660$, $R^2 = .002$. The R^2 – coefficient of determination – value suggested up to 0.20% of the variability in intervention can be attributed to years of teaching experience. Given that the overall model was not statistically significant; the individual predictors were not examined further. Results of the multiple linear regression are presented in Table 6.

Table 6

Results of Multiple Linear Regression Between Years of Teaching Experience and Intervention

Source	*B*	*SE*	β	*t*	*p*
Years of teaching experience (reference: 1–5 years)					
6–10 years	0.07	0.20	.01	0.34	.735
11–15 years	-0.17	0.22	-.03	-0.80	.425
16–20 years	0.02	0.24	.00	0.07	.942
> 20 years	-0.18	0.18	-.04	-1.02	.308

Note. Overall model: $F(4, 969) = 0.60$, $p = .660$, $R^2 = .002$.

Years of Teaching Experience and Overall Knowledge

A multiple linear regression was conducted between years of teaching experience and overall knowledge, as measured by the KADDS. Before conducting analysis, the assumptions of normality, homoscedasticity, and multicollinearity were checked.

Normality. The assumption of normality was verified by examination of a normal P-P scatter-plot (see Figure 11). The assumption was met as the data closely followed the normality trend line.

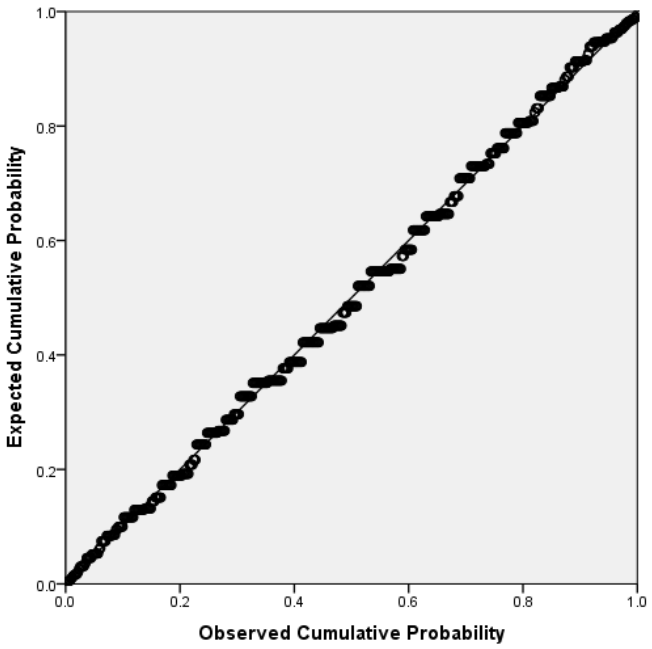

Figure 11. Normal P-P plot for overall knowledge residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by use of scatter-plot between the standardized prediction values versus the standardized residual values (see Figure 12). The presence of a rectangular distribution or one without a recognizable pattern suggested that the assumption was met.

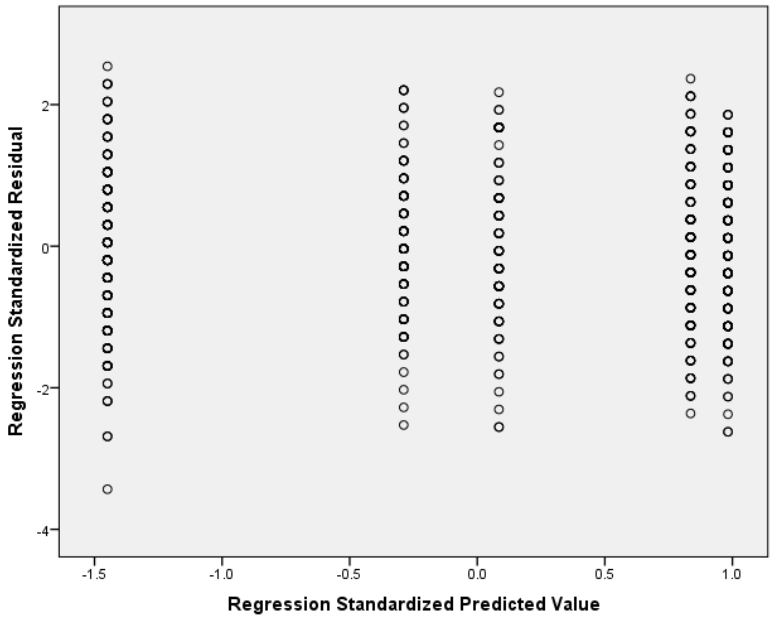

Figure 12. Scatterplot to interpret homoscedasticity assumption between years of teaching experience and overall knowledge.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. The assumption was checked by Variance Inflation Factors (VIFs), where values greater than 10 suggest the presence of multicollinearity and a violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.45; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between years of teaching experience and overall knowledge did not indicate statistical significance, $F(4, 969) = 1.41$, $p = .228$, $R^2 = .006$. The R^2 – coefficient of determination – value suggested up to 0.60% of the variability in overall knowledge can be attributed to years of teaching experience. However, since the overall model was not statistically significant, the individual predictors were not examined further. Table 7 presents the results of the multiple linear regression.

Table 7

Results of Multiple Linear Regression Between Years of Teaching Experience and Overall Knowledge

Source	*B*	*SE*	β	*t*	*p*
Years of teaching experience (reference: 1–5 years)					
6–10 years	0.70	0.38	.07	1.83	.068
11–15 years	0.36	0.42	.03	0.85	.394
16–20 years	0.47	0.47	.04	1.01	.313
> 20 years	0.74	0.35	.08	2.16	.031

Note. Overall model: $F(4, 969) = 1.41$, $p = .228$, $R^2 = .006$.

Summary of Research Question 2 findings. One of the four multiple linear regressions indicated a statistically significant predictive relationship. There was a significant relationship between years of teaching experience and etiology scores. Thus, the null hypothesis ($H_0 1$) for research question two can be partially rejected.

Research Question 3

Do Nigerian teachers' levels of education significantly predict their knowledge of ADHD, as measured by the KADDS?

$H_0 2$: Nigerian teachers' level of education does not significantly predict their knowledge about ADHD.

$H_A 2$: Nigerian teachers' level of education significantly predicts their knowledge about ADHD.

To address research question 3, series of multiple linear regressions were conducted to examine the predictive relationship between Nigerian teachers' level of education and their knowledge of ADHD (general awareness, etiology, intervention, and overall perception). A multiple linear regression is an appropriate statistical analysis when assessing the relationship between a group of predictor variables and a continuous criterion variable (Tabachnick & Fidell, 2012). The independent variable in this analysis

corresponds to the level of education with three separate levels (Bachelor's, Master's, and Ph.D.). The variable was dummy-coded into two different variables with Bachelor's degree as the reference group. The continuous dependent variable corresponds to self-reported knowledge about ADHD with four individual component scales – general awareness/characteristics, etiology, intervention, and overall perception. I conducted one multiple linear regression for each scale of the KADDS.

Level of Education and General Awareness

A multiple linear regression was conducted between level of education and general awareness/characteristics, as measured by the KADDS. Before conducting analysis, I verified assumptions of normality, homoscedasticity, and multicollinearity.

Normality. The assumption of normality was checked by examination of a normal P-P scatterplot (see Figure 13). The assumption was met as the data closely followed the normality trend line.

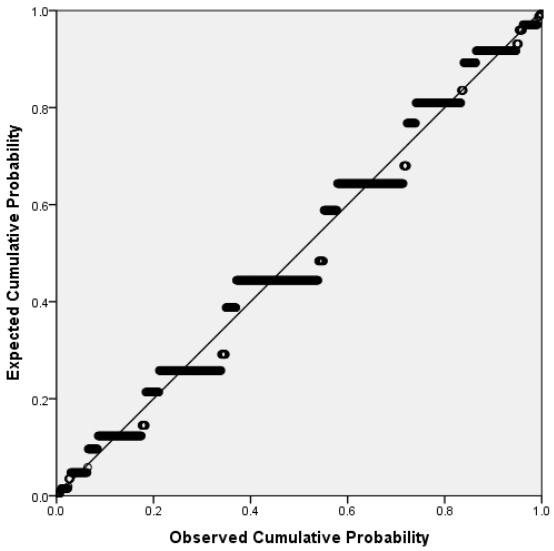

Figure 13. Normal P-P plot for general awareness subscale residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by use of scatterplot between the standardized prediction values versus the standardized residual values (see Figure 14). The presence of a rectangular distribution or one without a recognizable pattern suggested that the assumption was met.

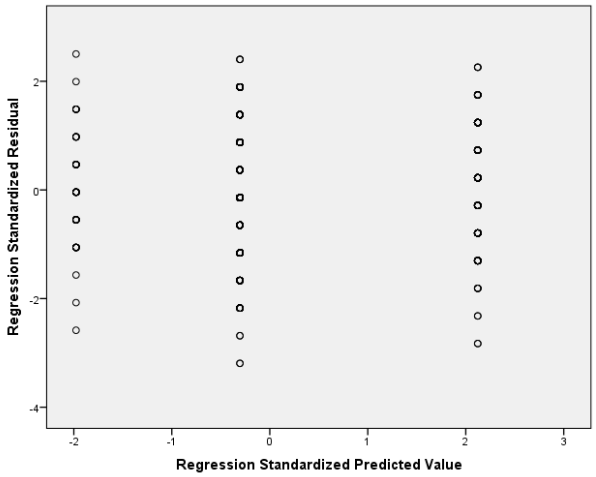

Figure 14. Scatterplot to interpret homoscedasticity assumption between level of education and general awareness.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. I checked the assumption using Variance Inflation Factors (VIFs), where values greater than 10 suggest the presence of multicollinearity and a violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.01; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between level of education and general awareness of ADHD did not indicate statistical significance, $F(2, 972) = 1.73$, $p = .178$, $R^2 = .004$. The R^2 – coefficient of determination – value suggested up to 0.40% of the variability, in general awareness/characteristics, can be attributed to the level of education. Due to the overall model not indicating

significance, the individual predictors were not examined further. Table 8 presents results of the multiple linear regression.

Table 8

Results of Multiple Linear Regression Between Level of Education and General Knowledge of ADHD

Source	*B*	*SE*	β	*t*	*p*
Level of education (reference: Bachelor's)					
Master's	0.28	0.17	.05	1.65	.099
PhD	-0.20	0.29	-.02	-0.68	.495

Note. Overall model: $F(2, 972) = 1.73$, $p = .178$, $R^2 = .004$.

Level of Education and Etiology

A multiple linear regression was conducted between level of education and etiology, as measured by the KADDS. Before conducting analysis, I verified the assumptions of normality, homoscedasticity, and multicollinearity.

Normality. The assumption of normality was checked by examination of a normal P-P scatterplot (see Figure 15). The assumption was met as the data closely followed the normality trend line.

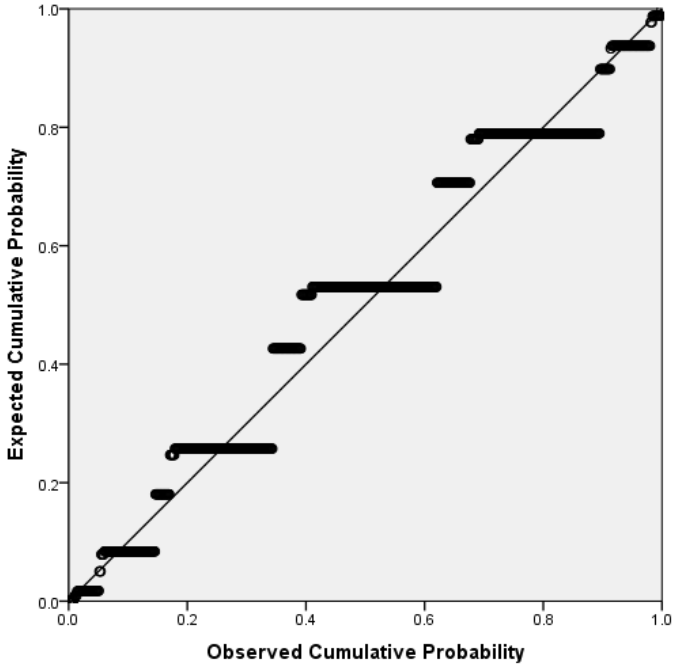

Figure 15. Normal P-P plot for etiology subscale residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by use of scatter-plot between the standardized prediction values versus the standardized residual values (Figure 16). The presence of a rectangular distribution or one without a recognizable pattern suggested that the assumption was met.

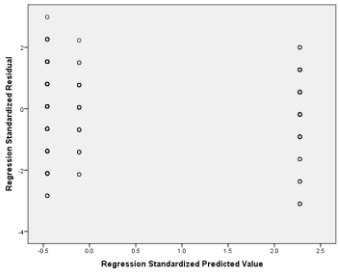

Figure 16. Scatterplot to interpret homoscedasticity assumption between level of education and etiology.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. I checked the assumption by employing Variance Inflation Factors (VIFs), where values

greater than 10 suggest the presence of multicollinearity and a violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.01; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between level of education and etiology of ADHD did indicate statistical significance, $F(2, 972) = 4.49$, $p = .011$, $R^2 = .009$. The R^2 – coefficient of determination – value suggested up to 0.90% of the variability in etiology can be attributed to level of education. Level of education (Master's degree) was a significant predictor in the model, suggesting that teachers with a Master's degree scored an average of 0.36 units higher on etiology scores than teachers who had a Bachelor's degree. Level of education (Master's degree) was a significant predictor in the model, suggesting that for every teacher with a Master's degree, etiology scores increased by 0.36 units in comparison to teachers who had Bachelor's degrees. Results of the multiple linear regressions are presented in Table 9.

Table 9

Results of Multiple Linear Regression Between Level of Education and Etiology

Source	*B*	*SE*	β	*t*	*p*
Level of education (reference: Bachelor's)					
Master's	0.36	0.12	.10	3.00	.003
PhD	0.05	0.20	.01	0.23	.821

Note. Overall model: $F(2, 972) = 4.49$, $p = .011$, $R^2 = .009$.

Level of Education and Intervention

A multiple linear regression was conducted between level of education and intervention, as measured by the KADDS. Before conducting analysis, I checked the assumptions of normality, homoscedasticity, and multicollinearity.

Normality. The assumption of normality was checked by examination of a normal P-P scatterplot (see Figure 17). The assumption was met as the data closely followed the normality trend line.

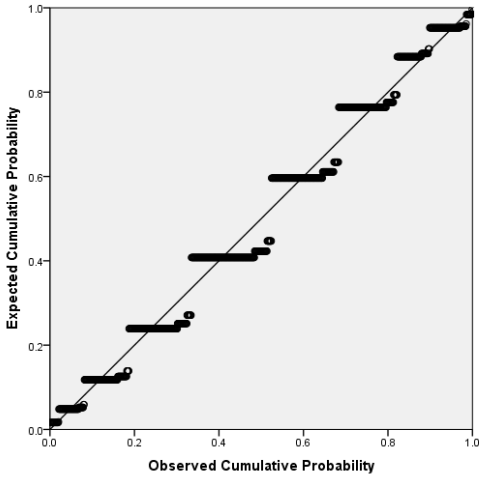

Figure 17. Normal P-P plot for intervention subscale residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by use of scatterplot between the standardized prediction values versus the standardized residual values (see Figure 18). The presence of a rectangular distribution or one without a recognizable pattern suggested that the assumption was met.

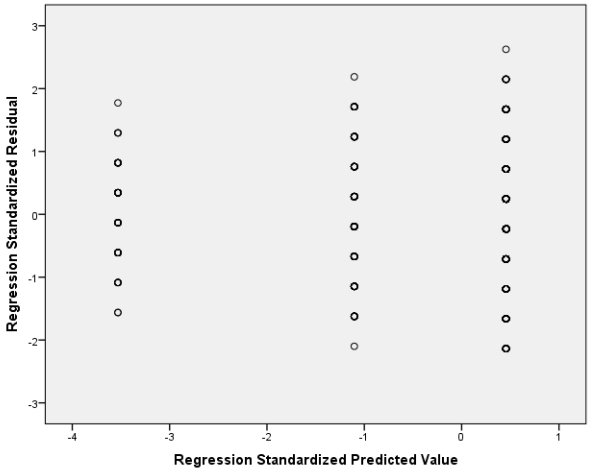

Figure 18. Scatterplot to interpret homoscedasticity assumption between level of education and intervention.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. I checked the assumption using Variance Inflation Factors (VIFs), where values greater than 10 suggest the presence of multicollinearity and a violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.01; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between level of education and intervention of ADHD did not indicate statistical significance, $F(2, 972) = 0.31$, $p = .737$, $R^2 = .001$. The R^2 – coefficient of determination – value suggested up to 0.10% of the variability in intervention could be attributed to level of education. Given that the overall model is not statistically significance, the individual predictors were not examined further. Results of the multiple linear regressions are presented in Table 10.

Table 10

Results of Multiple Linear Regression Between Level of Education and Intervention

Source	*B*	*SE*	β	*t*	*p*
Level of education (reference: Bachelor's)					
Master's	-0.08	0.18	-.01	-0.45	.656
PhD	-0.21	0.31	-.02	-0.68	.494

Note. Overall model: $F(2, 972) = 0.31$, $p = .737$, $R^2 = .001$.

Level of Education and Overall Knowledge

A multiple linear regression was conducted between level of education and overall knowledge, as measured by the KADDS. Before conducting analysis, researcher checked the assumptions of normality, homoscedasticity, and multicollinearity.

Normality. The assumption of normality was checked by examination of a normal P-P scatterplot (see Figure 19). The assumption was met as the data closely followed the normality trend line.

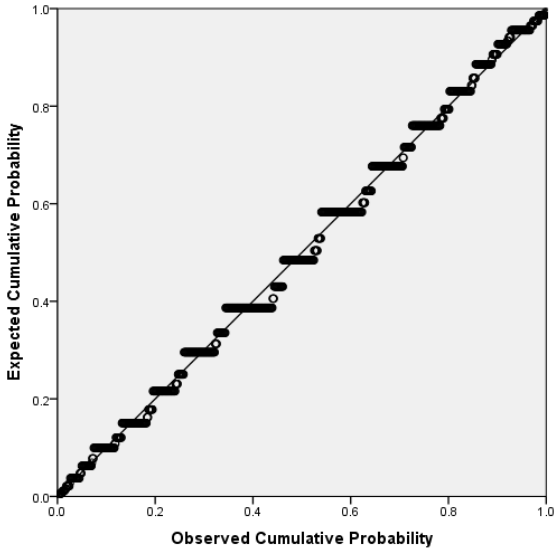

Figure 19. Normal P-P plot for overall knowledge residuals.

Homoscedasticity assumption. The homoscedasticity assumption was visually interpreted by use of scatterplot between the standardized prediction values versus the standardized residual values (see Figure 20). The presence of a rectangular distribution or one without a recognizable pattern suggested that the assumption was met.

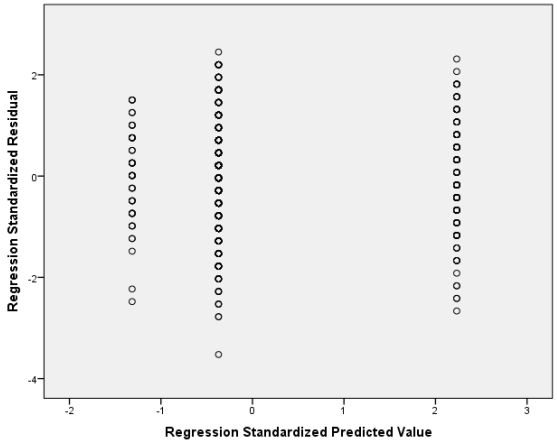

Figure 20. Scatterplot to interpret homoscedasticity assumption between level of education and overall knowledge.

Absence of multicollinearity assumption. The absence of multicollinearity assumes that there is not a significant association between the predictor variables. I checked the assumption using Variance Inflation Factors (VIFs), where values greater than 10 suggest the presence of multicollinearity and a violation of the assumption (Stevens, 2009). The highest VIF value among the predictors was 1.01; thus, the assumption was met.

Results of the multiple linear regressions. Results of multiple linear regression between level of education and overall knowledge of ADHD did not indicate statistical significance, $F(2, 972) = 1.34$, $p = .263$, $R^2 = .003$. The R^2 – coefficient of determination – value suggested up to 0.30% of the variability in overall knowledge could be attributed to level of education. Given that the overall model was not statistically significance, the individual predictors were not examined further. Results of the multiple linear regressions are presented in Table 11.

Table 11

Results of Multiple Linear Regression Between Level of Education and Overall Knowledge

Source	*B*	*SE*	β	*t*	*p*
Level of education (reference: Bachelor's)					
Master's	0.55	0.35	.05	1.56	.120
PhD	-0.20	0.59	-.01	-0.34	.735

Note. Overall model: $F(2, 972) = 1.34$, $p = .263$, $R^2 = .003$.

Summary of Research Question 3 findings. One of the four multiple linear regressions indicated a statistically significant predictive relationship. There was a

significant relationship between level of education and etiology scores. Thus, the null hypothesis ($H_0$2) for research question three can be partially rejected.

Research Question 4

Does Nigerian general educators' knowledge about ADHD, as measured by the KADDS, significantly predict choice of classroom behavior intervention (academic, consequent, antecedent), as measured by the TIAS, for inattentiveness, wandering, poor peer interaction, and speaking out of turn?

***$H_0$3*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding inattentiveness.

***H_A3*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding inattentiveness.

***$H_0$4*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding wandering.

***H_A4*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding wandering.

***$H_0$5*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding poor peer interaction.

***H_A5*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding poor peer interaction.

***$H_0$6*:** Nigerian general educators' knowledge about ADHD does not significantly predict their choice of classroom behavior intervention regarding speaking out of turn.

***H_A6*:** Nigerian general educators' knowledge about ADHD significantly predicts their choice of classroom behavior intervention regarding speaking out of turn.

To examine research question 4, a multinomial logistic regression analysis was conducted to determine the predictive effect of educators' knowledge about ADHD on the choice of classroom behavior intervention. Multinomial logistic regression is used when the outcome variable of interest has more than two levels (Tabachnick & Fidell, 2012). In this case, the outcome variable had 3 levels – antecedent, academic, consequent, and multiple intervention methods. The consequent intervention was treated as the reference group. I conducted one multinomial logistic regression for each vignette – inattentiveness, wandering, poor peer interaction, and speaking out of turn. Logistic regression models do not share the restrictive assumptions of linearity, normality, or homoscedasticity (Howell, 2010). Before conducting logistic regression, the sample was examined for frequencies of intervention choices. Table 12 presents the distribution of intervention choices group by vignettes.

Frequencies and percentages of classroom intervention by vignette. For the inattentiveness vignette, a majority of teachers (n = 486, 50%) selected the consequent intervention method. For the wandering vignette, many teachers (n = 313, 32%) selected the antecedent intervention method. For the poor peer interaction vignette, many teachers (n = 329, 34%) selected multiple classroom intervention methods. For the speaking out of turn vignette, many teachers (n = 278, 29%) selected the multiple interventions classroom intervention method. Table 12 presents the frequencies and percentages for classroom behavior intervention by each of the four vignettes (inattentiveness, wandering, poor peer interaction, and speaking out of turn).

Table 12

Frequencies and Percentages of Classroom Behavior Intervention by Vignette

Demographic	*n*	%
Inattentiveness		
Antecedent	90	9
Academic	158	16
Consequent	486	50
Antecedent-Academic	39	4
Academic-Consequent	117	12
Antecedent-Consequent	49	5
Antecedent-Academic-Consequent	36	4
Wandering		
Antecedent	313	32
Academic	182	19
Consequent	218	22
Antecedent-Academic	95	10
Academic-Consequent	36	4
Antecedent-Consequent	67	7
Antecedent-Academic-Consequent	64	7
Poor peer interaction		
Antecedent	236	24
Academic	144	15
Consequent	266	27
Antecedent-Academic	93	10
Academic-Consequent	72	7
Antecedent-Consequent	110	11
Antecedent-Academic-Consequent	54	6
Speaking out of turn		
Antecedent	272	28
Academic	188	19
Consequent	238	24
Antecedent-Academic	69	7
Academic-Consequent	39	4
Antecedent-Consequent	87	9
Antecedent-Academic-Consequent	82	8

Note. All percentages may not sum to 100 due to rounding error.

Inattentiveness Vignette

The results of the overall model for the inattentiveness vignette were significant ($\chi^2(3) = 17.00$, $p = .001$), suggesting that teachers' knowledge about ADHD could significantly predict teachers' choice of classroom behavior intervention. Overall knowledge was a significant predictor in the academic intervention group (Wald(1) = 13.27, $p < .001$) and multiple selections intervention group (Wald(1) = 7.88, $p = .005$).

For every one-unit increase in overall knowledge, participants were 1.09 (1/0.92) times more likely to select the consequent group compared to the academic group for the inattentiveness vignette. Additionally, for every one-unit increase in overall knowledge, participants were 1.05 (1/0.95) times more likely to select the consequent group compared to the multiple intervention group for the inattentiveness vignette. Table 13 shows the parameter estimates of the multinomial logistic regression model.

Table 13

Multinomial Logistic Regression for Overall Knowledge and Classroom Behavior Intervention (Inattentiveness Vignette)

Group	Predictor	*B*	*SE*	Wald(1)	*p*	*OR*
Antecedent	Overall knowledge	-0.04	0.03	1.86	.172	0.96
Academic	Overall knowledge	-0.09	0.02	13.27	< 001	0.92
Multiple interventions	Overall knowledge	-0.06	0.02	7.88	.005	0.95

Note. Overall model: $\chi^2(3) = 17.00$, $p = .001$.

Wandering Vignette

The results of the overall model for the wandering vignette were significant ($\chi^2(3) = 21.66$, $p < .001$), suggesting that teachers' knowledge about ADHD could significantly predict teachers' choice of classroom behavior intervention. Overall knowledge was a significant predictor in the academic intervention group (Wald(1) = 9.06, $p = .003$) and multiple selections intervention group (Wald(1) = 14.55, $p < .001$). For every one-unit increase in overall knowledge, participants were 1.08 times more likely to select the academic group compared to the consequent group for the wandering vignette. Also, for every one-unit increase in overall knowledge, participants were 1.09 times more likely to select the multiple intervention group compared to the consequent group for the

wandering vignette. Table 14 shows the parameter estimates of the multinomial logistic regression model.

Table 14

Multinomial Logistic Regression for Overall Knowledge and Classroom Behavior Intervention (Wandering Vignette)

Group	Predictor	*B*	*SE*	Wald(1)	*p*	*OR*
Antecedent	Overall knowledge	0.02	0.02	0.58	.447	1.02
Academic	Overall knowledge	0.08	0.03	9.06	.003	1.08
Multiple interventions	Overall knowledge	0.09	0.02	14.55	< .001	1.09

Note. Overall model: $\chi^2(3) = 21.66$, $p < .001$.

Poor Peer Interaction Vignette

The results of the overall model for the poor peer interaction vignette were significant ($\chi^2(3) = 28.93$, $p < .001$), suggesting that teachers' knowledge about ADHD could significantly predict teachers' choice of classroom behavior intervention. Overall knowledge was a significant predictor in the antecedent intervention group (Wald(1) = 19.87, $p < .001$). For every one-unit increase in overall knowledge, participants were 1.11 times more likely to select the antecedent group compared to the consequent group for the poor peer interaction vignette. Table 15 shows the parameter estimates of the multinomial logistic regression model.

Table 15

Multinomial Logistic Regression for Overall Knowledge and Classroom Behavior Intervention (Poor Peer Interaction Vignette)

Group	Predictor	*B*	*SE*	Wald(1)	*p*	*OR*
Antecedent	Overall knowledge	0.10	0.02	19.87	<.001	1.11
Academic	Overall knowledge	-0.02	0.03	0.59	.441	0.98
Multiple interventions	Overall knowledge	0.02	0.02	1.04	.309	1.02

Note. Overall model: $\chi^2(3) = 28.93$, $p < .001$.

Speaking Out of Turn Vignette

The results of the overall model for the speaking out of turn vignette were significant ($\chi^2(3) = 14.62$, $p < .001$), suggesting that teachers' knowledge about ADHD could significantly predict teachers' choice of classroom behavior intervention. Overall knowledge was a significant predictor in the multiple selections group (Wald(1) = 10.09, $p = .001$). For every one-unit increase in overall knowledge, participants were 1.07 times more likely to select the multiple intervention group compared to the consequent group for the speaking out of turn vignette. Table 16 shows the parameter estimates of the multinomial logistic regression model.

Table 16

Multinomial Logistic Regression for Overall Knowledge and Classroom Behavior Intervention (Speaking Out of Turn Vignette)

Group	Predictor	*B*	*SE*	Wald(1)	*p*	*OR*
Antecedent	Overall knowledge	0.03	0.02	1.90	.169	1.03
Academic	Overall knowledge	-0.01	0.02	0.07	.796	0.99
Multiple interventions	Overall knowledge	0.07	0.02	10.09	.001	1.07

Note. Overall model: $\chi^2(3) = 14.62$, $p = .002$.

Summary of Research Question 4 findings. Results of the multinomial logistic regressions indicated a statistically significant predictive relationship between overall knowledge and classroom behavior intervention among the four vignettes. Thus, the null hypotheses ($H_0$3, $H_0$4, $H_0$5, and $H_0$6) for research question four can be rejected.

Summary

The focus of this study was to assess Nigerian teachers' knowledge about ADHD and the specific classroom-behavior management strategies (antecedent, consequent, or academic) the teachers employ in shaping ADHD in-class behaviors. Results of the exploratory data analysis for research question one suggested that Nigerian teachers are

not extremely knowledgeable about ADHD. The research teacher-sample population answered approximately 50% of the items correctly. For research question two, a significant relationship existed between years of teaching experience and etiology scores for teachers in the 11 – 15 and >20 years teaching experience groups, but not for those in the 16 – 20 years teaching experience group. No other significant associations were found; thus, the null hypothesis ($H_0$1) for research question two can be partially rejected. For research question three, a significant relationship exists between level of education and etiology scores. No other significant associations were found; thus, the null hypothesis ($H_0$2) for research question one can be partially rejected. For research question four, an important correlation exists between overall knowledge of ADHD and choice of classroom behavior intervention among the four vignettes; thus, the null hypotheses ($H_0$3, $H_0$4, $H_0$5, and $H_0$6) can be rejected.

In Chapter 5, these findings will be discussed further in connection with and relationship to the existing literature. The statistical findings will also be discussed in the context of the assumptions of the theoretical framework selected for the study. The next chapter will also provide a discussion of the limitations and recommendations for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Summary of the Study

Following the revision of the National Policy on Education and the adoption of Universal Basic Education (UBE) in Nigeria, mainstreaming and inclusive education became the norm within the Nigerian general education environment. Inclusion and mainstreaming entail the integration of students with disabilities in regular classroom environments with their nondisabled peers (Ajuwon, 2008; Frankel et al., 2010; National Policy on Education, 2008; Siegel, 2011; Spiker et al., 2011). Among students with disabilities are students with ADHD, one of the most common types of neurodevelopmental disability associated with children in the general education environment (Famuyiwa, 2007; Getahun et al., 2013), with at least one or two students in each regular education classroom (Barkley, 2015; APA, 2013). The characteristic behaviors of ADHD subsume inattention, impulsivity, and hyperactivity (APA, 2013; Lee et al., 2011). Additionally, greater than half of these children present with externalizing and internalizing comorbid conditions, behaviors associated with oppositional defiant disorder (ODD), conduct disorder (CD), and learning disorder (LD) (APA, 2013; Frank-Briggs et al., 2013; Sullivan, 2014; Wheeler et al., 2009).

Indicators from previous research provide convergent evidence that over 8.0% of the Nigerian school-age child population meets the diagnostic criteria for ADHD (Adewuya & Famuyiwa, 2007; Ndukuba et al., 2014; Ofovwe et al., 2006) and is at elevated risk of academic underperformance, failure, and poor social development consequent to the debilitating characteristics of the disorder. In spite of this, most general educators in Nigeria lack the appropriate information, training, and resources for

effective pedagogy and the success of these children in inclusive classrooms (Ajuwon, 2008). The problem remains that children who demonstrate characteristic behaviors of ADHD in inclusive classrooms can disrupt the learning environment; such disruption may lead to ineffective pedagogical processes as well as undermining of the academic and social developmental success of the entire class.

Notably, Nigerian general educators hold misconceptions about characteristic behaviors of ADHD (Adeosun et al., 2013) and may be prone to the use of negative disciplinary consequences in response to ADHD presentations in the classroom (Ergun, 2014; Romi, Roache, & Riley, 2011). Therefore, adequate knowledge about ADHD and the ability to implement appropriate evidence-based classroom behavioral management interventions to shape negative characteristics of ADHD are necessary for teachers. Additionally, this knowledge may serve to promote educators' confidence, effectiveness, and efficiency in the general education classroom (Dixon et al., 2014).

A correlation exists between educators' instructional and classroom management techniques, knowledge about ADHD, and students' overall academic and social outcomes (Sherman et al., 2008). Preceded by the challenges experienced by ADHD students in general education environments, many teachers have reported that these students exhibit attention problems, show failure to stay on task, demonstrate poor concentration, require the need for constant redirection, and demonstrate poor peer interaction (Imeraj et al., 2013). These behaviors can impede students' academic success. Consequently, many educators have reported uncertainty regarding their capacity to manage negative ADHD behaviors within the learning environment due to inadequate training and knowledge about ADHD (Guerro & Brown, 2012; Van Tartwijk & Hammerness, 2011). Particularly,

in Nigeria, such training is nearly nonexistent (Abiodun et al., 2011; Bakare, 2012; Bakare, Ubochi, & Ebigbo, 2010; Bella et al., 2011; Ndukuba et al., 2014; Oshodi et al., 2013). In addition, while abundant literature exists on ADHD, no literature in the body of knowledge has provided information specific to Nigerian general educators' knowledge of ADHD and classroom management practices. Fortunately, past researchers have established school-based strategies for addressing classroom behaviors. These interventions include antecedent, academic, and consequent strategies and have been implemented in classrooms to successfully modify negative ADHD behaviors (Dupaul et al., 2011; Trout et al., 2007). Thus, ADHD students integrated into a general education environment with teachers who have adequate knowledge or training about ADHD and are skillful in the implementation of appropriate classroom behavioral management strategies may show improved social skills and increased academic success.

The current study sought to assess Nigerian general educators' knowledge about ADHD and the nature of the interventions they employ for shaping negative ADHD behaviors in the classroom. The participants for this study included 1,000 Nigerian educators with varied levels of education and years of teaching experience , who were taken from all elementary, middle, and high schools within the 27 local government areas in Imo State of the Southeastern region of Nigeria. Participant selection was conducted through a stratified random sampling method using a list of schools in Imo State. The current research involved the use of quantitative descriptive and correlative designs—multiple linear regression that employed a survey approach to measure teachers' knowledge about ADHD-general knowledge/characteristics, etiology, intervention and the relationship between the teachers' demographies and knowledge about ADHD.

Additionally, it employed multinomial logistic regression to assess the nature of Nigerian teachers' classroom intervention approaches (academic, consequent, and antecedent) for shaping four negative ADHD behaviors: wandering, speaking out of turn, poor peer interaction, and inattentiveness.

Ethical Dimensions

In this study, I adhered to stringent ethical standards, confidentiality agreements, and IRB recommendations. Consent forms and surveys were distributed to the research participants requesting their responses to questions related to the study. Participation in the research was voluntary with no risks to participants. The survey was completely anonymous. This study did not collect or reveal any participant's personal or recognizable identity, classroom practices, school, and local government area affiliations. Further, the survey data contained no identifying marks associated with the participants, and the participants could not be connected to institutions. Data included only participants' self-reports on knowledge about ADHD and choice of classroom interventions.

Overview of the Study Population and Sampling Method

A survey introduction and the instruments were distributed, which led to the recruitment of 1,000 teacher participants for this study. The participating schools constituted a stratified sample of all public elementary, middle, and high schools in Imo State, Nigeria. Descriptive statistics were employed to analyze knowledge about ADHD, including general awareness, etiology, intervention, and overall knowledge. Multiple linear regression procedure was employed to assess the relationship between Nigerian teachers' demographic characteristics—levels of education, years of teaching experience,

and ADHD knowledge. In addition, multinomial logistic regression was used to assess the relationship between teachers' knowledge about ADHD and the nature of their classroom behavioral management for inattentiveness, wandering, peer interaction, and speaking out of turn. The outcome of a power analysis indicated that the sample should consist of 55 participants. This study met and exceeded the requirement.

Data Collection Processes

The data collection process included surveys distributed to the participants and returned by the participants to a central location. Upon receipt, data were input into IBM SPSS statistics software for survey data analysis using multiple linear regression and multinomial regression procedures. The survey data were stored on a computer flash drive. Both the survey data and surveys remain locked in a file cabinet, accessible only to the researcher.

Summary of Findings

This study was framed with the assumptions of cultural relativism theory. Specifically, central to the theoretical premise underpinning this study is that the demographic characteristics (behaviors, attitudes, perceptions) of a people native to a culture are a configuration of culturally held beliefs, ideals, values, and norms inherent within the culture. However, factors including introduction of new or novel information can change such demographic characteristics, behaviors, and perceptions (Tennekes, 1971), and such behaviors can be explained in observable and measurable responses to environmental cues. The purpose of this study was to assess Nigerian general educators' knowledge about ADHD and the nature of the interventions they employed for shaping

negative ADHD behaviors in the classroom. In order to realize this purpose, I outlined four research questions:

RQ1: What is Nigerian teachers' knowledge about ADHD (general awareness, etiology, intervention, and overall), as measured by the KADDS?

RQ2: Do Nigerian teachers' years of teaching experience significantly predict their knowledge of ADHD, as measured by the KADDS?

RQ3: Do Nigerian teachers' levels of education significantly predict their knowledge of ADHD, as measured by the KADDS?

RQ4: Does Nigerian general educators' knowledge about ADHD, as measured by the KADDS, significantly predict choice of classroom behavior intervention (academic, consequent, antecedent), as measured by the TIAS, for inattentiveness, wandering, poor peer interaction, and speaking out of turn? Summarily, using a quantitative correlational study approach, I identified and applied various hypotheses to address the research questions.

Limitations

The study was limited to a sample of general educators from one state in the southeastern region of Nigeria. Due to cultural persuasions and differences, teachers from other school populations and regions in Nigeria may differ in their knowledge about ADHD, as well as in the nature of the classroom behavioral management techniques they employ.

Further, the manner in which data were collected may have contributed a certain level of limitation. While a survey is a valid method for data collection, using a Likert-type scale confines participants' responses to the available choices. Although the survey

permitted participants' comments regarding interventions, such comments were optional; as a result, only few teachers offered comments, and those comments did not offer new insight or contribute relevance or value in the determination of the Nigerian teachers' classroom management practices.

In addition, the survey instruments (KADDS and TIAS) used for this study are self-reported measures and may intrinsically be subjective. Finally, while I supervised the data collection and took steps to ensure accuracy of the survey process, it is noteworthy that the anonymity and autonomy of the participants were significant for the process. Thus, all participants completed the instruments within the convenience of their home/workplace and returned them to me at the collation center. Therefore, it was not possible to determine to what extent other people or other distractions influenced the respondents' responses, if any.

Discussion of the Findings

Research Question 1

What is Nigerian teachers' knowledge about ADHD (general awareness, etiology, intervention, and overall), as measured by the KADDS?

The outcomes of the exploratory data analysis underscored the Nigerian teachers' knowledge about ADHD in the four domains of knowledge about ADHD; these components or subscales were overall knowledge, general knowledge/symptomatic characteristics, etiology, and intervention (Sciutto et al., 2004). The overall knowledge component was a representation of the teachers' current composite or aggregate knowledge about ADHD, which consisted of knowledge areas related to general knowledge/symptomatic characteristics, etiology, and intervention. The general

knowledge/symptomatic characteristics domain highlighted the extent of the teachers' ability to accurately identify the manifest nature of and diagnostic criteria for ADHD, while the etiology and intervention domains measured the extent of the teachers' knowledge regarding the fundamental causes of and effective intervention approaches for ADHD behavioral presentations, respectively. The indicators of this study showed that Nigerian teachers scored 41.63% on overall knowledge of ADHD, 42.08% on ability to recognize the symptomatic characteristics of ADHD accurately, 55.05% on knowledge of the causes of ADHD, and 37.21% on effective intervention approaches for the disorder.

In view of these findings, Nigerian general educators scored significantly low on each ADHD domain, including assessment, diagnosis, and prognosis of the disorder, demonstrating a high level of misconception and limited knowledge about ADHD. However, within the three components or subscales of ADHD, the teachers demonstrated better ability with knowledge about the etiology of ADHD than they did with knowledge about the manifest characteristics of and intervention for the disorder. These findings support those of previous studies (Adeosun et al., 2013; Alkahtani, 2013; Gallant et al., 2014; Guerra et al, 2012; Perold et al., 2010; Rodrigo et al., 2011; Topkin & Roman, 2015; Schmiedeler, 2013) and Sciutto et al. (2000), who also asserted that even experienced teachers lack knowledge and training about ADHD.

Inadequate knowledge about ADHD is exacerbated by cultural differences and beliefs regarding the typical characteristics of the disorder, which, according to Guerra et al. (2012), reinforces teachers' misconceptions and negative perceptions regarding students with ADHD. In the Nigerian cultural setting, many of teachers' misconceptions are rooted in ethnocentric beliefs, norms, and cultural relativism. According to Tolulope

Eni-olorunda (2008), virtually all ethnic groups in Nigeria have one belief or another regarding persons with special needs. Some believe that they are reincarnated beings, while others believe that they are a result of the sins committed by their parents against the "gods of the land" (Ajuwon, Ogbonna, & Umolu, 2014; Tolulope Eni-olorunda, 2008). Such misconceptions can lead teachers to treat the population of ADHD students with insensitivity, to give students with ADHD less attention, and to treat these students as outcasts; thus, these students may not receive appropriate education in inclusive classrooms.

As noted, due to cultural beliefs, many Nigerian educators, much like educators worldwide, hold misconceptions about ADHD. These misconceptions are reflections of lack of training regarding ADHD and behavior intervention strategies, as well as the absence of ADHD information in the teacher training curriculum (Abiodun et al., 2011; Guerro & Brown, 2012; Ndukuba et al., 2014; Van Tartwijk & Hammerness, 2011). Consequently, these factors present negative implications for Nigerian teachers' pedagogical competence pertaining to differentiated instruction as well as undermine and obstruct the teachers' effectiveness in managing characteristic behaviors of ADHD in inclusive classrooms (West et al., 2005).

Research Question 2

Do Nigerian teachers' years of teaching experience significantly predict their knowledge of ADHD, as measured by the KADDS?

To address Research Question 2, a series of multiple linear regressions were conducted to examine the predictive relationship between Nigerian teachers' years of teaching experience and their knowledge of ADHD (general awareness, etiology,

intervention, and overall perception). Results of multiple linear regression between years of teaching experience and overall knowledge of ADHD did not indicate statistical significance, $F(4, 969) = 2.18$, $p = 1.41$, $R^2 = .006$. This means that Nigerian teachers' years of teaching experience did not predict or dramatically improve their overall knowledge of ADHD, including their knowledge of symptomatic characteristics of, management of, and intervention for the disorder. However, the teachers' years of teaching experience showed a predictive relationship with the teachers' knowledge about etiology of ADHD, $F(4, 969) = 5.34$, $p < .001$, $R^2 = .022$. It is noteworthy that this predictive finding was limited to between etiology and the teachers with 11–15 years and greater than 20 years of teaching experience, and that the finding did not hold strong for the teachers' overall knowledge about ADHD and other components or subscales of ADHD, including symptomatic characteristics and intervention. Additionally, the unexpected phenomenon that indicated predictive significance between years of teaching experience and etiology for teachers with 11–15 and > 20 years of teaching experience but not for those with 16–20 years of experience could be confirmatory to the indicators of Resarch Question 1, which showed that the teachers lacked concrete knowledge about ADHD. Further, the above anomaly could be attributed to respondents' unintentional response selection errors in the 16–20 years of experience teacher group.

The indicators of this study were similar to Schmiedeler's (2013) findings regarding the nature of correlation between educators' years of teaching experience and ADHD knowledge. In his study of 353 elementary and middle school educators and their knowledge of ADHD, Schmiedeler (2013) reported that while there was a positive correlation between professional development and ADHD knowledge, no correlation was

discovered between years of experience and ADHD knowledge. However, despite its consensus with Schmiedeler's (2013) study, the findings of this study contrasted with those of Alkahtani's (2013) study, which found a positive correlation between years of teaching experience and knowledge of ADHD. Alkahtani (2013) asserted that the more experience an educator had, the more knowledge he or she had in regard to ADHD.

While Alkahtani's (2013) findings affirmed the expectation that knowledge will increase exponentially with increase in years of experience, the finding of this research, which discovered otherwise, is unremarkable for the Nigerian teachers, giving their cultural disposition and ethnocentric inclination (Ajuwon, Ogbonna, & Umolu, 2014; Tolulope Eni-olorunda, 2008). As well, included in the Nigerian teachers' cultural and pedagogical dilemma are issues relating to absence of proximal information, accessible resources, and in-service training program that incorporate information about ADHD (Ajuwon, 2008; Frank-Briggs, 2011). Specifically, the teachers' years of teaching experience is a product of cultural primacy, including intrinsic cultural beliefs, norms, and persuasions. Thus, it is visceral to note that the teachers' knowledge about ADHD was ostensibly limited to the degree of the Nigerian cultural worldview (Brown, Lake, & Matters, 2011; Rubie-Davies et al., 2012), which seemingly embodies misconception about the typical characteristics of the disorder (Adeosun, et al., 2013; Ajuwon et al., 2014; Tolulope Eni-olorunda, 2008).

However, despite the contrast with Alkahtani's (2013) findings, the indicators of this study contribute to the existing body of literature in a significant way. Notably, experiences, especially those of educators, are foundational for establishing various forms of knowledge regarding students with ADHD. This contribution include the revelation

about the confluence between the Nigerian teachers experience and cultural mediators to negate accurate knowledge, empower misconception among the teachers, undermine teachers' pedagogical skills, and students' academic performance. Summarily, Darrow (2009) reported that negative experiences with students with ADHD tend to contribute negatively to educators' knowledge, which, in turn, leads to educators' development of negative attitudes and perceptions towards these learners.

Research Question 3

Do Nigerian teachers' levels of education significantly predict their knowledge of ADHD, as measured by the KADDS?

Results of the multiple linear regressions, $F(2, 972) = 1.\ 34$, $p = .263$, $R^2 = .003$, indicated that there was no significant predictive correlation between Nigerian teachers' level of education and their overall knowledge about ADHD. However, master's degree education showed some predictive power, $F(2, 972) = 4.49$, $p = .011$, $R^2 = .009$, for knowledge about the etiology of ADHD; but no significant correlation was found between the teachers' levels of education and knowledge about symptomatic characteristic/diagnosis, and evidence-based intervention or management practices for ADHD.

Conventional wisdom expects vertical and incremental relationships between levels of education and various academic knowledge, including knowledge about ADHD. However, while the teachers with master's degree scored better on the etiology of ADHD, summary of the important indicators of this study showed that the Nigerian teachers' levels of education did not match or improve their composite knowledge about the disorder, including symptomatic characteristics and evidence-based intervention. A

number of Specific reasons may explain this phenomenon. First, these findings buttress the notion about the absence of ADHD information in teacher education curriculum for the population (Van Tartwijk & Hammerness, 2011) and the need for teacher education reform in Nigeria. Secondly, the findings support Augiar et al's. (2012) study which found that levels of education did not commensurate teachers' knowledge of ADHD and that additional psychoeducation awareness intervention improved the their scores on the knowledge of the disorder. As well, Alkahtani (2013) shared similar consensus that the level of teachers' knowledge about ADHD were related to prior training that included college or undergraduate level courses taken on ADHD, thus, underscore the educators' need for additional training. Thirdly, the indicators of this study support the assertion about the inherent influences of cultural perceptions, worldviews and ethnocentrism in Nigeria as highlighted by Ajuwon, Ogbonna and Umolu, (2014) and Tolulope Eni-olorunda (2008). As such, it is plausible that the Nigerian educational system, curriculum, and approach to academic dissemination are subservient to cultural norms and customary practices to inform the relationship between the teachers' levels of education and knowledge regarding neurodevelopmental disabilities.

Furthermore, the findings support the need and implications for teacher re-training, teacher education curriculum reform, in-service programs (Ndukuba et al., 2014) as well as underscores the teachers' lack of knowledge about ADHD. Ohan et al. (2008) stated that the absence of appropriate education and adequate knowledge about ADHD on the part of educators often leads to their misconceptions of students with ADHD. When educators are exposed to higher levels of education, they are often less likely to be insensitive to the behaviors indicative of a child in need of help. Summarily, this

insensitivity could cause teachers to respond with inappropriate behavior modification consequences (Blotnicky-Gallant et al. 2014; Sherman et al., 2008) and to provide inaccurate data or perspectives to mental health, medical practitioners, parents regarding the effects of medication on and behavioral observation of ADHD students.

Additionally, given that teachers' attitudes towards ADHD presentations influence their pedagogical approach, teachers are the driving force behind effective implementation of educational policies and curricula, as they are the caretakers of classroom climates (Bornman & Donohue, 2013). Depending on teachers' attitudes toward inclusive practices, they can either hinder or promote the success of inclusive education, such attitudes are dependents of appropriate teacher training. Thus, when teachers are exposed to comprehensive training and ancillary resources, they can recognize a policy's pedagogical merit, commit to making an effective effort, and implement differentiated instructions. With positive attitudes, teachers can dedicate extra intensity to instructional responsibility and time with students who have educational barriers.

Research Question 4

RQ4: Does Nigerian general educators' knowledge about ADHD, as measured by the KADDS, significantly predict choice of classroom behavior intervention (academic, consequent, antecedent), as measured by the TIAS, for inattentiveness, wandering, poor peer interaction, and speaking out of turn?

The multinomial logistic regression analysis findings of this study indicated that the Nigerian educators' knowledge about ADHD significantly predicted their choice of behavior modification strategies for inattentiveness, wandering, poor-peer interaction,

and speaking out of turn behaviors of ADHD. In essence, the teachers' classroom management practices were found within limits of their ADHD knowledge levels. For inattentiveness behavior, majority of the teachers (n = 486, 50%) selected the consequent-base intervention strategy. For the wandering behavior, more teachers (n = 313, 32%) implemented the antecedent-base intervention strategy. For the poor peer interaction behavior, more teachers (n = 329, 34%) employed multiple classroom interventions (consequent, antecedent, and academic). For the speaking out of turn behavior, more teachers (n = 278, 29%) selected the multiple classroom interventions (consequent, antecedent, and academic). These findings are of critical significance in the determination of the effectiveness of the teachers' classroom management practices in the inclusive classroom and the academic outcomes for the students. Fundamentally, no finding in the body of knowledge supports effectiveness of multiple interventions for shaping specific negative behavior presentation of ADHD. Notably, these findings, including the teachers' selection of multiple interventions, highlight the teachers' lack of adequate knowledge about ADHD, inappropriate implementation of evidence-base interventions, and ineffective classroom management practices for ADHD students.

Taken together, it is deductible from the findings that the Nigerian teachers implemented more of consequent-based intervention in the inclusive classrooms. Past researchers (Alter, Wyrick, Brown, & Lingo, 2008; Dupaul et al., 2011; Trout et al., 2007; Wolraich & Dupaul, 2010) have noted consequent based intervention as the most effective for behavior modification of negative characteristics of ADHD. However, as applied to Nigerian cultural context, it is noteworthy that the contextual approach to and interpretation of consequent intervention departs from positive reinforcement of desired

behaviors and use of token economy to more of serious punitive reprimands. Thus, in Nigerian setting, where use of corporal punishment, including manual labor and physical reprimand is permissible, and common practice for shaping perceived negative behaviors, the Nigerian teachers commonly employ more of negative disciplinary consequences for shaping negative behaviors of ADHD in the inclusive classrooms. Inherent cultural norms, teachers' misconceptions, and self-reported lack of appropriate training on effective ways for managing behavioral presentations of special needs students account for this phenomenon and practice (Levin & Nolan, 2010).

Kaufman and Brigham (2009) noted that use of punitive strategies for shaping ADHD behaviors were ineffective. As well, various researchers share the consensus that the use of negative disciplinary consequences leads to increased frequency and intensity of the negative behaviors, including chronically impaired externalizing, and internalizing behaviors, in ADHD students (Sullivan et al., 2014). Furthermore, implementation of negative disciplinary approach for the management of classroom behavior presentations of ADHD students exacerbates aggressive behaviors and stimulates low punishment sensitivity in the population (Carlson, Pritchard, & Dominelli, 2013). Thus, it is plausible that the teachers in this study were unaware of the appropriate implementation approach for consequent based intervention.

Overall, past researchers believe that school-based interventions for ADHD engender delimited improvements for participating students (Wolraich & Dupaul, 2010). Additionally, the outcome of Fabiano et al.'s (2009) meta-analysis of behavioral interventions, subsuming classroom modification, parent training, and those that target skill building (Evan et al., 2009) suggested that these interventions do improve ADHD

symptoms, academic performance, organizational skills, school work, and executive functioning. Researchers have reported that teacher-training relating to ADHD and other professional development involving classroom management skills had a higher correlation with teachers' effectiveness and success of inclusive environment (Aguiar et al., 2012; DuPaul et al., 2011; Graham-Day et al., 2014). However, studies have shown that many teachers do not possess adequate training in classroom management, especially inclusive classroom practices, before engaging in an in-service teaching professional career (Freeman, Simonsen, Briere, & MacSuga-Gage, 2014; Roache, J. E., & Lewis, R. (2011); Romi, Lewis, Roache, & Riley, 2011; Roorda, Koomen, Spilt, & Oort, 2011;; Sneyers, Jacobs, & Struyf, 2016). These teachers experience struggles with classroom management along with their pedagogical responsibilities and often need continued in-service training to support and improve their knowledge about ADHD, and consequently, their classroom-management skills (Dicke, Elling, Schmeck, & Leutner, 2015; Simonsen et al., 2010).

Recommendation for Further Action

The purpose of this study was to determine Nigerian teachers' ADHD knowledge and the nature of classroom-behavioral management method they employ to shape negative ADHD behavior. It included determination of the relationship between teachers' demographic (level of education, years of teaching experience) and their knowledge about ADHD as well as the correlation between teachers knowledge about ADHD and their choice of classroom management approach to characteristic behaviors of ADHD.

As noted in the literature review and affirmed by the indicators in the current study, Nigerian educators hold misperceptions about students who present behaviors

typical of ADHD, and consequently may not be successful in the selection of appropriate choice of and implementation of interventions to modify negative ADHD behavior in the inclusive classroom. Providing Nigerian elementary, middle, and high school educators, support staff, and administrators with the findings from this study may be assistive to the development or enhancement of the school's behavioral management program. It is necessary to make the State Universal Basic Education Board (SUBEB) members and school-system-level directors aware of the outcomes of this study. Sensitizing awareness of the findings amongst educators and administrators can enhance their ability create a successful inclusive environment through reduction of negative behaviors that may impede or confound academic performance and social interactions of ADHD students and their peers. Educators and administrators who are knowledgeable of ADHD and aware of effective school-based intervention can employ this information to orient new teachers.

Recommendations for Future Study

Despite the fact that outcomes of this study offered valuable information regarding Nigerian educators ADHD knowledge and the nature of classroom intervention they adopt in shaping negative ADHD behaviors, it still lacks significant information. First, this study included teachers from all grade levels (elementary, middle, and high schools); future studies could be more specific by focusing inquiries on elementary, middle, or high school. Secondly, this study was limited to three interventions: antecedent, consequent, and academic. Future studies could admit more interventions subsuming self-monitoring or a combination of intervention and pharmacologic effect.

Notably, this study employed a quantitative, non-experimental design. Future studies could employ a qualitative design, involving naturalistic observations and phenomenological interviews; such approach would likely offer comprehensive or better insight regarding Nigerian educators' ADHD knowledge and classroom interventions with ADHD students. Finally, although this study involved large sample of teacher-participants, the samples were taken specifically from a single state within the southeastern region of Nigeria. A study that includes more states and regional demographics in Nigeria may provide more robust and generalizable information regarding Nigerian general educators' knowledge about ADHD and their choice of behavior intervention for shaping negative ADHD behaviors.

Implications for Social Change

Since the revision of the National Policy on Education in 2008 and the adoption of the Universal Basic Education, Nigeria implemented mainstreaming and inclusive education policy. This policy mandated the integration of students with disabilities, including ADHD students (Adewuya, 2007) in regular classroom environments with their nondisabled peers. In the inclusive classroom, students with ADHD habitually exhibit negative behaviors that can disrupt the learning environment and affect learning for both the student and peers. Many teachers report inadequate knowledge about ADHD and incompetent skills for managing disruptive behaviors in the inclusive classrooms (Koutrouba, 2013); as such, Nigerian teachers implement ineffective means, mostly negative disciplinary consequences to shape negative behaviors of ADHD.

At the same time, in Nigeria, information about ADHD is exiguous (Frank-Briggs, 2011). As well, there is the absence of ADHD information in teacher training

curriculum, in addition to inherent cultural misconception and stigmatization of typical behaviors of ADHD; thus, leaving teachers with the struggle of managing the behaviors in the inclusive classrooms. A teacher's possession of adequate knowledge regarding ADHD and ability to select and implement an effective classroom management practice is essential to affording the ADHD student a setting that promotes learning, increased academic achievement, and positive social interactions.

As a seminal study of its kind in Nigeria, this quantitative study is significant to scholarly research and literature in education and psychology domain as it offers invaluable information on the status of knowledge about ADHD among Nigerian teachers and their classroom management practices with the disorder. This study impacts social change because of its potential to inform the decisions of policymakers—school systems, education agencies, school districts responsible for developing differentiated instructional strategies and academic curriculum. Thus, the findings of this research are positioned to effect notable social change, in manners that can strengthen inclusive education policies, encourage reform in teacher training curriculum, enhance teachers' pedagogical capacity, classroom management practices, reduce teacher frustration, and improve students' academic performances.

Despite the free education offered by the Nigerian states, the significant budgetary investment on education, and the teachers' laudable and enduring efforts, the achievement of noteworthy inclusive education in Nigeria remain an elusive dream (Abiodun et al., 2011). A significant component of achieving effective inclusive education and improve academic outcomes for the students include reform in teacher training curriculum to include information about ADHD, evidence-base, and efficient

classroom management practices for the disorder; teacher training, and in-service program to reinforce teachers' knowledge about ADHD. Teachers' need appropriate training in classroom management practices and effective implementation of evidence-based classroom behavior interventions and ADHD students require structure. As well, the ability of teachers to appropriately choose and implement effective classroom behavior management is dependent on their possession of adequate knowledge about ADHD (Jordon et al., 2010; Sherman, 2008)

Teachers are accountable for the educational needs, social development, and academic gains of ADHD students in Nigerian inclusive classrooms (Kunter, Klusmann, Baumert, Richter, Voss, & Hachfeld, 2013); As well, they are expected to configure inclusive climate that promotes student emotional connections and engagement to yield academic achievement (Reyes, Brackett, Rivers, White, & Salovey, 2012) When teachers acquire new information, otherwise, become competent in the knowledge about ADHD and the implementation of evidence-based classroom practices, confidence in their pedagogical ability becomes enhanced (Dixion et al., 2014). The novel knowledge can assist teachers in the reduction of the intrinsic cultural stigma against individuals and students with the presentation of typical behaviors of ADHD. The teachers' can now commit to implementation of differentiated instructions to cater for the learning needs of individual students. Appropriate teacher training empowers teachers' abilities to limit ADHD disruptions to other pupils in the classroom and reduce the amount of time ADHD students receive negative reprimand because of teacher frustration as well as provide the environment that promotes learning, increased academic achievement, and positive social interactions for ADHD students and the entire class.

Final Summary

Many general educators in Nigeria lack the appropriate information, training, and resources for effective pedagogy and the success of children with ADHD in inclusive classrooms (Ajuwon, 2008). Children who demonstrate characteristic behaviors of ADHD in inclusive classrooms can disrupt the learning environment; such disruption may lead to ineffective pedagogical processes as well as undermining the academic, social, and developmental success of the entire class. Notably, Nigerian general educators hold misconceptions about characteristic behaviors of ADHD (Adeosun et al., 2013), and may be prone to the use of negative disciplinary consequences in response to ADHD presentations in the classrooms (Ergun, 2014;). Therefore, having adequate knowledge about ADHD and the ability to implement the appropriate evidence-based classroom behavioral management intervention to shape negative characteristics of ADHD in the classroom are necessary for teachers. The purpose of this quantitative correlational study was to assess Nigerian educators' knowledge about ADHD and the nature of classroom management strategies they employ for the management of ADHD students.

The researcher found that a high percentage of educators in Imo State, Nigeria lacked the knowledge in effective interventions for the management of ADHD behavior in the classroom, held inherent cultural beliefs that lead to serious misconceptions of students with ADHD behavior. As such, I suggest that need exists for future studies continue focus on this phenomenon in an effort not only to further inform scholarship on the perceptions regarding students with ADHD in the region but also to attempt to educate Nigerian teachers in various professional development ventures to afford these children their right to education.

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Appendix A: Inform Consent/Confidentiality Form

Informed Consent/Confidentiality Form

Nigerian Educators' Knowledge about ADHD and Classroom Behavior Management of Attention-Deficit Hyperactivity Disorder Students

Dear Teacher:

My name is Arthur Ojionuka and I am a student in the PH.D—Clinical Psychology program at Walden University. This research project is being conducted in partial fulfillment of my doctoral degree. Participation is voluntary and anonymous. Please read this form carefully and ask any questions you may have before acting on this invitation to be in the study.

I would like to invite you to participate in a study concerning Nigerian teachers' knowledge about attention deficit hyperactivity disorder (ADHD) and classroom interventions used by the teachers to shape students' presentation of negative behaviors of ADHD in the mainstream elementary, middle, and high school environments. You were chosen as a potential participant for the current study because your school is among those that met the selection criteria, and because you are a credentialed teacher working in the regular education, elementary, middle school, or high school, environment in Imo State.

The purpose of this study is to assess Nigerian educators' knowledge about ADHD and to determine the relationship between that knowledge and their classroom management approach for students who present characteristic behaviors of ADHD in the inclusive classrooms. Participation of this survey is strictly voluntary and anonymous; no personal or identifying information will be collected from or required of you. Therefore, your responses regarding your teaching practices, knowledge or attitudes are not traceable to you. You may decline to provide an answer for any question or withdraw from participation at anytime. Your decision whether or not to participate or to withdraw will not affect your current or future relationship with the Imo State Government or Ministry of Education, or career. Your completion of the survey will provide needed information on areas of teachers' knowledge and classroom management for students with ADHD in the mainstream and inclusive learning environment. Consent to participate is implied by your submission of a completed survey. You may keep the consent form for your record.

If you choose to participate in this study, at your convenience, you will be asked to present at a central location _____ in Owerri Imo State On _____, a weekend (Saturday or Sunday) to complete or return completed survey. The researcher will not use your information for any purposes outside of this research project. Participation in this project will involve completion of two surveys—one that that provides four vignettes followed by a list of classroom management interventions (academic, consequent, and antecedent). You will be asked to check which classroom intervention you would use when presented with each of the classroom situations. This survey should take approximately 15 to 20 minutes to complete. As well you will complete another survey requiring endorsements of true (T) or false (F) responses to a 39-item survey statements relating to ADHD, and should take approximately 15-20 minutes to complete.

Sample Vignette

In the middle of an important classroom lecture, which will prepare students for an upcoming test, you notice that Tommy is staring out the window. Tommy is obviously distracted by what is taking place outside the window and not following along with the daily lecture.
Educators use different methods to shape this negative behavior –please rate each of the six possible methods as to how effective you think that method would be in this situation-

1 = Very Poor, 2 = Poor, 3 = Unsure, 4 = Good, 5 = Very Good.

1. Move Tommy to a seat away from windows_____

2. Call on Tommy to answer a question related to the lecture_____
3. Reward the student next to Tommy (verbal or tangible) for paying attention Nicely ___
4. Ignore Tommy at this moment and later change your instructional schedule to teach the most demanding attentional tasks in the morning or at the beginning of a class period __
5. Provide a nearby peer a signal to draw Tommy back on task _____
6. Ask Tommy to redirect his attention to the front of the room _____

There is no compensation for participation; however, society may benefit from your participation, as your participation will catalyze or inform:

- Development of appropriate training for mental health personnel, teachers, and the incorporation of research outcomes into teacher training to ensure successful inclusive practices within the Nigerian education system
- Appropriate education reform and teacher training curriculum
- Improvement of teachers' knowledge about ADHD and competence with classroom behavioral management of ADHD students
- Improvement of students' social development, academic performance, and achievement in Imo State and Nigeria

There are no known risks involved with participating in this research.
Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Data will be kept secure by the researcher in locked box. Data will be kept for a period of at least 5 years, as required by the university. The researcher conducting this research is Arthur Ojionuka. The researcher's faculty advisor is Dr. Cheryl Tyler-Balkcom. You may ask any questions you have now. If you have questions later, you may contact the researcher and researcher's faculty advisor via arthur.Ojionuka@waldenu.edu. The Research Participant Advocate at Walden University is Dr. Leilani Endicott. You may contact her at 001-612-312-1210. Walden University's approval number for this study is **10-06-15-0180941** and it expires on **October 5, 2016.**

Thank you for your valued consideration

Sincerely

Arthur N. Ojionuka
Doctoral Candidate

Appendix B: KADDS

Knowledge about Attention Deficit Disorder Survey (KADDS) Items

Please answer the following questions regarding Attention-Deficit/Hyperactivity Disorders (ADHD). THIS NOT A TEST OR EXAMINATION. If you are unsure of an answer, respond Don't Know (DK). PLEASE DO NOT GUESS.

True (T), False (F), or Don't Know (DK) (circle one):

1.	T	F	DK	Most estimates suggest that ADHD occurs in approximately 15% of school age children.
2.	T	F	DK	Current research suggests that ADHD is largely the result of ineffective parenting skills.
3.	T	F	DK	ADHD children are frequently distracted by extraneous stimuli.
4.	T	F	DK	ADHD children are typically more compliant with their fathers than with their mothers.
5.	T	F	DK	In order to be diagnosed with ADHD, the child's symptoms must have been present before age 7.
6.	T	F	DK	ADHD is more common in the 1st degree biological relatives (i.e. mother, father) of children with ADHD than in the general population.
7.	T	F	DK	One symptom of ADHD children is that they have been physically cruel to other people.
8.	T	F	DK	Antidepressant drugs have been effective in reducing symptoms for many ADHD children.
9.	T	F	DK	ADHD children often fidget or squirm in their seats.
10.	T	F	DK	Parent and teacher training in managing an ADHD child are generally effective when combined with medication treatment.
11.	T	F	DK	It is common for ADHD children to have an inflated sense of self-esteem or grandiosity.
12.	T	F	DK	When treatment of an ADHD child is terminated, it is rare for the child's symptoms to return.
13.	T	F	DK	It is possible for an adult to be diagnosed with ADHD.
14.	T	F	DK	ADHD children often have a history of stealing or destroying other people's things .
15.	T	F	DK	Side effects of stimulant drugs used for treatment of ADHD may include mild insomnia and appetite reduction.
16.	T	F	DK	Current wisdom about ADHD suggests two clusters of symptoms: One of inattention and another consisting of hyperactivity/impulsivity.
17.	T	F	DK	Symptoms of depression are found more frequently in ADHD children than in non- ADHD children.

18. T F DK Individual psychotherapy is usually sufficient for the treatment of most ADHD children.

19. T F DK Most ADHD children "outgrow" their symptoms by the onset of puberty and subsequently function normally in adulthood.

20. T F DK In severe cases of ADHD, medication is often used before other behavior modification techniques are attempted.

21. T F DK In order to be diagnosed as ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school).

22. T F DK If an ADHD child is able to demonstrate sustained attention to video games or TV for over an hour, that child is also able to sustain attention for at least an hour of class or homework.

23. T F DK Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD.

24. T F DK A diagnosis of ADHD by itself makes a child eligible for placement in special education.

25. T F DK Stimulant drugs are the most common type of drug used to treat children with ADHD

26. T F DK ADHD children often have difficulties organizing tasks and activities.

27. T F DK ADHD children generally experience more problems in novel situations than in familiar situations.

28. T F DK There are specific physical features which can be identified by medical doctors (e.g. pediatrician) in making a definitive diagnosis of ADHD.

29. T F DK In school age children, the prevalence of ADHD in males and females is equivalent.

30. T F DK In very young children (less than 4 years old), the problem behaviors of ADHD children (e.g. hyperactivity, inattention) are distinctly different from age-appropriate behaviors of non-ADHD children.

31. T F DK Children with ADHD are more distinguishable from normal children in a classroom setting than in a free play situation.

32. T F DK The majority of ADHD children evidence some degree of poor school performance in the elementary school years.

33. T F DK Symptoms of ADHD are often seen in non-ADHD children who come from inadequate and chaotic home environments.

34. T F DK Behavioral/Psychological interventions for children with ADHD focus primarily on the child's problems with inattention.

35. T F DK Electroconvulsive Therapy (i.e. shock treatment) has been found to be an effective treatment for severe cases of ADHD.

36.	T	F	DK	Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD.
37.	T	F	DK	Research has shown that prolonged use of stimulant medications leads to increased addiction (i.e., drug, alcohol) in adulthood.
38.	T	F	DK	If a child responds to stimulant medications (e.g., Ritalin), then they probably have ADHD.
39.	T	F	DK	Children with ADHD generally display an inflexible adherence to specific routines or rituals.

Appendix C: KIAS

Teachers' Intervention for ADHD Students (TIAS)
Study Survey

Please complete the following survey and place it in the preaddressed stamped envelope provided. Participation in this survey is voluntary. The survey is anonymous so your signature is not required. This is not a test or an examination. To maintain anonymity, please do not write your name anywhere on this questionnaire.

1. To indicate your consent to participate, simply place a checkmark next to the below statement of consent. If you decide to decline to participate, please place a checkmark next to the decline statement and return the uncompleted survey in the enclosed preaddressed envelope.

____ I consent to participate in the survey and understand that I will remain anonymous

_____I decline to participate in this research project.

Demographic Information

2. Please mark your gender:

_____ Male _____ Female

3. Check the grade level you are currently teaching:

_____ Kindergarten
_____ 1st grade _____ ____ _____7th grade _____
_____ 2nd grade _____8th grade____
_____ 3rd grade _____ 9 grade
_____ 4th grade _____10th grade
_____ 5th grade _____ 11th grade_____
_____ 6th grade _____ 12th grade

4. Years of teaching experience _____

5. Check your level of education:

Bachelor of Arts/Science ____ Master of Arts/Science____Ph.D. or Ed.D. _
Professional clear credential____ Multiple subject credential___Single subject credential____

Please list any extra credentials or unit earned:

_____

_____

Section II

Survey
Teacher Interventions for ADHD Students (TIAS)

Each vignette below describes four negative behavioral classroom scenarios of students with ADHD in the mainstream educational environment (inattention, wandering around the room, poor peer interaction, speaking out of turn). Carefully read each vignette and the methods that follow. **Using the scale below each vignette, please rate each of the methods as very poor, poor, unsure, good, and very good.**

Vignette # 1: Inattentiveness

In the middle of an important classroom lecture, which will prepare students for an upcoming test, you notice that Tommy is staring out the window. Tommy is obviously distracted by what is taking place outside the window and not following along with the daily lecture.

Educators use different methods to shape this negative behavior –please rate each of the six possible methods as to how effective you think that method would be in this situation-
1 = Very Poor, 2 = Poor, 3 = Unsure, 4 = Good, 5 = Very Good.

1. Move Tommy to a seat away from windows
2. Call on Tommy to answer a question related to the lecture
3. Reward the student next to Tommy (verbal or tangible) for paying attention nicely
4. Ignore Tommy at this moment and later change your instructional schedule to teach the most demanding attentional tasks in the morning or at the beginning of a class period.
5. Provide a nearby peer a signal to draw Tommy back on task.
6. Ask Tommy to redirect his attention to the front of the room

If you do not agree that any of the interventions listed are beneficial, please comment on what has been successful in your classroom to be added to my research:
(optional)

_____

_____

Vignette #2: Wandering

While teaching a math lesson, Tommy gets up from his desk and walks over to the trash can to throw away a piece of paper. While walking to the trash can, Tommy stops to say hello to a peer seated near the trash. The peer seems to be ignoring him, but Tommy continues to talk which has now disrupted the learning environment.

Educators use different methods to shape this negative behavior –please rate each of the six possible methods as to how effective you think that method would be in this situation-

1 = Very Poor, 2 = Poor, 3 = Unsure, 4 = Good, 5 = Very Good.

7. Remind Tommy that he must remain seated during instruction
8. Ignore Tommy's behavior and provide tickets, tokens, or treats to other students who have continued to stay on task .
9. Provide Tommy the choice to return to his seat or earn a consequence
10. Assign Tommy a consequence (detention, time out, referral).
11. Give a responsible peer the cue to redirect Tommy back to his desk
12. Enhance your math lesson at that moment to draw Tommy's attention back (ask for volunteers, speak in a different tone, walk around the room)

If you do not agree that any of the interventions listed are beneficial, please comment on what has been successful in your classroom to be added to my research:
(optional)

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Vignette #3: Poor Peer Interaction

During class time, students are asked to join a group of two or three students or are placed by you into groups of two or three to work together on an activity. While in their groups, Tommy refuses to cooperate with the other students and at the same time antagonizes them with silly comments and rude noises. The other students ask Tommy to stop, but he only mimics them.

Educators use different methods to shape this negative behavior –please rate each of the six possible methods as to how effective you think that method would be in this situation-
1 = Very Poor, 2 = Poor, 3 = Unsure, 4 = Good, 5 = Very Good.

13. Walk towards Tommy's group and reward the others for working nicely together (verbal or tangible).
14. Sit down and join Tommy's group to assist with the task
15. Privately Remind Tommy that he will earn points/tickets/check marks for working nicely with others.
16. Remind Tommy of the class rules
17. Give Tommy a consequence (detention, time out, office referral).
18. Assign Tommy an individualized task to work on

If you do not agree that any of the interventions listed are beneficial, please comment on what has been successful in your classroom to be added to my research:
(optional)

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Vignette #4: Speaking Out Of Turn

Following a class activity, you proceed to ask the students questions to check for understanding. You ask the first question and Tommy blurts out the answer without being called on. You:

Educators use different methods to shape this negative behavior –please rate each of the six possible methods as to how effective you think that method would be in this situation.
1 = Very Poor, 2 = Poor, 3 = Unsure, 4 = Good, 5 = Very Good.

19. Ignore Tommy and call on a student who has raised their hand to answer the question.
20. Tell the class that they've lost class points because a peer broke a rule by shouting out.
21. Thank Tommy for answering the question correctly, but gently remind Tommy of the rule of raising your hand
22. Reward the students who are raising their hands to answer the question (verbally- –I like the way Kelly is raising her hand‖) or (tangible- treats/tickets/points).
23. Assign a responsible peer to sit next to Tommy for rule reminders
24. Change your way of instruction by calling on a student first before asking the question (Kelly, can you answer the next question?) _____

If you do not agree that any of the interventions listed are beneficial, please comment on what has been successful in your classroom to be added to my research:
(optional)

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